TRAINING

EWI Forming Center

Fundamentals and Applications of Sheet Metal Forming

(1- or 2-Day Course*)

FUNDAMENTALS OF SHEET METAL FORMING (DAY ONE)

Fundamentals of Sheet Metal Forming provides an introduction to fundamental aspects of sheet metal forming. All attendees will learn about common sheet metal stamping practices and fundamentals of material formability, lubrication, forming equipment and tooling in detail. This course is beneficial for designers, engineers, and managers who have roles and responsibilities in material formability/qualification, tooling design/maintenance, stamping quality check/process control, and purchasing of stamping/equipment/tooling.

COURSE TOPICS

The course covers the following topics:

1. Sheet Metal Forming - Introduction
2. Formability and Testing Methods
3. Friction and Lubrication
4. Tool Wear, Materials, Coatings and Treatments
5. Press Equipment – Mechanical, Hydraulic and Servomotor presses
6. Forming Dies, Cushion Systems, and Sensors
7. Quality Issues of Stampings – Springback, Wrinkle, and Fracture
8. Modeling and Simulation for Forming Process
9. Demonstration for Testing and Establishing the Forming Limit Curve

This course will start at 8 AM and end at 4 PM (including 30-minute lunchtime in the classroom) in order to provide sufficient time for instruction and discussion. All attendees will receive certification in the course and have an opportunity to take the next level course, Applications of Sheet Metal Forming.

APPLICATIONS OF SHEET METAL FORMING (DAY TWO)

Applications of Sheet Metal Forming introduces various industrial applications of sheet metal forming. Attendees will learn about basic forming applications such as blanking, bending, flanging, and deep drawing, as well as more advanced forming applications like hot stamping, warm forming, sheet/tube hydroforming, and incremental sheet forming. This course is beneficial for designers, engineers, and managers involved in new product development, stamping process engineering, tooling design/maintenance, stamping quality check/process control, and purchasing of stamping/equipment/tooling.

EWI

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COURSE TOPICS

The course covers the following topics:

1. Blanking and Trimming
2. Bending, Flanging and Hemming
3. Drawing Round and Rectangular Parts
4. Forming of Advanced High Strength Steels
5. Hot Stamping
6. Warm Forming of Aluminum Alloys
7. Hydroforming of Sheet/Tube
8. Incremental Sheet Forming - Spinning, Shear Forming and Flow Forming
9. Demonstration for Deep Drawing and Effects of Blank Holder Force

This course will start at 8 AM and end at 4 PM (including 30-minute lunchtime in the classroom) in order to provide sufficient time for instruction and discussion. All attendees will receive certification in this advanced course.

INSTRUCTORS

Taylan Altan is currently the Chairman of EWI Forming Center. He received his Diploma Ingenieur (equivalent to MS Eng. degree) at the Technical University (now University of Hannover, Germany) in 1962 and M.S. (1966) and Ph.D. (1966) at University of California, Berkeley. Taylan has been a professor of Industrial and Mechanical Engineering at OSU since 1986. Before coming to OSU, he was a staff member (Researcher, Research Leader, Senior. Research Leader) at Battelle Columbus Laboratories (1968-1986) and a Researcher at DuPont (1966-1968). He is a fellow member of several professional societies (CIRP, ASME, ASM International, SME) and Director of the Center for Precision Forming (CPF, an I/UCRC funded by NSF and industry) and the Engineering Research Center for Net Shape Manufacturing (ERC/NSM). Taylan has authored and co-authored more than 500 technical papers and several books on topics, related to manufacturing and metal forming. His latest book is *Sheet Metal Forming – Fundamentals and Applications*.

Hyunok Kim is currently the Technical Director of the EWI Forming Center. His technical expertise includes cold/hot forming technology, tribology in metal forming processes, and forming test / formability analysis / process simulations. Hyunok received his M.S. (2002) at University of Michigan, and Ph.D. (2008) at The Ohio State University in metal forming and manufacturing areas. Since joining EWI in 2008, he has contributed in consulting with small to large- sized metal forming companies, material suppliers, and various OEMs of automotive, heavy manufacturing and shipbuilding in various countries. He is also actively networking with the metal forming industry to develop practical training courses for engineers and designers. Hyunok is an Ohio-certified Professional Engineer (PE) and also actively involved in teaching undergraduate and graduate students as an Adjunct Professor at The OSU College of Engineering. He has authored and co-authored more than 30 technical papers and articles on topics related to manufacturing and metal forming.

Visit ewi.org/ewi-forming-center or contact events@ewi.org for more information.

Note: These courses may be taken together or independently of each other.