

2017 ADVANCE PROGRAM

FABTECH 2017

CHICAGO
NOV 6 – 9

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INDUSTRIAL EVOLUTION

EXPERIENCE THE FUTURE OF
METAL FABRICATING AND MORE
— ONLY AT FABTECH

INSIDE:

EXHIBITOR LIST

SPECIAL EVENTS

SCHEDULE-AT-A-GLANCE

EDUCATION PROGRAMS

HOTEL AND TRAVEL

PLANNING TOOLS



NORTH AMERICA'S LARGEST METAL FORMING,
FABRICATING, WELDING AND FINISHING EVENT

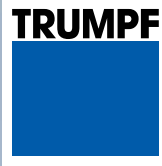


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#FABTECH17

REGISTER TODAY FABTECHEXPO.COM



GET CONNECTED with TRUMPF

FABTECH is the perfect opportunity to get connected with TRUMPF. We invite you to stop by our booths to see our latest selection of machine technology, automation, software and services. Talk with our experts and learn how a smart connection with TRUMPF can keep you ahead of your competition. With 3 booths, 9 production technologies and 13 machines in operation, we hope to have what it takes to make your fab shop a digital success.

FABTECH Booths A2601, B11013, B103 / www.trumpf.com

Punch/Laser – Laser Cutting – 3D Laser Processing – Tube Laser Cutting – Bending – Automation – Additive Manufacturing – Laser Welding – Laser Marking – Power Tools – Software – Financing – Technical Services

EXPERIENCE THE FUTURE OF METAL FABRICATING AND MORE ONLY AT FABTECH 2017

FABTECH provides a dynamic environment where you can meet with world-class suppliers, see the latest industry products, developments and trends, and uncover the tools to improve productivity, facilitate growth, and increase profits.

REGISTER TO ATTEND TODAY AT FABTECHEXPO.COM

► LEARN + PROGRESS

Interact with the largest gathering of technical experts and industry-leading visionaries — and learn not only what's new, but what's next. Gain valuable, can't-miss insights from best-in-class educational and training programs.

► MEET + ADVANCE

Happy hours, Industry Night and other special events allow attendees to network with peers, learn from top industry experts, exchange best practices and explore the latest technological industry advancements.

► EXPLORE + GROW

Want to make a real difference in your business, your product and your bottom line? Bring your entire team to FABTECH and uncover more cost-saving ideas and strategies that will differentiate you from your competition.

► FABTECH 2017 FEATURES

OVER 1,700 EXHIBITORS

KEYNOTE SPEAKERS

150+ EDUCATIONAL PROGRAMS

PRODUCT DEMONSTRATIONS

500+ NEW PRODUCTS

EXPERT-LED DISCUSSIONS

LEARN | MEET | EXPLORE | BE PART OF THE

INDUSTRIAL EVOLUTION

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 Next Industrial Evolution

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Additive Theater Presentations

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REGISTER TO ATTEND!

Avoid lines onsite by registering online at **fabtechexpo.com**. Use the Promo Code next to your mailing address when registering.

SHOW ADMISSION

Exhibit-only attendance is FREE if you register by November 3, 2017. Beginning November 4, the cost to attend the exhibits is \$50. AWS, FMA, SME, PMA and CCAI members may always attend the exhibits for FREE with a valid member card.

LOCATION

McCORMICK PLACE
2301 S. KING DRIVE
CHICAGO, IL 60616



SHOW HOURS

MONDAY, NOVEMBER 6
10:00 AM – 6:00 PM

TUESDAY, NOVEMBER 7
9:00 AM – 5:00 PM

WEDNESDAY, NOVEMBER 8
9:00 AM – 5:00 PM

THURSDAY, NOVEMBER 9
9:00 AM – 3:00 PM

NEW FOR 2017!

3D/ADDITIVE MANUFACTURING PAVILION

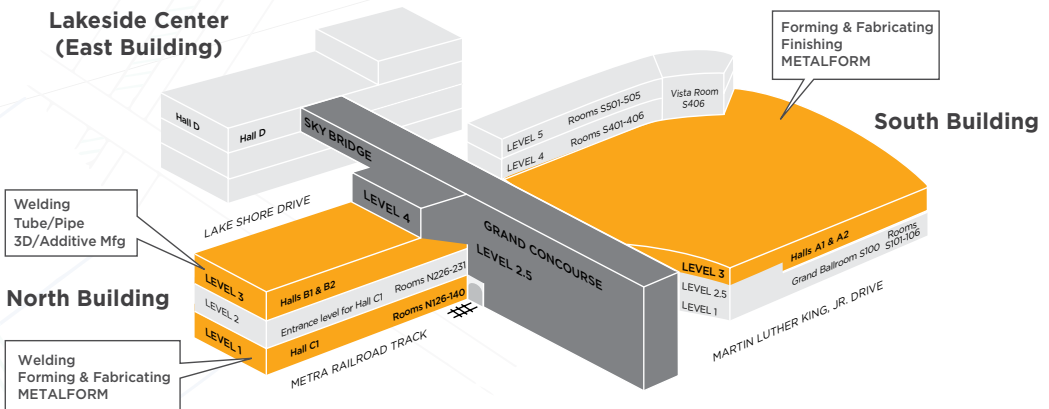
Additive Manufacturing is one of the fastest-growing technologies of the 21st century and FABTECH has taken notice. To accommodate the increasing interest in this technology, FABTECH has added the new 3D/Additive Manufacturing Pavilion featuring over 25 exhibitors and a 3D/Additive Theater that will offer daily presentations, education and networking for attendees interested in learning more about Additive Manufacturing.

EXPANDED TUBE PRODUCERS & SUPPLIERS PAVILION

FABTECH, in a joint venture with Messe Düsseldorf, showcases an expanded Tube & Pipe Pavilion to bring the latest technology from all over the world to meet the needs of users of tube and pipe profiles.



THREE HALLS OF TECHNOLOGY TO EXPLORE



► TECHNOLOGY ON DISPLAY

additive manufacturing/3D printing • arc welding • assembly • bending & forming • brazing & soldering • business services • coil processing • cutting • fastening & joining • finishing/paint & powder coating • finishing/plating • gases & gas equipment • hydroforming • inspection & testing • job shop/contract manufacturing • lasers • lubrication • maintenance & repair • material handling • metal suppliers • plate & structural fabricating • press brakes • punching • resistance welding • robotics • roll forming • safety & environmental • saws • software/machine controls • stamping • thermal spraying • tool & die • tooling • tube & pipe fabricating or welding • tube & pipe producing • waterjet • welding consumables • welding machines

3D/ADDITIVE MANUFACTURING

3D Systems
BodyCote Thermal Processing
Cincinnati Inc
Formlabs
GPI Prototype &
Manufacturing Services Inc
Markforged
Met-L-Flo Inc
Oak Ridge National Laboratory
OR Laserotechnology Inc
Proto Labs Inc
Raise3d Inc
Remishaw Inc
solidThinking Inc
TRUMPF Inc
Ultimaker
Wisconsin Precision
Casting Corp
Xometry
ZEISS Industrial Metrology
and ZEISS Microscopy

FINISHING & COATING

Accudraft Paint Booths
Acme Finishing Co
ACT Test Panels LLC
Add Industrial Coating
ADF Systems Ltd
Aesthetic Finishers Inc
AFC Finishing Systems
AkzoNobel Powder Coatings
Alconox
Alliance Manufacturing Inc
American Fabric Filter Co
American Grinders Inc
American Industrial Sales LLC
Ameribica Inc
AMQUA SARL
APEL International
Argon Masking Corp
Assured Testing Services
Axalta Coating Systems
AZZ Metal Coatings
B L Downey Company LLC
Baoli Aati New Metal Co Ltd
Bari Coatings USA
BASF Corp
Bayco / Guspro Inc
BCI Surface Technologies Bulk
Chemicals Inc
BEKO Technologies
Bex Spray Nozzles
Blast Cleaning Technologies
Blastone
Bonding Solutions
Brush Research
Manufacturing Co
Burligh Industries
Caldan Conveyor A/S
Calvary Industries Inc
Caplugs
Carbint Paint Co
Cardinal Paint and Powder
Cardinal Parts &
Equipment LLC
Carisole Fluid Technologies
Catalforesis SA de CV
Catalytic Industrial Systems
CFM Canadian Finishing &
Coatings Manufacturing
Chemetal US Inc
Chemicals Assoc Int'l
ChemQuest Inc
Chemtec North America LLC
Chicago Coating Technologies
Chris Plating
ClearCoat Coatings LLC
Clemco Industries Corp
Col-Met Engineered Finishing
Solutions
Columbus Industries Inc
Combustion and Systems Inc
Coral Chemical Co
CPR Systems
Custom Fabricating &
Supplies
Dariluku North America
Jervis B Webb Company
DeFelsko Corp
Deflin Industrial
Dinamex Systems
Divine Brothers Co
DMP Corporation
Dosatron International Inc
DST Chemicals Inc
DuBois Chemicals Inc
Durr Systems Inc
Eco-Engineering
Eisenmann Corp
Eicometer Inc
Electrocoat Association, The
ElektroPhysik USA Inc
Enhanced Powder
Coating LLC
Enhancement Technologies
Inc / Sublitech Mirolight
EPSI (Engineered Products &
Services) Inc
Ervin Industries
FANUC America Corp
Filtermedia SRL

FINISHING & COATING

Fischer Technology Inc
Flex Trim USA
Fluke Process Instruments
Fostoria Process Equipment,
Div. of TPI Corp.
Frolic Inc
Gema USA Inc
General Automatic Transfer
General Fabrications Corp
George Koch Sons LLC
Global Finishing Solutions
GMA Industries Inc
Goff Inc
Graco Inc
Graphic Products
HafcoVac
Hedston Technologies
North America
Henkel Corp
Hentzen Coatings Inc
Heraeus Noblelight LLC
Herr Industrial Inc
Hosco Fittings LLC
Houghton International Inc
Hubbard-Hall Inc
IFS Coatings Inc
IHC Inc
INTEK Corporation
IntelliFinishing
International Thermal
Systems LLC
INTERTEK
Iowa Area Development Group
IST International Surface
Technologies
Jamestown Coating
Technologies
Keyland Polymer Material
Sciences LLC
Klinger Paint Co
Kolene Corporation
Kyzem Corporation
LDPI Inc
Magic Rack/Production
Plus Corp
Metokote Corp
Micro-Surface
Finishing Products
Midwest Finishing Systems
Mighty Hook Inc
Mode Kartella Boya Ltd Stl
Munters Corporation
NikoTrack LLC
Nordic Air Filtration
Nordson Corp
Northern Coatings & Chemical
NorthStar Products
Novacel
Osborn
Parker Ionics
Patriot Metal Finishing
Systems Inc
PEM Inc
Pneu-Mech Systems Mfg
Poli-FILM America Inc
Pollution Control Products Co.
Polymer Molding Inc
Poppelmann Plastics USA LLC
Porcelain Enamel Institute Inc
Powder Coated Tough
Magazine
Powder Coating
Powder Coating Institute
Powder Parts Inc
PPG Industries Inc
Proceco Ltd
Products Finishing Magazine
Protech Powder Coatings
Quaker Chemical Corporation
QuickLabel Systems
Richards-Wilcox Conveyor
Rohrer
RoilSeal Inc
Ruwaac
Sames Kremlin
Sankyo Rikagaku Co Ltd
Sata Spray Equipment
SciTex Group
Sculpt Nouveau
Sbias Heat Technology
Sherwin-Williams
sia Abrasives
Sierra Paint Corporation
Southern Systems Inc
Spray Systems Inc
Spray Tech/Junair
Spraying Systems Co
Stanza Machinery
Sunbikes Thermoreactors Inc
SuperMax Tools
Surface Armor
SWECO
System Technologies
Tanis Inc
Technotrans America
Therma-Tron-X Inc
The Finishing Equipment Corp
Thermac Industrial Systems
Uni-Spray Systems Inc
V&S Galvanizing LLC
Valmont Coatings
Vapor Technologies
Venjakob North America Inc
Nutro Inc

FINISHING & COATING

Vitraccoat America Inc
Vogel Industrial Coatings
VULKAN Blast Shot
W Abrasives
Wagner Systems Inc
Weston-Stiles Co
Westran Thermal Processing
Yueell Nameplate & Label
**FORMING &
FABRICATING**
1960 Seravesi SRL
Accuril
Accurpress
AccuStream Inc
Acrotech Inc
Actus Industrial Power Inc
Advanced Machine &
Engineering
Aerospace Manufacturing
& Design
AFM Advanced Manufacturing
Technologies
Aljan Elektronik Servis Sanayi
Ve Ticaret Ltd Sts
AKS Cutting Systems Inc
AKYAPAK ULUSLARARAS
DS TCARET MAK. SAN. VE
TO A.S.
Alfra USA LLC
Alliance For American
Manufacturing
Alliance Machine and
Engraving LLC
Allied Powers LLC
Allor Manufacturing Inc/Plesh
Industries
Allstate Saws &
Machining LLC
Allstrap Steel & Poly
Strapping Systems
Allure Industries
Aluma CAM USA LLC
Alternative Parts Inc
AM Machinery Sales Inc
Amada America Inc
American Cutting Edge
Datto USA Inc
Dake Corporation
Daimec Inc
data M Sheet Metal
Solutions GmbH
DAVI Inc
DCM Tech Inc
Denray Machine Inc
Design Part
Donaldson Torit - Donaldson
Design Storage & Handling Inc
Despres Tank
Diamond Saw Works Inc
Diamond Wire Spring
Dimco Coil Technologies Inc
Disston Tools
DoALL Sawing Products
Donaldson Torit - Donaldson
Company Inc
Dongguan Maozhong
Precision Hardware Co. Ltd
Doringer Cold Saws
Doucet Machineries Inc
Dr. Shrink Inc.
Dreistern Inc
Dropska USA
DSS America Inc
DT Engineering
Dude Solutions
Durma - Durmazlar AS
Dynabrade Inc
Dynatec Manufacturing Inc
E Jordan Brookes Co
Eagle Branding Machines Inc
Eberle America Inc
Econco/CP
EDM Tech Center Inc
EHRT North America
Ekide
Elesa USA
ELG Metals Inc
Elumatec North America Inc
Emmegg USA Inc
Enutron Industrial Corp
Epicor Software Corp
Epilog Laser Corp
Ercolina - CML USA Inc
Eriez Manufacturing Co.
Ermasan Makina San
Ve Tic. AS
ESCO Tool Co
F. J. B. Manufacturing LLC
Fab Shop Magazine Direct
Fab Supply Inc
FabSuite LLC
Faccin Srl USA Inc
Factory Cat
Family Business USA
FARO Technologies Inc
Fascut Industries
Fastenix
Faulkner Fabricating Inc
Felton Inc
FF Journal/Modern Metals
Ficop Corporation
Fisher Unitex
Fladder-Hansen &
Hundebol Inc

FORMING & FABRICATING

Butech Bliss
BUWW Coverings Inc
Bystronic Inc
C Marshall Fabrication
Machinery Inc
Cable Industrial Maintenance
Cajo Technologies
Carell Corporation
CASTEM HOUSTON LLC
Centricut
Cerasinc Inc
CH Steel Solutions Inc
Chambréon Industrial
Slides Inc
Chengzhou City Wansui
Tools Works
Chase Cooling Systems
CIDAN Machinery Inc
Cincinnati Inc
CLARCOR Industrial Air / UAS
Cleveland Pump & Die Co
Cleveland Steel Tool Co
CM solution SRL
CMF
CMS North America Inc
Coastone Oy
Coherent Inc
Coldwater Machine Co
COMET USA
COMED Inc
CONCOA Inc
Control Works Inc
Controlled Automation Inc
Cosen Saws
Costa Sanders
Coulson Ice Blast
Coveted Financial
Services LLC
Coves Tool Co
Creaform
Createx Machine and Design
CTD Machines
Current Inc
Custom Rollforming Corp
Cy Laser America
D L Wire / Pensa Labs
Datto USA Inc
Dake Corporation
Daimec Inc
data M Sheet Metal
Solutions GmbH
DAVI Inc
DCM Tech Inc
Denray Machine Inc
Design Part
Donaldson Torit - Donaldson
Design Storage & Handling Inc
Despres Tank
Diamond Saw Works Inc
Diamond Wire Spring
Dimco Coil Technologies Inc
Disston Tools
DoALL Sawing Products
Donaldson Torit - Donaldson
Company Inc
Dongguan Maozhong
Precision Hardware Co. Ltd
Doringer Cold Saws
Doucet Machineries Inc
Dr. Shrink Inc.
Dreistern Inc
Dropska USA
DSS America Inc
DT Engineering
Dude Solutions
Durma - Durmazlar AS
Dynabrade Inc
Dynatec Manufacturing Inc
E Jordan Brookes Co
Eagle Branding Machines Inc
Eberle America Inc
Econco/CP
EDM Tech Center Inc
EHRT North America
Ekide
Elesa USA
ELG Metals Inc
Elumatec North America Inc
Emmegg USA Inc
Enutron Industrial Corp
Epicor Software Corp
Epilog Laser Corp
Ercolina - CML USA Inc
Eriez Manufacturing Co.
Ermasan Makina San
Ve Tic. AS
ESCO Tool Co
F. J. B. Manufacturing LLC
Fab Shop Magazine Direct
Fab Supply Inc
FabSuite LLC
Faccin Srl USA Inc
Factory Cat
Family Business USA
FARO Technologies Inc
Fascut Industries
Fastenix
Faulkner Fabricating Inc
Felton Inc
FF Journal/Modern Metals
Ficop Corporation
Fisher Unitex
Fladder-Hansen &
Hundebol Inc

FORMING & FABRICATING

FlashCut CNC
FlexAm Inc
Flow International Corp
Fluke Corporation
Focus Technology Co Ltd
FormUSA
Formdriil USA Inc
Formtek Inc
Fortress Interlocks
Frantz Manufacturing Co
FreePoint Technologies Inc
Fujitsu Glovia Inc
Fuxin Jiufeng Hydraulic
Co. Ltd
Garant Machinerie
Gasol Engineering Systems Inc
Gasparrini SpA
Gauer Metal Products Inc
GE Mathis Co
General Wire Form
Genius Solutions
GINGRAS/Machinerie G A S
Glen Dimplex Thermal
Solutions
Global Shop Solutions
GMA Garnet USA Corp
GMC Machine Tools Corp
Gorbel Inc
Gravotech Inc
GrishamWorks LLC
GSM America Inc
H20 JET Inc
Haas Saw & Supply
Haberle / Ken Bergman &
Associates
Haco-Atlantic Inc
Haeger Inc
HAEUSLER AG Duggingen
Hafendorfer Machine Inc
Hainan E-Mig Technology
Co. Ltd
Haitong Metals Manufacturer
Ningbo China
Hangzhou Grand Imp &
Exp Co Ltd
Hangzhou Xiangsheng
Abrasive Machine
Manufacturing Co. Ltd
Hans Laser Technology
Industry Group Co Ltd
Hans Weber Sales and
Service Corp
Harmonic Drive LLC
Hayes International
Hedweld Group of Companies
Heinrich Georg GmbH GEORG
HEM Inc
Hexagon Manufacturing
Intelligence
HGG Profiling Equipment BV
Hiwin Corporation
HK Laser & Systems
Holtec Gas Systems
Hornet Cutting Systems
Hougen Manufacturing Inc
Hsin Fu Chia Industrial Co Ltd
Hyd-Mech Group Ltd
Hydren Systems LLC
Hypertherm CAM
Hypertherm Inc
Hyster Co
igus Inc
ii-Vi Infrared
IMCO Associates Inc
IMSM Inc
Industrial Machine Trader
Industrial Magnetics Inc
Industrial Market Place
Industrial Molded Rubber
Products
InfoSight Corp
Inoue Special Steel Co. Ltd
International Technologies Inc
Invaware Corp
IQMS
ISB
Italmac USA Inc
Jacquet Metals/Jacquet
Midwest
Jenoptik Automotive North
America LLC
Jet Edge
JETCAM-NestOne Solutions
JHP Fasteners Inc
Ji' An RuiPengFei Precision
Technology Co. Ltd
Jinen Bodor CNC Machine
Co Ltd
JMR Industrial
JMT USA
JobBOSS
JobPack Inc
Jobscope ERP
Jordi Universal VSL
Kalamazoo Machine Tool
Kalamazoo Metal Muncher
Kar Metal San Ve Tic Ltd STI
Kaspar Manufacturing
Kasto Inc
KB Duct - A CEO
ENVIRONMENTAL
COMPANY
KD Capital Equipment LLC
Keller USA Inc

FORMING & FABRICATING

Kelly Services
Kentek Corp Laser Safety Div
Kern Laser Systems
Ketec Precision Tooling Inc
Keyvield Solutions
Keyence Corp of America
Kinetic Cutting Systems Inc
KIG chillers
Klingelhofer Corp
KMT Waterjet Systems Inc
Knifesoil
KNUTH Machine Tools USA Inc
Komatsu America
Industries LLC
Kore Engineering Co Inc
Kyntronics
Laguna Tools
Lantek Sheet Metal Solutions
LAP Laser
Lapham-Hickey Steel
Laser Experts Inc
Laser Research Optics
LaserStar Technologies Corp
Laservision
Lazer Safe Pty Ltd
Leader Precision Drive
LENOX®
Lincoln Electric Co
LISSMAC Corp
LSI Industries Inc
Lumentum
LVD Strippit
Lyon Industries
Machine Concepts Inc
Machinery Dealers
National Assoc
MachineTools.com
Manufacturing News
Manufacturing Solutions
Marion Die & Fixture Inc
Markman
Marvel Manufacturing Co
Master America Corp
Master Magnetics
Master Roll Manufacturing
Mate Precision Tooling
Maxphotonics Co Ltd
Mazak Optonics Corp
MB Metal Technologies LLC
MIC Machinery Systems Inc
MD Metals
Measurement Systems
Intl A Rice Lake Weighing
Systems Co
MECCO
Megafab
Messer Cutting Systems
Mestek Machinery Inc
Metal Center News
MetalFinish LLC
MetalForming Inc
Metalix CAD/CAM Ltd
MetalMation Inc
Metform International Ltd
Metisaw Systems Inc
MG
Midwest Automation
Midwest Tool Inc
MIE Solutions Inc
Millner-Hauser Tool Company
Modern Manufacturing
Technologies Intl
Molhawk Machinery Inc
Mortank Machine Works
Moss International Srl
Muller - Load Containment
Solutions
MultiCam Inc
Muram Inc
Muram Machinery USA Inc
MVD Makina Sanayi A.S.
Nadella Inc
nano-purification solutions
Nantong Reliant Trading
Co Ltd
NBM Metals
Nebraska Public Power
District
New London Engineering
Nitto Kohki USA Inc
nLIGHT Corp
NN, Inc. Precision Engineered
Products Group
Nordfab Ducting
Norlok Technology Inc
NSK Americas
Nucor Buildings Group
Nukon USA
Nurn Corp
Nutron Nameplate Inc
Oakley Industrial Machinery
Oasis Scientific Inc
Ocean Machinery Inc
Orlikon Metco (US) Inc
Ohio Laser LLC
OMAX Corp
OMCO
OmegaCube Technologies
Oncor
Ophir Spiricon LLC
Optron Machinery North
America Inc
OSAI USA
Pacific Press Technologies
Packsize International LLC

FORMING & FABRICATING

Pangborn Group
Pannier Corp
Paper-Less LLC
Park Industries
Parker Hamilton
Pat Money Saw Inc
Peddighaus Corp
PEP Technology
Perfection Global LLC
Permador Industries Inc
Peter Prinzling GmbH
Phoenix Laser Solutions
Phoenix Metals Co
Polyurethane Products Corp
Precision Saws Inc
Press Brake Repair
Press Brake Safety
Presto Lifts Inc
Prima Power North America Inc
Project Tool & Die Inc
Pythorix - A Lincoln Electric Company
Oneet LLC
Quantum Machinery Group
Radan
RAS Systems LLC
RBT LLC
Red Bud Industries
Rhino Cutting Systems
Richardson Electronics Ltd
Rigidized Metals Corp
Rocklin Manufacturing Co
Rolled Alloys
Rohli USA
Roper Whitney
ROUND
Rousseau Metal Inc
RWM Casters Co
Ryerson
SafanDarley BV
Salvagnini America Inc
Samco Machinery Ltd
Samson Roll Formed Products Co
Sawblade.com
SB Whistler & Sons Inc
Schelling America Inc
Scotchman Industries Inc
Sernyx LLC
Senteng CNC & Laser Technology USA Inc
Service Lamp Corp
SES Salico Finishing and Processing LLC
Shanghai Golden Arrow Automatic Equipment Technology Development
Shanghai Qianjun Tools Co Ltd
ShopData Systems Inc
Shoptech
SICK Inc
SigmaTEK Systems LLC
Simonds Saw
Sinto Surface Treatment
Slattro LLC
Solback USA Inc
SPI Lasers
STAM SpA
Standard Industrial Corp
Starrett Company
State of Wyoming
Staub Manufacturing Solutions
Steel Storage Systems Inc
Striker Systems
Strong Hold Products
STRUMIS LLC
Studio Eleven Promotional Products
Sturdal Industries Inc
Sugar Steel Corp
SUNHS International LLC
Superfici America Inc
Supra Machine Tool
Syspro
Tapeswitch Corporation
T-Drill Industries Inc
Techni Inc
TECHN Waterjet
Technical Translation Services
Telesis Technologies Inc
Tenex Fabrication
TeraDiode Inc
The Fabricator Magazine
The M.K. Morse Company
The RDI Group
Thermal Care
THK America Inc
Three D Metals/Williams Metals and Welding Alloys
TigerStop LLC
Timesavers LLC
Torchmate
Tribonics Inc
Tri-Chem Corp
Trilogy Machinery Inc
Trimble Solutions USA Inc
Tri-Mer Corp
Trim-Lok
TRUMPF Inc
Tsune America LLC
TYKMA Electro
Unipunch Products Inc

FORMING & FABRICATING

United Industries Inc
United Lens Co
Ursviken Inc
US Industrial Machinery Co
US Lubricants
Versut Software Inc
VERNON Tool - A Lincoln Electric Company
Virtex Vision International
Volmer Of America
Vortman Corporation
Vytek
Walker Magnetics
WARDJet Inc
Waterjet USA LLC
Well Engineering North America
Welsper Profile GmbH
Wheelabrator Group
Wila USA
Wilson Tool International
Wisconsin Metal Parts Inc
WM Caster
Workshops For Warriors
Worthington Industries
Wysong Parts & Service
XCELHR
XinXiang TianFeng Machinery Manufacture Co Ltd
xTuple-World's #1 Open Source ERP
YESTOOL / Alois USA
Zund America Inc

GERMAN PAVILION

DURUM Verschleiss-Schutz GmbH
DVS e V
evobeam GmbH
GEFERTEC GmbH
GVB GmbH - Solutions in Glass
Haane Welding Systems
infoBOARD USA LLC
Kaindl Schellftechnik
Reiling GmbH
Lesmann GmbH
Official German Information Stand
Pstproducts GmbH
WECON Inc

METALFORM

AAF International
ABC Metals Inc
Accura-Wire Controls Inc
Accura-Die Design Software Inc./Logopress3
Admiral Steel LLC
Agathon Machine Tools Inc
AGIR Technologies
AIDA-America Corp
ALCOS Machinery Inc
Alma Machinery Co
Almco Inc
Almetals Company
Airo Steel Corporation
American Manufacturing Inc
Anchor Donly
Anchor Manufacturing Group Inc
AP&T North America Inc
ART Metals Group
ASC Machine Tools Inc
Associated Spring Raymond
Atlas Technologies
AutoForm Engineering USA Inc
Automated Tapping Systems
Bad Dog Tools
Balluff Inc
Beckwood Press Co
Benteler Maschinenbau GmbH
Berg Spanntechnik Co
Bestar LLC
BesTech Tool Corp
Big Ass Solutions
Biller of America Inc
Blacksmith Technology Limited
Bohler Uddeholm Corp
Brown Bogs Machine Co
Bruderer Machinery Inc
BSP Tools (Kunshan) Co Ltd
BDT
Bunting Magnetics Co
C2&E Architecture + Engineering
Champion Die Tool
China Machinery Industry Engineering (Dalian) Co Ltd
CIECO Inc
Clayton Metals
Clips & Clamps Industries
COE Press Equipment Corporation
Colt Automation LTD
Cometel S A
Dallas Industries Inc
Daubert Cromwell
DAYTON Lamina Corporation
Dees Hydraulic Industrial Co Ltd
Delta Computer Systems Inc

