

“Near Net Shape Manufacturing”

Educational Seminar Series

Sponsored by the Peoria Chapter of ASM

When:

February 24th 7:45 am to 3:30 pm (registration starts at 7:15 am)
Caterpillar Inc. Technical Center – Bldg A Auditorium, Mossville, IL
(directions will be provided upon registration).

What:

Learn about near net shape manufacturing processes such as **powder metallurgy, hydroforming, casting, and forging from leading industry experts**. The topics will cover recent and future developments in these manufacturing processes, material performance, suitable applications, and evaluation of their relative advantages over conventional fabrication processes.

This educational opportunity is being made available to all who are interested at the ASM subsidized price. **Register before February 17 for only \$5. Registration fee after February 17 or on-site is \$10.**

Who should attend:

- Anyone interested in learning more about near net shape manufacturing processes
- Materials, mechanical, manufacturing, and industrial engineers
- Engineers and other professionals involved in design, research, quality, and cost reduction efforts

Registration:

Please RSVP to Chirayu Garud
Email: Garud_Chirayu_V@cat.com
Tel: 309-578-3339

Please direct all questions to Olga Rowan
Email: Rowan_Olga@cat.com
Tel: 309-675-7970

Seminar Agenda:

7:15 – 7:45 am Registration

7:45 -- 8:00 am Introduction

8:00 – 9:00 pm **"New Developments in Powder Metallurgy"**

Speaker: Roland Warzel, Manager Technical Service &
Application Development, North American Höganäs

9:00 – 9:45 pm **"Powder Metallurgy Design, Processing and Applications"**

Speaker: Tim Liu, Sr. R&D Engineer, Caterpillar

Break (discussion, networking, refreshments)

10:00 – 11:00 am **"Hydroforming – cost-effective alternative to fabrication of complex design components"**

Speaker: Stephan Robertson, Sales and Technical Manager,
Schuler Inc.

Lunch break

12:00 – 12:45 pm **"Simulation Driven Design and Production of Quality Castings"**

Speaker: Rick Huff, Technical Team Leader, Caterpillar

12:45 – 1:30 pm **"Simulating Casting Designs to Replace Fabrications"**

Speaker: Charlie Monroe, Sr. R&D Engineer, Caterpillar and
Zhiping Lin, Sr. R&D Engineer, Caterpillar

Break (discussion, networking, refreshments)

2:00 – 3:00 pm **"Near Net Forging – gear application"**

Speaker: Chris Carmen, CEO, Presrite Corporation

3:00 – 3:30 pm Open questions

Speakers:

Roland Warzel

Roland has been with North American Höganäs for 6 years and is now a Manager of Technical Service & Application Development. He manages technical service requests and application /new product development projects for North American Powder Metals customers. Interest areas include alloy development, microstructure development and machinability. Roland is a member of the board of directors for the Center for Powder Metal Technology. He also serves as the Secretary for ASTM B09 committee on Metal Powders. He is a member of ASTM, APMI, ASM and the Engineers Society of Western Pennsylvania.

Tim Liu

Tim Liu is a Senior R&D Engineer in the Metals and Thermal Processes group, Caterpillar Advanced Materials Technology. Prior to joining Caterpillar, he spent 6 years working for Sumitomo Electric, the 2nd largest Powder Metallurgy part manufacturer in the world. He has also worked 2 years for Sinteris, a medium Powder Metallurgy part manufacturer in Canada and 5 years for Central Iron & Steel Research Institute, the largest material research center in China. He obtained his Ph.D. in Metallurgy from Queen's University in Canada.

Stephan Robertson

Stephan Robertson is a Sales and Technical Manager at Schuler Inc, Canton, MI. Schuler facilities deliver industry leading metalforming products, systems, and services worldwide. Specifically, Schuler Hydroforming supports North American customers in manufacturing and try-out of the dies developed for hydroforming, design and development of hydroformed parts, design of hydroforming manufacturing lines and tools. The Schuler Hydroforming facility in Canton produces approximately 600,000 hydroformed components annually.

Rick Huff

Since 1999, Rick has been responsible for leading technical teams at Caterpillar's Champaign Simulation Center focusing on the development and application of advanced simulation methods in the areas of metal forming, casting, welding, heat treatment, machining, and advanced CFD for powertrain lubrication, and combustion modeling. Prior to this Rick spent 2 years in Advanced Materials Technology Division at Caterpillar's Technical Center working in the area of metal forming simulation. Rick received his M.S. in Mechanical Engineering from Wright State University where his research topic was on developing near-net shape forging processes using inverse and sensitivity-based optimization techniques.

Charles Monroe

Charles Monroe is a Senior Engineer at the Champaign Simulation Center of Caterpillar Inc. He works on modeling solidification, flow, and stress phenomena to improve casting design. Charles obtained his PhD in Mechanical Engineering from the University of Iowa in 2008 with a topic entitled "A modeling and experimental study of deformation and hot tearing in steel."

Zhiping Lin

Zhiping Lin is a Senior Engineer at the Champaign Simulation Center of Caterpillar Inc. He works on modeling casting manufacturing processes including quality and performance. He obtained his Ph.D. in Mechanical Engineering from the University of Iowa in 2004 with a topic entitled "Modeling of Porosity Formation and Feeding Flow during Casting of Steel and Aluminum Alloys."

Chris Carmen

Chris Carmen is CEO/President of Presrite Corporation, the leading forging manufacturer, located in Cleveland, OH. Presrite's Bessemer Division is the premier near-net gear manufacturing facility in the world, whose forgings are used in the off-highway, truck, automotive, aerospace, railroad, and material handling industries. The company holds a patent for a forging process to produce multiple-flange track rollers used on crawler equipment. Presrite forging plant is equipped with the latest design and state-of-the-art engineering technologies, and forging presses with up to 6,000 tons of capacity.