



JUNE 7 - 10, 2021 | LIVE ONLINE

FOUNDRY INDUSTRY 4.0

DIGITAL MANUFACTURING IN THE METALCASTING INDUSTRY

What do metalcasting leaders need to know about Industry 4.0 to make smart investments and gain a lasting business advantage? How connected is your foundry? Industry 4.0 is no longer just about the future. Smart, proactive manufacturers are using innovation and technology to improve productivity, profitability, and worker safety. Evaluating and implementing technology today is the key to remaining competitive and sustainable.

This virtual conference will focus on how digital manufacturing is affecting all areas of the casting process today, and how this will change the foundry of the future. You can find more information at AFSinc.org.

Register today at:

www.afsinc.org/Foundry4.0

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NOTES:

- All times are listed in CDT (GMT-5). Please adjust for your time zone.
- Most sessions will include live Q&A after the presentations.
- On-demand sessions are pre-recorded and do not include Q&A.
- All scheduled sessions will be available on demand after their original broadcast time.

MONDAY, JUNE 7, 2021

On Demand **Welcome Video**
Doug Kurkul & Steve Robison
AFS, Schaumburg IL

9 a.m. **KEYNOTE PRESENTATION: The Future of Work and the Worker-Challenges and Opportunities for Manufacturing and Foundry Industries**

Diran Apelian
Advance Casting Research Center, University California, Irvine, CA

The initial goals of Industry 4.0 typically have been automation, manufacturing process improvement, and productivity/production optimization. The more advanced goals are innovation and the transition to new business models and revenue sources using information technologies and services as cornerstones. There are several major tsunamis coming down the pike, and it is important to learn how to surf these tsunamis, and more importantly, leverage these changes to ensure value creation for end-users of the metal casting industry – our customers. The issue of workforce and the impact of these changes on the worker also will be reviewed and discussed.

The Digital Manufacturing Plant

10:15 a.m. **Journey of Digital Transformation and “Culturizing” The Smart Process**
Hicham Wazni
Howmet Aerospace, Cleveland, OH

Smart Manufacturing, or Industry 4.0, is not a plug-and-play approach. While the technology is available in different forms and platforms, the approach and the people element are the key enablers for a successful implementation and a sustainable culture of Industry 4.0. This session focuses on the methodology to get started, the approach to accelerate it, and the social system to turn the implementation into a Smart Culture of Industry 4.0.

11:15 a.m. **Strategy and Organizational Change to Unleash Smart Manufacturing Enabled Business Value**
Michelle Pastel
NY / Smart Manufacturing Leadership Coalition (SMLC), Corning, NY
Lance Fountaine
Cargill, Wayzata, MN

1 p.m. **Feature Importance and Predicting Quality Metrics from Casting Data**
Adam Kopper
Mercury Marine, Fond Du Lac, WI

2 p.m. **Industry 4.0 – Remote = Quick Wins: Utilizing the Cloud to Extend Your Team**
David Wang
Beet Analytics Technology, Plymouth MI
Jim Wenson
Sinto America, Grand Ledge, MI

3 p.m. **Implementing Cobots in Manufacturing: One Plant’s Journey**
Joe Campbell
Universal Robots USA, Inc., Ann Arbor, MI
Craig Zoberis
Fusion OEM, Burr Ridge IL

TUESDAY, JUNE 8, 2021**The Customer Perspective**

9 a.m. **Digital Manufacturing in the Metalcasting Industry: An OEM Perspective**
David Furrer
Pratt & Whitney, East Hartford, CT

Industry is continuing to progress down the path of Industry 4.0. This journey includes the new world of digital product and process definitions, computational modeling and simulation and automation. This technology evolution is bringing forth new opportunities, including enhancement in communication of requirements, enabling of computational process predictions, establishment of model-informed process controls and product testing, and automated data capture and analytics for continuous learning and improvement. Challenges still exist relative to data standards and across supply-chain data communication. A review of several current industry efforts to capture the benefits and overcome the challenges will be presented.

