

# **"FUNDAMENTALS OF COLD FORGING"**

# PRESENTED BY: DR. VIJAY NAGPAL METAL FORMING SYSTEMS, INC. CANTON MI -48187

Metal Forming Systems, Inc.

COPYING OR REDISTRIBUTION OF THIS MATERIAL IS STRICTLY PROHIBITED 7974 Lilley Road, Canton MI 48187 www.nagform.com

# MFS

### FOLLOWING TOPICS WILL BE COVERED:

- 1. Introduction to Metal Forming
- 2. Introduction to Cold Forging Process
- 3. Basics of Metal Deformation
- 4. Material properties and behavior
- 5. Machines for Cold Forging
- 6. Principles of forging sequence design
- 7. Basic forming processes
- 8. Sequence design rules
- 9. Preform shapes
- 10. Forming sequence layout
- 11. Practical considerations in sequence design
- 12. Load and design calculations
- 13. Introduction of Finite Element Analysis (FEA) for simulation of Forging Processes
- 14. Tool design and die stress analysis
- 15. Software program NAGFORM for sequence design
- 16. Validation of design through FEA simulation NAGSIM software program

# **FUNDAMENTALS OF COLD FORGING**



#### **COURSE SCHEDULE:**

August 6 <sup>th</sup> –	9AM – 5PM
August 7 <sup>th</sup> –	9AM - 5PM
August 8 <sup>th</sup> –	8AM – 3PM

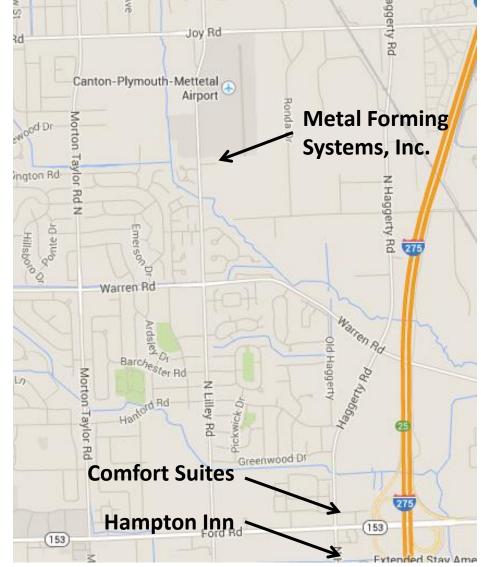
#### TRAINING LOCATION:

Metal Forming Systems, Inc. 7974 N. Lilley Road Canton MI – 48187 Tel: 734-451-5415 Cell: 734-658-1716 Fax: 734-981-4438

#### **SUGGESTED HOTELS:**

Hampton Inn And Suites Detroit/Canton 1950 Haggerty Road North, Canton, MI 48187

Comfort Suites Canton 5730 Haggerty Road, Canton, MI 48187



#### **INSTRUCTOR'S BACKGROUND:**

- Ph.D. & ME in Mechanical Engineering Georgia Institute of Technology, Atlanta
  - Thesis Subject Analysis of Metal Forming Processes
- Inventor of NAGFORM / NAGSIM software
- > PATENTS (Co-Inventors Ford Motor Company) in the following subjects:
  - Extrusion forming of internal helical splines
  - Stepped extrusion die assembly
  - Cold extrusion for helical gear teeth
  - Entrance contour design to streamline metal flow in a forging die
  - Over 40 publications in journals such as ASME, SME, ASM, Fastener Technology International etc.
  - Taught Mechanical Engineering related classes at University of Michigan (Dearborn), Lawrence Tech University and University of Detroit Mercy.
  - ➢ Work Experience
    - President, Metal Forming Systems, Inc.
    - Transmission Gear Development Consultant, Ford Motor Company
    - Principal Research Scientist, Battelle Labs, Columbus Ohio
    - Tool Engineer, Tata Engineering (TELCO), India