METALFORM

Delta Industrial
DESCH Canada Ltd
Die Cad Group Inc
Die Ironix/Kent Corp
Dongguan A-one Metal Co Ltd
Dongguan City Haiwei Intelligent Equipment Incorporated Co
Dongguan Gooming Mechanical Co Ltd
Dongguan Leim Tilledet Metal Technology Co. Ltd.
Dongguan Meinie Tool & Die Co Ltd
Dongguan Rocky Tool & Die Co Ltd
Dongguan SYH Tooling Co Ltd
Dongguan Wogang Metal
Dongguan Wisdom Tool & Die Co Ltd
DTC Products Corporation
Dubuque Stamping & Mfg Inc
Durable Superior Casters
Dynamic
Eagle Metals
Eagle Press & Equipment Co Ltd
EAS Mold & Die Change Systems Inc
ECI M1
EECCO Inc
Eigen
Eisenmann Thermal Solutions GmbH & Co. KG
Electra USA
Electrex Industrial Solutions
Elizabeth Carbide Components
Emprotech Industrial Technologies
Erickson Metals Corp
ESI North America
ETA Dynaforn
EuroLink Inc
Excelsior Hardware & Plastic Co Ltd
F&G Tool and Die Co
Fagor Arrasate
Feed Lease Corp
Fembot Technology Fibra
FluidForming Americas
Fontjane Grotnes North America
Forming Technologies Inc
FORMTEK-ME
Fox Valley Spring Co LLC
Fuchs Lubricants Co
GERB Vibration Control Systems
Global Metal Spinning Solutions Inc - DENN USA
Metal Forming
Green Valley Manufacturing Inc
Greendress Press & Machine Company Inc
Griesey Group
Gruber Tool & Die Inc
Gutlie Pressesammen GmbH
Haas Automation Inc
Hangzhou Sida Machinery & Electronics Co
Helm Instrument Co Inc
Heraeus Electronics
Heyco Metals Inc
Hidrosilcan Halim USTA HDP
Press Ltd STL
Higraide USA Inc
Hilma Div Carr Lane Roemheld
HINILU CO LTD
Hitachi Metals Inc
Hong Kong Metals Manufacturers Association
HONGJU Automotive Components Tool & Die Co Ltd
Hotset America / Strack Norma
Houghton International Inc
HTM Sensors
Hubei Zheyu (Goldsense) Machinery & Equipment
Hutchison Tool Sales Co
Hwai Press Co Ltd
Hydraulic as
HYSON Metal Forming Solutions
IH Ionbond Inc
Impax Tooling Solutions
Industrial Innovations Inc
Industrial Machinery Digest
Intercomp International Chemical Co
Javis Cutting Tools
JD Norman
Jiangsu SUNSH Precision Tool Technology Co Ltd
Jianshan PVB Sliding Bearing Co. Ltd.
JIER North America
JET Automation Inc
J-Tech

METALFORM

Kaeser Compressors Inc
KALLER Gas Springs
Kingyu Tool & Die Co Ltd
Koley Engineering Inc
Komatsu America Industries LLC
Kosmek USA
Kopinoplastika Loz D.D.
Kunshan Dersun
Precision Mould Co Ltd
KunShan DLS Technology Co Ltd
Kunshan Eagle Precision Tooling Co Ltd
Latrobe Specialty Metals Distribution
Lee Contracting Inc
Leifeld Metal Spinning AG
Lenzkes Clamping Tools Inc
Linear Precision Industrial Co. Ltd.
Linear Transfer Automation Inc
Link Electric & Safety Control
Litostroj Ravne D O O
LSP Industries Inc
Lucky Harvest Co Ltd
MachineMetrics
Macrodyn Technologies Inc
Mantowoc Tool & Manufacturing LLC
Marine Services International Inc
Mayfran International Inc
Meccanica Rossi USA Corp
Metal Supermarkets Service Company Inc
Metalstar S.A. de C.V.
MetalMizer
Metrel Inc
Midwest Industrial Metals
MJC Engineering & Technology Inc
Modula
Moeller Precision Tool
Molificio Bordignon srl
MPI Magnetic Products Inc
Multipress Inc
Neff Press Inc
NGK Metals Corp
Nidec Minster Corp
Ningbo Goarwin Machinery Manufacturing Co Ltd
NKS LLC
Norgren Automation Solutions LLC
O'Brien Lifting Solutions Inc
ODM Tool & Manufacturing Co Inc
OGS Industries
Oriental Casting Inc
Orinmec Corporation of America
Ortochemicals
Ortech Inc
Overton Industries
P&G Fluid Power Inc JET-SET
P/A Industries Inc
Pacesetter Systems
Paulo
Pax Products Inc
Penn United Technologies Inc
PennEngineering
Phillip Rubber/Lankhorst Mouldings
Pib Inc
Plex Systems
Pottiez America LP
Precision Plate Inc
Precision Metal Stamping Tool and Product Co. LTD.
Precision Metalforming Association
Precision Punch Corp
Precision Stamping Products
Premier Tooling & Manufacturing Inc
Prescor LLC
Press Room Equipment Co
Pressroom Electronics Inc
Principal Manufacturing Corp
Production Tube Cutting Inc
ProMANAGE Smart Manufacturing Solutions
Pronic Inc
Puritan Magnetics
Quintus Technologies AB
R&M Manufacturing Co LLC
Radny Corp
Refin Construction Company
Ramez Precision Stamping and Manufacturing LLC
Rapid-Air Corp
Raziol Zubilla & Sohn GmbH
Ready Technology Inc
REHA Makina ic Ve Dis Tic San Ltd Sti
Res Manufacturing Rock Valley Oil & Chemical Co Inc
Rockford Systems Inc
Rolled Metal Products
Roller Die + Forming Co
Ross Technology Corp
RUF Briquetting Systems
Sangiacomo Presses Americas LLC

METALFORM

Schleifstein
Maschinenstechnik GmbH
Schuler Incorporated
Seitlube
Sen Fung Rollform Machinery Corp
Serapid Inc
SEYI America Inc
Shenyang Jinbei Imp Exp Co Ltd
Shenzhen Haiyi Tool & Die Co Ltd
Shenzhen HuaYuanDa Technology Co Ltd
Shenzhen Manyes Precision Metal Co Ltd
Shenzhen Yalu Industry Co LTD
ShopEdge Software Inc
SIMPAC Inc
Solar Atmospheres Southern Machinery Repair Inc
Southwestern Industries Inc
Special Springs LLC
Speed Metal Fabrication Inc / Hangzhou Speed Machinery Co Ltd
Stamtec Inc
Stanley Spring & Stamping Corp
Starrett Company
Steel Craft Technologies
Steel King Industries Inc
Stripmatic Products Inc
Strothmann Machines & Handling GmbH
Sunrise Metal Technology Co Ltd
Superior Die Set Corp
Sutherland Presses
Taiwan Linking Metal Co Ltd
Taylor Made Solutions Inc
Tecnomagete Inc
The Heim Group
Theta TTS Inc
Toledo Integrated Systems
Topline Precision Electronics Co Ltd
Torque Inc
Torque Technologies Inc
Torspec International Inc
Tower Metalworking Fluids
Trans-Matic
Travelers Indemnity Company
TST Tooling Software Technology LLC
TURCK Inc
Uelner Precision Tools & Dies
Ulbrich Stainless Steels & Special Metals Inc
Ultratech Tool & Design Inc
Unico Inc
Unisorb Installation Technologies
Unist Inc
United Aluminum Corp
United Machine Corp
United Performance Metals
United Wire Co Inc
Vaughn Manufacturing Co
Versatility Professional Tool Storage
Vibro-Dynamics LLC
Victory Tool
Vidur Machine Inc
Viking Blast & Wash Systems
Vincent Clad Metals Corporation
VKS - Visual Knowledge Share
Voith Turbo Inc
Wieland Metals Inc
Wilco Inc
Wintriss Controls Group LLC
WorkWise Software
World Precise Machinery Co Ltd
Wuxi City GEYI Mechanical Co Ltd
Wuxi Lead-Dpca Technology Co Ltd
Wuxi Micro Research Precision Press Parts Co. Ltd
Wuxi Minghao Automotive Parts Co Ltd
Wuxi White Eagle Metalforming Machinery Co Ltd
Xact Wire EDM Corp
Xander Automotive Stamping & Tooling Ltd
Xinyongku Metal & Die (Shenzhen) Co Ltd
Yangli Group Co Ltd
Yangzhou DTM Tool & Mold Co Ltd
Yih Shen Machinery Co. Ltd (YSM)
Yuyao Jingqiao Hardware Factory
Zapp Precision Strip
Zeen (Jiangsu) Tooling & Auto Parts Co Ltd
Zerostart-tool Manufacture Ltd
Zerust Corrosion Solutions

METALFORM

Zhejiang Jinaolan Machine Tool Co Ltd

TUBE & PIPE

3D Fab Light
5 Star Engineering and Maintenance
Accurate Technology Inc
Accutrex Measurement Inc
Addison Machine Engineering Inc
Addition Manufacturing Technologies
Advanced Tubular Technologies Inc
Ajax Tocco
Magnethermic Corp
Alpine Bender Machinery
Ambrell Induction Heating Solutions
American Hydroformers
AMPICO Metal Inc
ASMAG USA Inc
Astro Pak
AWS Schäfer Technologie GmbH
AXAIR USA
Bend Tech
BLM GROUP USA Corp
Chiyoda Kogyo-Maruka USA
Clark Fixtue Technologies
CMP Automation
Comblitt USA
Conco USA Inc
Continental Pipe & Tube
Cut-Off Machines
Cornerstone Capital Partners
Crippa SPA
Crum Manufacturing Inc
Current Tech
DeeTee Industries Ltd
Ecogate Inc
Eddytech Systems Inc
EPB Induction Inc
Euroborb BV
FD Machinery
FIT RITE Systems LLC
Fives
Flowdrill Inc
Fromm Packaging Systems
Full Vision Inc
Gem Tool Corporation
George A Mitchell Co
GH Induction Atmospheres LLC
Gubraener Inc
Guld International
Haven Manufacturing Corp
Horn Machine Tools Inc
Huhn Ben Pearson International LLC
ioctek Corp
II-VI HIGHVAG
Innerspec Technologies
Innovative Tube Equipment Corp
INNOVO Corp
Inspectech
J&S Machine Inc
JD Squared Inc
Kent Corp
Kinkelder USA
Lakeland Products
Laser Making Technologies LLC
Libbacka USA
Magnetic Analysis Corp
Mair Research SpA
Manchester Tool & Die Inc
Manufacturing Solutions Industries Inc
Metaloid Corp
Metron Inc
MIC OPTON (USA)
Mill Masters
NDT Technologies Inc
New Form Tools Ltd
Numalliance Inc
Olimpia 80 Srl
OMOG Inc
OMNI-X USA
Overton Industries
Panjinris Inc
Passline Performance
Patterson Fan Co
PHI
Proto-1 Manufacturing
R&B Machining Inc
Rafter Equipment Corp
Rattunde Corporation
REA JET US
Ready Robotics
Rigaku Analytical Devices
Roll Machining Technologies & Solutions
Saar Hartmetal USA LLC
Sage Automation Inc
Sanderson Machines Ltd
Schmalz Inc
Schwarze-Robotec GmbH
SciApps Inc
Shanghai TAYOR Heavy Industry (Group) Co Ltd
Sharpe Products
SST Forming Roll Inc
Stuers Inc

TUBE & PIPE

T&H Lemont
Tallyrand Ind Systems Inc
Tenryu America Inc
Thermatool Corp
Thermo Fisher Scientific
Tools for Bending
Transfluid Maschinenbau GmbH
Tremefil Izauride SA
Tru-Cut Saw Inc
TRUMPF Inc
Tube & Pipe Technology
Tube Bending Concepts Inc
Tube Form Solutions
Tubex Technology Machinery
Tubing Central
Ultralex Power Technologies Corp
UniPunch Products Inc
Unison LTD
Universal Controls Group
Universal Tool & Engineering
Universal Tube & Rollform Equipment Corp
Vulcan Tool Corp
WAFIOS Machinery Corp
Watts Mueller
Wauselon Machine & Manufacturing Inc
Winton Machine Company
WORX Environmental Products
Xinis Automation Inc
Zhangjiagang Chevit International Co Ltd

TUBE PRODUCERS

Beverlin Specialty Tube
BIVUE S.r.l.
Changzhou Changyuan Fittings Co Ltd
Changzhou City Liany Special Stainless Steel Tube Co. Ltd
ISEND SA
Jepson Power
Shijiazhuang Teneng Mechanical & Electrical Equipment Co Ltd
Vimlong Stainless Steel (Vietnam) Co Ltd
Yada Piping Solution Co Ltd
Yulchon Co Ltd

WELDING

3M
ABB Inc
Abicor Binzel
Ace Industrial Products
AGT Robotics
Aimtek Inc
Air Purification Inc
Airgas Inc
Alabama Laser
Alabama Robotics
Technology PK
Allegro Industries
ALM Positioners Inc
ALS Maverick Testing Laboratories Inc
American Friction Welding
American Innovative Manufacturing LLC
American Society for Nondestructive Testing
American Technical Publishers
American Torch Tip Co Inc
American Weldquip Inc
AMET Inc
Andersen Industries Inc
ANDRITZ Soutec AG
Angle-Rite® Clamping System
Anthony Welded Products Inc
Antra Technologies Co Ltd
Anxin Abrasives Co Ltd
AquaSol Corp
Arc Machines Inc
Arc Products
ARC Specialists Inc
ARCON Welding Equipment LLC
Artolch
ATI Industrial Automation
Atlanta Drive Systems Inc
Atlantic Welding
Import & Export Co Ltd
Atlas RFID Solutions
Auburn Manufacturing Inc
Automatic Welding Wire Company Inc
Automation International Inc
Avani Environmental Intl Inc
AVS Industries LLC
Axelent Inc
Azusa Safety Inc
B&B Pipe & Industrial Tool
Baohi Bore Metal Products Co Ltd
Barefoot Ergonomic
Flooring by Beagle I Inc
Beijing Essen Welding & Cutting Fair

WELDING

Beijing Metals & Minerals Corp
Bellun Futuo Mechanical Tools
Bernard
BESSEY Tools North America
Beveler USA Inc.
Black Stallion
Blackbird Robotics Inc
Bluco Corp
Blue Demon Welding Products
Bob Dale Gloves & Import US Inc
Boilhoff USA
Bonal Technologies Inc
Bore Repair Systems Inc
Boss Manufacturing Co
Boss Products LLC
Bradford Denurit Corp
BTIC America Corporation
BTM Company LLC
Buffalo Shrink Wrap
BUG-O Systems
C & G Systems
C H Symington & Co Inc
Cadi Co Inc
Cambridge Vacuum
Canaweld Inc
Capital One Spark Business Card
Capital Weld Cleaners
Carr Lane Manufacturing Co
CEI
CEIA USA Induction Heating Systems
CENT North America Inc
Corbaco Ltd
CGW-Camel
Grinding Wheels USA
Changzhou Asia Science & Technology Co Ltd
Changzhou Huarui Welding & Cutting Machinery Co Ltd
Changzhou Longren Mechanical & Electrical Co Ltd
Changzhou Shine Science & Technology Co Ltd
Changzhou Yatai Welding & Cutting Co Ltd
Changzhou Zhengyang Welding Material Co Ltd
Chart Inc
Chicago Pneumatic Tool Co
China Guangzhou Get Star
Welding Equipment Co Ltd
Ciba AV
CK Worldwide
Clampex USA Inc
CleanSpace
Cloos Robotic Welding Inc
Closed Loop Recycling
CM Industries Inc
COB Industries Inc
Cold Jet
Computers Unlimited
Continental Abrasives
Controlled Automation Inc
Coral SPA
COR-MET INC
Corexels Inc
CS Unitec Inc
D/F Machine Specialties Inc
Dakota Ultrasonics
Dailian Chengchuang Machinery Co. Ltd
Dalian Donghai Trade Co. Ltd
Danatronics Corp
Datawel Inc
Dedeco International Inc
Dengshena America Corp
DEWALT - Power Tools & Abrasives
Diagraph MSP an ITW Company
Diamond Ground Products Inc
DIMIDE
Dime-Lite Scopes (BigC)
Dinse Inc
Direct Wire & Cable
Diversitech
Drahtwerk Eisilant GmbH & Co
DualDraw LLC
Dynatorch Inc
E. H. Wachs
Easom Automation Systems Inc - A Lincoln Electric Company
Edge Manufacturing Inc
Eicometer Inc
eldec LLC
Electron Beam Technologies Inc
Encampass Machines Inc
Enstetech Inc
ESAC Welding & Cutting Products
ESTA Extraction USA LP
Eurovac
Evolution Power Tools LLC
Fagor Automation Corp
FANDELI Coated Abrasives
FANUC America Corp
FANUC Company

WELDING

Fein Power Tools Inc
Filter 1
Fireball Tool
Firelec Solutions LLC
Firewheel Industrial Corp
Fit-up-Gear
Flame Technologies Inc
Flange Wizard Inc
Flexovit USA Inc
Fluid Chillers Inc
FOCUS GmbH
Forney Industries Inc
Fronius USA LLC
Fuji Tools
Fumelvac
Fusion Inc
G&J Hall Tools Inc
Ganzhou Hongfei Tungsten & Molybdenum Materials Co Ltd
GE Schmidt Ltd
Genesis Systems Group
Genstar Technologies Inc
GENTEX Corp
Golden Eagle
Mimetals(Beijing)
Wig Materials Co
Goss Inc
Geron Machine Corporation
Gidel, Inc.
Guilin Nanjian Welding Materials Co. LTD
Gulmo International
H & M Pipe Beveling Machine Co Inc
Hangzhou Topwell Technology Co. Ltd.
Harbert's Products Inc/
Allied Flux Reclaiming Ltd
Hardface Technologies by Postle
Harris Products Group
Haynes International
Headux Electric Co Ltd.
Hebei Xinyi Welding Co. Ltd.
Heck Industries
Henan Huamao
Metal Materials Co Ltd
Hermes Abrasives Ltd
Heron Machine & Electric Industrial Ltd
Heshan Wode Tungsten & Molybdenum Co Ltd
Hisco
HIT Welding Industry Co Ltd
Hobart Brothers
Hobart Institute of Welding Technology
HOSO Metal Co Ltd
HTP America Inc
Hux Industries Ltd
Hypertherm Inc
Hyundai Welding
IBEDA/Superflash
Compressed Gas Equipment Inc
Ideal Welding Systems LP
igm Robotic Systems Inc
Imperial Systems Inc
In Motion Technology
Distribution
Intercon Enterprises Inc
International Welding Technologies Inc
InterTest
IPG Photonics
IRCO Automation Inc
Ironworker Management
Progressive Action
Cooperative Trust
IVEC Systems
Janson Cables India Pvt. Ltd
JASJC Technologies - America Inc
Jiangsu BTMMF Advanced Materials Science & Technology Co Ltd
Jinan Chpro Commercial Co Ltd
Jinan Xintian Technology Co Ltd
Jingyu Welding & Cutting Co Ltd
Jinhua Garystep Tools Manufacture Co Ltd
Jinzhou Newroute Hyperpure Material Co Ltd
Jisheng Electric Machinery Co Ltd
JLC Electromet Pvt LLC
John Tillman Co
Jaysun Abrasives Co Ltd
JR Automation Technologies
Kaiso Wire Inc.
Kawasaki Robotics (USA) Inc
Kayo Products Co Ltd
KeepTheHeat
Kent Stud Welding Co Ltd
Keystone Fastening Technologies
Kistler Cutting and Welding (Kistler GmbH)
Kiswell USA Inc

WELDING

Klimawent USA LLC
KLINGSPOR Abrasives Inc
Kobco Welding of America Inc
Koike Anson Inc
KUKA Robotics Corporation
Kyoung Dong Machinery Co Ltd
Laboratory Testing Inc
LA-CO Industries Inc
Laizhou Hongyuan Bench
Vise Manufacture Co Ltd
Laser Marking Technologies LLC
Laser Mechanisms Inc
Lasernet Inc
Lasernet Inc
Lianyungang Orientcraft Abrasives Co Ltd
Liburdi Automation Inc
LinAn Da Yang Welding Material Co Ltd
Lincoln Electric Co
Linemaster Switch Corp
Luvata Ohio Inc
Magnatech LLC
Maryland Brush Co
Matthey Deamann
Matsumoto US Technologies Inc
Matuschek Welding Products Inc
McDantim Inc
MCR Safety
Meccanica Ronzani Sri
Mercer Industries
Meta Vision Systems Inc
Metabo Corp
Metal Man Work Gear Co
Metal Science Technologies Pty Ltd
Michigan Pneumatic Tool Inc
Micro Air
Mid alloy
Miller Electric Mfg Co
MK Products Inc
Morris Precision Technology Company Limited
Motokuyi Co. Ltd
Moxey Inc
MPM Products Inc
MSC Software
MTA-USA LLC
Multi-Contact USA
NASA Technology Transfer Program
Nation Wide Products
National Standard
Nederman LLC
Nelson Stud Welding Inc
New Fire Co Ltd
Newland (Tianjin) Welding Wire and Metal Products Co Ltd
Ningbo Kimpin Industrial Pte Ltd
Ningbo Nisten Enterprise Co Ltd
Ningbo Powerway Alloy Material Co Ltd
Ningbo Qisheng Welding Tools Plant
Ningbo Starex Welding & Cutting Tech Technologies
Notha Industrial Technology
Wuxi Co. Ltd
NOVMA Fabricator
North Pole Abrasives Inc
Norton I Saint-Gobain
Novarc Technologies Inc
Ocutopuz Inc
Olympus
Optrel Inc
OR Lasertechnology Inc
OT DAHEN Inc
Oxford Instruments
Oxylance Inc
Pador Marketing Group
Panasonic Factory Solutions Company of America
PDS Bartsch Inc
Pearl Abrasive Co
Pernamex Oy Ltd
PFERD Inc
Phoenix International Inc
PITTARC Welding Wires
Plasma Automation Inc
plasma USA LLC
Plymvent Inc
Polymet Corp
Praxair Inc
Prectec Inc
Preco Inc
Preston-Eastin Inc
Pro Spot International
proAutomation LLC
Production Design Services Inc (PDSI)
PROFAX / LENCO
PROTEM USA LLC
PushCorp Inc

WELDING

Pyro Shield Inc
Qingdao Everbest Trading Co Ltd
Rasco FR
Resistance Welding Machine & Accessory
Ray-Cut Abrasives
Rhodius USA
RIDGID
RIMCO Rotator
Rite Hite Machine Guarding
Robotic Automation
Robotmaster
RoboVent
RPB Safety LLC
Lasernet Inc
Sakura of America
Sandvik Materials Technology
Sampo Publications Incorporated
SanRex Corp
Saru Silver Alloy Private Limited
Schweissen & Schneiden
Seedorff Acme Corp
Seit Electronica
Sellstrom Manufacturing Co
Serimax Holdings
Servo-Robot Inc
Seventy Eight Co Ltd
Shandong Aotai Electric Co Ltd
Shandong Huaye Tungsten & Molybdenum Co Ltd
Shandong Jui Welding Co LTD
Shandong Yangu
Jingyanguang Investment Casting Co., Ltd
Shanghai Hugong Electric Group Co Ltd
Shanghai Mealer Welding Equipment Co Ltd
Shenyang Zhongde Tools Co. Ltd
Shenzhen Dornur Welding Equipment Co Ltd
Shenzhen Huayilong Electric Co Ltd
Shenzhen Yimatic Technology Co. Ltd
Siderox Engineering Sri
Sri Meccanica SPA
SMA Specialty Manufactured Abrasives
SMC Corporation of America
Soph Inc
Southern Copper & Supply
Southern Stud Welding
Special Metals Welding Products Co
SPCSTRO Analytical Instruments
Steelless Structurals LLC
Steelmax Tools
Steel-Smith & Case-Maul Clamps Inc
Steiner Industries
Stor-Loc Corp
Strong Hand Tools
Sturbridge Metallurgical Services
Sunner Industrial Products Inc
Sumig USA Corporation
Summer Manufacturing Co
Sunmigh Abrasives
Superior Abrasives LLC
Superior Joining Technologies Inc
Surface Engineering Alloy Co
T. J. Snow
Taipei Canada
Tandil International Co Ltd
Taylor-Winfield Technologies Inc
Team Industrial Services
Team Industries Inc
TEC Welding Products
Techniwell USA
TECMEN Electronics Co Ltd
TECNA SpA
Tennessee Rand Inc
Tersura Abrasives Co Ltd
Thermacut Inc
Thermal Dynamics
Thermoco Instrument Corp
Thermion Inc
Tianjin Jinlong Welding Material Co Ltd
Tianjin Xinsen Welding Materials Co Ltd
Tiger-Vac USA Inc
Tip Tig USA LLC
Tongling Xinxin Welding Materials Co Ltd
Tropi Cal Air Tools
Tregaskiss
Trendex Inc
Tri Tool Inc
TRU-FIT Products TRU-Weld
Trystar Inc
TURCK Inc
TWI North America LLC
Tyrolit Industrial Abrasives

WELDING

UltraTech International Inc
U-Mark Inc
United Abrasives Inc /SAIT
Universal Robots Usa Inc
Unweld Products Inc
Uweld Technologies Co Ltd
VDM Metals USA LLC
Veroline LLC
Victory CNC Plasma Systems
Viticronic Machine Vision
Vizient Manufacturing
Solutions Inc - A Lincoln Electric Co
Vladimir Plant of Precision Alloys
voestalpine Bohler
Welding USA Inc
VSM Abrasives Corp
Walter Surface Technologies
Washington Alloy Co
Wayne Trail Technologies
Weiler Corporation
Weld Engineering Co
Weld Pride USA For Weldbrush
Weld Systems Integrators Inc
Weld-Aid Products
Weldas Co LLC
Weldco
WeldComputer
Welding Alloys USA
Weldobot Technologies Inc
Weldsate LLC
WELDTEX Inc
Wekker Engineered Products
Wendt USA LLC
Wenzhou Essen Welding Equipment Co Ltd
Wenzhou Xidin Electronics Technology Co Ltd
West Chester Protective Gear
Western Enterprises
Winking Abrasives Co. Ltd.
Winner Tungsten Products Co. Ltd
Winnox Industries Ltd
Wire Wizard Welding Products
Wisconsin Wire Works Inc
WITT Gas Controls
Wolf Robotics LLC - A Lincoln Electric Company
Wuhan Welhel
Photoelectric Co Ltd
Wuxi Ronniwell Machinery Equipment Co Ltd
Wuxi Yincheng Science & Technology Co Ltd
Wuzhou Ally Protect Co Ltd
Yancheng DLD Welding Science and Technology Co. Ltd
Yaskawa America Inc
York Portable Machine Tools
Zhejiang Changcheng Project Carbon Electrodes Co Ltd
Zhejiang Jingwei Welding & Cutting Technology Co Ltd
Zhejiang Jinhua Cumet
Abrasive Co Ltd
Zhejiang Juba Welding Equipments Manufacturing Co Ltd
Zhejiang Poney Electric Co Ltd
Zhejiang Seleno Science and Technology Co Ltd
Zhui Shengjie Machinery Co Ltd
ZIMM USA Inc
ZJ Industries Inc
Zormot International Inc

SPECIAL EVENTS ARE FREE AND OPEN TO
ALL ATTENDEES UNLESS OTHERWISE NOTED

MONDAY, NOVEMBER 6

KEYNOTE PRESENTATION

FABx TECH TALKS

8:45 – 10:00 AM

Embracing the wildly popular TED Talks concept, FABTECH 2017 kicks off with a new and exciting format for the opening keynote. The FABx Tech Talks will spotlight visionary leaders who will motivate and inspire attendees via short inspirational talks on the topics of transformation, growth, advancement and expansion for the future of manufacturing. Come hear how these leaders are driving innovation to take their businesses to the next level.

Participants Include:



Jacques Panis
President,
Shinola



Adam Genei
Founder,
Mobsteel



Michael Walton
Industry Solution
Executive
(Manufacturing
Industry),
Microsoft



Karen Kerr
Executive
Managing
Director,
GE Ventures



Albert Paley
Sculpture Artist,
Paley Studios



Jesse James
West Coast
Choppers, Custom
Car and Bike
Builder

OPENING CEREMONY

10:00 AM

Join the FABTECH family in the Grand Concourse as we kick-off FABTECH 2017. See the unveiling of the Paley/James metal sculptures. Albert Paley and Jesse James of West Coast Chopper fame used their unique styles and collaborated to create two pieces of art. Each started their own sculpture and finished the other. The completed sculptures will be on display throughout the show.

EXPERT PANEL PRESENTATION

ADVANCED MANUFACTURING FOR THE NEXT INDUSTRIAL EVOLUTION

12:30 – 1:30 PM

Our panel of experts will focus on the evolution taking place in manufacturing. Advanced manufacturing is transforming the economy and jobs, using cutting-edge technology and new manufacturing processes to accelerate innovation. Our panelists will discuss how their companies stay at the forefront of manufacturing advancements and how they embrace disruptive technologies to remain competitive and profitable.