10 a.m. **Lockheed Martin’s Future Vision for Foundries**
Heather Woodworth
Sikorsky, A Lockheed Martin Company, Stratford CT

Lockheed Martin uses castings of varying sizes and complexities in critical applications with high quality parts required to meet mission requirements. This presentation will discuss their vision for the future and current work with foundries to utilize newer technologies to ensure that advancements in technology and processes are supported throughout the design and manufacturing lifecycle of the parts.

11 a.m. **KEYNOTE PRESENTATION: Current Trends in Manufacturing 4.0**
David Vasko
Rockwell Automation, Milwaukee, WI

Environmental Health and Safety

1 p.m. **Exoskeletons for Ergonomics**
Cayla Zielinski
Camau, Southfield, MI

Operators in the manufacturing industry are increasingly incurring workplace-related musculoskeletal disorders due to repetitive manual tasks and awkward postures. Companies are looking to new innovative technologies such as exoskeletons to help reduce the risk of injuries and retain talent for years to come.

2 p.m. **Wearable Biometrics to Monitor Employees for Heat Stress & Fatigue**
Melissa Glossup
KOSTechnology, Long Beach, CA

This presentation will discuss the innovative use of wearable biometric technologies in manufacturing to create smarter, safer industries and improve organizational operation and employee experience.

3 p.m. **Eye Tracking Glasses for Training Metal Pourers**
Mike Bartels
Tobii Pro, Reston, VA

The case study presented demonstrates how eye tracking technology can provide employers with valuable insight into the effectiveness of their workforce and serve as a powerful training tool.

On Demand **The Ergonomic Foundry – Wearables in the Workplace**
Joe Marquardt
Rhino Tool House, New Berlin WI

This presentation will focus on the Ironhand by Bioservo, a grip assist wearable glove that mechanically increases grip force for the end user. This technology is meant for applications that require gripping products or tools for extended periods of time throughout the day. With the Ironhand, much of that grip force required to hold the product or tooling is eliminated by mechanical means through the glove.

WEDNESDAY, JUNE 9, 2021**Case Studies in Process Control and Efficiency**

9 a.m. **KEYNOTE PRESENTATION: Digital Twins, Cyber Security, and Digital Manufacturing for the Metalcasting Industry**
Federico Sciammarella
MxD, Chicago IL

This presentation will highlight work MxD has done with its members to advance metal casting technologies such as looking at dimensional piece to piece variability (IAMFix), reducing waste in manufacturing large die-cast parts. It will also highlight digital technologies such as digital twins and the role MxD is now playing in cyber security awareness as the National Center for Cyber security in Manufacturing.

10:15 a.m. **Augmented Reality for Equipment Maintenance and Training**
John Letts
Laempe Reich, Trussville, AL

The challenge of increasing machine performance and enhancing Overall Equipment Effectiveness (OEE) of foundry equipment is often confronted with attracting, training, and retaining quality personnel. This presentation demonstrates the use of augmented reality (AR) to remotely support foundry personnel as they learn, inspect, troubleshoot and repair their coremaking equipment. The LAEMPE technician not only sees what the foundry sees, real-time, but can also place documents and instructions directly in view to accelerate and enhance the repair and training. With remote guidance from factory technicians, foundry personnel achieve repair, improved up-time, and training without travel costs and delays associated with traditional on-site support.

11:15 a.m. Laser Scanning and BIM for Complex Industrial Installations

Ziad Salameh
ZS LLC, Milwaukee, WI

This presentation will present case studies demonstrating how the use of 3D laser scanning and BIM was an essential component of the planning and installation of equipment in complex industrial facilities.

1 p.m. Implementing Self-Monitoring, Adaptive Re-calculating Degassing into a V-Process Aluminum Foundry

Eric Baker
Harmony Castings, Harmony, PA
Brian Began
ASM International, Brecksville, OH

Speakers will discuss the use of adaptive degassing and other treatments to fully automate the melt treatment and degassing process at an aluminum foundry. This presentations documents some expected benefits achieved during the first year after implementation, including eliminating some production wastes and significantly improving mechanical properties. Higher productivity and lower metallurgical scrap were accomplished.

