



Developing an Additive Manufacturing Strategy

3 Day Course - 24 hours

TRAINING OVERVIEW

The global additive manufacturing market is currently valued around \$12 billion and is expected to grow to \$50 billion by 2025. Is your company poised to take advantage of new Industry 4.0 capabilities and the explosive growth of this disruptive technology? This course will arm participants with cardinal knowledge of the additive manufacturing landscape, allowing them to form strategies around the technology and identify current opportunities within their own organizations.

TRAINING DESCRIPTION

This training will provide an understanding of the history, current landscape, and future of additive manufacturing. Participants will learn about the most common types of technologies and how they are being used with real life use cases. They will also gain exposure to two types of software being used today and understand the strategies and value around designing for additive. This course also includes an onsite visit to help identify possible applications within their facility.

TRAINING CONTENT

DAY 1

Intro to Additive

- The history, current status, and future of additive manufacturing. Where we were, where we are, and where we are going; and why this is important to your business.
- Technology overview including FDM, SLA, ADAM, DLP, SLS, DMLS, EBM, BJ, MJ, the most common additive technologies and their advantages and disadvantages.
- Common materials overview – The most readily available materials, their properties and uses.

Impact on Industry 4.0

- What is Industry 4.0 and where does additive fit?
- Automation, Artificial Intelligence, Print farms.
- Supply Chain Management & Risk Management

Manufacturing Applications & Use Cases

- Most common applications – Prototyping, Tooling & Fixturing, End Use Parts
- Real life use case examples – How others have benefitted from adopting the technology.

DAY 2

High Strength 3d Printing for Manufacturing

- Discussion of printed composites with carbon fiber, Kevlar, fiberglass, and HSHF fiberglass
- Discussion of printed metals such as stainless steel, tool steels, Inconel, and pure copper
- Application training – Sample parts will be presented, and their features, orientations, and uses will be discussed.



Software instruction and demonstration

- Exposure to both proprietary and generic printing software and how to import and slice STL files.
- How to quickly analyze CAD models for 3D printing efficiency

Design for Additive Manufacturing (DfAM)

- Understanding the Design Constraints – Overview of the specific rules and guidelines of designing for FDM printers
- Identifying a Part's Core Functionality – Understand the functional requirements of a part to discover any unexpected or potential challenges early on in the design process
- Selecting a Fiber for the Application – matching prioritized loading and environmental needs with the fiber's properties
- Incorporating Hardware into Parts – Discussing when to add COTS hardware vs 3D printing, common useful applications, and considerations for designing embedded hardware
- Optimizing Support Structures – Learn different techniques to eliminate supports when possible as well as leveraging the Support Angle Feature for easy removal
- Multi-Body Part Designs – Best practices on how & when to split a part

DAY 3

Site visit to participant's facility, where they will learn how to:

- Understand the organization's goals and pain points
- Identify applications on the manufacturing floor – Discussion of machines such as mills, lathes, press brakes, and robotic arms; and where to look for additive opportunities.
- Calculate Return on Investment (ROI) – What to consider when calculating ROI including reduced lead times, increased opportunities, cost reduction, waste reduction, reduced inventory, and keeping staff and machines focused on production.