Moderator: Sridhar Kota, Executive Director of MFOresight

Panelists:

Jerry Foster, CTO, Plex Systems

Karen Kerr, Executive Managing Director, GE Ventures

Jacques Panis, President, Shinola

Michael Walton, Industry Solution Executive
(Manufacturing Industry), Microsoft

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TUESDAY, NOVEMBER 7

KEYNOTE PRESENTATION

**"FAST N' LOUD" WITH RICHARD RAWLINGS****8:30 – 9:30 AM**

Co-host of Discovery Channel's popular "Fast N' Loud" series and founder of Gas Monkey Garage, a world-renowned hot rod shop, Richard Rawlings will share his entrepreneurial spirit and career to inspire manufacturers to innovate and take risks. Rawlings will speak about his businesses, challenges, opportunities, and pursuing one's dreams with the discipline and persistence that is required for success. Rawlings will utilize any remaining time to answer audience questions about his life, the show, his business or even the building of hot rods.

FEATURED PRESENTATION

**EVOLUTION OF ADDITIVE MANUFACTURING AND WHAT IT MEANS FOR THE FABRICATION INDUSTRY****10:30 – 11:30 AM****Todd Grimm, President, T. A. Grimm & Associates, Inc.**

3D Printing. Additive Manufacturing. What does this technology mean for the manufacturing industry? How should we be preparing for the future? Industry expert, Todd Grimm, will explain the impact that additive manufacturing is having and will continue to have on manufacturing and how companies can embrace what it has to offer.

EXPERT PANEL PRESENTATION

EFFECTIVELY INCORPORATING ADDITIVE MANUFACTURING INTO YOUR BUSINESS**2:00 – 3:00 PM**

So you have decided to incorporate additive into your manufacturing process. Now what? Should you purchase equipment or is a partnership with another facility a viable option? What about training? Hear our expert panelists discuss the resources that are available as you implement your additive manufacturing process. From funding to workforce development, get a complete guide to the best route for your business.

Moderator: Todd Grimm, President, T. A. Grimm & Associates, Inc.

Panelists:

Carl Dekker, President, Met-L-Flo

Dana Ellis, Senior Program Manager, National Center for Manufacturing Sciences (NCMS)

Federico M. Sciammarella, Ph.D., Interim Chair Mechanical Engineering Department,
College of Engineering & Engineering Technology

NETWORKING EVENT

**INDUSTRY NIGHT AT SOLDIER FIELD****5:30 – 7:30 PM**

Enjoy an evening of fun, food, drinks and networking during our Industry Night Party at Soldier Field, home of the Chicago Bears. The evening will include exclusive access to Soldier Field and a meet-and-greet with retired Chicago Bears Hall of Famer Dan "Danimal" Hampton. **Advance ticket price: \$50**

INDUSTRY NIGHT VIP EXPERIENCE: \$75

As a VIP, get a behind the scenes tour that includes access to the Visitor's Locker Room, where Bears opponents gear up before game time, and a visit to the field where all the action happens. VIP's will also have the chance to win a football autographed by special guest Dan "Danimal" Hampton.

Tickets can be purchased during the online registration process. VIP Experience – Limited to 200 participants

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WEDNESDAY, NOVEMBER 8

WOMEN OF FABTECH BREAKFAST WITH TECH TOUR

7:30 – 10:30 AM

Join us for a networking breakfast celebrating the importance of women in the manufacturing sector. This event aims to foster relationships and dialogue between supporters and practitioners in the field. Includes a continental breakfast and tech tour on the show floor. Price: \$25

KEYNOTE PRESENTATION



INSPIRING CREATIVITY IN THE WORKPLACE

8:30 – 9:30 AM

Matthew Luhn, Original Storyteller, Pixar

As one of the original story creators at Pixar Animation Studios, Matthew Luhn participated in building and sustaining the creative culture at Pixar from startup to the most successful filmmaking group in the history of Hollywood. Matthew's engaging and action-oriented talk will provide strategies on how to create a culture that encourages and nurtures new ideas, and embraces fear and failing as a necessary part of the creative process. He demonstrates how to empower relationships and build trust through authentic communication.

EXPERT PANEL PRESENTATION

INNOVATIVE APPROACHES FOR WORKFORCE DEVELOPMENT & RECRUITING TALENT

12:30 – 1:30 PM

On a daily basis manufacturers face workforce shortages in key areas within their manufacturing operations. Those that engage with their communities — including technical high schools & colleges, manufacturing summer camps for youth, and Manufacturing Day celebrations — are ahead of the pack filling these positions. Attend and learn from manufacturers and educators how to benefit from these approaches to building a consistent workforce pipeline.

Moderator: Brad Beckner, Chicago Territory Vice President, KellyOCG

Panelists:

Warren Long, Commodity Manager, Briggs & Stratton Products Group
Mike Cattellino, Apprenticeship Manager, Fox Valley Technical College
Laura Elsner, Workforce Development Manager, DeWys Manufacturing

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MONDAY, NOVEMBER 6 – WEDNESDAY, NOVEMBER 8

PROFESSIONAL WELDING COMPETITION

During Show Hours in Hall C1

Professional welders can sign up onsite to compete for a \$2,500 first prize, a \$1,000 second prize, and a \$500 third prize. Don't miss the chance to cheer on competitors as they demonstrate their skills to earn the title of "Best Welder in America." Contestants will make a single-pass SMAW weld with E7018 on low-carbon steel. Speed and quality will be the criteria. Announcement of winners at 10:30 AM on Wednesday, November 8.



EXHIBITS ONLY

Attendance is FREE if you register by November 3. Beginning November 4, the cost to attend the exhibits is \$50. AWS, FMA, SME, PMA, and CCAI members may always attend the exhibits for FREE with a valid member card.

SPECIAL EVENTS
INDUSTRY NIGHT AT SOLDIER FIELD
TUESDAY, NOVEMBER 7

Advance ticket price for attendees is \$50 and includes food and drinks, networking, and more at Soldier Field. VIP Experience Package available for \$75 and includes a VIP tour of the Visitors Locker Room and football field.

WOMEN OF FABTECH BREAKFAST
WITH TECH TOUR
WEDNESDAY, NOVEMBER 8

Tickets for FABTECH Attendees are \$25 and include a continental breakfast.

EDUCATION PROGRAMS

3D/ADDITIVE MANUFACTURING, AUTOMATION/SMART MFG, CUTTING, FINISHING, FORMING & FABRICATING, LASERS, LEAN, MANAGEMENT, JOB SHOP, STAMPING, STRUCTURAL STEEL/PLATE, WORKFORCE DEVELOPMENT

PACKAGES (BUY MORE AND SAVE!)	MEMBER	NON-MEMBER
1 Session	\$175	\$200
2 Sessions	\$300	\$350
3 Sessions	\$405	\$480
4 Sessions	\$500	\$600*
5 Sessions	\$600	\$725*
Full Conference: (6 or more sessions)	\$690	\$840*

NOTE: The rate for the Laser Welding for Today's Fabricator Workshop (Session AWF100) is \$335 for Members and \$420 for Non-Members.

* Non-Member rates for **4 or more sessions** include a one-year complimentary membership to one of the co-sponsoring associations (FMA or SME only).

WELDING TRACK

	MEMBER	NON-MEMBER ^a
1-Day AWS Educational Sessions	\$150	\$235
1/2-Day Seminar or Workshop	\$335	\$420
1-Day Conference or Seminar	\$550	\$635
2-Day Conference or Seminar	\$775	\$860
2-Day RWMA Resistance Welding School	\$775	\$860
1-Day Professional Program	\$150	\$235
4-Day Professional Program	\$225	\$310
Student Professional Program	\$75	\$90 ^b
AWS Awards Luncheon	\$30	\$30
AWS Prayer Breakfast	\$10	\$10

^a Non-Member price for AWS Sessions only includes a one-year AWS Individual Membership.

^b Non-Member Student Professional Program price includes a one-year AWS Student Membership.

CONFERENCE CANCELLATION POLICY: Cancellations must be made in writing and faxed to Attn: FABTECH Conference Cancellation at (313) 425-3407 no later than October 23, 2017 to receive a full refund minus a \$50 administrative fee. Cancellations received after this date are non-refundable. Substitutions allowed.



ABOUT THE EDUCATION PROGRAM

The Fabricators & Manufacturers Association, Int'l (FMA), SME, Precision Metalforming Association (PMA), and Chemical Coaters Association International (CCAI) cosponsor the sessions on 3D/additive manufacturing, automation/smart mfg, cutting, finishing, forming & fabricating, job shop, lasers, lean, management, stamping, structural steel/plate, and workforce development. All sessions are two hours in length, offering practical knowledge you can use right away. Sessions with Tech Tours combine classroom instruction with expert-led guided tours on the show floor to see technology operating in designated booths.

The American Welding Society (AWS) presents a comprehensive lineup of welding education. Led by the industry's top professionals, programs focus on best practices and new commercial developments in welding and thermal spray. Events include conferences, seminars, RWMA Resistance Welding School, professional program, society events, and more.

CONTINUING EDUCATION CREDITS

Individuals who attend AWS education programs are awarded 1 PDH (Professional Development Hour) for each hour of education program attendance. Individuals seeking FMA Recertification Credits will be awarded 2 credits for each conference session attended (forming & fabricating, cutting, or finishing tracks) plus an additional 2 credits for attending the show. Individuals who attend SME education programs may be eligible to receive 1 credit per hour attended toward their SME-managed recertification requirements.

MEMBERSHIP INFORMATION

Discounted rates for members are available on educational programs. Interested in becoming a member of AWS, FMA, SME, PMA or CCAI? Find details on each of the co-sponsor associations and membership benefits by visiting their websites today!



aws.org



fmanet.org



sme.org



pma.org



ccaiweb.com

EXPERIENCE LEVELS

The Schedule-At-A-Glance on the following pages provides a quick reference to all the educational programs offered at FABTECH 2017. Note that you can use the following key to find the education that meets your needs.

- B BASIC** – Recommended for the attendee who is new to the industry or needs a refresher on the topic.
- I INTERMEDIATE** – Designed for the attendee who already has a basic understanding of the subject matter.
- A ADVANCED** – For the attendee with several years of experience who is seeking more in-depth information.

▶ MONDAY, NOVEMBER 6

TECHNOLOGY	8:00 AM – 10:00 AM	10:30 AM – 12:30 PM	1:30 PM – 3:30 PM
3D/ADDITIVE MANUFACTURING		F20: NEW Fundamentals of 3D Additive Manufacturing for Fabricators B	F30: NEW Fundamentals of 3D Additive Scanning and Imaging I
AUTOMATION/ SMART MFG		F27: NEW Introduction to IIoT & Strategies for Evaluating Industry 4.0 I	F37: NEW Automation and Smart Machines: The Future of the Factory I
CUTTING		F21: NEW Automating in Cutting B	F31: NEW Comparative Cutting Systems with Tech Tour B
FINISHING		C20: NEW Fundamentals of a Successful Powder Coating Operation B	C30: NEW Fundamentals of a Successful Liquid Coating Operation B
		C21: NEW Fundamentals of a Successful Electrocoat Operation B	C31: NEW Fundamentals of Plating and Anodizing B
		C22: NEW Rack-up Profits with Productivity and Efficiency I	C32: NEW Blasting Your Way to Successful Metal Preparation B
FORMING & FABRICATING	F18: NEW Coil Processing: Leveling, Slitting and Best Practices I	F28: NEW Tube & Pipe Cutting I	F38: NEW Panel Bending Technology I
	F19: NEW Press Brakes for Engineers I	F29: NEW Roll Forming Basics and Justification B	F39: NEW Press Brake Cost Reduction I
JOB SHOP		F26: NEW The Importance of Scheduling, Traceability and Classifying Inventory for Manufacturers B	F36: NEW Activity-Based Costing and Estimating for Profitability in the Job Shop I
LASERS		F22: NEW Fiber Laser Cutting and Joining: Recent Advances in Technology, Tools and Applications B	F32: NEW Laser Additive Testing and Application Solutions I
LEAN	F14: NEW Lean Principle: Strategic Planning and Organizational Alignment A	F24: NEW Lean Principle: Developing People and Processes B	F34: NEW Lean Tools: A3 Thinking - Developing People & Solving Problems I
MANAGEMENT	F15: NEW Today's Digital and Inbound Marketing Strategies for Fabricators I	F25: NEW Current Economy, Labor and Employment Update for Manufacturing A	F35: NEW Achieving Supplier Success in Today's Global Manufacturing Environment A
STAMPING	S10: NEW Deep Draw Process Technology I	S20: NEW Deep Drawing Principles I	S30: NEW Lubrication Selection & Application I
		S21: NEW Die Sensing Fundamentals I	S31: NEW In-Die Assembly, Monitoring & Adjustments I
STRUCTURAL STEEL/PLATE		F100: NEW AISC Market Outlook and Certification B	F200: NEW Structural Steel Case Study B
WORKFORCE DEVELOPMENT	F13: NEW Managing Complex Change: The Challenge of Implementing a Significant Improvement Initiative B	F23: NEW Mission Critical: Tackling the Manufacturing Skills Gap I	F33: NEW Managing Conflict and Delegation Strategies for Effective Leadership B
WELDING			
SEMINARS	W10: D1.1 - Structural Steel Code Clinic - 2015		8:30 AM 4:30 PM
	W11: What's New in the 21st Edition of API 1104		8:30 AM 4:30 PM
CONFERENCES	W25: Thermal Spray Coatings - FREE		1:00 PM 5:00 PM
PROFESSIONAL PROGRAM	W27: Session 1: Additive Manufacturing		2:00 PM 5:00 PM
	Session 2: Modeling 1		2:00 PM 5:00 PM
	Session 3: Friction Stir and Solid State Welding		2:00 PM 5:00 PM
EDUCATIONAL SESSIONS	W33: National Center for Welding Education and Training, Weld-Ed		9:00 AM 4:30 PM
SPECIAL PROGRAMS	W35: AWS Prayer Breakfast		7:00 AM 8:30 AM

B = Basic **I** = Intermediate **A** = Advanced

TUESDAY, NOVEMBER 7

SCHEDULE-AT-A-GLANCE

TECHNOLOGY	8:00 AM – 10:00 AM	10:30 AM – 12:30 PM	1:30 PM – 3:30 PM
3D/ADDITIVE MANUFACTURING	F40: NEW Business Considerations for 3D Additive Technology with Tech Tour B	F50: NEW Design Considerations for 3D Additive Technology I	F60: NEW Considerations for Small to Large Additive 3D Printing I
AUTOMATION/SMART MFG	F47: NEW Automating with Laser Technology I	F57: NEW Introduction to Smart Manufacturing and Asset Optimization in Real-Time B	F67: NEW Robot-Based Automation Systems I
CUTTING			F61: NEW Waterjet Cutting Solutions for Quality Cut and Speed I
FINISHING	C40: NEW Fundamentals of Pretreatment B	C50: NEW Finishing End User Case Histories I	C60: NEW Understanding the Importance of Wastewater Treatment I
	C41: NEW Plating and Anodizing Industry Success Stories I	C51: NEW Mejorando el Desempeño Total Del Sistema de Pintura en Polvo I	C61: NEW Practical Approach to Optimal Powder Coating Operations A
	C42: NEW Solving 21st Century Coating Challenges with Durable Porcelain Enamel I	C52: NEW Finishing System Design Criteria I	C62: NEW Optimizing Liquid Finishes I
FORMING & FABRICATING	F48: NEW Tube Producing and Joining B	F58: NEW Advanced Roll Forming Tooling and Line Troubleshooting A	F68: NEW Press Brake Tooling I
	F49: NEW Advanced Punching Capabilities for Fabricators I	F59: NEW Advanced Press Brake Technology I	F69: NEW Steel 101: Mill to Fabricator B
JOB SHOP	F46: NEW Cracking the Paperless Code for Manufacturers I	F56: NEW Lean Manufacturing Journey Through the Job Shop B	F66: NEW Leverage Real-Time Costs and Double Output I
LASERS	AWF100: NEW Laser Welding for Today's Fabricator Workshop I		F62: NEW Innovative Laser Application and Solutions B
LEAN	F44: NEW Lean: Value Stream Mapping, Addressing Differences Between Office and Shop Floor I	F54: NEW Lean Tools: Flow and Pull Creating Flow in High-Variety Environments I	F64: NEW Lean Tools: Quick Changeover and Total Production Maintenance (TPM) I
MANAGEMENT	F45: NEW Global Landscapes and Cultural Awareness for Competitive Advantage I	F55: NEW Accelerate Profitability Through Cost Reduction Strategies I	F65: NEW Innovative Strategies for Leading, Protecting and Growing Your Organization B
STAMPING	S40: NEW Press Line Optimization I	S50: NEW Machine Modernization & Safeguarding I	S60: NEW Equipment Installation I
	S41: NEW Cutting & Punching Technology I	S51: NEW Lubrication Technology I	S61: NEW Transfer Die Technology I
STRUCTURAL STEEL/PLATE	F300: NEW Structural Fabrication Equipment Technology I		F400: NEW Structural Steel Software Solutions I
WORKFORCE DEVELOPMENT	F43: NEW Leadership Actions to Transform Your Culture and Create Employee Engagement B	F53: NEW Strategies for Learning and Leveraging Your Leadership I	F63: NEW Accelerating Workforce Performance Through Best Practices in Learning & Development I
WELDING			
SEMINARS	W12: NEW Crash Course of Welding Inspection Technology Seminar (WIT)		8:30 AM 4:30 PM
	W13: NEW The Why and How of Welding Procedure Specifications - Beginner		8:00 AM 12:00 PM
	W14: NEW The Why and How of Welding Procedure Specifications - Advanced		1:00 PM 5:00 PM
	W15: NEW The Why and How of Welding Procedure Specifications - Both		8:00 AM 5:00 PM
	W16: NEW Applications of Stainless Steel Welding - Day 1		8:30 AM 4:30 PM
	W17: NEW ASME Section IX, B31.1 & B31.3 Code Clinic - Day 1		8:30 AM 4:30 PM
CONFERENCES	W24: NEW Tubular Structures Conference		8:00 AM 3:00 PM
RWMA SCHOOL	W26: NEW RWMA Resistance Welding School - Day 1		8:00 AM 5:00 PM
PROFESSIONAL PROGRAM	W28: NEW Session 4: Arc Welding		8:00 AM 12:00 PM
	Session 5: Welding Metallurgy & Weldability		8:00 AM 12:00 PM
	Session 6: Honorary Symposia for Dr. S. David and Prof. T. DebRoy - Joint Session A		8:00 AM 12:00 PM
	Session 7: Industrial Technologies		2:00 PM 5:00 PM
	Session 8: Honorary Symposium for Dr. S. David - Session B		2:00 PM 5:00 PM
	Session 9: Honorary Symposium for Prof. T. DebRoy - Session B		2:00 PM 5:00 PM
EDUCATIONAL SESSIONS	W34: NEW AWS Education Sessions		8:30 AM 4:00 PM
SPECIAL PROGRAMS	W36: NEW AWS Awards Luncheon		12:00 PM 2:00 PM

B = Basic **I** = Intermediate **A** = Advanced

WEDNESDAY, NOVEMBER 8

TECHNOLOGY	8:00 AM – 10:00 AM	10:30 AM – 12:30 PM	1:30 PM – 3:30 PM
3D/ADDITIVE MANUFACTURING	F70: NEW 3D Additive for Metals, Tools and Castings B	F80: NEW 3D Additive Applications for Fabricators I	
AUTOMATION/ SMART MFG	F77: NEW Robotic Joining Cells and Mass Production I	F87: NEW Smart Manufacturing Execution System and Continuous Improvement Solutions I	F97: NEW Agile Design and Synchronized Manufacturing For Real Time Decision-Making A
CUTTING	F71: NEW New Technology in Plasma Cutting for Fabricators I	F81: NEW Advanced Cutting Tools, Applications and Software for Productivity I	
FINISHING	C70: NEW Managing Perceptions for Your Finishing Business I	C80: NEW Achieving Consistent Quality Finishes I	C90: Efficient Curing with Infrared B
	C71: NEW Mastering a Batch Finishing Operation B	C81: NEW See It. Touch It. Fix It. Identifying and Solving Finishing Defects I	C91: Protecting Your Most Valuable Asset: Your Employees I
	C72: NEW Advancements in Ambient Pretreatment I	C82: We've Got the Cure I	C92: NEW The Evolving Technology of Powder Coating A
FORMING & FABRICATING	F78: NEW Tube & Pipe Bending 101 I	F88: Roll Form Tooling Installation, Troubleshooting and Lubricants I	F98: Tube Laser Processing 101 B
	F79: Press Brake Safety: ANSI B11.3 Explained I	F89: NEW Best Practices: Machine Tool Field & Installation Service Technician Panel B	F99: Effective Safeguarding Risk Assessment B
JOB SHOP	F76: NEW Configurable ERP for Your Job Shop Future I	F86: NEW Guide to Getting the Best Out of Your Data I	F96: NEW Effective Product Differentiation In Commoditization Based Marketplace B
LASERS	F72: NEW Fiber Laser Technology & Advancements B	F82: NEW Laser Joining Advancements I	F92: NEW Laser Beams and Material Advancements B
LEAN	F74: NEW Lean Principle: Standardize Work - The Basis for Lean B	F84: Lean Tools: 5S Workplace Organization and Standardization I	F94: NEW Lean Principle: Hoshin Kanri - How to Achieve the Future You See A
MANAGEMENT	F75: NEW Innovation, The Art of Being Wrong I	F85: NEW Succession and Exit Planning for the Next Generation of Metal Fabricators B	F95: NEW How to Develop and Manage a Reshoring Project B
STAMPING	S70: NEW Metal Stamping Fundamentals B	S80: NEW Manufacturing ROI & Tax Credits I	S90: NEW Understanding Metal Stamping Presses I
	S71: Die Sensing Fundamentals B	S81: NEW Stamping, Assembly & Error-Proofing I	S91: NEW Advance Forming Technologies I
STRUCTURAL STEEL/PLATE	F500: NEW Steel Beam Assembly Technology B		
WORKFORCE DEVELOPMENT	F73: NEW Attract, Develop and Build a High Performance Millennial Team B	F83: NEW Six Keys to Team Leadership and Effective Workplace Teams B	F93: NEW Communicate, Build Accountability and Conduct Meaningful Evaluations in Your Organization I
WELDING			
SEMINARS	W16: Applications of Stainless Steel Welding - Day 2		8:30 AM 4:30 PM
	W17: ASME Section IX, B31.1 & B31.3 Code Clinic - Day 2		8:30 AM 4:30 PM
	W18: Ethics Seminar for Certified Welding Inspectors - Part A		8:00 AM 12:00 PM
	W19: What to Expect as a New Certified Welding Inspector - Part B		1:00 PM 5:00 PM
	W20: Ethics Seminar for Certified Welding Inspectors & What to Expect as a New Certified Welding Inspector (Part A & B)		8:00 AM 5:00 PM
	W21: The Visual Inspection Workshop		8:30 AM 4:30 PM
	W22: Fundamentals of Liquid Penetrant Testing for CWI's and Quality Assurance Personnel		8:30 AM 4:30 PM
RWMA SCHOOL	W26: RWMA Resistance Welding School - Day 2		8:00 AM 4:15 PM
PROFESSIONAL PROGRAM	W29: Session 10: Plenary Session		8:00 AM 9:30 AM
	Session 11: Laser Welding/Additive Manufacturing		9:40 AM 12:00 PM
	Session 12: Honorary Symposium for Dr. S. David - Session C		9:40 AM 12:00 PM
	Session 13: Honorary Symposium for Prof. T. DebRoy - Session C		9:40 AM 12:00 PM
	Session 14: Overlay and Cladding		2:00 PM 5:00 PM
	Session 15: Dissimilar Joining		2:00 PM 6:00 PM
	Session 16: Honorary Symposia for Dr. S. David and Prof. T. DebRoy - Joint Session D		2:00 PM 6:00 PM

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THURSDAY, NOVEMBER 9

SCHEDULE-AT-A-GLANCE

TECHNOLOGY	8:00 AM – 10:00 AM	10:30 AM – 12:30 PM	1:30 PM – 3:30 PM
AUTOMATION/ SMART MFG	F107: NEW Standards and Air Quality for Risk Assessment in Your Automation I		
FINISHING	C100: NEW The ULTIMATE Powder Coating A	C110: NEW Got Corrosion? I	
	C101: Electrocoating Equipment Considerations B	C111: NEW The Evolution of Architectural Coatings I	
FORMING & FABRICATING	F108: NEW Tube & Pipe Forming A		
	F109: Roll Forming In-Line Punching, Cutoff Dies and Press Tonnage I		
JOB SHOP	F106: Sales 101 For The Fabrication Industry B	F116: Sustainable Design and Solutions for the Job Shop B	
LEAN	F104: Lean Tools: Preventative Maintenance and Sustainable Techniques & Life Cycle Assessments I		
MANAGEMENT	F105: NEW Increasing Organizational Readiness and Agility in Your Company A	F115: Marketing 101 for Fabricators B	F125: Grow Your Business: For Keeps or For Sale! I
STAMPING	S100: NEW Advancements in Press Technology I	S110: NEW Press Drive Technology A	
	S101: NEW Optimizing Sensor and Lubricant Applications I	S111: NEW Simulation & Process Design Improvement I	
STRUCTURAL STEEL/PLATE	F600: NEW Plate Rolling of Structural Steel I		
WORKFORCE DEVELOPMENT	F103: NEW 6 Steps to Hiring and The New Gig Economy B		
WELDING			
SEMINARS	W23: Fundamentals of Radiographic Inspection for CWI's and Quality Assurance Personnel	8:00 AM	4:00 PM
PROFESSIONAL PROGRAM	W30: Session 17: Sensing and Control	8:00 AM	12:00 PM
	Session 18: Modeling II	8:00 AM	12:00 PM
	Session 19: Testing and Characterization	8:00 AM	12:00 PM
SPECIAL PROGRAMS	AWS Certification Information Session: Move to Computer-based Testing (CBT) and Other Topics - FREE	9:00 AM	12:00 PM
	AWS Certification Exam (advance application required)	7:00 AM	6:00 PM

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MITSUBISHI LASER

3D/ADDITIVE MANUFACTURING

MONDAY, NOVEMBER 6

10:30 AM – 12:30 PM

F20: FUNDAMENTALS OF 3D ADDITIVE MANUFACTURING FOR FABRICATORS **B**

Review the fundamental practices for modeling and fabricating parts with AM. Learn about the latest equipment and material cost-benefit analyses taking place in the industry. New design and software rules and limitations, intellectual property issues and the difficulties associated with business case justifications will be discussed.

Fundamentals of Additive Manufacturing

Sheku Kamara – Milwaukee School of Engineering

Expanded Applications for Additive Manufacturers

Carl Dekker – Met-L-Flo Inc.

1:30 PM – 3:30 PM

F30: NEW! FUNDAMENTALS OF 3D ADDITIVE SCANNING AND IMAGING **I**

3D Scanning and Imaging continue to change the way we think about Additive Manufacturing. Gain a comprehensive introduction to 3D technologies, software and processes. This session also covers reverse engineering and how it can be used to address many other engineering functions.

Reverse Engineering: A How To

Greg Groth – Exact Metrology

Fundamentals of Additive Manufacturing Part 2

Carl Dekker – Met-L-Flo Inc.

TUESDAY, NOVEMBER 7

8:00 AM – 10:00 AM

F40: NEW! BUSINESS CONSIDERATIONS FOR 3D ADDITIVE TECHNOLOGY WITH TECH TOUR **B**

Fabricators find themselves trying to understand the business case for 3D Additive Manufacturing. This session will cover careful consideration of the direct costs that drive Additive Manufacturing and traditional production. The attendee will also gain knowledge of funding for using high performance computing to innovate processes. Experts will lead a tech tour to the additive pavilion to see some hands on technology.

Business Considerations for 3D Additive

Carl Dekker – Met-L-Flo Inc.

Learn How to Capitalize on Funding for Using High Performance Computing to Innovate Manufacturing Processes (with Case Studies)

Lori Diachin and Robin Miles – Lawrence Livermore National Laboratory

10:30 AM – 12:30 PM

F50: NEW! DESIGN CONSIDERATIONS FOR 3D ADDITIVE TECHNOLOGY **I**

This session will highlight key elements that the designer should consider when creating components and parts for 3D printing. Hear our experts discuss the right process for your business needs. By addressing concerns early in the design phase, you can eliminate issues further downstream in the manufacturing process.

Making Sense of Additive Manufacturing – A Guide to Select the Right Process

Frank Geyer – TRUMPF Inc.