2 p.m. Data Driven Real Time Process Control in the Cast Iron Foundry

Jiten Shah
Product Development & Analysis,
Naperville IL
Frank Headington
Neenah, WI

Capturing the historical key process parameters, the methodology and preliminary results using AI technique to quantify uncertainty will be presented for better process control and scrap reduction.

On Demand Digitalization of an Iron Foundry Operation

Guilherme Viana
ABP, Union Grove, WI

THURSDAY, JUNE 10, 2021**9 a.m. KEYNOTE PRESENTATION: How IIoT is Part of the Cybercrime and Espionage World**

Jonathan Tomek
MadX LLC, Vienna, VA

The Industrial Internet of Things is a complicated part of our everyday life. How often do we think of the “actual” risks associated with it? What is the intent behind accessing these systems? Ransomware, supply chain, general personal cybersecurity hygiene, are among the many things to consider. Let us look at how malicious adversaries view networks, vulnerabilities, and your organization. We will go over a few examples of cybercrime and espionage, how they could affect your organization, and the best practices to remediate the issues.

9:45 a.m. BREAKOUT SESSION: Q&A on Cybersecurity with Jonathan Tomak

Jonathan Tomek
MadX LLC, Vienna, VA

How safe is your manufacturing data and network? How about your engineering drawings and customer files? Bring your questions to Jonathan Tomek and come prepared for a lively interactive session to help us better understand how to manage the risk as we move toward more digitally integrated manufacturing.

Case Studies in Process Control and Efficiency**10:30 a.m. Using Industry 4.0 in the No-Bake Foundry**

Wil Tinker
Tinker Omega Sinto LLC, Springfield OH

Foundries can begin using Industry 4.0 in small steps that involve reduced down-time and cost spreading, and there are benefits in embracing the technologies one area at a time. This presentation will discuss the use of data collection and connectivity in the core making process for greater efficiency, higher quality and cost reduction.

11:30 a.m. How a Permanent Mold Foundry is Taking the 4.0 Turn Towards Data-Driven Melt Quality and Casting Process Decision Making

Yohan Tremblay
Foundry Solutions and Metallurgical Services,
Magog, QC, Canada

Small and mid-size foundries have unprecedented opportunities to improve their quality and productivity with the help of data-driven decision-making. This presentation explores how one foundry used smart technology to connect existing and new analysis and production equipment, such as tilt-pour machines and the laboratory, to collect important data to share with operators.

12:30 p.m. SPECIAL PRESENTATION: The Foundry in a Starship - Melting and Pouring in a Zero Gravity Atmosphere

Dave Weiss
Eck Industries, Manitowoc, WI

On Demand Cutting Scrap in Green Sand Foundries with Industry 4.0 and AI

Dennis Janitza
Norican Digital, LaGrange GA

Artificial Intelligence (AI) offers enormous potential for improving casting quality in green sand and other foundry processes. Foundries adopting AI-driven solutions have seen their cost of bad quality drop as much as 50%.

On Demand Four Steps to Success in a Data-Driven World

Andy Moore
CADDIS Systems, Bettendorf, IA

This presentation will review factors for successful data management across several manufacturing platforms and provide a case study of how one foundry has used a data management system to its benefit. Using current production data, a core machine can “learn” to set the right process conditions. These new intelligent solutions can create a digital transformation of core-making processes.

SELECTED SPEAKERS

Diran Apelian
Distinguished Professor of Materials Science and Engineering, University of California, Irvine

Diran Apelian is Distinguished Professor of Materials Science and Engineering at University of California, Irvine. He heads the advanced material processing activities of IDMI and is Director of the Advanced

Casting Research Center. Prior to joining UCI, Apelian was the Alcoa-Howmet Professor of Engineering and Founding Director of the Metal Processing Institute (MPI) at Worcester Polytechnic Institute (WPI). From 1990-1997, he served as WPI's Provost.

Professor Apelian is a Fellow of TMS, ASM, and APMI, and is a member of the National Academy of Engineering

(NAE), National Academy of Inventors (NAI), European Academy of Sciences, and the Armenian Academy of Sciences. Apelian was TMS President and Chair of the ASM Educational Foundation Board. He is a co-founder of Solvus Global LLC, Battery Resourcers Inc., Kinetic Batteries LLC, and Melt Cognition LLC. For more information, visit www.mindyourmetal.com.



David Vasko
*Director of Advanced Technology,
Rockwell Automation*

Dave Vasko is Director of Advanced Technology at Rockwell Automation, where he oversees applied R&D and global product standards and regulations. He is responsible for developing and managing technology to enable the future of

industrial automation, including augmented reality, artificial intelligence, digital twins, digital transformation, IoT, and collaborative robotics.

Vasko is a member of the National Institute of Standards and Technology VCAT (Visiting Committee on Advanced Technology) and serves on the board of the 5 Lakes Institute. He is a member of the Wisconsin Technical Council, the MFOresight Leadership Council, and the U.S National Committee of the International Electrotechnical Commission, where he serves on technical advisory groups. Vasko also serves on the Connect Systems Institute Steering Committee, the Marquette University Advisory Board, and the WEF Data Sharing Taskforce. He is a senior member of both the IEEE and ISA.

In 2005, Vasko was recognized as Rockwell Automation's Engineer of the Year for his contribution to the development of a CIP Safety Communication Protocol. He holds 75 granted U.S. patents.



Jonathan Tomek
CEO, MadX

Jonathan Tomek is CEO of MadX in Vienna, VA. He specializes in threat intelligence, network forensics, incident handling, and malware analysis in the information security realm.



Federico Sciammarella
President & CTO, MxD

As President and CTO of MxD, Federico Sciammarella is in charge of developing and implementing the technology vision for this Chicago-based institute.

Sciammarella previously was an associate professor at Northern Illinois University. At NIU, he directed Advanced Research in Materials and Manufacturing for more than 10 years, which generated over \$2.5 million in funding and created a launch pad for many students and technologies in advanced manufacturing. He has a long list of publications and patents

for applications in laser assisted machining and additive manufacturing. Sciammarella's experience is in creating research focused on applications for industry.



Hicham Wazni
Global Director, Continuous Improvement and Smart Manufacturing, Howmet Aerospace

Hicham Wazni is Global Director of Continuous Improvement and Smart Manufacturing at Howmet Aerospace. Hicham has 24 years of collective experience in Manufacturing Operations, Continuous Improvement, Smart Manufacturing/Industry 4.0, and Business and P&L Management.

In addition to his full-time job at Howmet Aerospace, Hicham has been an Adjunct Faculty at Cuyahoga Community College since August 2013, where he has been teaching courses in Statistical Quality Engineering and Additive Manufacturing New Product Development.

Hicham has a BS and MS in Mechanical Engineering from the University of Texas at Austin and a MBA from the University of Georgia.



Adam Kopper
Technical Specialist, Mercury Marine

Adam Kopper has been in the metalcasting industry for 24 years. He is the immediate past chair of the AFS Aluminum and Light Metals Division. He recently completed his Ph.D. in Material Science at Worcester Polytechnic Institute, where his research focused on applying data science in materials processing.



Yohan Tremblay
Co-Founder, Foundry Solutions & Metallurgical Services

Since obtaining his degree in metallurgical engineering at University Laval, Québec City in 2001, Yohan Tremblay has focused on foundry process quality control.

He worked for three years in Europe before returning to Canada, having fun with ductile iron, white iron, and ADI; more recently, in 2016, he dove into light casting alloys. He launched Foundry Solutions as a personal business in 2013. In January 2015, Tremblay co-founded Foundry Solutions & Metallurgical Services Inc., supporting costumers from around the world with proprietary and partner solutions.



David Wang
CEO, BEET Analytics Technology

David Wang is CEO of BEET Analytics Technology, an industry 4.0 solution provider focused on digitizing machine performance. BEET creates products and solutions that help companies be more proactive, more accountable, and more efficient than ever before.