Designing for the DMLS Process

Jonathan Bissmeyer – Proto Labs

1:30 PM – 3:30 PM

F60: NEW! CONSIDERATIONS FOR SMALL TO LARGE ADDITIVE 3D PRINTING **I**

Which is right for you? Our experts will discuss SAAM (small area additive manufacturing) and BAAM (big area additive manufacturing). When to justify for prototyping, large or small parts in production and which option is best for your operation will be discussed.

Justifying a Shared 3D Printer for Manufacturers

Chris Haid – New Valence Robotics Corp.

Question Everything: BAAM (Big Area Additive Manufacturing) Technology and the Future of Additive Manufacturing

Rick Neff – Cincinnati Inc.

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

F70: NEW! 3D ADDITIVE FOR METALS, TOOLS AND CASTINGS **B**

This session will focus on emerging technologies that are being utilized to produce cast components, and will cover aspects of 3D printing for the metal casting industry. Learn how to incorporate in your business and practical information on 3D for metals, tools and castings.

An Introduction to 3D Sand Printing for the Metalcasting Industry

Steven Murray – Hoosier Pattern

3D/ADDITIVE MANUFACTURING

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

F70: NEW! 3D ADDITIVE FOR METALS, TOOLS AND CASTINGS (CONT'D) **B****How to Use 3D Printed Sand in Short Run Production and Prototype Castings**

Steven Murray – Hoosier Pattern

Additive Manufacturing for Your Metal Forge Tools

Steven Murray – Hoosier Pattern

10:30 AM – 12:30 PM

F80: NEW! 3D ADDITIVE APPLICATIONS FOR FABRICATORS **I**

Hear about some 3D Additive applications and making sense of metal 3D printing. The session will begin with an overview and go into more complex applications on building a digital twin of additive. The session will also touch on monitoring with embedded sensors for 3D printing.

Making Sense of Metal 3D Printing

Cullen Hilkene – 3Diligent

Building a Digital Twin of Additive Manufacturing

Gerald Knapp – Pennsylvania State University

Health Monitoring with Embedded Sensors Produced Through Metal 3D Printing

Mark Norfolk – Fabrisonic

AUTOMATION/SMART MFG

MONDAY, NOVEMBER 6

10:30 AM – 12:30 PM

F27: NEW! INTRODUCTION TO IIOT & STRATEGIES FOR EVALUATING INDUSTRY 4.0 **I**

How can small-to-mid-sized fabricators stay competitive in this age of small batches, short lead times and increased part complexity? How does a company take the first step to Industry 4.0? This presentation will help fabricators navigate the Industry 4.0 landscape. In particular, an overview of strategy and practical system planning for data capture and analytics for existing and future products will be covered. The session will also discuss each part of the ecosystem and how they fit together to form a complete and compelling solution.

Introduction to IIoT Strategy for Industrial Machines

Robert Waldrop – Tailor Made Tech

Evaluating Industry 4.0 Principles

Kurt Debbaut – LVD Company

The Internet of Things Is an Ecosystem Not a Platform

Bryan Sapot – SensTrx

1:30 PM – 3:30 PM

F37: NEW! AUTOMATION AND SMART MACHINES: THE FUTURE OF THE FACTORY **I**

There has been a lot of discussion recently regarding the future of machine technology. The purpose of this session is to define what actually makes a machine smart and what technologies on the horizon will alter the future of the industry. This session will also explore how predictive algorithms are helping to extend equipment and filter life, minimize energy consumption, minimize maintenance burden and reduce total costs of ownership for air quality control.

Cutting Through the Noise: What's Really in Store for Smart Machines

Ashish Patwardhan – Schneider Electric

Automating the Factory Environment

Jim Reid – RoboVent Solutions Group

TUESDAY, NOVEMBER 7

8:00 AM – 10:00 AM

F47: NEW! AUTOMATING WITH LASER TECHNOLOGY **I**

The power and processing speed of lasers has increased substantially over the past few years and current market offerings enable much higher part production rates than ever before. This presentation will touch on the concepts of rethinking laser cutting operations and designing complete process solutions to enable higher throughput with less effort and labor.

The Requirement for Automating High Powered Fiber Lasers for Maximum Output

Brendon DiVincenzo – Bystronic Inc.

Robotic Laser Cutting with High-Path-Accuracy, Articulated Robot

Mike Monnin – OTC Daihen, Inc.

New Robotic Laser with Direct Pulse Control Offers High Frequency Control Based on the Robot Position and Process Speed

Michael Sharpe – FANUC America Corp.

10:30 AM – 12:30 PM**F57: NEW! INTRODUCTION TO SMART MANUFACTURING AND ASSET OPTIMIZATION IN REAL-TIME B**

This session will break down the basics of smart manufacturing and discuss simple decisions you can make today to start enabling your factory for flexible manufacturing & efficient production. This session will also focus on trends, distributed sensors and machine learning systems that provide predictive maintenance and optimal allocation of assets on a real-time basis.

An Introduction to Smart Manufacturing, IIoT, Industry 4.0 & Why You Should Care

Will Healy, III. – Balluff Inc.

Smart Factory in Practice: Using Machine Learning for Asset Optimization

Rob Dolci – Aizoon

Drones, Wearables & VR: Manufacturing Hype or Reality?

Derek Ochs – Exact, Macola Division

1:30 PM – 3:30 PM**F67: NEW! ROBOT-BASED AUTOMATION SYSTEMS B**

This session will explore how the robotics industry functions, why to choose robot based automation, principles of automation systems, general principles of robot technology, the business case for automation and the 10 common mistakes made in Robot Integration.

Bob Rochelle – Gudel Inc.

WEDNESDAY, NOVEMBER 8**8:00 AM – 10:00 AM****F77: NEW! ROBOTIC JOINING CELLS AND MASS PRODUCTION I**

Traditional robots vs. collaborative robots, turning manual welding into mass production with robots, weld splatter elimination, synchronized wire feeding and a GMAW-WP weld power source and systems for wire parts will all be discussed in this session.

Traditional Robots vs. Collaborative Robots

Gary Bartz – ARC Specialties, Inc.

How to Turn Your Manual Welding Operation into Mass Production with Robotic Welding Cells

Mike Monnin – OTC Daihen, Inc.

Weld Spatter Elimination Through the Marriage of Robotics, Synchronized Wire Feeding and a GMAW-WP Weld Power Source

Mike Monnin – OTC Daihen, Inc.

Machinery Systems for Wire Parts

Torsten Luik – WPT WAFIOS Production Technology GmbH & Co. KG

10:30 AM – 12:30 PM**F87: NEW! SMART MANUFACTURING EXECUTION SYSTEM AND CONTINUOUS IMPROVEMENT SOLUTIONS I**

Enterprise Resource Planning (ERP) and Manufacturing Execution System (MES) Solutions hold promise for improving accuracy and accessing previously untapped treasures of production information. Attend this session and make the move towards achieving your business and production goals. Successful digital transformation examples will be presented and discussed. You will leave this session with actionable insight and a clear pathway to next steps for optimal results.

Winning Management Buy-In for a Smart MES Shop Floor Operations Management System

Mike LeRoy – Paper-Less, LLC

Using a Manufacturing Execution System (MES) as a Spring Board to a Continuous Improvement Initiative

William Shema – Paper-Less, LLC

Successful Manufacturers Moving from Paper and Excel Spreadsheets to the New Digital Frontier

Ann Krauss – Paper-Less, LLC

1:30 PM – 3:30 PM**F97: NEW! AGILE DESIGN AND SYNCHRONIZED MANUFACTURING FOR REAL TIME DECISION-MAKING B**

New cloud-based CAD technologies are being introduced that increase collaboration, allow faster iteration, and reduce errors. In this session, we will explore the new technologies and explain how they are enabling new Agile Design Processes. The session will also cover traceability and real-time decision making in the manufacturing process by implementing a leading-edge manufacturing execution system (MES).

Harnessing the Power of Synchronized Manufacturing

Kevin Power and Rohan Palshikar – Tata Technologies

Agile Design Processes Using Cloud-Based Engineering Tools

Darren Henry – Onshape

AUTOMATION/SMART MFG

THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM

F107: NEW! STANDARDS AND AIR QUALITY FOR RISK ASSESSMENT IN YOUR AUTOMATION I

In recent years, innovations in industrial automation and control systems have advanced automated manufacturing with innovative and sophisticated designs. This interactive session will cover the standards (ANSI B11.20, ISO 11161) for integrated manufacturing systems (IMS) and cover the basics of air quality evaluation, mitigation and monitoring for metalworking and fabricating plants.

Integrated Manufacturing Systems – Risk Assessment & Zone Determination by Layout Analysis

Mark Nehrkorn – SICK Product & Competence Center Americas LLC

Indoor Air Quality: How Clean Is Clean Enough?

Jim Reid – RoboVent Solutions Group

CUTTING

MONDAY, NOVEMBER 6

10:30 AM – 12:30 PM

F21: NEW! AUTOMATING IN CUTTING B

Increased productivity through automation has allowed fabricators to grow through lean manufacturing, eliminate material handling, drastically reduce labor cost and increase output. Hear these experts discuss cutting solutions for plasma and oxy-fuel for the most sophisticated cutting options using automation and increase your operational efficiency.

Structural Steel Fabrication of Robotic Plasma Cutting

Matthew Miller – PythonX, A Lincoln Electric Company

Oxy-Fuel Cutting – Automation Makes the Difference

Kurt Nachbargauer – IHT Automation GmbH & Co. KG

1:30 PM – 3:30 PM

F31: COMPARATIVE CUTTING SYSTEMS WITH TECH TOUR B

Hear our experts cover the comparison cutting methods using waterjet, laser and plasma and decide which is right for your operation. The expert advisor will then lead the attendees to the show floor for a tech tour covering these technologies.

Waterjet Cutting

David Dumas – Hypertherm Inc.

Laser Cutting

Hank White – MC Machinery Systems, Inc.

Plasma Cutting

Jim Colt – Hypertherm Inc.

TUESDAY, NOVEMBER 7

1:30 PM – 3:30 PM

F61: WATERJET CUTTING SOLUTIONS FOR QUALITY CUT AND SPEED I

This session will focus on the latest advancements and solutions using waterjet technology. Multi-Pass abrasive recycling and the impact on recovery for speed and quality will be covered.

Waterjet Solutions for Fabricators

Brian Sherick – Flow International

Multi-Pass Abrasive Recycling and the Impact on Abrasive Recovery, Cut Speed and Part Quality in an Abrasive Waterjet Production Environment

Arion Vandergon – Hypertherm Inc.

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

F71: NEW! NEW TECHNOLOGY IN PLASMA CUTTING FOR FABRICATORS I

This session will serve as a guide to new technology in plasma cutting. Understand the industry, hole cutting, and robotic plasma cutting of structural steel fabrication.

New Technology Frontiers in Plasma Cutting Technology

Phillip Parker – Hypertherm Inc.

A Guide to the Metamorphosis of the Plasma Industry: Understanding the Industry and Analyzing How to Better Your Business

Allan Holst – Park Industries

Advancements in Plasma Hole Cutting

Daniel McLenithan – Hypertherm Inc.

10:30 AM – 12:30 PM

F81: NEW! ADVANCED CUTTING TOOLS, APPLICATIONS AND SOFTWARE FOR PRODUCTIVITY I

Build your foundation with advanced nesting software and learn multiple processes to eliminate re-work and secondary handling. Other cutting tools such as integration of pierce detection within fiber laser and cutting band saw application will be discussed.

Advanced Nesting Software: Building Your Foundation for Productivity & Success

Derek Weston – Hypertherm Inc.

Multiple Processing to Increase Productivity and Eliminate Secondary Handling and Re-work

Dave Maxham – Soitaab Usa

Integration of Pierce Detection Within Fiber Lasers

Stuart McCulloch – SPI Lasers

Cutting Fluid Application in Band Saw Application

Chandra Sekhar Rakurty – The M. K. Morse Company

FINISHING

MONDAY, NOVEMBER 6

10:30 AM – 12:30 PM

C20: FUNDAMENTALS OF A SUCCESSFUL POWDER COATING OPERATION **B**

Whether you are planning on converting from an existing liquid paint system, or getting into powder coating from scratch, there are essential elements required to ensure your best chance of success. This presentation will discuss the requirements of a well-designed, high-performing powder coating system, from pre-treatment, powder material selection to powder application and recovery, to curing.

John Sudges – Midwest Finishing Systems, Inc., Michael Withers – Axalta Coating Systems and Frank Mohar – Nordson Corp.

C21: FUNDAMENTALS OF A SUCCESSFUL ELECTROCOAT OPERATION **B**

Electrocoat is the process of using an electrical field to migrate charged colloidal particles onto an oppositely charged conductive electrode. It is a highly efficient process that offers many functional and performance features. This session will review how the process works, when electrocoat is a good choice, technology options, how to control costs and maximize the efficiency of the system, and basic troubleshooting.

Gary Orosz – PPG Industries

C22: NEW! RACK-UP PROFITS WITH PRODUCTIVITY AND EFFICIENCY **I**

This session will present the process for developing proper hang methods and rack design to maximize line density, material handling concepts to reduce labor costs and establishing safety guidelines and parameters for compliance. The second half of this session will explain the importance of part grounding and evaluate film build consistency as a function of ground quality. The benefits of proper hook & rack maintenance as well as implementation of stripping systems to provide in-line, on-line rack stripping will be reviewed along with new process techniques to reduce required line space for in-line stripping systems.

Rack up Profits with Productivity and Efficiency

Scott Rempala – Mighty Hook

Improve Your Coating Quality with Clean Hooks and Racks

James Malloy – Kolene Corporation

1:30 PM – 3:30 PM

C30: NEW! FUNDAMENTALS OF A SUCCESSFUL LIQUID COATING OPERATION **B**

A liquid coating operation consists of many moving parts with multiple variables. This session contains several key components to managing a successful liquid coating operation. It will highlight how finishers can cut compressed air consumption in a mix room by 75% without an enormous capital investment. It will also focus on simple, quick actions to ensure you have quality going into and out of your finishing operation. Finally, it will review the basic knowledge base of liquid application equipment including the complete range of application technology from all aspects of manual applicators, automatic applicators and rotary atomizers.

Reducing Compressed Air Usage in Paint Kitchens

Michael Elbersson – Autoquip Automation

Quality In – Quality Out

Dan Szczepanik – Sherwin-Williams Product Finishes

Building a Knowledge Base of Liquid Application Equipment Technology

Judith Lietzke – Carlisle Fluid Technologies

C31: NEW! FUNDAMENTALS OF PLATING AND ANODIZING **B**

This session covers the basics of plating and anodizing which includes equipment design, racking, loading and cleaning metal parts, electrified processes and post processes for both technologies. It will also include an overview of the electroplating process with discussion of basic functional and decorative electroplated coatings. Attendees will also hear about a new type of chemistry that will eliminate process steps, reduce processing time, and reduce energy consumption.

Anodizing and Plating Basics

Mark Norton – PriceWalgren

The Basics of Electroplating

Blair Vandivier – Asterion, LLC

Aluminum Surface Preparation Made Easy

Mike Valenti – Hubbard-Hall

FINISHING

MONDAY, NOVEMBER 6

1:30 PM – 3:30 PM

C32: NEW! BLASTING YOUR WAY TO SUCCESSFUL METAL PREPARATION **B**

It's important to understand all variables involved in surface preparation. This session will review advantages and disadvantages for attendees to gain a full understanding when blasting can be most effective for metal surface preparation. It will cover the basics of centrifugal wheel blasting, blast equipment and conveying parts. Attendees will also learn the basics of air powered abrasive blasting and ways to reduce costs associated with this process. There will also be an introduction of automation in air abrasive blasting through the use of robotics.

Understanding the Benefits of Centrifugal Wheel Blasting

Carl Panzenhagen – Blast Cleaning Technologies

Abrasive Blasting: Best Practices, Cost Savings and Automation

Brian Kenimer – Blast-One International

TUESDAY, NOVEMBER 7

8:00 AM – 10:00 AM

C40: NEW! FUNDAMENTALS OF PRETREATMENT **B**

This session will review a variety of key elements to consider in your pretreatment process. Learn about reverse osmosis water treatment as well as its applications, advantages and disadvantages. There will also be a segment on controlling the cleaning and pretreatment process, which is critical to achieving superior results. Knowing what parameters to control helps to prevent rejects and free up manpower for other processes. Receive a basic framework of fundamentals for cleaning and pretreatment, with emphasis on cleaning methods and pretreatment types. Understanding these concepts is essential to operating a high-quality finishing operation.

Reverse Osmosis Basics

Abigail Grommet – Therma-Tron-X, Inc.

Process Control for the Cleaning and Prepaint Industries

Robert Bodak – Chemetall US, Inc. – now part of BASF Group

Basics of Cleaning and Pretreatment – Keys for Success in the Modern Coating Shop

David Chalk – DuBois Chemicals

C41: NEW! PLATING AND ANODIZING INDUSTRY SUCCESS STORIES **I**

This session consists of three presentations that will address successful case histories in the plating and anodizing industry. Attendees will learn how to identify the bottleneck in zinc-nickel plating while improving quality and service to the end user. Learn how to identify a market need and design a system to meet that need, as well as discuss challenges and non-traditional solutions. There will also be a presentation from an end user describing the planning, implementation and operation of a newly installed anodizing line.

If You Build It, They Will Come: The King Kong of Zinc Plating Lines

George Gatto, Jr. – Gatto Industrial Platers, Inc.

Automated Aluminum Anodizing for Exterior Automotive Applications

Richard Macary – Arlington Plating Company

C42: NEW! SOLVING 21ST CENTURY COATING CHALLENGES WITH DURABLE PORCELAIN ENAMEL **I**

This presentation will encompass the technology of porcelain enameling. It will include the base metals (steel, cast iron and aluminum), basic design criteria, enamel frit, coating processes (powder and wet), firing/furnaces, troubleshooting and defect analysis. The general features and benefits of porcelain enamel will be discussed along with a review of typical products. Emerging new products and technologies will also be shared.

Cullen Hackler – Porcelain Enamel Institute

10:30 AM – 12:30 PM

C50: NEW! FINISHING END USER CASE HISTORIES **I**

This session highlights three case histories:

1. An overview of a bicycle manufacturer's re-shoring efforts including focus on their "dual coat" powder coating process.
2. The various application systems needed to finish many different types of doors along with the types of coatings applied.
3. Firsthand experience to successfully powder coat over hot-dip galvanized steel, including the proper procedures that must be followed to prepare new and weathered zinc-coated surfaces.

Bicycle Manufacturing Gears up with Powder Coating

Jeffrey Hale – Gema USA Inc.

Not All Doors Are Finished the Same Way

Steve Romer – SAMES-KREMLIN, Inc.

Lessons Learned in Powder Coating over Hot-Dip Galvanized Steel

Joe Langemeier – AZZ Metal Coatings

C51: NEW! MEJORANDO EL DESEMPEÑO TOTAL DEL SISTEMA DE PINTURA EN POLVO **I**

El eficiente desempeño de un Sistema de Pintura en Polvo se compone de dos áreas principales: Pretratamiento y Aplicación del acabado. Los dos presentan retos para el ahorro los cuales serán tratados en esta capacitación. Cómo puedo aumentar mi producción y conseguir buen recubrimiento. Como mejorarlo, Mantenimiento de herramientas, el eslabón perdido. Respuestas a estas preguntas y muchas más en esta sesión.

Antonio Tapia – Coral Chemical Company and
Arturo Mercado – AkzoNobel

C52: NEW! FINISHING SYSTEM DESIGN CRITERIA **I**

This session will consist of an overview of cost drivers in designing and installing a finishing system; a complete synopsis of the process considerations that affect capital and operational costs while meeting production, flexibility, and quality goals, including a case study of an actual finishing system acquisition; and a review of the latest in overhead conveyor technology for paint systems, friction-driven conveyors. There will also be examples of how friction-driven conveyors, teamed with smart controls, offer flexibility and expandability options.

Cost Considerations for a Finishing Line

Jason Gattion – Pneu-Mech Systems Mfg LLC

A Case Study Judging the Feasibility of Purchasing a New Finishing System

Nicholas Liberto – Powder Coating Consultants

Future of Finishing – Designing Your Paint System for the Unknown

Joshua Gilmore – IntelliFinishing

1:30 PM – 3:30 PM

C60: NEW! UNDERSTANDING THE IMPORTANCE OF WASTEWATER TREATMENT **I**

This session covers important matters concerning wastewater treatment. Contaminant classification is critical to keeping industrial discharges legal & optimizing aqueous cleaning solution effectiveness. Presentations will cover defining sources, basic oil/soil removal, membrane filtration and other conservation techniques. Attendees will learn about the changes in rules and regulations concerning phosphates in wastewater discharges; why phosphates are bad for the environment and how to ensure you meet your discharge permit requirements; how surcharges work and why they are in place, and future trends in phosphate regulations. Learning how wastewater systems work and why they are important is critical for any finishing operation.

Be Nice to Mother Earth! Remove Oils & Soils from Your Wastewater; Recycle Your Aqueous Cleaning Solutions

Raymond Graffia, Jr. – The Arbortech Corp.

Where the EPA Stands on Phosphates in Wastewater

Robin Deal – Hubbard–Hall

Understanding Waste Treatment and Why It's Important to Your Company

Al Enrique – Coral Chemical Company

C61: NEW! PRACTICAL APPROACH TO OPTIMAL POWDER COATING OPERATIONS **A**

This session will cover an overview of the preventive maintenance process as it relates to powder coating and then go in-depth on troubleshooting powder coating related issues. Attendees will take away many great ideas and recommendations regarding the preventive maintenance process. It will also review methods used to activate the powder prior to transportation; vibration, stirring, and the most common-fluidization method. The presentation, will review the effect fluidization has on the overall application process, and steps to achieve greater efficiency.

Preventive Maintenance and Troubleshooting of Powder Coating Operations

John Cole – Parker Ionics and
Mike Wittenhagen – TCI Powder Coatings

Effects of Fluidization on the Spray Application of Powder Coating

Jeffrey Hale – Gema USA Inc.

C62: NEW! OPTIMIZING LIQUID FINISHES **I**

One presentation in this session will compare changes to component ratio and cure schedule using cyclic corrosion testing to determine if improvements to performance can be made beyond that of the recommended ratio and cure. Another presentation will review how defects can be reduced or eliminated by holding paint temperature within a narrow window. Also, how to turn temperature into a tool that can actively improve application results and increase first-pass yield. The last presentation will explain how to optimize a liquid coating operation including a variety of elements to increase productivity while maintaining the highest quality finished product.

The Study of 2k Paint and How Variations in Cure Effect Performance

P. Andrew Bias – Henkel Corp.

FINISHING

TUESDAY, NOVEMBER 7

1:30 PM – 3:30 PM

C62: NEW! OPTIMIZING LIQUID FINISHES (CONT'D) I**Improving Finish Quality by Controlling Paint Application Temperature**

Michael Bonner – Saint Clair Systems, Inc.

Optimizing Your Liquid Coating Operation

Stephen Houston – Col-Met Engineered Finishing Solutions

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

C70: NEW! MANAGING PERCEPTIONS FOR YOUR FINISHING BUSINESS I

This session highlights tips for setting your internal plan/strategy for customer service. It's important to manage your customer service personnel to ensure satisfied customers will keep coming back. A second presentation covers social media as a key marketing strategy used in small finishing businesses and major global brands alike. Attendees will learn how social media should be incorporated into marketing and how employees and company policies can help (or harm) your online reputation.

Meaningful Customer Service for the Finishing Industry – How to Bring Your Customers Back

Martin Powell – LEWCO Inc.

Managing Perceptions for Your Finishing Business

Troy Newport – The Powder Coating Institute

C71: NEW! MASTERING A BATCH FINISHING OPERATION B

Attendees will be presented with detailed criteria to consider when choosing between a batch or powered system. The session will include best practices recommended to provide consistent results when applying pretreatment using manual spray equipment. Cleaning, rinsing and conversion coating best practices will also be presented as well as the conventional iron phosphate processes utilized in many facilities. Additionally, attendees will learn about a unique approach to incorporate the lean manufacturing mentality with pre-engineered modular components and direct customer input to ensure a system that is labor efficient, compact, and cost effective.

Batch System Design Criteria

Aaron Hughes and Dan Guirl – General Automatic Transfer

Best Practices for Manual Pretreatment Applications

Kirk Beaster – Chemetall US, Inc. - now a part of BASF Group

Innovative Conveying Systems for Batch and Semi-automated Finishing Systems – Lean Manufacturing Approach to the Finishing Industry

Alex Koza – NikoTrack

C72: NEW! ADVANCEMENTS IN AMBIENT PRETREATMENT I

This presentation will discuss the advantages and disadvantages of iron phosphate and zirconium-based conversion coatings and how each have unique differences in chemistries and performance. Attendees will also learn nine reasons when considering zirconium-based, non-phosphorous advanced pretreatments along with best practices and practical aspects of transitioning to advanced pretreatments, including a transition success story. This session concludes with a review of the effect typical city water has on corrosion performance, with pre-buffering of a nanoceramic product to the recommended pH operating range.

What Are the Major Differences Between Iron Phosphate and Zirconium-based Conversion Coatings, and What Are the Advantages and Disadvantages?

Sergio Mancini – Bulk Chemicals, Inc.

Learn About the Newest Zirconium-based, Non-phosphorous Pretreatments!

Suresh Patel – Chemetall US, Inc. - now part of BASF Group

Improved Nanoceramic Bath Stability Through Buffering

Joe Caiozzo – Henkel Corp.

10:30 AM – 12:30 PM

C80: NEW! ACHIEVING CONSISTENT QUALITY FINISHES I

This session contains an overview of the most common test instrumentation. Learn when and why they are used and understand how they fit into simple quality programs. The audience will learn how to best utilize LED technology in their day-to-day finishing processes, enabling them to improve their lighting quality while reducing energy costs. This presentation will also discuss why it is so important to maintain and protect equipment. Typical preventive maintenance programs, their schedule intervals and benefits of developing a program to ensure the best quality product produced and extending the life of your investment will also be provided.

Powder Coating Quality Test Equipment

Michael Beamish – DeFelsko Corp.

Harnessing the Potential of LED Technology to Optimize Your Finish and Appearance

Nicole Boss – LDPI Inc.

PM or Not to PM, "The Hidden Cost of Reactionary Maintenance"

Rich Huston – Thermo-Tron-X, Inc.

C81: NEW! SEE IT. TOUCH IT. FIX IT. IDENTIFYING AND SOLVING FINISHING DEFECTS **I**

This unique session will highlight examples of real world causes and solutions to common (and less common) finishing defects. Each key area of the finishing process will be covered, including pretreatment, liquid and powder coating materials and liquid and powder application equipment. Attendees will learn the best ways to identify the cause of a finishing defect as it relates to the coating process, and prevent the defect from returning. Presenters will have actual samples of a variety of defects and discuss the problem-solving process on how to correct and eliminate these finishing defects.

Troubleshooting Your Modern Cleaning and Pretreatment System Process Prior to Powder Application

David Schimpff – DuBois Chemicals

A Visual Approach to Identifying and Solving Pretreatment Defects

Ken Kaluzny – Coral Chemical Company

Understanding Coating Materials' Impact on Finishing Defects

Bob Horton – BASF Coatings and Tom Whalen – TCI Powder Coatings

Who Do You Blame for Defects from Your Finishing Line?

Kevin Higgins and Steve Romer – SAMES KREMLIN, Inc.

C82: WE'VE GOT THE CURE **I**

Whether convection, infrared or combination of both, the most time consuming portion of the finishing process is typically in the cure. This session will focus on the types of curing methods and how to ensure your finishing operation is using the correct oven. Learn simple steps to selecting the right oven or making modifications to an existing oven to achieve overall goals. Case studies and cost comparisons of real-life projects will be presented with a brief explanation of catalytic oven technology. The innovation advantages of UV-cured powder coatings cured with UV LED will also be demonstrated.

Selecting the Right Oven – The Correct Oven Pays for Itself

Martin Powell – LEWCO Inc.

Oven Retrofit/Rebuild vs. New

Steven Onsager – Westran Thermal Processing

Infrared Oven Applications for Finishing with Liquid and Powder Coatings, Including Case Studies

Michael Chapman – Heraeus Noblelight America LLC

Developments in UV LED Curing Technology and UV-cured Powder Coatings

Michael Knoblauch – Keyland Polymer UV Powder Coating, LLC

1:30 PM – 3:30 PM

C90: EFFICIENT CURING WITH INFRARED **B**

This session will review the basics of IR including what it is, how it is produced and its characteristics. It will include all equipment sources of infrared followed by a discussion of the wide variety of IR applications, which showcase the many ways in which IR can be utilized in today's industrial environment. Attendees will also learn several ways to troubleshoot with infrared technology.

John Podach – Fostoria Process Equipment, Div. of TPI Corp. and Scott Bishop – Alabama Power Co.

C91: PROTECTING YOUR MOST VALUABLE ASSET: YOUR EMPLOYEES **I**

This session provides pertinent safety information for the finishing system user including relevant safety codes for finishers. There will be a presentation on safety measures to avoid fires, mishaps, and proper safety devices/equipment for personnel. Attendees will learn the requirements for personal protection equipment (PPE), what they are, if they are required, and what degree of protection is necessary. The session will provide best practices for PPE necessary to operate blast media, wash/pretreatment, powder coating, liquid paint, and hanger/part stripping systems. Attendees will receive an overview of the technologies and code requirements.

Safety in the Finishing Environment – Paint, Powder, Dust, and Other Considerations

Martin Powell – LEWCO Inc.

Personal Protection Equipment – What a Finisher Needs to Know

Nicholas Liberto – Powder Coating Consultants

C92: NEW! THE EVOLVING TECHNOLOGY OF POWDER COATING **A**

This session will demonstrate how evolving technology in the coating industry is helping to eliminate some age-old powder coating issues such as powder accumulating on hangers and fixtures, reaching difficult to coat areas, measuring uncured powder film and fast color change on an automated powder system. Attendees will also learn about extraneous elements that can increase the cost of powder coating operations and ways to combat them.

Solving Age Old Problems in Powder Coating with Today's Technology

Joe Glassco – Wagner Industrial Solutions

Hunting Down and Eliminating Hidden Costs in Your Powder Coating Operations

John Cole – Parker Ionics

Knowing When to Upgrade Your System

Matt Ambrose – Nordson Corp.

FINISHING

THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM

C100: NEW! THE ULTIMATE POWDER COATING **A**

This session will show all the details required to create the optimal powder coating process from start to finish. It will also go into the six root causes to avoid that can and typically will lead to a powder coating failure. No matter your experience level, these two sections combined will assure the attendee leaves with all the elements.

Stephen Houston – Col-Met Engineered Finishing Solutions, Chris Merritt – Gema USA Inc., Ron Cudzilo – George Koch Sons and Suresh Patel – Chemetall US, Inc. - now part of BASF Group

C101: ELECTROCOATING EQUIPMENT CONSIDERATIONS **B**

In this session, the presenter will discuss the equipment that is necessary in the electro-coating process including tanks, circulation system, anolyte/catholyte system, filtration, rectifier, post rinses, curing oven and cooling tunnels. This will include evaluating production rates, cost considerations, footprint availability, and defining the paint process. Information will be presented on the various material handling options available.

Chad Andrae – Therma-Tron-X, Inc.

10:30 AM – 12:30 PM

C110: NEW! GOT CORROSION? **I**

This session will provide an in-depth overview of the different types of corrosion associated with the metal industry, the leading causes, as well as ways to minimize them. Learn about a novel technology recently patented for the process of pretreating metal substrates prior to paint and learn about the application, monitoring, control and performance of this new technology. Finally, a discussion to help electrical equipment manufacturers make the most of their coatings investment by explaining the causes of corrosion and the variables they should consider when selecting a coatings system for their products.

A Step by Step Guide to Prevent Corrosion: A Global Enemy

Scott Fouts – KYZEN Corp.

Innovation Update of Novel Polymer Pretreatment Technologies

David Schimpff – DuBois Chemicals

Corrosion Considerations and Lifecycle Cost for Electrical Components

Maria Lamorey – PPG Industries

1:30 PM – 3:30 PM

C111: NEW! THE EVOLUTION OF ARCHITECTURAL COATINGS **I**

The attendee will learn about the beginnings, current technology and future of coatings developed specifically for the architectural market. These coatings can be in liquid, coil coatings or powder coatings. These coatings can be applied to many substrates and used on building components, railings, light poles and fence. They have been designed to meet the strict performance requirements of AAMA (American Architectural Manufacturers Association). Colors can be solids or metallic effect coatings.

Michael Withers and Manuel Mayer – Axalta Coating Systems and Barry Frost – DuraCoat Products Inc.

FORMING & FABRICATING

MONDAY, NOVEMBER 6

8:00 AM – 10:00 AM

F18: COIL PROCESSING: LEVELING, SLITTING AND BEST PRACTICES **I**

Examine the technologies of leveling and deburring, discuss several slit coil rack designs and implementation case studies, learn how to slit new high strength steel materials, and take a deep-dive into the aspects of customization of universal joints and drive shafts.

Slitting the New High Strength Steels

Al Zelt – ASKO Inc.

Best, Safe Practices and Operating Efficiency for Slit Coils

Michael Baach – Philpott Rubber & Plastics Company and Stephen Detweiler – Philpott Rubber Co.

Leveling and Deburring: Modern Metal Processing

Nicholas Miller – ARKU Coil Systems

What Is Beyond Universal? A Journey into Customizing Universal Joints for Metal Processing Machinery

Maxine Gomez – Belden Universal

F19: PRESS BRAKES FOR ENGINEERS **I**

Learn how an air-bend radius turns sharp at 63% of the material thickness, the effects operationally, and the development of a correct flat pattern.

Steve Benson – ASMA LLC

10:30 AM – 12:30 PM**F28: NEW! TUBE & PIPE CUTTING I**

Review tube cutting technologies and the decision process for utilizing one type of equipment over another as well as how software capabilities correlate to specific applications and how this impacts the choice of system to use.

Principles of Tube Cutting

Lisa Wertzbaugher and Nate Tindall – Superior Tube Products

Selecting Software for Laser Tube Cutting

Rick Jackson – LVD Strippit

F29: ROLL FORMING BASICS AND JUSTIFICATION B

Understand the opportunities involved with using roll forming, value add possibilities, consistency of roll forming, and volume requirements. Receive a breakdown of the different systems in the roll forming process, how they work and their pros & cons.

Roll Forming Basics

Paul Williams – Hill Engineering/ Formtek Inc. and Brian Rogers – Formtek, Inc.

Justification for Roll Forming

Paul Williams – Hill Engineering/ Formtek Inc. and Brian Rogers – Formtek, Inc.

1:30 PM – 3:30 PM**F38: NEW! PANEL BENDING TECHNOLOGY I**

Explore the many benefits to forming with a panel bender and how technology and software are helping redefine this metal forming process. Learn which manufacturing industries this technology can benefit.

Panel Bending: A Better Way to Form

Vincent Iozzo – TRUMPF Inc.

Automatic Panel Bender Technology

Bill Bossard – Salvagnini America Inc.

F39: NEW! PRESS BRAKE COST REDUCTION I

Discover and discuss the keys to sheet metal part design and the importance of understanding equipment capabilities and machine limitations to reduce processes, mistakes, and costs.

Grant Hagedorn – TRUMPF Inc.

TUESDAY, NOVEMBER 7**8:00 AM – 10:00 AM****F48: TUBE PRODUCING AND JOINING B**

Explore the requirements needed, such as infrastructure and software changes, to move tube and pipe production into the realm of IoT and Industry 4.0 to keep up with industry trends. Review the state of the art in various applications of thermal imaging for High Frequency welded tube and pipe.

Advancements in HF Welding Data Collection and Analytics

Victor Monreale – Thermatool Corp.

Advancements in Thermal Imaging for High Frequency Welding Applications

Grant Huffman – Thermatool Corp.

F49: ADVANCED PUNCHING CAPABILITIES FOR FABRICATORS I

Learn about advanced technologies that make punch presses flexible and why, and how they help keep punching cost-effective. Also explore how to avoid and resolve many of the issues that occur daily in the punch press.

Advanced Capabilities Found in Today's Punch Presses

Dan Caprio and Eric Mitten – LVD Strippit

Problems In The Punch Press

Scott Tacheny – Wilson Tool International

10:30 AM – 12:30 PM**F58: ADVANCED ROLL FORMING TOOLING AND LINE TROUBLESHOOTING A**

Discover how to optimize functionality for effective set-ups and roll forming as well as the differences between tube mill systems and weld roll forming systems during this session.

Roll and Die Tooling Designs

John Kopsick – Formtek, Inc.

Advanced Roll Forming Techniques

Paul Williams – Hill Engineering/ Formtek Inc. and Brian Kopsick – Formtek, Inc.

F59: ADVANCED PRESS BRAKE TECHNOLOGY I

Gain a better understanding of advancements in press brake technology from high speed fiber lasers to Industry 4.0 to robotic bending. Presentations and case studies will aid your understanding of automation and help you in determining which level of automation would be a good fit for your company.

Advancements in Press Brake Setup Reduction

Scott Ottens – Amada America Inc.

FORMING & FABRICATING

TUESDAY, NOVEMBER 7

10:30 AM – 12:30 PM

F59: ADVANCED PRESS BRAKE TECHNOLOGY (CONT'D) **I****Automation in Bending: What Is the Right Technology for Me?**

Marcel Fiedler and Paul LeTang – Bystronic Inc.

Automation in Bending: Reducing the Cost Per Part

Vincent Iozzo – TRUMPF Inc.

1:30 PM – 3:30 PM

F68: PRESS BRAKE TOOLING **I**

Learn the differences in press brake tool heights and clamping systems and which will work best for your shop. Discuss the three categories of press brake tooling, explore different hardening methods, and look at proper care and maintenance for your equipment.

An Overview of Press Brake Tooling Heights and Clamping Systems

Larry Boden – Mate Precision Tooling

The Drawbacks, Benefits, and Differences Between Precision Ground, Planer and Precision Planer Styles of Press Brake Tooling

Steve Benson – ASMA LLC

F69: STEEL 101: MILL TO FABRICATOR **B**

Learn all facets of the steel making process, including chemistry, manufacturing process for flat rolled, bar, plate and specials, steps to process steel before it reaches its end-user, and what the fabricator can expect when forming the various grades specified by OEMs. Market drivers will also be covered.

John Eckstein and John Packard – Steel Market Update

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

F78: NEW! TUBE & PIPE BENDING 101 **I**

Learn about technological and equipment considerations for tube forming for mechanical and structural tube bending as well as how to increase productivity in mandrel tube bending processes by having a good understanding of modern lubricant regimes.

Dynamic Lubrication for Mandrel Tube Bending

Christopher Fletcher – Tower Metalworking Fluids

Tube Forming – Best Practices

Lisa Wertzbaugher, Gus Griffin and Jeff Otten – Superior Tube Products

F79: PRESS BRAKE SAFETY: ANSI B11.3 EXPLAINED **I**

OSHA/ANSI regulations and standards will be explained, and real world examples outlining an application appropriate approach to defining under what circumstances various types of safety methods or devices maximize throughput will be presented.

Douglas Raff – Paragon Industrial Controls, Inc.

10:30 AM – 12:30 PM

F88: ROLL FORM TOOLING INSTALLATION, TROUBLESHOOTING AND LUBRICANTS **I**

Review the latest technologies in lubricants and coolants available for metal roll forming processes and learn about a seven step selection process for finding the best lubricant. Plus, learn how to properly setup roll form tooling and document your setup, and explore roll forming trouble shooting techniques.

Roll Form Tooling Installation and Trouble Shooting

Steve Ebel – Roll Form Solutions Inc.

Modern Lubricants for Roll Forming Processes

David Kinnard – Tower Metalworking Fluids

F89: NEW! BEST PRACTICES: MACHINE TOOL FIELD & INSTALLATION SERVICE TECHNICIAN PANEL **B**

Join this panel as they discuss the best practices for recruiting, training, and retaining service technicians through real world examples.

David Kloos – Mitsubishi Laser, James Rogowski – TRUMPF Inc. and James Warren – FMA

1:30 PM – 3:30 PM

F98: TUBE LASER PROCESSING 101 **B**

Review a case study on a traditional sheet metal fabricator that took a risk to grow in the tube laser processing area, look at fiber laser tube processing for cutting applications, and learn how laser processing can affect how parts fit into assemblies and future design possibilities.

Tube Laser Processing Case Studies

Gregg Simpson – Ohio Laser LLC

Fiber Laser Tube Processing for Cutting Applications

Mauro Corno – BLM Group USA

Tru Laser Tube: Advancements in Laser Tube Processing

Ryan Welcome – TRUMPF Inc.

Case Study – Richards Sheet Metal Works Tube Laser Processing Program

Dee Roskelley – Richards Sheet Metal Works, Inc.

JOB SHOP

MONDAY, NOVEMBER 6

10:30 AM – 12:30 PM

F26: NEW! THE IMPORTANCE OF SCHEDULING, TRACEABILITY AND CLASSIFYING INVENTORY FOR MANUFACTURERS **B**

This comprehensive session will provide tools and solutions to track and trace the raw materials, machinery and even the personnel involved in manufacturing your products and reducing your inventory while maintaining customer service and scheduling using MES.

The Importance of Traceability in a Manufacturing Environment

Ruben Mirensky – IMCO Associates, Inc.

The Importance of Properly Stratifying Inventory

Ruben Mirensky – IMCO Associates, Inc.

The Importance of Good Production Scheduling

Ruben Mirensky – IMCO Associates, Inc.

1:30 PM – 3:30 PM

F36: ACTIVITY-BASED COSTING AND ESTIMATING FOR PROFITABILITY IN THE JOB SHOP **I**

This presentation goes over the intricacies of job costing and estimating in a job shop. Costing for job shops and high mix, low volume shops is critical. Costing jobs correctly could mean increased profits and getting it wrong could mean long running unprofitable work. Attend this session to gain insight on the importance of activity based costing, estimating and allocating the appropriate cost to the right job.

Job Shop Costing and Estimating

Don Clutter – MIE Solutions

Activity Based Costing – It's as Easy as ABC

David Lechleitner – KeyedIn Solutions

TUESDAY, NOVEMBER 7

8:00 AM – 10:00 AM

F46: NEW! CRACKING THE PAPERLESS CODE FOR MANUFACTURERS **I**

With more companies working toward going paperless, others struggle to understand what it fully entails. This session breaks down the concepts and will walk you through the process, providing real world case studies, and wrapping up with a brief Q&A. Discover why some companies succeed, other efforts die out, and how to make going paperless work for your company.

Shane Peltier – Ncell Systems, Inc., Bridget Lazlo – Guardian Business Solutions, Nancy Brehmer – KeyedIn Solutions, John Kemp – Bystronic Inc., and Christine Hansen – Epicor Software Inc.

F99: EFFECTIVE SAFEGUARDING RISK ASSESSMENT **B**

Understand the collaborative risk assessment process for safeguarding, task and hazard identification, and the real world scoring matrix during this session which also features a case study of an un-guarded machine.

Douglas Raff – Paragon Industrial Controls, Inc. and Brian Roberts – CNA Risk Control Services

THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM

F108: NEW! TUBE & PIPE FORMING **A**

Explore various aspects of the tube bending industry including the difference between bending tool sets and bending tool systems and how to apply both in a real world scenario, new technologies in rolling processes and tube bending with a special focus on productivity and quality, and the automation of tube bending.

Bender Tooling Systems (Special Rotary Draw Tooling Solutions)

Robert Want – Tools for Bending

Modern Tube Bending Machinery

Greg Miller – Tubular Solutions Inc.

How to Increase Productivity and Quality in Automated Tube Forming Production

Klaus Wurster – WAFIOS Tube Automation

F109: ROLL FORMING IN-LINE PUNCHING, CUTOFF DIES AND PRESS TONNAGE **I**

Explore in-line punching concepts to determine the best cutoff application and punching and cutoff press selection. Discuss the different types of presses used in roll forming and how the tonnage ratings of these presses may not be the tonnage you need.

Adding Value to Your Rollforming Lines with In-line Punching and Cutoff Dies

Paul Williams – Hill Engineering/Formtek Inc.

When the Press Tonnage Rating Is Really Not the That Tonnage in a Roll Forming Line

Paul Williams – Hill Engineering/Formtek Inc.

JOB SHOP

TUESDAY, NOVEMBER 7

10:30 AM – 12:30 PM

F56: NEW! LEAN MANUFACTURING JOURNEY THROUGH THE JOB SHOP **B**

A look at lean manufacturing and the press brake followed by a case study on a job shops journey from implementation with different perspectives of the changes, challenges and successes of implementing lean. The session will take a deeper dive into the lean body of knowledge throughout the presentation.

Lean Manufacturing and the Press Brake

Steve Benson – ASMA LLC

Looking at Lean Journey Through the Eyes of the Job Shop!

Jeff Sipes – Back2Basics, LLC, Richard Steel, Jr., Matt Feight and Mike Repine – Miller Welding & Machine

1:30 PM – 3:30 PM

F66: NEW! LEVERAGE REAL-TIME COSTS AND DOUBLE OUTPUT **I**

Gain practical knowledge for leveraging real-time access to up-to-the-minute material costs, labor rates, machine run-time, post-cutting operations, and other costs while managing high-variety production and increasing your output.

Fabrication Quoting: Passing on Tribal Knowledge

Brad Stropes – SecturaSOFT

Merits and Limitations of Various Practical Approaches to Job Shop Production Management and an Optimal Mix of Those Approaches

Prasad Velaga – Optisol

Doubling Plant Output and Delivering On Time, Every Time – How to Make It Happen

Steve Bieszczał – IQMS and Jeff Hohlfeldt – Northern Industrial Manufacturing

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

F76: NEW! CONFIGURABLE ERP FOR YOUR JOB SHOP FUTURE **I**

More and more shop owners are considering the cloud as a viable option for their key business solutions. One of the challenges of these solutions has traditionally been in multi-tenant environments and the ability to customize the solution to meet their specific needs. Exciting new opportunities are now available including

configurable SaaS allowing users to develop entire modules to fit their business. Attend this session to learn about the latest trends and why implementations of ERP fail.

Why ERP Implementations Fail

Bridget Lazlo – Guardian Business Solutions

Is Configurable SaaS ERP in Your Future?

David Lechleitner – KeyedIn Solutions

10:30 AM – 12:30 PM

F86: NEW! GUIDE TO GETTING THE BEST OUT OF YOUR DATA **I**

Learn how OEE (Overall Equipment Effectiveness) gives you the best metric to evaluate your factory capacity & efficiency. OEE has traditionally been a manual process with white boards, paper downtime sheets, etc. These methods are sufficient for analyzing information "after-the-fact", data needs to be available in real-time for it to be truly valuable. The only way to collect data real-time is to do it automatically. You can view equipment data, associate it with workflows, other enterprise systems, KPIs and make informed decisions from anywhere, anytime. Attendees who want to improve operational health will find value in this session.

MAKE IT BETTER, KEEP IT BETTER: The Short & Long Term Benefits of Automatically Collecting OEE Data

Keith Magnant – ShopFloorConnect

Getting the Best out of Your Data for Route-based Maintenance and Condition-based Monitoring

Frederic Baudart – Fluke Corp.

1:30 PM – 3:30 PM

F96: NEW! EFFECTIVE PRODUCT DIFFERENTIATION IN COMMODITIZATION BASED MARKETPLACE **B**

Attend this session to understand how job shops and manufacturing companies can increase sales and minimize commoditization in the age of information technology in the marketplace. The engaging and interactive session will include actionable takeaways on crafting new differentiators without added overhead, methods for effectively communicating to the marketplace, and increasing your organization's overall competitiveness.

How Job Shops and Manufacturing Companies Can Increase Sales and Minimize Commoditization in the Age of the Information Economy

Rick Farrell – Tangent Knowledge Systems

Effective Product Differentiation in a Commoditization-based Marketplace

Andrea Olson – Prag'madix

THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM

F106: SALES 101 FOR THE FABRICATION INDUSTRY **B**

You will acquire proven tactics, strategies and approaches to high-impact, effective sales. Learn to keep the customers you have and attract the ones you want! Lead generation, neuroscience (experimental psychology) and the case studies from Uber and Airbnb will be shared.

Sharing Economy Sales Force: How Lessons from Uber and Airbnb Apply to Selling Your Product

Charles Cohon – Manufacturers' Agents National Association

Outsmart and Outsell Your Competition Using Neuroscience

Bryan Gray – RPG – Revenue Path Group

The Single Best Lead Generation Tactic

Bruce McDuffee – Manufacturing Marketing Group

10:30 AM – 12:30 PM

F116: SUSTAINABLE DESIGN AND SOLUTIONS FOR THE JOB SHOP **B**

What does "Sustainability" mean for your company's products or services and what actionable steps can you take to make your products less impactful on the environment? This example filled session will provide insight into the ways that the design for sustainability and a water recycling strategy can help.

Creating Value Through Design for Sustainability

Robin Tindall – Hypertherm Inc. and Shelly Severinghaus – Long Trail Sustainability

How to Determine If Water Recycle & Reuse Makes Sense for Your Organization

Tom Sage – DMP Corp.

LASERS

MONDAY, NOVEMBER 6

10:30 AM – 12:30 PM

F22: NEW! FIBER LASER CUTTING AND JOINING: RECENT ADVANCES IN TECHNOLOGY, TOOLS AND APPLICATIONS **B**

Advances in lasers' power, improved cutting speeds and edge quality, and lower operating costs have opened more avenues for use of the technology. This comprehensive session will discuss recent advancements in fiber laser cutting and joining tools, applications and the latest technology for fabricators.

Dahv Kliner – nLIGHT Corp., Brian Victor – nLIGHT Corp., Tom Kugler – Laser Mechanisms, Inc., Robert Borgstrom – Precitec, and Tim Morris – Blackbird Robotics, Inc.

1:30 PM – 3:30 PM

F32: NEW! LASER ADDITIVE TESTING AND APPLICATION SOLUTIONS **I**

This session will offer applications in laser additive manufacturing with some great case study examples. Wire-feed AM is a promising technology for producing larger components with moderate complexity. Full scale testing and characterization and the fatigue life using lasers will also be discussed.

Wire Based Robotic Laser Additive, Welding and Cladding Applications and Examples

Erik Miller – Miller Electric

Full-scale Testing and Characterization of the Fatigue Life of Laser Additive Manufacturing Repaired Alloy Steel Components

Kurtis Bell – IRISNDT

TUESDAY, NOVEMBER 7

8:00 AM – 12:30 PM

AWF100: LASER WELDING FOR TODAY'S FABRICATOR WORKSHOP **I**

This workshop is full of experts covering the latest advancements on laser welding. Topics include: design consideration, industrial laser welding, laser sources for fiber, disk and diode, system overview, hybrid laser welding and additive technologies. Attendees will have additional time to discuss any application with the experts.

Essential Considerations for Laser Welding: From Component Design to Implementation

David Havrilla – TRUMPF Inc.

Introduction to Industrial Laser Welding

Tom Kugler – Laser Mechanisms, Inc.

Laser Sources for Industrial Laser Welding: Fiber, Disk and Diode

Jean-Philippe Lavoie – Coherent

System Overview for Laser Welding

Mark Rodighiero – Amada Miyachi America

Material Selection for Laser Welding

Geoff Shannon – Amada Miyachi America

Hybrid Laser Welding

Paul Denney – Lincoln Electric

Laser Welding and Additive Technologies

Wayne Penn – Alabama Laser

LASERS

TUESDAY, NOVEMBER 7

1:30 PM – 3:30 PM

F62: NEW! INNOVATIVE LASER APPLICATION AND SOLUTIONS **B**

The right laser system can bring benefits to your shop floor. Our laser experts will cover processing of fully automated sheet metal, processing large image fields on the fly and latest innovations in marking.

Fully Automated Sheet Metal Processing for the Future

Mark Bronski – TRUMPF Inc.

Processing on the Fly in Large Image Fields

Dale Sabo – SCANLAB America

Latest Innovations in Laser Marking

Frederic Lallemand – Gravotech, Inc.

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

F72: NEW! FIBER LASER TECHNOLOGY & ADVANCEMENTS **B**

Technological advancements are vital to the fiber laser industry. The newest lasers provide substantial cost, energy, and space-saving opportunities to users, and will continue to become stronger and more powerful in time. This session will discuss robotic laser with direct pulse control, CO₂ and fiber laser application in a high production world and new developments in applications and productivity.

Fiber Developments and Productivity

Dustin Diehl – Amada America, Inc.

CO₂ and Fiber Laser System Market Adoption and Applications: Finding New Ways to Employ These Versatile Systems

Robert Boyes – Coherent Inc.

Fiber Lasers in the High Production World

Hank White – MC Machinery Systems, Inc.

10:30 AM – 12:30 PM

F82: NEW! LASER JOINING ADVANCEMENTS **I**

Today's laser joining offers a variety of new advancements that expand the possibilities for laser joining. Some of these advancements in flexibility with part design, laser edge and optical seam tracking and filler wire for applications will allow attendees an overview of these select processes.

Using Laser Welding's Flexibility with Part Design to Optimize Manufacturing

Brett Thompson – TRUMPF Inc.

Advancements in Laser Edge Welding Utilizing Integrated Optical Seam Tracking

Tom Graham and John Sutter – Abicor Binzel

Shifting Paradigms in Laser Joining Solutions for Thin Alloys

Daniel Capostagno – SPI Lasers

Coaxial Seam Tracking and Topography Measurement Through Optical Coherence Tomography (OCT) in 3D Scanner Welding

Tim Morris – Blackbird Robotics, Inc.

1:30 PM – 3:30 PM

F92: NEW! LASER BEAMS AND MATERIAL ADVANCEMENTS **B**

Our experts will discuss laser beams and material advancements in fabrication. Hardening and annealing processes through remote laser optics process, direct diode and control of the laser bonding process will be highlighted.

Hardening and Annealing Processes Through Remote Laser Optics

Tom Graham – Abicor Binzel

High-Power High Brightness Direct Diode Laser Applications Using Integrated Dynamic Beam Shaper

Francisco Villarreal, Myrna Reyes, Chris Halle, Wang Zhou, Bien Chann, Bryan Lochman and Parviz Tayebati – TeraDiode Inc.

High-Power Diode Lasers and Innovative Industrial Applications

Oleg Raykis – Laserline Inc.

Optimization and Control of the Laser Bonding Process for Industry

Joseph Sarver – Ferro Corp.

LEAN

MONDAY, NOVEMBER 6

8:00 AM – 10:00 AM

F14: NEW! LEAN PRINCIPLE: STRATEGIC PLANNING AND ORGANIZATIONAL ALIGNMENT **A**

Learn to recognize the different mistakes companies make and also what systems to put in place to ensure your success. "Lean" has unfortunately received status as a buzzword, where everyone thinks they know what lean is yet few have truly been through a full transformation. Depending on research, 70%-90% of transformations fail. Engagement is a critical element to help drive your success rate up, yet most companies do a poor job here, too.

Pete Winiarski – Win Enterprises, LLC

10:30 AM – 12:30 PM

F24: **NEW!** LEAN PRINCIPLE: DEVELOPING PEOPLE AND PROCESSES **B**

Being a conscious leader will help keep you centered and grounded, gain clarity, and raise your awareness of how to lead your team to achieving great results. This presentation will provide the true essence of performance management and how it can benefit your organization. Individuals will take away examples of how companies are successfully using Operational Excellence.

Creating a Journey to World Class Performance Utilizing Operational Excellence

Korey Zawadzki – Competitive Solutions, Inc.

The Best Leadership Approach to Reduce Your Stress, Engage Your Team, and Achieve Rock Star Results

David Tweedt – Win Enterprises, LLC

1:30 PM – 3:30 PM

F34: **LEAN TOOLS: A3 THINKING – DEVELOPING PEOPLE & SOLVING PROBLEMS** **I**

We understand the Lean Tools (cells, Kanban, VSM, standard work), but how good are we at solving problems? In fact, does it ever seem like we are fixing the same problem over and over? Effective improvement requires changing how people approach, address, and resolve problems. We need to develop “thinking problem-solvers.” Very visual and hands-on, A3-Thinking is a proven step-by-step methodology that actively engages the problem solver, their supervisor, and those affected by the problem.

Mike Osterling – Osterling Consulting, Inc.

TUESDAY, NOVEMBER 7

8:00 AM – 10:00 AM

F44: **LEAN: VALUE STREAM MAPPING, ADDRESSING DIFFERENCES BETWEEN OFFICE AND SHOP FLOOR** **I**

VSM’s roots are in production, but most Value Streams include non-production functions like engineering, purchasing, service and sales – or the VS doesn’t even touch the product (think HR, finance and marketing). Successful mapping there requires a different approach. Properly performed, VSM surfaces and addresses issues in highly cross-functional processes related to: organizational alignment, leadership engagement, directing teams and consensus building. Leave this presentation armed with new insights on how to VSM most any process!

Mike Osterling – Osterling Consulting, Inc.

10:30 AM – 12:30 PM

F54: **LEAN TOOLS: FLOW AND PULL CREATING FLOW IN HIGH-VARIETY ENVIRONMENTS** **I**

Creating flow in fabrication shops with highly complex products, demand and shared resources can be challenging. The speaker will explain, step by step, how to apply advanced lean principles to create a value stream of multiple product flows at the pull of the customer. See these concepts in action with case studies of complex manufacturing operations that have gone beyond basic value stream mapping to create a future state for mixed model production.