Wang has an MBA from University of Michigan's Stephen M. Ross School of Business, and a Bachelor of Engineering in electrical and electronics engineering from Wayne State University.



Dr. David U. Furrer
Senior Fellow Discipline Lead, Pratt & Whitney

Dr. David Furrer is Senior Fellow Discipline Lead for the Materials and Processes Engineering organization at Pratt & Whitney, East Hartford, Connecticut.

Furrer leads the Pratt & Whitney Materials Discipline Chiefs and Materials Fellows in the development of technical strategies and engineering standards and procedures. He supports the development, design, and deployment of new materials and associated manufacturing processes. He is responsible for manufacturing technologies development and maturation, including computational tools and methods to support legacy and emerging manufacturing process application and design for manufacture. Furrer is involved in additive manufacturing process development along with other emerging manufacturing processes.



Heather Woodworth
Dynamic Systems Materials Engineer, Sikorsky, a Lockheed Martin Company

Heather Woodworth is Dynamic Systems Materials Engineer at Sikorsky, a Lockheed Martin Company, Hartford, Connecticut. She has worked at Sikorsky for 12 years in materials and engineering. Woodworth has a Bachelor of Science in Material

Science and Engineering and an MBA from Rensselaer Polytechnic Institute, Troy, New York.



Cayla Zielinski
*Wearable Robotics Specialist,
Comau LLC*

Presenter Cayla Zielinski, Wearable Robotics Specialist at Comau LLC, is responsible for the MATE exoskeleton product for Comau North America. She is a graduate of the University of Michigan with a Bachelor of Science in biology.

Operators in the manufacturing industry are increasingly incurring work-place-related musculoskeletal disorders due to repetitive manual tasks and awkward postures. Companies are looking to new innovative technologies such as exoskeletons to help reduce the risk of injuries and retain talent for years to come.



Melissa Glossup
CEO and Co-Founder, KOSTechnology

Melissa Glossup is a business success authority, innovator, and visionary. She is the CEO and co-founder of KOSTechnology, an emerging revolutionary safety technology that is set to transform the global modern workforce and enhance industrial safety.

Through the years, Glossup has mastered and developed winning strategies to mitigate risk, build strategic partnerships, assemble dynamic teams, and mastermind products from concept to launch and market share.



Mike Bartels
Director of Research, Tobii Pro

Mike Bartels is the Director of Research at Tobii Pro in North America. He has over 15 years of experience studying human visual attention across a variety of different contexts, including training, performance, usability, and design. Bartels has a master's degree in

experimental psychology and has written extensively on eye tracking technology.



Joe Marquardt
Sales Engineer, Rhino Tool House

Joe Marquardt has more than 16 years of experience in industrial sales, with over a decade specializing in foundry tooling, ergonomics, and material handling applications.



David Weiss
Vice President of Engineering and R&D,
Eck Industries

David Weiss is Vice President of Engineering and R&D for Eck Industries, Inc. He is responsible for development and application of high-performance alloys and casting concepts for the foundry and their customers.

Weiss has authored over 70 papers on the processing and application of aluminum, metal matrix composite and magnesium castings. He has won numerous industry awards including the John A. Penton Gold Medal from the American Foundry Society for pioneering work in the premium aluminum casting industry.



John Letts
Sales, LAEMPE REICH

For the past 5 years, John Letts has been honored to contribute to the LAEMPE REICH team by supporting technical sales for North America. As the North American Partner of LAEMPE Mössner Sinto, LAEMPE REICH provides LAEMPE core equipment, technologies, and services

to the metalcasting industry.



Wil Tinker
President, Tinker Omega Sinto

A complete smart factory may be out of the reach for most foundries, but taking small steps now will help foundries get the most out of new technologies when they emerge.

Wil Tinker has spent 40 years in the no-bake industry, and has been President of Tinker Omega Sinto for the last 20 years. He has served on the CMI board and is past president of the Foundry Educational Foundation. He graduated from Kent State University in 1981.



Craig Zoberis
President, Fusion OEM

Craig Zoberis is founder and president of Fusion OEM, a contract machine shop and robotics system integrator for machine tending of CNC equipment. Zoberis has a BSME from Marquette University and an MBA from Saint Xavier University.



Andy Moore
President, CADDIS Systems

With an educational background in physics, engineering, and business, Andy Moore is conditioned to solve problems when they are encountered. Having spent over 15 years working in manufacturing with roles ranging from plant floor operations to senior leadership, he has made a name for

himself by solving complex problems with straightforward solutions.

In this presentation, Moore will highlight how to position your company for success by embracing machine data and effectively respond to the key metrics that lead to increased profitability and long-term machine health.



Dr. Ziad Salameh
Principal In Charge, ZS Architectural Engineering, LLC

Dr. Ziad Salameh brings more than 35 years of professional experience related to building structural designs, building enclosure consulting, laser scanning to BIM, BIM to facility management consulting, historic structures restoration, and structural

failure investigations.

In addition to his consulting experience, Salameh serves as a board member with Milwaukee Preservation Alliance and Landmarks Illinois. He is also a past chair of the executive committee of the ASCE Forensic Engineering Division (FED) and is a founding member of the City of Milwaukee Façade Examination Ordinance Committee. Additionally, he served as an adjunct associate professor of building's structural systems at the School of Architecture and Urban Planning (SARUP) as well as the School of Engineering at University of Wisconsin – Milwaukee.



Jiten Shah
President, Product Development & Analysis (PDA) LLC

Jiten Shah has more than 30 years of experience in casting design and manufacturing. He has been involved in various research projects by key manufacturing innovation institutes over the last six years, among them, MxD (formerly Digital Mfg. and Design

Innovation Institute - DMDII), LIFT and America Makes.

In this presentation, Shah will explore improvements to process control and scrap reduction through artificial intelligence techniques.



Brian Began
Business Development Manager, ASM International

Brian has a B.S. in materials science & engineering from Case Western Reserve University and an MBA from Ashland University. He has worked the past 23+ years in a variety of roles at Foseco in Cleveland, OH. Brian was a recent recipient of an AFS Service

Citation and has published and presented extensively on a variety of topics related to casting aluminum.



Eric Baker
Project Engineer, Harmony Castings

Eric Baker is a graduate of Penn State University, where he earned a bachelor's degree in industrial engineering. Eric started his career at Harmony Castings in Harmony, PA, where he has held the roles of manufacturing engineer and project engineer. Eric's primary interests are in

optimization, process improvement, and project management.



Guilherme Viana
Digital Product Manager, ABP Induction

Guilherme Viana is a digital business enthusiast who is passionate about technology. He has a track record developing digital solutions for Fortune 500 companies and startups across nine countries. Currently, Viana is tackling the challenge of reshaping the metal work industry to

became a leading digital industry.



Lance Fontaine
Cargill, Wayzata, MN/ Smart Manufacturing Leadership Consortium Strategic Advisory Board Vice Chair

In March 2018, Lance Fontaine joined Cargill as the company's Smart Manufacturing Leader. In this role, Lance has global accountability for development of a common digital transformation strategy across plant

operations. This strategy not only includes the definition of the target technology stack, but also the alignment of the company's enterprises and business groups around a common set of digital objectives within their production facilities.



Michelle Pastel
Corning Inc., Corning, NY/ Smart Manufacturing Consortium Strategic Advisory Board Chair

Michelle Pastel joined Corning 28 years ago as a Systems Engineer. Today she leads teams responsible for pioneering collaborative, multi-organizational projects to develop and deliver digital solutions. These

teams integrate materials, process, and equipment with measurements, process controls, modeling, analytics, and computing platforms to achieve faster fundamental understanding and real-time data driven manufacturing within a plant, plant-to-plant, and across the supply chain. As a program leader, she works in partnership with multi-disciplinary colleagues across Corning to extend the portfolio of projects solving Corning's business problems through digital solutions. She also engages and develops strategic collaborative external relationships in the areas of Industry 4.0, Smart Manufacturing, Industrial Internet of Things, and 5G, with standards bodies, national labs, universities, professional societies, other manufacturers, and solution providers.