Kevin Duggan – Institute for Operational Excellence

1:30 PM – 3:30 PM

F64: **LEAN TOOLS: QUICK CHANGEOVER AND TOTAL PRODUCTION MAINTENANCE (TPM)** **I**

Total Productive Maintenance (TPM) rests on eight principles/pillars. This overview will help you assess and plan your journey toward a more productive outcome, why TPM principles form the required foundation for a sustainable system and implement complete maintenance plans. This presentation will also discuss the advantages and challenges of improving changeover performance, including what factors are critical for success, the steps to successfully implement a program, how to maximize results, and how to sustain progress.

Total Productive Maintenance (TPM)

Bill Artzberger – Lean Learning Center

Increasing Production Capacity with Quick Changeover (SMED)

Bill Artzberger – Lean Learning Center

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

F74: **NEW!** LEAN PRINCIPLE: STANDARDIZE WORK – THE BASIS FOR LEAN **B**

Standardized work is one of the most powerful but least used lean tools. By documenting the current best practice, standardized work forms the baseline for kaizen or continuous improvement. You will be showed the different types of Standardize Work, and which format to use. Real-world examples will help guide you.

Anthony Manos – Profero, Inc.

LEAN

WEDNESDAY, NOVEMBER 8

10:30 AM – 12:30 PM

F84: LEAN TOOLS: 5S WORKPLACE ORGANIZATION AND STANDARDIZATION **I**

Learn the fundamentals of 5S and how it will improve your organization. The 5S system is a deceptively powerful technique that will save you time and money and make your workplace more productive and safe. Learn through a class exercise the 5S's and what the impact will be.

Anthony Manos – Profero, Inc.

1:30 PM – 3:30 PM

F94: NEW! LEAN PRINCIPLE: HOSHIN KANRI – HOW TO ACHIEVE THE FUTURE YOU SEE **A**

Hoshin (a.k.a. Policy Deployment) is a powerful methodology to achieve your long-term strategic goals. This session will walk you through step-by-step this powerful strategic planning system that has helped many companies remained focused on what's important in the long-term while executing tactical day-to-day critical operations.

Anthony Manos – Profero, Inc.

THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM

F104: LEAN TOOLS: PREVENTATIVE MAINTENANCE AND SUSTAINABLE TECHNIQUES & LIFE CYCLE ASSESSMENTS **I**

This blended session covers key differences and cost savings in PM and PdM, using LCA (Life Cycle Assessments, to identify hot spots, reduce impacts throughout their supply chain, and an overview of how lean manufacturing can focus on sustainable initiatives, while helping manufacturers remove production wastes. Case studies provided.

Saving Money by Adopting Preventative (PM) and Predictive Maintenance (PdM) Strategies

Michael Schlagenhafer – Acuity

Driving Sustainability Through Life Cycle Assessments

Shelly Severinghaus – Long Trail Sustainability and Robin Tindall – Hypertherm Inc.

Achieving Sustainable Practices in Manufacturing Through Lean Techniques

William Shema – Paper-Less, LLC

MANAGEMENT

MONDAY, NOVEMBER 6

8:00 AM – 10:00 AM

F15: NEW! TODAY'S DIGITAL AND INBOUND MARKETING STRATEGIES FOR FABRICATORS **I**

In order to successfully grow your business, you need to attract and work to retain a large base of satisfied customers. The experts will discuss in-bound marketing, using the website to generate leads and customer acquisitions. Attendees will take away strategies and actionable items to improve overall marketing results.

Attract, Convert, Close, and Delight Your Prospects with Inbound Marketing

Nicole Wagner – Stevens & Tate Marketing

Today's Industrial Digital World – Strategies to Excel

Tim Doyle – TopSpot

Blogging Is Great, But...

Dan Konstantinovskiy – RH Blake

10:30 AM – 12:30 PM

F25: NEW! CURRENT ECONOMY, LABOR AND EMPLOYMENT UPDATE FOR MANUFACTURING **A**

What does the coming year hold in store? The U.S. has regained a good bit of its manufacturing influence but the challenges have not vanished and will be with us next year as well. This session will conclude with an overview of how attendees will learn about Trump's immigration, labor, and employment policies and how it will affect workers. Participants will learn about the increasing patchwork of federal, state, and local labor and employment laws. Finally, attendees will discover how the minimum wage, paid sick leave, and Trump's infrastructure plan will affect wages, labor, and other policies.

Looking Ahead – Economy of 2018

Chris Kuehl – Armada Corporate Intelligence

2017: Labor and Employment Update

John Cruickshank – Alaniz Schraeder Linker Farris Mayes

1:30 PM – 3:30 PM

F35: **NEW!** ACHIEVING SUPPLIER SUCCESS IN TODAY'S GLOBAL MANUFACTURING ENVIRONMENT **A**

Today's global manufacturing environment is changing faster than ever before. This session will discuss what OEMs are seeking from today's suppliers, 3D Value Chains and what this strategy means to manufacturing success. This presentation will also describe 5 steps to achieve everything, with no problems standard, which attendees can take away and use immediately in their businesses.

Achieving Supplier Success in Today's Global Manufacturing Environment

Joseph Mazzeo – Integrated Lean and Quality Solutions, LLC

Building 3D Value Chains

Alan Lund – CORE Business Management Solutions

5 Steps to Achieve What Customers Want: Everything, with No Problems

Paul Vragel – 4aBetterBusiness, Inc.

TUESDAY, NOVEMBER 7

8:00 AM – 10:00 AM

F45: **NEW!** GLOBAL LANDSCAPES AND CULTURAL AWARENESS FOR COMPETITIVE ADVANTAGE **I**

This session will discuss what cultural awareness is, the application and use of diversity and inclusion in the workplace and why it is important, and how having cross-cultural capabilities can have a significant and positive effect on the success of a company doing business in a global environment.

The Benefits of Diversity for Business Success

Laura Allen – Kettering University

Using Cultural Awareness as a Competitive Advantage for Global Business Success

Joseph Mazzeo – Integrated Lean and Quality Solutions, LLC

10:30 AM – 12:30 PM

F55: **NEW!** ACCELERATE PROFITABILITY THROUGH COST REDUCTION STRATEGIES **I**

To achieve and sustain profitability, you must have a business framework that is capable of supporting the fundamentals of profitability and processes. In addition, advances in technology, globalization of markets, and talent wars have all contributed to a new business landscape. This session will provide a framework, examine the business assumptions and provide tools to learn innovative strategies

you can begin implementing to accelerate cost reduction.

Accelerating Profitability Through Cost Reduction Strategies

Alan Lund – CORE Business Management Solutions

10 Business Assumptions That Will Kill Your Company

Andrea Olson – Prag'madik

Multiple Pathways of Growth: Innovative Strategies for Business Leaders

John Dearing – Capstone

1:30 PM – 3:30 PM

F65: **NEW!** INNOVATIVE STRATEGIES FOR LEADING, PROTECTING AND GROWING YOUR ORGANIZATION **B**

Hear our experts discuss proven step by step methods and framework for leading, protecting and growing your organization. Strategy is as useful at helping leaders determine what not to do, as it is at helping them determine what to do. Learn how to build a winning strategic architecture and clarify the complexities that combined become your competitive advantage.

Leading an Organization to Profitability

Mark Hamade – Vivaris Capital

Learn Your Strategic Architecture of Growth

Mark Frasco – COACT Associates, Ltd.

Protecting Manufacturing's Crown Jewels

Vincent Howell – Corning Inc.

FAST 4 Principles Every Business Needs to Achieve Success and Drive Results

Gordon Tredgold – Leadership Principles LLC

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

F75: **NEW!** INNOVATION, THE ART OF BEING WRONG **I**

Organizations must embrace failure to accelerate innovation. Through mental framing, learn to create freedom from the fear of failure using adaptive analytical perspectives that encourage ideas and discovery. Keep your organization innovative and successful by creating a culture of passion, drive and ambition in the midst of failure.

Stefana Saxton – Black & Veatch

MANAGEMENT

WEDNESDAY, NOVEMBER 8

10:30 AM – 12:30 PM

F85: NEW! SUCCESSION AND EXIT PLANNING FOR THE NEXT GENERATION OF METAL FABRICATORS **B**

All job shops, no matter their size, whether a family business, partnership, or single owner need succession planning. This session will provide applicable tools to improve business, chart a roadmap for successful succession, provide a multidisciplinary approach to business succession, and an exit strategy to prepare your company for sale.

Business Succession Planning for Metal Fabricators – Common Techniques, Issues to Avoid & Valuation Fundamentals

Jonathan Michael – Burke, Warren, MacKay & Serritella

Succession Planning for the Next Generation of Fabricators

Henry Hutcheson – Family Business USA

Fabricating a Stronger Future Through Exit Strategy Preparation

Zachary Corson – Douglas Group

1:30 PM – 3:30 PM

F95: NEW! HOW TO DEVELOP AND MANAGE A RESHORING PROJECT **B**

Reshoring may be a popular topic with executive management, but it's not as easy as it seems. Not only must you consider a new American manufacturing site and new processes, but you must also redevelop your supply base, and find and train skilled workers. You may benefit from local government incentives and reshoring publicity, but these things also take time and effort. In addition, there are likely to be complications when leaving a foreign location such as applying for exit permits, employee contract buy-outs, and trying to get tools and equipment back.

Learn how to manage all these moving parts when undertaking a Reshoring project. This session is led by the expert in Reshoring project management and author of *The Reshoring Guidebook*.

Rosemary Coates – Reshoring Institute at University of San Diego

THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM

F105: NEW! INCREASING ORGANIZATION READINESS AND AGILITY IN YOUR COMPANY **A**

Most businesses over 5 years have yielded significant waste in their services, internal communication & operating costs resulting in lower profitability. Agile is a process most often associated with technology firms, but can now be applied to all businesses to help them reach the next level of performance. Our simple Freedom Teams and Freedom Systems 3-step formula can help any small business on the cusp of growth.

Soraya (Morgan) Gutman – Brand Launcher

10:30 AM – 12:30 PM

F115: MARKETING 101 FOR FABRICATORS **B**

In order to successfully grow your business, you'll need to attract and then work to retain a large base of satisfied customers. The experts will discuss in-bound marketing, using the website to generate leads and customer acquisitions. Attendees will take away strategies and actionable items to improve overall marketing results.

Four Actionable Strategies to Improve Marketing Results

Dan Gartlan – Stevens & Tate Marketing

How Manufacturers Can Use Their Website to Generate Scalable and Predictable Lead Generation and Customer Acquisition

Josh Curcio – protocol 80, Inc.

How to Make Your Website Work as Hard as You Do

Chris Rooney – Digital Bridge Solutions

1:30 PM – 3:30 PM

F125: GROW YOUR BUSINESS: FOR KEEPS OR FOR SALE! **I**

Far too many owners and executives at privately held specialty manufacturing operations spend more time putting out daily fires than focusing on the big picture of the business. What is your plan for your business and how do you plan to get there? Learn the key metrics for that matter for growth and maximum sale price.

John Honney – Bootstrap Capital LLC and Vincent J. Pappalardo – Brown Gibbons Lang & Company

STAMPING

MONDAY, NOVEMBER 6

8:00 AM – 10:00 AM

S10 NEW! DEEP DRAW PROCESS TECHNOLOGY I

Learn how a custom servo-hydraulic press with multiple axes, coupled with a coil feed line, robotics and down-stream processing equipment increased Pentair's part quality, decreased per-part costs, maximized raw material scrap value and significantly increased overall process uptime. Attendees will see demonstration of critical concepts through review of a real-world examples.

Jon Schmidt - Neff Press Inc. and Scott Heitman - Pentair Inc.

10:30 AM – 12:30 PM

S20: NEW! DEEP DRAWING PRINCIPLES I

One of the most complex metalforming operations is the deep-drawing process. In deep drawing, the objective is to force the sheetmetal to "flow" into a die cavity to produce the required shape with minimal stretching and thinning of the material. This presentation examines the fundamental principles for designing successful deep-drawing operations.

Peter Ulintz - Precision Metalforming Association

S21: DIE SENSING FUNDAMENTALS I

Poor part quality and missed production quotas can be a daily source of frustration. Through real-world examples, this presentation illustrates how press shops are successfully implementing error-proofing sensors, preventing die crashes and implementing quick die changes regardless of their experience with automation.

Will Healy, III. and Dave Bird - Balluff Inc.

1:30 PM – 3:30 PM

S30: LUBRICATION SELECTION & APPLICATION I

This multi-speaker session examines how the use of data can drive stamping lubricant decisions and describes an accurate ranking method that correlates well with actual heavy stamping results. Also presented is how precision spray control (SPC) can be an effective way to ensure uniform application of oils and waxes for lubrication to help increase production, reduce scrap and decrease operating costs.

Separating Fact from Friction – Use Data to Drive Stamping Lubricant Decisions

W. Jeff Jeffery – IRMCO

Improve Lubrication Application with Precision Spray Control

Dominic DeMaria – Spraying Systems Co.

S31: IN-DIE ASSEMBLY, MONITORING & ADJUSTMENTS I

In-die fastener installations and the application of part measurement, die-adjustment and part-tracking technologies will be presented in this multi-speaker track. The first presenter explains the benefits of in-die fastener installations for increased productivity and the elimination of bottlenecks. Animations of the die tooling and case studies of typical and unique projects also are presented. The second speaker shares practical methods to select, apply and integrate sensors and control systems for implementing part measurement, die adjustment and part tracking for assuring improved part quality and reduced scrap rates.

Exploring the Advantages of In-Die Fastener Installations

Roger Patton – PennEngineering

Automatic In-Die Part-Quality Monitoring & Tool Adjustments

James Barrett – Link Systems Inc.

TUESDAY, NOVEMBER 7

8:00 AM – 10:00 AM

S40: NEW! PRESS LINE OPTIMIZATION I

This presentation will cover topics on feedline optimization, die protection and setup sheets. If you could get 1 SPM more out of your press would you? That's 60 more parts per hour, 480 parts per day, 24,000 parts per year (based on an 8 hour day). This two hour presentation will provide helpful hints and tips on how to get the most from your line by presenting the intricacies of indexing, die protection schemes and efficient setup.

Rob Meyer – Nidec Minster Corp.

S41: CUTTING & PUNCHING TECHNOLOGY I

Attendees will learn what clearances to use to improve the punch productivity in their metal-stamping applications and how to reduce punch wear. This session also includes information regarding abrasive and adhesive wear issues and the comparisons of characteristics of tool steels and why you might need to change a tool steel for a specific application.

Joel Cegielski – Dayton Lamina

STAMPING

TUESDAY, NOVEMBER 7

10:30 AM – 12:30 PM

S50: NEW! MACHINE MODERNIZATION & SAFEGUARDING I

This session provides information to determine if the refurbishment and modernization of existing transfer system capital is an ideal option. Learn how to review press requirements, safety standards, tooling design and feeding methods when the option to purchase a new transfer system is not in the budget. The second presentation covers primarily focuses on guards; devices; distance, location and opening requirements; main power disconnects; and motor starters and emergency stops with respect to ANSI B11.19 and NFPA 79.

Reutilization & Modernization of Existing Capital Equipment for Transfer Applications

Bill Rogner – Atlas Technologies

Machine Safeguarding Overview

Roger Harrison – Rockford Systems, LLC

S51: LUBRICATION TECHNOLOGY I

Attendees will learn about Lubrinomics, the science that studies the economic activity and strategies of lubrication, to gain an understanding of the processes that govern the production, distribution and consumption of metal-stamping lubricants. A second presentation examines the role metalworking fluids play in their respective processes and how their chemistries interact to contribute to the overall fluid performance. Gain insight into process improvements, problem solving, cost savings and potential implications of upcoming regulation.

Lubrinomics – The Science of Lubrication & Economics in Metal Stamping

Steve Lowery – Tower Metalworking Fluids

Metalworking Fluid Technology, Now and into the Future

Joseph Christy-Saviano, III and Adam Bringedahl – Biosolutions LLC

1:30 PM – 3:30 PM

S60: NEW! EQUIPMENT INSTALLATION I

Proper installation of new equipment not only will influence the operation of the equipment itself, but also influence the impact on surrounding equipment and environment. Many considerations need to take place prior to installing the equipment. Is the equipment support critical? Does the foundation design require professional engineering? What are the

machine requirements for stability, level, alignment and anchoring? What are the machine and environment considerations regarding vibrations? Answers to these questions and others will be presented.

Richard Haase – Unisorb Installation Technologies

S61: NEW! TRANSFER DIE TECHNOLOGY I

Learn about the application and advantages of compact in-die transfer technology to win more work. See examples of the different types of compact in-die transfer applications and take away several real-world case studies. Hear real-world case studies for integrating sensors in both the die and part gripping tools for improvements in connectivity. The benefits of a connected transfer press will be discussed in the context of Industrial Internet of Things (IIoT), robotic transfers and factory automation.

Compact In-Die Transfers – An Introduction to New Stamping Technology

Robert Gunst – Jacar Systems LLC

Sensors & Connectivity Improvements for Transfer Die Applications

Will Healy, III, and Dave Bird – Balluff Inc.

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

S70: NEW! METAL STAMPING FUNDAMENTALS B

This presentation will provide attendees with a fundamental understanding of metal-stamping processes, common industry terminology and general press shop operations. It is designed for those involved in purchasing, procurement, quality, sales, marketing, program management or other professional occupations not directly involved in the manufacturing process but who must specify, purchase, manage or control stamping processes, tools, and/or their related materials.

Peter Ulintz – Precision Metalforming Association

S71: DIE SENSING FUNDAMENTALS B

Attendees will learn how to get the most out of a die-protection system. This presentation details the proper use of control functions and features and identifies the most important factors to consider when selecting a system. Learn how to select and properly apply the right sensor for any application. The advantages and limitations of each sensor type, and tricks and tips for sensor selection, installation, wiring and maintenance will be discussed.

Jim Finnerty – Wintriss

10:30 AM – 12:30 PM**S80: NEW! MANUFACTURING ROI & TAX CREDITS** **I**

Learn the advantages of servo press technology and the factors directly impacting return on investment. Practical applications and part studies comparing the output of flywheel drive vs. servo drive presses and resulting payback analysis will be shared. Learn how to take advantage of the often-overlooked R&D tax credit available to contract manufacturers who qualify. This credit has many unique advantages specifically for job shop companies that build products for their customers. This session walks attendees through an identification process that may qualify your company for R&D tax credits that adds revenue to your bottom line.

Servo Press Technology – Return on Investment

Barry Lewalski – Schuler Inc.

As a Contract Manufacturer, Are You Leaving Money on the Table?

John Madsen – Black Line Group

S81: NEW! STAMPING, ASSEMBLY & ERROR-PROOFING **I**

This session will cover financial considerations and best practices for stamping and assembly processes. Presenter will use real-life examples, pictures, video, technical and costing information to address the engineering, processing and financial considerations necessary to determine the metal stamping and assembly processes best suited to each specific application. The very latest error-proofing and zero PPM methods for metal stamping and fabricating companies will also be discussed, including, how leading-edge metal stampers are using servomotors to automatically adjust tooling "on-the-fly" to compensate for changes in the material hardness, tensile, thickness, etc.

Solutions for High-Volume Metal Stamping and Assembly

Dave Thomas – Scott Technology, Ltd.

Error-Proof Metal Stamping: No Die Crashes & Zero PPMs

George Keremedjiev – Tecknow Education Services, Inc.

1:30 PM – 3:30 PM**S90: NEW! UNDERSTANDING METAL STAMPING PRESSES** **B**

Understand the proper function setup and use of a metal stamping press and learn how to quickly troubleshoot machine operational issues. You will learn how to level the slide face with the bed and acceptable tolerances, adjust the gib clearances and why that is important, and adjust counterbalance pressures to maximize

machine and tool throughput. With this training you will be able to directly apply the knowledge gained to improve performance in your own operations.

Jeff Fredline – Industrial Maintenance Company, LLC

S91: NEW! ADVANCE FORMING TECHNOLOGIES **B**

This multi-speaker session explores advances in several metalforming technologies. Presentations include, FLEXCELL, a solution for companies that require greater flexibility to stamp medium or small parts while maintaining maximum productivity; an innovative transfer technology, that utilizes linear motor technology; and an ROI-centric presentation on hot stamping, describing the right choice of equipment: automation, press, furnace, die technology – and considerations of the right labor concepts for training and launch support.

FLEXCELL: The Innovative Concept in Stamping Equipment – Flexibility, Productivity and Efficiency in One Single Installation

Victor Esteban – Fagor Arrasate USA, Inc.

A New and Flexible Way to Transfer Parts in a Transfer Press

Carl Best – Schuler Group

The Cool Way to Increase ROI with a Turnkey Hot Stamping Solution

Paul Thom – Schuler Inc.

THURSDAY, NOVEMBER 9**8:00 AM – 10:00 AM****S100: NEW! ADVANCEMENTS IN PRESS TECHNOLOGY** **B**

Learn how the cost of new stamping press equipment provides increased value to companies in terms of production output, cost of maintenance over older equipment and worker safety concerns. Recent speed advances in fineblanking technology and development promises to bring the benefits of fineblanking to a wider range of small components for which high production rates and low production cost may not have been favorable to this process in the past will also be discussed.

The Value of New Metalforming Equipment in the Press Room

Bryan Vezina – Schuler Group

Speed Advances Put Fineblanking in New Territory

Rudi Schubert – Feintool Corp.

STAMPING

THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM

S101: NEW! OPTIMIZING SENSOR LUBRICANT APPLICATIONS **B**

This session addresses considerations for sensor selection in die-sensing applications and robotic welding processes where aluminum sheetmetal is used in stamping or fabrication processes. Learn how to choose the correct sensor technology based on aluminum/aluminum alloy specific detection and electronic measurement qualities required to achieve maximum machine up-time performance. The second presentation highlights the importance of sheetmetal lubrication and a newly developed spray technology. Discover how this technology is applied on current production equipment and the cost savings stampers are experiencing through several case studies presented.

Considerations for Optimum Sensor Selection Used for in Die Sensing, Die Protection and in Robotic Weld Processes with Aluminum Fabrication

Dave Bird and Shawn Day – Balluff, Inc.

Sheetmetal Lubrication: Reducing Costs and Maintenance, While Improving Safety and the Environment

Ron Demonet – Atlas Technologies, Inc.

10:30 AM – 12:30 PM

S110: NEW! PRESS DRIVE TECHNOLOGY **A**

Learn the relevance of variable-speed drives in metalforming today, including: EC drive control and VFD control consideration, how EC drive offers flexibility throughout the press stroke and how position and speed controls increase productivity. Best practices in the selection of clutch and brake systems will also be covered. Learn how a manufacturing facility's environment, personnel, attitude, skills, preventive maintenance programs and machinery should contribute to the evaluation and strategic decisions of the best clutch and brake system for that facility.

Variable-Speed Drives Are Still Relevant Today

Anthony Anniballi – Dynamatic/Drive Source International

Clutch and Brake Evaluation & Selection for Your Metalforming Equipment

Thomas Coyle, Sr. – BCN Technical Services, Inc., Schuler Group N.A.

S111: NEW! SIMULATION & PROCESS DESIGN IMPROVEMENT **I**

Automotive light-weighting initiatives have led to the introduction of very high tensile-strength materials, such as Dual Phase 980. The use of these materials has increased reliance upon computer metalforming simulations for process feasibility analysis and process development. This session will address metal stamping process simulation from single parts to full process chain simulation, including springback analysis and compensation. Attendees will also learn key differences between A2, D2 and Matrix Steels and be offered some solutions to complex tooling problems.

Springback Analysis and Compensation with Dual Phase Steel

Dan Marinac – Forming Technologies Inc. (FTI)

Process Design in Sheetmetal Forming, from Single Part to Full Process Chain Simulation

Harald Porzner – ESI North America and Manfredi Biasutti – ESI GmbH

Tool Steel for Improved Die Performance for AHSS

Tom Bell – HITACHI

STRUCTURAL STEEL/PLATE

MONDAY, NOVEMBER 6

10:30 AM – 12:30 PM

F100: NEW! AISC MARKET OUTLOOK AND CERTIFICATION **B**

Gain a clear insight into the future of the construction market and the challenges that will face the structural steel fabricator.

John Cross and Mark Trimble – AISC

1:30 PM – 3:30 PM

F200: NEW! STRUCTURAL STEEL CASE STUDY **B**

Through the use of a case study, this session will review the structural steel fabrication technology that aided in the innovations which allowed for a 54 story office building unlike anything seen before in Chicago to be built.

Chris Simonson – Zalk Joseph Fabricators and Joe Jurasits – Chicago Steel Construction

TUESDAY, NOVEMBER 7

8:00 AM – 10:00 AM

F300: NEW! STRUCTURAL FABRICATION EQUIPMENT TECHNOLOGY **I**

All facets of structural steel fabrication will be discussed in this session with a special focus on how machine tool technology is used to enable complex steel structures to be built.

Elliott Bass – Peddinghaus Corp. and Rick Boksa – Burlington Automation

1:30 PM – 3:30 PM

F400: STRUCTURAL STEEL SOFTWARE SOLUTIONS **I**

Evaluate management systems for structural fabrication shops, including integration with design and engineering systems and other software that aids the fabricator. Through case studies, learn what is the best approach and fit for your fabrication shop.

Ian Coats – AUTODESK and Todd White – Fabsuite

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

F500: NEW! STEEL BEAM ASSEMBLY TECHNOLOGY **B**

This session will use a case study to highlight how robotic welding is advancing the structural steel beam fabrication industry in light of the skilled worker shortage.

Andreas Hofer – Peddinghaus Corp. and Louis Dicaire – Avant-Garde Technologies

THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM

F600: NEW! PLATE ROLLING OF STRUCTURAL STEEL **I**

Learn techniques to increase your knowledge of plate rolling including methods such as using the plate roller type to your advantage, learning from the masters, and determining capabilities considering material type, among others. Also explore various plate rolling and bending technologies available to the structural fabricator.

How a Plate Rolling Rookie Becomes a Guru

Ken Pecho – Chicago Metal Rolled Products

Plate Rolling Technology for Structural Fabricators

Steve Bonney – Davi, Inc.

WORKFORCE DEVELOPMENT

MONDAY, NOVEMBER 6

8:00 AM – 10:00 AM

F13: NEW! MANAGING COMPLEX CHANGE: THE CHALLENGE OF IMPLEMENTING A SIGNIFICANT IMPROVEMENT INITIATIVE **B**

The idea of change can cause some hearts to race, but like it or not, things do change. Often things need to change for the survival of the organization. The real issue isn't the act of changing; it is creating an atmosphere and system so the change is successful, meaning it was efficiently executed and effectively functioning in a timely manner. This session will cover what is required to facilitate positive change.

Gary Higbee – SafeStart

10:30 AM – 12:30 PM

F23: NEW! MISSION CRITICAL: TACKLING THE MANUFACTURING SKILLS GAP **I**

Tackling the manufacturing skills gap and creating in-house skills training are on the forefront of manufactures today. Hear some practical knowledge and solutions to creating and keeping a high performance team and closing the skills gap.

Mission Critical: Tackling the Manufacturing Skills Gap with a High Performing Workforce

Jeannine Kunz – Tooling U-SME

Manufacturing Executives – You Are the Secret to Solving the Manufacturing Workforce Problem

Steve Staub – Staub Manufacturing Solutions

Creating an In-house Skills Training Academy for Manufacturing

George Keremedjiev – Tecknow Education Services, Inc.

1:30 PM – 3:30 PM

F33: NEW! MANAGING CONFLICT AND DELEGATION STRATEGIES FOR EFFECTIVE LEADERSHIP **B**

Understand the importance of delegation in time management, resource utilization, job satisfaction, employee development, and overall team productivity. Leaders can gain additional strategies to manage conflict, mitigate the noise in your organization and delegate to become a more effective manager in this expert-led session.

Minimize the Drama: How Effective Leaders Manage Conflict

Liz Weber – Weber Business Services, LLC

WORKFORCE DEVELOPMENT

MONDAY, NOVEMBER 6

1:30 PM – 3:30 PM

F33: NEW! MANAGING CONFLICT AND DELEGATION STRATEGIES FOR EFFECTIVE LEADERSHIP (CONT'D) **B**

Mitigate the Noise in Your Organization

Marion Wells – Human Asset Management

Delegation Strategies to Be a More Effective Manager

Mark Ernst – Ernst Enterprises

TUESDAY, NOVEMBER 7

8:00 AM – 10:00 AM

F43: NEW! LEADERSHIP ACTIONS TO TRANSFORM YOUR CULTURE AND CREATE EMPLOYEE ENGAGEMENT **B**

This session will provide strategies to create the right conditions for all members of your organization to give their best each day, committed to the organization's goals and values, and form a culture to engage and retain your talent pool.

Transforming Your Culture: Leadership Actions to Accelerate and Sustain Results

Pete Winiarski – Win Enterprises, LLC

How to Create Employee Engagement

Charles DeBettignies – Gainsharing Inc.

Manufacturing Engagement: How to Retain Top Talent

Lisa Ryan – Grategy.com

10:30 AM – 12:30 PM

F53: NEW! STRATEGIES FOR LEARNING AND LEVERAGING YOUR LEADERSHIP **I**

Effective leadership is about the ability to communicate a vision and have an organization understand and execute it. Develop strategies to leverage your management to become effective leaders and win the trust of your team.

Becoming a Learning Leader and Avoiding the Fatal Flaws of Failure

Joseph Mazzeo – Integrated Lean and Quality Solutions, LLC

Something's Going to Change Around Here – The Five Stages to Leveraging Your Leadership

Liz Weber – Weber Business Services, LLC

Trust to Win, a Case Study of Success

Mark Ernst – Ernst Enterprises

1:30 PM – 3:30 PM

F63: ACCELERATING WORKFORCE PERFORMANCE THROUGH BEST PRACTICES IN LEARNING & DEVELOPMENT **I**

This session will provide critical information on how well-designed learning programs can accelerate a worker's performance level and increase manufacturing profitability. The presentation will discuss best-in-class tools that create High Impact Learning, which will meet requirements for the new manufacturing workforce. The conversation will include a discussion on performance support surrounding traditional and "bleeding edge" technology for the manufacturing floor and design centers. Finally, the session will discuss the Return on Investment of Learning.

John Hindman – Tooling U-SME

WEDNESDAY, NOVEMBER 8

8:00 AM – 10:00 AM

F73: NEW! ATTRACT, DEVELOP AND BUILD A HIGH PERFORMANCE MILLENNIAL TEAM **B**

With Millennials entering the workforce, it is imperative to learn what makes this new generation of employees motivated. This session will give you strategies to attract and develop the next generation of leaders and build a high performance team.

Attracting and Working with the Millennial Generation

Andrea Olson – Prag'madix

Developing the Next Generation Leader

Mark Ernst – Ernst Enterprises

Building a High Performance Team

David Gregor – Innovative Steel Detailing, Inc.

10:30 AM – 12:30 PM

F83: NEW! SIX KEYS TO TEAM LEADERSHIP AND EFFECTIVE WORKPLACE TEAMS **B**

Team leadership and structure are not easy. Populating teams with the right people and skill sets is important; effectively leading them to achieve is vital. We will look at several ways team leaders can manage cross-functional, intra-departmental and even multi-cultural team situations to realize meaningful business results. The six keys include; Vision, Context, People, Design, Execution and Celebration.

Cullen Hackler – PEI

1:30 PM – 3:30 PM

F93: NEW! COMMUNICATE, BUILD ACCOUNTABILITY AND CONDUCT MEANINGFUL EVALUATIONS IN YOUR ORGANIZATION I

Communication and accountability are keys to a successful organization. This session will provide tools to communicate for impact, build accountability into your organization and conduct legal and meaningful employee evaluations.

Everyone Communicates, Few Connect – Communicating for Impact and Results

Kemi Sorinmade – The Growth Studio

Conducting Legal, Meaningful Employee Evaluations

Richard Alaniz – Alaniz Schraeder Linker Farris Mayes, L.L.P.

How to Build Accountability into Your Organization

Mark Ernst – Ernst Enterprises

THURSDAY, NOVEMBER 9

8:00 AM – 10:00 AM

F103: NEW! 6 STEPS TO HIRING AND THE NEW GIG ECONOMY B

This session provides actionable steps to take back and improve your hiring process. Find out best practices in 6-Steps: preparing to recruit; recruiting/sourcing; screening for top talent; interviewing; assessing, and employment offer and on-boarding. In addition, hear about one of the hottest topics in talent management: "Gig Economy", in which individual workers market their services and talents to buyers, typically for short duration, well-defined deliverables.

Manufacturing and the Gig Economy

Joseph Lampinen – KellyOCG

Every Job Deserves the Right Person: 6 Steps to Hire Better

Chuck Smith – NewHire

Automate Your Shop
with **TigerStop**

TigerStop
fast and accurate...every time

C40544



SEMINARS

MONDAY, NOVEMBER 6

8:30 AM - 4:30 PM

W10: D1.1 – CODE CLINIC

This one day seminar will provide a "road map" through the Code, emphasizing the ability to locate important paragraphs, charts and tables quickly, which is crucial to understanding the code when working under stressful deadlines. In addition to practice questions, a practice exam will be administered, and the instructor will illustrate the use of the Code under time constraints, creating deadline pressure similar to the test environment. If you're taking the CWI exam, this clinic has proven to be valuable test preparation. As a leading construction code, D1.1 is the ideal tool to teach effective code use. NOTE: Clinic fee does not include a copy of the D1.1/ D1.1M:2015 STRUCTURAL WELDING CODE-STEEL. D1.1 Code Book may be purchased from the AWS Technical Standards Sales Team at (800) 443-9353 ext. 280. Attendees will receive our study guide, AWS D1.1 Code Clinic Reference Manual.

8:30 AM - 4:30 PM

W11: WHAT'S NEW IN THE 21ST EDITION OF API 1104

The 21st Edition of the API 1104 Standard features new technical information and requirements as well as new definitions, all presented in a single-column format. Rules for qualifying welding procedures will be reviewed, including emphasis on changes in essential variables and new tension testing options. Rules for qualifying welding personnel will also be reviewed, including the new rule that qualifies

fixed-position welders for roll welding. New visual acuity requirements for NDE personnel will be explained as well. The biggest change in the 21st Edition is the detailed requirements for repair and removal of defects in Section 10. Repair procedures are now divided into four categories: full thickness repairs, internal partial thickness repairs, external partial thickness repairs and cover pass repairs. API 1104 now specifies the type and number of test specimens required for each type of repair welding procedure — and it gives detailed requirements for the contents of the welding procedure specification for each. The tests required include hardness tests of heat-affected zones, which are typically the most critical area of any repair. Requirements for the qualification of welders who perform repair welds are now specified. These will all be reviewed in detail.

TUESDAY, NOVEMBER 7

8:30 AM - 4:30 PM

W12: CRASH COURSE OF WELDING INSPECTION TECHNOLOGY SEMINAR (WIT)

This one day seminar is designed to combine the normal two-day Welding Inspection Technology (WIT) portion of the CWI seminar into a one day crash course. The intent is to breakdown and cover the common knowledge aspects as opposed to covering all ten Chapters of the Welding Inspection Technology (WIT) textbook/workbook. NOTE: Attendees will receive the Welding Inspection Textbook and Welding Inspection Workbook.

SEMINARS

**THE WHY AND HOW OF WELDING
PROCEDURE SPECIFICATIONS****W13: BEGINNER — 8:00 AM - 12:00 PM****W14: ADVANCED — 1:00 PM - 5:00 PM****W15: BEGINNER AND ADVANCED —
8:00 AM - 5:00 PM****Welding Procedure Specifications —
Ensuring Consistent, Predictable Welding
Processes Performance**

As a welding professional who is constantly responding to customer demands for increasing the performance and quality of weldments while controlling costs, optimizing your WELDING PROCEDURE SPECIFICATIONS (WPSs) for performance and profitability may be the key. A well written WPS Defines, Measures, Analyzes, Improves, & Controls quality in the welding process. This two-part workshop revisits the fundamentals of WPSs for both the seasoned professional and for those individuals seeking to become more proficient in the authoring and application of a WPS in fabrication as well as hands on approach to advanced instruction in the formulation and writing of WPSs in the afternoon.

**TUESDAY, NOVEMBER 7 —
WEDNESDAY, NOVEMBER 8****8:30 AM - 4:30 PM****W16: APPLICATIONS OF STAINLESS
STEEL WELDING**

This seminar comprises two separate days (or parts): AWS D1.6:2017 and Basic Stainless Steel Welding followed by Reducing Stainless Steel Welding Defects. The program focuses on the basic weldability of the five types of stainless steels, with emphasis on the 300 series austenitic stainless steels. This session is invaluable to welders, engineers, and inspectors working with all stainless steels, not just those used for structural welding. Books to be provided are AWS D1.6:2017 and Professional's Advisor on Welding of Stainless Steels.

8:30 AM - 4:30 PM**W17: ASME SECTION IX, B31.1 & B31.3
CODE CLINIC**

This 16-hour seminar will help you prepare for the ASME Section IX, B31.1, and B31.3 examination for endorsement or Part C of the CWI. Note that endorsements are supplemental inspection credentials available to AWS

Certified Welding Inspectors (CWIs) and Senior Certified Welding Inspectors (SCWIs), but non-CWI/SCWIs can also participate in the seminar and examination to enhance their educational background. Participants are expected to provide their own codebooks. Please note that there is a separate application and fee required to take the Certification Exam.

WEDNESDAY, NOVEMBER 8**8:00 AM - 12:00 PM****W18: ETHICS SEMINAR FOR CERTIFIED
WELDING INSPECTORS — PART A**

Working in the field as a Certified Welding Inspector is a very rewarding undertaking. However, it is wrought with perils relating not only to personal safety but also professionally, involving ethical decisions which could potentially injure or even destroy your professional reputation. The AWS QC-1 code of ethics will be reviewed. Then this conference will use a panel to discuss scenarios and answer questions regarding ethical situations relating to the Certified Welding Inspector.

1:00 PM - 5:00 PM**W19: WHAT TO EXPECT AS A NEW
CERTIFIED WELDING INSPECTOR —
PART B**

This course/discussion will supply Insights, directions and recommendations for the fledgling Certified Welding Inspector. If you have just accomplished your AWS QC-1 Certified Welding Inspector goal this conference is for you. After long hours of studying, a week-long refresher course and a rigorous 6-hour exam. You were then awaiting your outcome for eight long stress filled days you finally receive word: YOU PASSED! You spend a week or so basking in the warm comfort of success as the thought slowly creeps in on you. "Now that I have the CWI what should I do with it and how do I do it? This Seminar will supply strategies, information and recommendations on how to proceed with your new credential.

SEMINARS

WEDNESDAY, NOVEMBER 8**8:30 AM - 4:30 PM****W21: THE VISUAL INSPECTION WORKSHOP**

An 8-hour course for CWI exam candidates to review the basic concepts and applications of visual inspection. After a discussion of the limitations and advantages of visual inspection, types of weld data that may be obtained by visual inspection are presented and discussed. Includes the many types of discontinuities encountered during the visual inspection of welds. Common tools used for visual inspection are presented and discussed (a machinist's scale, dial calipers, micrometers, fillet weld gauges, the Palmgren gauge, and the V-WAC). Participants will use these gages to make measurements on weld replicas. This will prepare candidates for Part "B" of the exam. A sample weld specification containing acceptance criteria is presented and discussed, after which students use the specification and visual inspection tools to evaluate the weld replicas using a series of specific questions and scenarios.

8:30AM - 4:30PM**W22: FUNDAMENTALS OF LIQUID PENETRANT TESTING FOR CWI'S AND QUALITY ASSURANCE PERSONNEL**

The purpose of this workshop is to provide the fundamental knowledge of penetrant testing

required by Certified Welding Inspectors and quality assurance and test personnel to enable them to: ascertain that the proper test technique, or combination of techniques, is being used to assure the quality of the finished product; interpret, evaluate, and make a sound decision as to the results of any liquid penetrant test; and recognize those areas of doubtful test results that require either retest or assistance in interpretation and evaluation.

THURSDAY, NOVEMBER 9**8:00 AM - 4:00 PM****W23: FUNDAMENTALS OF RADIOGRAPHIC INSPECTION FOR CWI'S AND QUALITY ASSURANCE PERSONNEL**

The purpose of this workshop is to provide the fundamental knowledge of radiography required by Certified Welding Inspectors and quality assurance and test personnel to enable them to: ascertain that the proper test technique, or combination of techniques, is being used to assure the quality of the finished product; interpret, evaluate, and make a sound decision as to the results of any radiographic test; and recognize those areas of doubtful test results that require either retest or assistance in interpretation and evaluation.

CONFERENCES

MONDAY, NOVEMBER 6**1:00 PM - 5:00 PM****W25: THERMAL SPRAY COATINGS - FREE**

This group will discuss most aspects of thermal spray coatings including thermal spray processes, equipment, pre and post treatment, applications, and industry usage.

TUESDAY, NOVEMBER 7**8:00 AM - 3:00 PM****W24: TUBULAR STRUCTURES CONFERENCE****Experts Come Together for Conference on Pipe and Tubing**

Three key experts will lead this conference. Bill Newell, the chairman of the 90 plus-person D10 Committee on Piping and Tubing, will

deliver the keynote address. Newell will be joined by Allen Sindel, the chairman of the ever popular D1 Structural Welding Committee, another 96-plus person committee. He will discuss the tubular construction of buildings, a forthcoming market for welded tubing. A third expert, Jeff Henry, will share some interesting developments which could solve some of the problems troubling many fabricators. Other topics will include induction bending of pipe, the use of Tip TIG and Spinarc welding, laser welding, and some new developments in orbital systems.

RWMA RESISTANCE WELDING SCHOOL

TUESDAY, NOVEMBER 7 –

8:00 AM – 5:00 PM

WEDNESDAY, NOVEMBER 8 –

8:00 AM – 4:15 PM

W26: RWMA RESISTANCE WELDING SCHOOL

RWMA offers this intensive two-day course about the basics of resistance welding once a year. The school is designed to give operators, production supervisors, engineers, and others the opportunity to study, better understand, and further their knowledge in the theory, applications, and equipment used in the resistance welding process. This intense learning atmosphere will better prepare the unfamiliar and further educate the experienced. The first day of this school introduces the processes and machines, materials, electrodes and power systems associated with resistance welding. The second day of this school discussion welding controls, quality standards, machine set-up, and maintenance topics.

WORKSHOP

TUESDAY, NOVEMBER 7

8:00 AM – 12:00 PM

AWF100: LASER WELDING FOR TODAY'S FABRICATOR WORKSHOP

This workshop is full of experts covering the latest advancements on laser welding. Topics include: design consideration, industrial laser welding, laser sources for fiber, disk and diode, system overview, hybrid laser welding and additive technologies. Attendees will have additional time to discuss any application with the experts.

Essential Considerations for Laser Welding: From Component Design to Implementation

David Havrilla – TRUMPF Inc.

Introduction to Industrial Laser Welding

Tom Kugler – Laser Mechanisms, Inc.

Laser Sources for Industrial Laser Welding: Fiber, Disk and Diode

Jean-Philippe Lavoie – Coherent

System Overview for Laser Welding

Mark Rodighiero – Amada Miyachi America

Material Selection for Laser Welding

Geoff Shannon – Amada Miyachi America

Hybrid Laser Welding

Paul Denney – Lincoln Electric

Laser Welding and Additive Technologies

Wayne Penn – Alabama Laser



PROFESSIONAL PROGRAM

Pick and choose between concurrent sessions for the latest in welding research and commercial developments. Pay by the day or attend the entire four-day program, with special discounts for students and members of AWS, FMA, SME, PMA, or CCAI.

1-Day Professional Program: Monday: W27, Tuesday: W28, Wednesday: W29, Thursday: W30

4-Day Professional Program: W31

4-Day Student Professional Program: W32

MONDAY, NOVEMBER 6

SESSION 1: ADDITIVE MANUFACTURING

Chairs: Chairs: P. Hohanadel (Los Alamos National Laboratory), T. Palmer (Penn State University)

1A. 2:00 PM Cracking Behavior of High Gamma Prime Ni-Base Superalloys Fabricated through Additive Manufacturing

M. Kirka, D. Greeley, R. Dehoff, Y. Lee and A. Okello, Oak Ridge National Laboratory

1B. 2:20 PM TEM/STEM Characterization of 316L Stainless Steel Laser Additive Manufacturing Components

Thomas J. Lienert and Terry G. Holesinger, Los Alamos National Laboratory

1C. 2:40 PM Welding Differences between Wrought and Additive Manufactured 304L

C. Hawk and S. Liu, Colorado School of Mines; D. Javernick, Los Alamos National Laboratory

1D. 3:00 PM Role of Scan Strategy on Thermal Gradient and Solidification Rate in Electron Beam Melting

Yousub Lee, M. M. Kirka, R.B. Dinwiddie, N. Raghavan; R.R. Dehoff, Oak Ridge National Laboratory

1E. 3:20 PM In-situ and Ex-situ Characterization of Metal Additive Manufacturing

Sarah Foster, J. Raplee and S.S. Babu, The University of Tennessee-Knoxville; R. Dinwiddie and R.R. Dehoff, Oak Ridge National Laboratory

1F. 3:40 PM The Role of Robotics in Large Scale Metal Arc Additive Manufacturing

Andrzej Nycz, Mark Noakes, and Bradley Richardson, Oak Ridge National Laboratory; S.S. Babu, The University of Tennessee-Knoxville

1G. 4:00 PM Topology Optimization for Additive Manufacturing for Ti64 in EBM

S. Yoder, The University of Tennessee-Knoxville

1H. 4:20 PM Compositionally Graded Transition Joints Between 2.25Cr-1Mo Steel and Alloy 800H Using Additive Manufacturing

J. Zuback, T. Palmer and T. DeRoy, Pennsylvania State University

1I. 4:40 PM Fabrication of Steel Welds in the Solid State Using Ultrasonic Additive Manufacturing

N. Sridharan, Oak Ridge National Laboratory; Tyler, M. Dapino, The Ohio State University; S. Babu, The University of Tennessee-Knoxville

SESSION 2: MODELING I

Chairs: Y. Yang (EWI), E. Pfeif (National Institute of Standards and Technology)

2A. 2:00 PM Addressing Weldability Challenges in the Nuclear Power Industry with Computational Materials Engineering Tools

A. Hope, Thermo-Calc Software; B. Sutton, Electric Power Research Institute

2B. 2:20 PM Numerical Modeling and Microstructure Control in Additive Manufacturing

N. Raghavan, A. Plotkowski and S. Babu, University of Tennessee-Knoxville; J. Turner and Y. Lee, Oak Ridge National Laboratory

2C. 2:40 PM Stamp-Weld Coupled Analysis for Automotive Components: Using Welding Process as a Strategy to Reduce Deformation of Welded Sheet Metal Assemblies

Y. Goo-roochurn, T. Mao, N. Rajagopal, V. Tunga and M. Doroudian, ESI Group

2D. 3:00 PM NIST Alloys Data Web Application

E. Pfeif, B. Wilthan, S. Townsend, V. Diky and K. Kroenlein, National Institute of Standards and Technology

2E. 3:20 PM Development of a Process Model for Mash Seam Welding

A. Kuprienko, H. Song, and W. Zhang, The Ohio State University; B. Krakauer and J. Scott, AO Smith

2F. 3:40 PM Numerical Simulation of Nugget Growth and Hardness in Resistance Spot Welding of Hot Stamped Boron Steel in 2T and 3T Stack-up

Y. Lu, A. Peer, M. Kimchi and W. Zhang, The Ohio State University; T. Abke, Honda R&D Americas, Inc.

2G. 4:00 PM Development of Advanced Processes and Models for Weld Repair of Highly Irradiated Light Water Reactor Components

J. Tatman and G. Fredrick, Electric Power Research Institute; J. Chen and Z. Feng, Oak Ridge National Institute Laboratory; Z. Chen, University of Tennessee -Knoxville

2H. 4:20 PM Engineering Expressions Based on Fundamental Physics for Characteristic Values of a Moving Point Heat Source

Y. Wang, P. Mendez and Y. Lu, University of Alberta

2I. 4:40 PM Numerical Analysis of Plasma Arc Properties under Additional Constraint of Keyhole

B. Xu, F. Jiang and S. Chen, Beijing University of Technology

PROFESSIONAL PROGRAM

SESSION 3: FRICTION STIR AND SOLID STATE WELDING

Chairs: Z. Yu (Colorado School of Mines),
W. Tang (Oak Ridge National Laboratory)

3A. 2:00 PM Dynamic Recrystallization During Friction Stir Welding of AZ31B Mg Alloy

H. Choo, Y. Li and P. Hou, University of Tennessee-Knoxville;
Z. Wu and Z. Feng, Oak Ridge National Laboratory

3B. 2:20 PM Modeling the Heat Transfer and Material Flow in Ultrasonic Vibration Enhanced Friction Stir Welding

C. Wu, L. Shi and C. Zhang, Institute of Materials Joining,
Shandong University

3C. 2:40 PM Toward a Comprehensive Understanding of Bond Formation During Inertia Friction Welding through Interrupted Welding Trials

D. Tung and W. Zhang, The Ohio State University;
D. Mahaffey, O. Senkov, and S. Semiatin, Air Force
Research Laboratory

3D. 3:00 PM Variability of Resistance Spot Weld Cross Tension Testing

S. Tate, AK Steel

3E. 3:20 PM Avoiding Intermetallics: Welding Al-Steel Joints with FSW and VFAW

G. Lee, A. Nassire, G. Daehn, A. Vivek and A. Ramirez,
The Ohio State University; E. Torres, Instituto Tecnológico
Metropolitano

3F. 3:40 PM Investigation of Interfacial Bonding in Micro- Friction Stir Blind Riveting

H. Khan, K. Wang and J. Li, Pennsylvania State University

3G. 4:00 PM Intermetallics in Steel-to-Aluminum Friction Stir Welds

K. Oyedemi, Y. Adonyi and P. Wang, LeTourneau University

3H. 4:20 PM Recent Progress on Numerical Simulation of the Material Flow During Friction Stir Welding for Predicting the Tunnel-Defects

Q. Shi, G. Chen, S. Zhang and Y. Zhu, Tsinghua University

3I. 4:40 PM Enhanced Mechanical Properties of Cr3 Steel Used for Support Roller by Friction Stir Processing

R. Fu and Y. Li, Yanshan University

TUESDAY, NOVEMBER 7**SESSION 4: ARC WELDING**

Chairs: J. Xiao (Beijing University of Technology),
J. Farren (Naval Surface Warfare Center
Carderock Division)

4A. 8:00 AM Piezo-Driven Metal Transfer: An Innovative GMAW Process

J. Xiao, Y. Zeng and S. Chen, Beijing University of
Technology

4B. 8:20 AM Comparative Study of Metal Transfer in Aluminum GMAW Consumables

C. McIntosh, Lincoln Electric Company

4C. 8:40 AM Arc Behavior and Metal Transfer in Multi-electrodes Welding Process

S. Chen, Beijing University of Technology

4D. 9:00 AM The Dynamic Droplet Transfer Behavior of CWW CO₂ Welding

Z. Yang, C. Fang, Y. Chen, Z. Zhang and Y. Gao, Jiangsu
University of Science and Technology

4E. 9:20 AM Hot Wire GTA Process and Composition Effects on Low Oxygen Microstructure

D. White and S. Liu, Colorado School of Mines

4F. 9:40 AM Deep Penetration TIG Welding of 2101 Duplex Stainless Steel

S. Cui and Y. Shi, South China University of Technology

4G. 10:00 AM Effects of Activating Flux on Surface Tension of Molten Pool in Gas Tungsten Arc Welding

Y. Shi, C. Li and Y. Gu, Lanzhou University

4H. 10:20 AM The Effect of Surface Tension on Molten Depression with High Frequency Pulsed Arc Welding

M. Yang, L. Li, B. Qi and H. Zheng, Beijing University of
Aeronautics and Astronautics

4I. 10:40 AM Thermal-Mechanical Output Properties in Different Polarity of Variable Polarity Plasma Arc Welding

F. Jiang, B. Xu and S. Chen, Beijing University of Technology

4J. 11:00 AM Challenges Associated with Hot Extraction of Diffusible Hydrogen

J. Farren, M. Sinfield and D. Bechetti, Naval Surface
Warfare Center Carderock Division

4K. 11:20 AM Estimations of Anode and Cathode Voltage Falls in SAW

D. Havrylov and P. Mendez, University of Alberta

4L. 11:40 AM Welding Galvanized Steels with a Novel AC Welding Process

Y. Liao, B. Narayanan, V. Rajan and J. Henry,
Lincoln Electric Company

PROFESSIONAL PROGRAM

TUESDAY, NOVEMBER 7

SESSION 5: WELDING METALLURGY & WELDABILITY

Chairs: B. Alexandrov (The Ohio State University),
M. Sinfield (Naval Surface Warfare Center
Carderock Division)

5A. 8:00 AM Assessing the Impact of Boron Micro-Alloying Additions on the Weldability of 304L Austenitic Stainless Steel

J. Rodelas, M. Maguire, J. Michael, P. Duran and R. Grant,
Sandia National Laboratories

5B. 8:20 AM Solidification Behavior of High Entropy Alloys

C. Fink and J. Oliveira, The Ohio State University; A. Hope,
Thermo-Calc Software

5C. 8:40 AM Application of Scandium Additions to Al-Mg Filler Alloys for Welding High Strength 5XXX and 7XXX Aluminum Alloys

F. Armao, Lincoln Electric Company

5D. 9:00 AM Retention of Delta Ferrite in 410SS Welds

D. Stone and B. Alexandrov, The Ohio State University

5E. 9:20 AM Microstructure and Mechanical Properties of Fe-10Ni Steel Additively Manufactured using Laser Powder Bed Fusion (L-PBF)

D. Bechetti and M., Naval Surface Warfare Center
Carderock Division

5F. 9:40 AM Grain Orientation Effects Regarding Backfilling Effectiveness in Ni-30Cr Weld Metals Backfilling Effectiveness Based on Grain Orientation and Eutectic Liquid Properties in Ni-30Cr Weld Metal

R. Wheeling and J. Lippold, The Ohio State University

5G. 10:00 AM Intercritical Heat-Affected Zone and Type IV Cracking in Grade 91 Steel

Y. Wang and L. Li, University of Alberta

5H. 10:20 AM Quantification of the Susceptibility to Ductility Dip Cracking in Weld Overlays of Ni-based Alloys

S. Luther and B. Alexandrov, The Ohio State University

5I. 10:40 AM Effect of Niobium on Weld Metal Microstructure and Properties of Submerged Arc Welds in X70 Steel

T. Patterson and J. Lippold, The Ohio State University

5J. 11:00 AM Fe-Ni Steel Welding Consumable Development for High-Strength, Low Service Temperature Applications

M. Sinfield, J. Farren and D. Bechetti, Naval Surface

Warfare Center Carderock Division; P. Ray, Carpenter
Technology Corporation

5K. 11:20 AM The Effect of Inclusions and Residual Composition on Creep Cavity Nucleation and Their Relationship with Increased Failure Susceptibility in Grade 91 Steels

G. Abreu Faria, B. Alexandrov and A. Ramirez, The Ohio
State University; J. Siefert and J. Parker, Electric Power
Research Institute

5L. 11:40 AM Research on the Effect of the Intermetallic Compounds on the Weld-Edge Cracking Mechanism of Magnesium Alloys

T. Yuan, X. Wang, S. Chen and Y. Zhao, Beijing University of
Technology

SESSION 6: HONORARY SYMPOSIA FOR DR. S. DAVID AND PROF. T. DEBROY - JOINT SESSION A

Chairs: M. Tumuluru (United Steel Corporation),
T. Palmer (Penn State University)

6A. 8:00 AM Intro - David's Contribution to Welding Research & Science

M. Tumuluru, United Steel Corporation

6B. 8:10 AM Intro - DeBroy's Contribution to Welding Research & Science

T. Palmer, Pennsylvania State University

6C. 8:20 AM Advances in Welding Science and Technology - A Personal Journey of Three Decades

T. Zacharia, Oak Ridge National Laboratory

6D. 9:00 AM A Retrospective on Welding Metallurgy

J. Lippold, The Ohio State University

6E. 9:40 AM Role of Weld Solidification Science in Metal Additive Manufacturing - Review

S. Babu, University of Tennessee-Knoxville

6F. 10:20 AM Microstructure Development in Steel Welds

T. Koseki, The University of Tokyo

6G. 11:00 AM Integrated Computational Welding Engineering - A Modeling Framework to Advance Materials Joining Science and Technology

Z. Feng, Oak Ridge National Laboratory

6F. 11:40 AM Dissimilar Metal Welds for Oil and Gas, and Power Generation Applications

B. Alexandrov, The Ohio State University

PROFESSIONAL PROGRAM

SESSION 7: INDUSTRIAL TECHNOLOGIES

Chairs: M. Sinfield (Naval Surface Warfare Center Carderock Division), N. Porter (EWI)

7A. 2:00 PM Taking Advantage of Clauses in the D17.2 MIL-SPEC for Resistance Welding to Eliminate Destructive Testing, Improve Weld Quality, and Reduce Machine Maintenance Requirements

R. Cohen, WeldComputer Corporation

7B. 2:20 PM Design Consideration for Resistance Welding

R. Michelena, T.J. Snow Co., Inc.

7C. 2:40 PM How to Maximize Resistance Seam Welding Production Speeds and Improve Weld Quality

R. Cohen, WeldComputer Corporation

7D. 3:00 PM High-Speed, High-Quality Welding of Copper-Nickel Pipe Joints

N. Kapustka, EWI

7E. 3:20 PM Study on Influence of Boron for Hot Crack Sensitivity of Carbon Steel Welds

S. Park, Y. Cho, C. Jee and S. Shin, Hyundai Heavy Industries Co., LTD

7F. 3:40 PM Development of Microhardness Acceptance Criteria for Temper Bead Weld Qualification

B. Smith, The Ohio State University; B. Sutton and S. McCracken, Co-PI

7G. 4:00 PM Fume and Dust Extraction Fundamentals for Metal Fabrication Operations

By R. Williamson, N. LLC and D. Rousseau, Nederman ABB

7H. 4:20 PM How to Increase Flash Welding Performance While Reducing Energy Utilization

R. Cohen, WeldComputer Corporation

7I. 4:40 PM Improvement of Toughness Of Weld Metal After PWHT For HT610 Class Steels With Rutile Type Flux-Cored Wire

Y. Kitagawa, Kobe Steel, LTD

SESSION 8: HONORARY SYMPOSIUM FOR DR. STAN DAVID - SESSION B

Chairs: Z. Feng (Oak Ridge National Laboratory)

8A. 2:00 PM Controlled Directional Solidification of Hypo-Peritectic and Hyper-Peritectic Alloys

H. Brody and P. Shahbeigi-Roodposhti, University of Connecticut

8B. 2:40 PM A Study of Liquid Metal Embrittlement Cracking in Advanced High Strength Steel Welds

M. Tumuluru, United States Steel Corporation

8C. 3:20 PM Stan David: Role Model and Mentor

P. Mendez, University of Alberta

8D. 4:00 PM Magnetically Assisted Resistance Spot Welding (MA-RSW) of Lightweight Materials

Y. Li and S. David, Shanghai Jiao Tong University

8E. 4:40 PM How Weld Travel Speed Affects Solidification Cracking and Weldability

C. Cross, Los Alamos National Laboratory

SESSION 9: HONORARY SYMPOSIUM FOR PROF. T. DEBROY - SESSION B

Chairs: Z. Yang (Caterpillar), W. Zhang (The Ohio State University)

9A. 2:00 PM Assessment of Tool Durability in Friction Stir Welding

A. De, Indian Institute of Technology Bombay

9B. 2:40 PM Improving Deposition Rate and Efficiency in Gas Metal Arc Welding of Al 5083 Alloy

C. Kim, Korea Institute of Industrial Technology

9C. 3:20 PM Mechanisms of Thermal-Electrical-Mechanical-Metallurgical Coupling during Resistance Spot Welding

P. Wei, National Sun Yat-Sen University

9D. 4:00 PM Effect of Beam Oscillation on Electron Beam Welded Similar/ Dissimilar Joints

G. Gopal Roy and J. Kar, Indian Institute of Technology

WEDNESDAY, NOVEMBER 8**SESSION 10: PLENARY SESSION**

Chairs: T. Lienert (Los Alamos National Laboratory), J. Perdomo (ExxonMobil)

10A. 8:00 AM Welcome to Plenary and A Tribute to Two "Giants" of Welding Science:

Dr. S. David and Prof. T. DebRoy

T. Lienert, Los Alamos National Laboratory

10B. 8:10 AM Advancing the Science of Welding: The Legacy of Stan David and Tarasankar DebRoy

J. Vitek, Oak Ridge National Laboratory

10C. 8:50 AM The Effects of Reduced Pressure and Shielding Gas Type on Laser Weld Porosity and Weld Geometry

J. Elmer, Lawrence Livermore National Laboratory

PROFESSIONAL PROGRAM

WEDNESDAY, NOVEMBER 8

SESSION 11: LASER WELDING/ADDITIVE MANUFACTURING

Chairs: P. Hohanadel (Los Alamos National Laboratory), J. Li (Penn State University)

11A. 9:40 AM Analysis of Maximum Temperature under a Gaussian Source in Laser Beam Processes

Y. Lu, P. Mendez and Y. Wang, University of Alberta

11B. 10:00 AM Laser Weldability Testing of Austenitic Nickel Alloys

J. Watson, Colorado School of Mines; P. Williams and E. Pfeif, National Institute of Standards and Technology; J. Sowards, NASA Marshall Space Flight Center; J. Caron, Haynes International, Inc.

11C. 10:20 AM Laser Welding of Shape Memory Alloys

J. Pedro Oliveira, The Ohio State University

11D. 10:40 AM Development of a Standard Weldability Test Procedure for Laser Powder-Bed Fusion Applications

B. Kemerling and J. Lippold, The Ohio State University

11E. 11:00 AM Effect of Segregation on the Welding of Selective Laser Melted Stainless Steel Alloys

D. Gonzales, Colorado School of Mines

11F. 11:20 AM Role of Metal Evaporation and Condensation during Laser Additive Manufacturing

D. Galicki, A. Plotkowski, N. Raghavan and S. Babu, University of Tennessee-Knoxville; F. List, Oak Ridge National Laboratory

11G. 11:40 AM Laser Hybrid Welding

H. Wang, Gang Song, Z. Hou and Y. Zhang, Dalian University of Technology

SESSION 12: HONORARY SYMPOSIUM FOR DR. S. DAVID - SESSION C

Chairs: J. Chen (Oak Ridge National Laboratory)

12A. 8:00 AM Aluminum Industry Innovation: Ultrasonic Grain Refining

K. Manchiraju and M. Powell, Southwire Company; Q. Han, Purdue University

12B. 8:20 AM Friction Stir Welding & Processing – Two Decades R&D at ORNL

W. Tang, S. David and Z. Feng, Oak Ridge National Laboratory

12C. 8:40 AM Weldability and Weld Properties of Iridium Alloys

R. Miller, Oak Ridge National Laboratory

12D. 9:00 AM Friction Stir Welding Technology for High Pressure Gas Storage Application

Y. Chae Lim and Z. Feng, Oak Ridge National Laboratory; M. Miles, Brigham Young University; X. Liu, University of Michigan; Y. Li, Shanghai Jiao Tong University

12E. 9:20 AM Weld Creep Performance Modeling of Creep Strength Enhanced Ferritic Steel

X. Yu and Z. Feng, Oak Ridge National Laboratory

12F. 9:40 AM Influence of the Welding Thermal Cycle on the Cross-Weld Creep Performance in Grade 91 Steel

J. Siefert and J. Parker, Electric Power Research Institute; Rachel Thomson, Loughborough University

12G. 10:00 AM Intelligent Weld Manufacturing: Role of Integrated Computational Welding Engineering

J. Chen, Oak Ridge National Laboratory

SESSION 13: HONORARY SYMPOSIUM FOR PROF. DEBROY - SESSION C

Chairs: A. De (Indian Institute of Technology - Bombay), P. Wei (National Sun Yat-Sen University)

13A. 9:40 AM Metal Additive Manufacturing for Aerospace

B. Ribic, Rolls Royce Corporation

13B. 10:00 AM Efficient Prediction of Solidification Conditions in Metal Additive Manufacturing

A. Plotkowski and S. Babu, University of Tennessee-Knoxville

13C. 10:20 AM Welding and Joining Technologies in Heavy and Smart Machinery

Z. Yang and T. Hong, Caterpillar Inc.

13D. 10:40 AM Building a Digital Twin of Additive Manufacturing

G. Knapp, Pennsylvania State University

13E. 11:00 AM Root Defect Formation in 304L Stainless Steel

J. Blecher, 3D Systems; T. Palmer, Applied Research Lab; T. DebRoy, Pennsylvania State University

13F. 11:20 AM A Numerical Approach to Fabricate Defect Free and Structurally Sound Components by Additive Manufacturing

T. Mukherjee, V. Manvalkar, T. DebRoy and A. De, Pennsylvania State University

PROFESSIONAL PROGRAM

SESSION 14: OVERLAY AND CLADDING

Chairs: G. Woods (University of Alberta), M. Grams (University of Alberta)

14A. 2:00 PM Temper Bead Welding for Weld Overlays

J. Stewart and B. Alexandrov, The Ohio State University

14B. 2:20 PM Hydrogen Assisted Cracking of Dissimilar Metal Welds Between Grade F65 Steel and Low Alloy Steel Overlays Using Alloy 625 Filler Wire

R. Buntain and B. Alexandrov, The Ohio State University

14C. 2:40 PM Growth Mechanism of Primary Carbides in Chromium Carbide Overlays

N. Barnes and P. Mendez, University of Alberta; S. Clark and S. Seetharaman, University of Warwick

14D. 3:00 PM Joining of Internally Clad X65 Pipes Using Low Alloy Steel Consumable

A. Alvarez and B. Alexandrov, The Ohio State University

14E. 3:20 PM Heat Affected Zone Sensitization of Type 405 Stainless Steel Cladding in an Overlay Repaired Coke Drum

Y. Wang, R. Kannan and L. Li, University of Alberta; Y. Suzuk and D. Ting, Suncor Energy

14F. 3:40 PM Dispelling the Fears of Hydrogen in Shielding Gases for Corrosion-Resistant Overlays on High Strength Steels

D. Hebble, D. Allford and R. Holdren, Arc Specialties, Inc.

SESSION 15: DISSIMILAR JOINING

Chairs: L. Li (University of Alberta), W. Tan (Utah State University)

15A. 2:00 PM Hydrogen Assisted Cracking in Dissimilar Metal Welds Used in the Oil and Gas Industry

C. Boster, The Ohio State University

15B. 2:20 PM Intermetallic Characterization in Metal-to-Ceramic Microwave Joining

I. Reiman, I. Thompson and Y. Adonyi, LeTourneau University; Collin Overstreet, Wellbore Technologies

15C. 2:40 PM Experimental Measurements and FEA Modeling of Fracture Mechanics of Brazed Joints in Ni-based Superalloys for Gas Turbine Applications

B. Riggs, B. Alexandrov and A. Benatar, The Ohio State University; R. Xu, Rolls-Royce Corporation

15D. 3:00 PM Recent Progress of Multi-Material Joining R&D for Lightweight Vehicle Application

Y. Chae Lim and Z. Feng, Oak Ridge National Laboratory; M. Miles, Brigham Young University; X. Liu, University of Michigan; Y. Li, Shanghai Jiao Tong University

15E. 3:20 PM Microstructural Evolution near the Fusion Boundary of Grade 91 Steel Dissimilar Metal Welds with Nickel Filler Metals

M. Kuper, M. Mills and B. Alexandrov, The Ohio State University; J. Burgess, GE Power

15F. 3:40 PM Numerical Investigation of Laser Braze-Welding Process for Lap Joints of Dissimilar Metals

W. Tan, University of Utah

15G. 4:00 PM Study of High Temperature Deformation Behavior of Graded Transition Joints (GTJ)

M. Sumbaramanian and S. Babu, University of Tennessee-Knoxville; J. Gallar and J. DuPont, Lehigh University; Z. Feng, Oak Ridge National Laboratory

SESSION 16: HONORARY SYMPOSIA FOR DR. S. DAVID AND PROF. T. DEBROY - JOINT SESSION D

Chairs: M. Tumuluru (United States Steel Corporation), B. Ribic (Rolls Royce)

16A. 2:00 PM Technology Innovation Built around Vaporization in Laser Welding of NiTi Alloys

N. Zhou, University of Waterloo

16B. 2:40 PM A Simple Test for Solidification Cracking Susceptibility and Filler Metal Effectiveness

S. Kou and T. Soysal, University of Wisconsin

16C. 3:20 PM Analysis of Low Transformation Temperature Welding (LTTW) Consumables - Evolution of Residual Stresses

S. Liu, Colorado School of Mines

16D. 4:00 PM Toward Intelligent Welding Manufacturing

Y. Zhang, University of Kentucky

16E. 4:40 PM Non-Equilibrium Phase Transformation Behavior in DP980 AHSS

Z. Yu, Colorado School of Mines; J. Vitek, K. An, Z. Feng and S. David, Oak Ridge National Laboratory

16F. 5:00 PM Transport Phenomena in Molten Pool from Fusion Welding to Additive Manufacturing

W. Zhang, Y. Li and K. Zhang, The Ohio State University; Y. Lee, Oak Ridge National Laboratory

PROFESSIONAL PROGRAM

THURSDAY, NOVEMBER 9

SESSION 17: SENSING AND CONTROL

Chairs: J. Chen (Oak Ridge National Laboratory),
Z.J. Wang (Tianjin University)

17A. 8:00 AM Welding Process Monitoring and Control Using Optical Sensing Techniques

J. Chen and Z. Feng, Oak Ridge National Laboratory

17B. 8:20 AM Modeling and Control of Reflecting Weld Pool Surface Vibration

J. Chen, J. Chen and Z. Feng, Oak Ridge National Laboratory

17C. 8:40 AM Real-time Measurement of Weld Pool Oscillation Frequency in GTAW-P Process

C. Li, Y. Shi and Y. Gu, Lanzhou City

17D. 9:00 AM Weld Pool Sensing for Penetration Control in Pulsed Gas Metal Arc Welding

Z. Wang, P. Bai, S. Hu and T. Lu, Tianjin University

17E. 9:20 AM Molten Pool Morphology and Characteristics of CWW CO₂ Welding

C. Fang, Jiangsu University of Science and Technology

17F. 9:40 AM Double-Sided Dual Laser Pulse Driven Droplet Transfer in GMAW

Y. J. Shujun Chen, J. Xiao, Y. Zeng, L. Wang and S. Chen, Beijing University of Technology

17G. 10:00 AM High Speed Videography of Welding: Fundamentals and Techniques

S. Guest, Stantec; G. Gott, INP Greifswald e.V.; J. Chapuis, Areva, Chalons-sur-Saone, France; P. Mendez and G. Dapp, University of Alberta

17H. 10:20 AM Spectral Diagnostics of a Plasma Arc

K. Foster, P. Mendez and R. Sydora, University of Alberta

17I. 10:40 AM A Novel Macro-Micro Pressure Control Technology of Aluminum Alloy Resistance Spot Welding Process Based on Piezoelectric Actuator

S. Chen, N. Wu, J. Xiao and J. Hao, Beijing University of Technology

17J. 11:00 AM Convolutional Neural Network (CNN) Applied in GTAW to Determine Full Penetration

C. Li, Y. Zhang and J. Chen, University of Kentucky

17K. 11:20 AM Torch Path and Attitude Tracking Based on IMU Sensor

R. Yu, University of Kentucky

17L. 11:40 AM High Temperature Full-Field Strain Measurements Based on Digital Image Correlation for GTAW

H. Chen, S. Chen and X. Zhou, Shanghai Jiao Tong University

SESSION 18: MODELING II

Chairs: C. Wu (Shandong University), C. Fisher (Naval Surface Warfare Center Carderock Division)

18A. 8:00 AM Empirical, Analytical, and Computational Modeling of Weld Metal Cooling as a Function of Plate Orientation and Thickness

C. Fisher, M. Sinfield and D. Bechetti, Naval Surface Warfare Center Carderock Division

18B. 8:20 AM Verification and Validation in Computational Weld Mechanics – Uncertainty Analysis of Mechanical Properties

J. Semple, The Ohio State University; D. Bechetti, Naval Surface Warfare Center Carderock Division; Y. Gooroochurn, ESI-North America; Y. Yang, EWI; T. Huang, HII-Ingalls Shipbuilding

18C. 8:40 AM In-situ Weld Penetration Estimation and Control by a Dynamic Analytic Weld Pool Model Calibrated by 3D Weld Pool Surface Measurement

S. Wu and Y. Zhang, University of Kentucky; H. Gao, Harbin Institute of Technology; W. Zhang, The Ohio State University

18D. 9:00 AM Predict and Control Welding-Induced Distortion on Aluminum Extruded Panels

By Y. Yang, EWI

18E. 9:20 AM High Performance Computing of Welding Residual Stress and Distortion by Explicit FEM

H. Huang, Z. Feng and J. Chen, Oak Ridge National Laboratory; Blair Carlson, GM

18F. 9:40 AM Simplify, Accelerate, and Democratize Welding Process FEA Simulation Modelling with Modern Process Oriented Software

J. Robertson, Simufact Engineering

18G. 10:00 AM FEA DoE on the Effect of Welding Parameters on DMW Overlays

M. Forquer and B. Alexandrov, The Ohio State University

18H. 10:20 AM Effect of Mechanically Assisted Vibrating Wire and Hot-Wire Gas Tungsten Arc Welding (GTAW) on the Geometric Shape for Additive Manufacturing Application

B. Silwal and Mi. Santangelo, Georgia Southern University

PROFESSIONAL PROGRAM

18I. 10:40 AM Prediction of Chloride-Induced Stress Corrosion Cracking Behavior in Austenitic Stainless Steel Canisters for Dry Storage of Spent Fuel using a Multiphysics Finite Element Model

X. Wu, Z. Yu and D. Olson, Colorado School of Mines;
C. Bryan and E. Schindelholz, Sandia National Laboratories

18J. 11:00 AM High Performance Computing of Welding Thermal-Mechanical Process by a GPU-Based In-House Code

H. Huang, J. Chen and Z. Feng, Oak Ridge National Laboratory

18K. 11:20 AM Study of Medium Influence on the Cooling Conditions of an API 5L X80 Pipe In-service Welding Through the Finite Element Method

A. Alves, D. Batista, R. de A. Cruz Neto and S. Brandi, University of Sao Paulo

SESSION 19: TESTING AND CHARACTERIZATION

Chairs: Z. Yu (Colorado School of Mines),
Y. Lim (Oak Ridge National Laboratory)

19A. 8:00 AM A Simple Test for Solidification Cracking Susceptibility and Filler Metal Effectiveness

T. Soysal and S. Kou, University of Wisconsin

19B. 8:20 AM Utilizing Neutron Diffraction to Non-Destructively Map Residual Stresses in Welds

Jeff Bunn, Oak Ridge National Laboratory

19C. 8:40 AM Quantification of Root-Pass Residual Stresses in Pipeline Girth Welds

M. Grams and P. Mendez, University of Alberta

19D. 9:00 AM Effect of Low Heat Input on Creep-Fatigue Strength of 9Cr-1MoV Weldments

T. Payton, H. Whitt, M. Mills and W. Zhang, The Ohio State University; Y. Wang, Oak Ridge National Laboratory

19E. 9:20 AM Fatigue Strength Improvement of Steel Welded Structures Using High Frequency Mechanical Impact (HFMI) Treatment

K. Ghahremani, Walter P. Moore Co.

19F. 9:40 AM Evaluation of Stress Relief Cracking in Grade 11 Welds

C. Sarich and B. Alexandrov, The Ohio State University

19G. 10:00 AM Microstructural Characterization of Base Material and Heat Affected Zones of Serviced and Non-Serviced Coke Drums

S. Romo, J. Oliveira and A. Ramirez, The Ohio State University

19H. 10:20 AM The Prediction of the Steel Response to Welding

R. Bannister and P. Mendez, University of Alberta

19I. 10:40 AM An Evaluation of Wind Tower Submerged Arc Weld Toughness

N. McVicker, Lincoln Electric Company

19J. 11:00 AM Nitrogen Shielding Effects in Duplex Stainless Steel Welding

B. Varbai and K. Majlinger, Budapest University of Technology and Economics; Y. Adonyi and N. Henry, LeTourneau University

AWS POSTER SESSION

NOVEMBER 6-9 - DURING SHOW HOURS

The AWS Poster Session is an integral part of the AWS Professional Program. Graphic displays of technical achievements are presented for close, first-hand examination in the Poster Session. Posters present welding results and related material, which are best communicated visually, as well as research results that call for close study of photomicrographs, tables, systems architecture, or other illustrative

materials. Posters are presented in five categories: Students in High School Welding Program, Students in a Two-Year College or Certificate Program, Undergraduate Students, Graduate Students, and Professionals. Be sure to stop by and observe this year's entries.

EDUCATION SESSIONS

MONDAY, NOVEMBER 6

9:00 AM – 4:30 PM

W33: NATIONAL CENTER FOR WELDING EDUCATION AND TRAINING, WELD-ED

The National Center for Welding Education & Training (Weld-Ed) is pleased to offer a one-day conference for welding educators. The conference is open to secondary, post-secondary, and industry instructors/faculty/trainers. Weld-Ed, partially funded by the National Science Foundation, is a dynamic partnership between industry, community and technical colleges, universities, the American Welding Society, and government with a mission to improve the quality and quantity of welding technicians to meet ongoing workforce needs. The conference agenda includes an overview of Weld-Ed's six professional development modules,

the new accreditation program, and an advanced manufacturing & process showcase where industry partners will share information about the products and services they offer to benefit welding educators.

TUESDAY, NOVEMBER 7

8:30 AM – 4:00 PM

W34: AWS EDUCATION SESSIONS

This annual session, hosted by the AWS Education Committee, features the latest developments and best practices in welding education. Experienced educators and industry experts present tools and conceptual strategies that welding educators can use to help future welders, technicians, engineers, and sales representatives remain competent and competitive.

AWS SOCIETY EVENTS

MONDAY, NOVEMBER 6

7:00 AM – 8:30 AM

W35: AWS PRAYER BREAKFAST

This year's speaker at the AWS Prayer Breakfast will be Mr. Dave Rider, a leadership consultant. His topic will be "Ultimate Stewardship: Stewarding our Life and Leadership."

Dave has a leadership coaching practice outside Chicago Illinois. He focuses on intersection of individual leadership and organizational challenges. He leverages strong problem solving analytical abilities with his interpersonal skills allowing him to provide insight and guidance from a unique vantage point. His practice distinctive is a holistic integrated approach, partnering with leaders to improve their personal and professional growth.

Mr. Rider holds a BA, from Michigan State University, and went on to receive his MBA from Lake Forest Graduate School of Management. Dave is a certified professional coach with over 15 years in human resources. Dave has lead corporate talent development, and he is certified to deliver requisite personality and leadership assessment tools.

Dave grew up with sporadic attendance in and around church, but never really understood the Gospel until a trusted friend explained it to him.

He became a believer through the ministry of Campus Crusade for Christ at Michigan State University in 1984. He has attended Willow Creek Community Church since 1986. He considers himself to be a pastor to leaders and helps leaders navigate external and internal challenges of leadership. He and his wife Holly have been married for 28 years and have three children.

Attendees will also be treated to guest performer, Patti Nyien, an accomplished pianist and musician. Ms. Nyien, earned a BM in Education (Magnum cum laude) from Belmont University, TN and Piano Pedagogy at University of Michigan. Her Noteworthy Piano Studio recently celebrated its 40th anniversary, receiving Best of Westmont Award 3 times. She directs choir, Forever Praise. Illinois State Music Teachers Association Director and Treasurer, Salt Creek Music Teachers Association past President and newsletter editor, Patti co-chairs and co-conducts Glorious Grands: A Piano Extravaganza!!!, an 8 Steinway Grand Pianos concert at College of DuPage and Chicago's Symphony Center, for the Keys to the City Festival. In March 2017, she received the Music Teachers National Association Foundation Fellow Award in Baltimore, Maryland.

AWS SOCIETY EVENTS

9:00 AM – 12:00 PM

AWS OPENING SESSION

During the AWS Opening Session and the 98th Annual Business Meeting, 2017 AWS President John Bray will give the Presidential Report and Dale Flood will be inducted as the AWS President for 2018. Following the induction, the 2017 Class of AWS Counselors and Fellows will also be introduced. This meeting is open to all AWS Members and show registrants.

10:30 AM – 11:30 AM

COMFORT A. ADAMS LECTURE

The Comfort A. Adams lecture this year is titled "Towards Process Based Quality Through Fundamental Understanding of Weld Microstructure Evolution" by Sudarsanam Suresh Babu. Dr. Babu, an AWS Fellow, received his PhD in materials science and metallurgy from the University of Cambridge, UK, in 1992. He worked as a research associate at the Institute for Materials Research, Sendai, Japan, before joining Oakridge Research National Laboratories (ORNL) in 1993 where he held joint researcher positions with the University of Tennessee (UT) and The Pennsylvania State University and served on the R&D staff. From 2005 to 2007, Dr. Babu worked at Edison Welding Institute before joining The Ohio State University staff as a Professor of Materials Science and Engineering and Director of NSF I/UCRC Center for Materials Joining Science for Energy Applications. In 2013, Dr. Babu was appointed UT/ORNL Chair of Advanced Manufacturing at the University of Tennessee in Knoxville.

Dr. Babu's research relates to welding metallurgy, solid-state joining, ultrasonic additive manufacturing, laser/electron beam-assisted additive manufacturing, phase transformation issues related to low-alloy steels, inclusion formation, nonequilibrium solidification, and application of computational thermodynamics and kinetics to corrosion issues. He is also involved in the application of state-of-the-art characterization tools including atom probe tomography; synchrotron diffraction and neutron diffraction for understanding interaction between weld thermal cycles, phase stability and diffusion in complex alloys, as well as, energy storage materials. He has published more than 186 peer-reviewed papers and numerous conference proceedings.

12:00 PM-2:00 PM

AWS EXCELLENCE IN WELDING AWARDS CEREMONY AND LUNCHEON

The best and brightest stars in the welding industry will be honored for their outstanding industry achievements at the 15th Annual Excellence in Welding Awards. Presented by the AWS and WEMCO, a standing committee of AWS, the Excellence in Welding Awards is the industry's top honors saluting the year's most outstanding public initiatives and programs that promote the image of welding. By invitation only.

6:30 PM

AWS OFFICERS/PRESIDENTS/ COUNTERPARTS RECEPTION

AWS Headquarters Hotel, The Hilton Chicago

This reception is held annually during the show and is open to all registrants. Take advantage of this opportunity to meet the AWS Officers, network with members and prospects. A complimentary hors d'oeuvres buffet and open bar are included. Evening business attire, please.

TUESDAY, NOVEMBER 7

12:00 PM – 2:00 PM

W36: AWS AWARDS/AWS FOUNDATION LUNCHEON

As the Society and the industry it serves have grown, so has the need to recognize outstanding scientists, engineers, educators, and researchers. Join an assembly of distinguished award presenters, recipients, and guests for a well-paced ceremony and a delicious lunch. The cost for attending the ceremony is \$30 and is open to all registrants. Tickets will also be available at the door.

2:00 PM-3:00 PM

AWS NATIONAL NOMINATING COMMITTEE - OPEN MEETING

AWS Members are requested to submit their recommendations for National Officers to serve during 2019. Nominations must be accompanied by 16 copies of biographical material on each candidate, including a written statement by the candidate as to his/her willingness and ability to serve if nominated and elected.

AWS SOCIETY EVENTS

WEDNESDAY, NOVEMBER 8

10:00 AM-10:30 AM

**R.D. THOMAS, JR.
INTERNATIONAL LECTURE**

Mathias Lundin, CEO of the Swedish welding commission (Svetskommissionen) since 2007 has over 25 years' experience in the field of welding and allied processes. Lundin holds MSc degrees in Welding Technology and Welding Engineering and has been an International Welding Engineer, IWE, since 1996. He has been active in welding standardization activities since the mid 1990's and currently serves as Chair of the IIW working group on standardization, WG-STAND (since 2012). He currently serves as vice chair of IIW SC-QUAL (since 2010) and has been Swedish delegate to IIW Commission VI since 2001. Previously, he served as Secretary to both ISO/TC 44/SC 3 and CEN/TC 121/SC 3 on welding consumables. He has attended IIW Annual Assemblies since 1995.

AMERICAN COUNCIL OF IIW

10:30 AM (immediately following the R.D. Thomas, Jr. International Lecture)

American Council of the IIW, meeting of the US member body of the International Institute of Welding.

THURSDAY, NOVEMBER 9

7:00 AM- 6:00 PM

**AWS CERTIFICATION EXAM (ADVANCE
APPLICATION REQUIRED)**

Take your exam to certify as a CWI, CWE, SCWI, CWEng, or test for endorsements.

Call 1-800-443-9353 ext. 273, or go to www.aws.org/certification for details on the certification and registration requirements for each of these programs.

9:00 AM – 12:00 PM - FREE SESSION**AWS CERTIFICATION INFORMATION
SESSION: MOVE TO COMPUTER-BASED
TESTING (CBT) AND OTHER TOPICS**

AWS began offering some of its certification exams at Prometric CBT locations in mid-2016 and plans to continue moving more exams in 2017 to Prometric CBT sites including the portions of the Certified Welding Inspector. AWS Staff along with Prometric staff will provide some short presentations on the transition and will answer any questions. Other certification topics may be covered including recent programs changes and previews of new upcoming certification programs.



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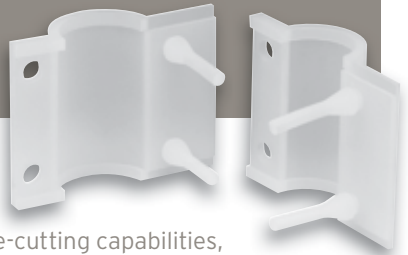
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