

Course ID
PLST-DES
Course Duration
3 days

Course Title
Plastics: Design for Producibility, Molds, and Molding

Related Courses

- Plastic Materials Selection (PLAST-MS, 4 days)
- Plastic Parts Failure Analysis (PLAST-FA, 3days)
- Materials and Methods: Designing for Plastics vs. Other Materials (PLST-OTHER, 2 days)
- Poka-Yoke: A Comprehensive Workshop for Improving Product and Process Quality By Preventing Defects (POKAYOKE, 2 days)
- Geometric Dimensioning and Tolerancing (GDT, 2 days)
- Statistical Tolerance Analysis: A Comprehensive Workshop (S-TOL-ANAL, 2 days)
- Statistical Process Control (SPCON, 3 days)
- Root Cause Failure Analysis and Experiment Design Techniques (RCFA3D, 3 days)
- Cost Reduction: Opportunities and Strategies (COSTRED, 2 days)
- Quality Management (QUALMGT, 3 days)

Aimed At

Those whose work requires knowledge of injection molded plastic product design, tooling, and processing – with special emphasis on designing for producibility.

Prerequisites

While there are no formal prerequisites, it will be helpful for the participants to have had some prior exposure to the topics and issues discussed in this course.

Group Size

5-25

Course in a Nutshell

With an ever increasing plastic parts content of products across a variety of industries, there is a critical need for a course on designing plastic parts for producibility, a niche this course seeks to fill. After an introduction to plastics, the course moves on to an in-depth discussion of designing for producibility and improved performance, tolerance considerations, injection molds, and molding.

The full three-day course is recommended for those who wish to study the subject in depth, whereas a two-day, condensed version may suffice for the needs of those requiring a basic overview of the field.

Customize It!

We can customize this course to your team's technical needs, usually at little to no added cost. While the primary audience of this course is product design engineers and their management, the course can also be tailored to the needs of marketing, technical sales, quality control/management, and procurement professionals, as well as others with interest in this subject.

A condensed two-day version of this course that presents the content in less depth is also available.

Schedule post-class follow-up consultation for continuing in-house implementation of the principles and techniques discussed in this course.

Course Outline

- Plastics
 - The History of Plastics
 - Study of Plastics / Resins
 - Families of Plastics
 - Plastics Identification
 - Resin Selection
 - Testing Plastic Parts
- Design for Producibility
 - Approach to “Plastic” Product Design
 - Common Additives / Fillers
 - Product Design / Development
 - Rib Construction
 - Shutoffs in Plastic Parts
 - Designing with No / Minimum Sink
 - Boss Design
 - Proper Radii Design
 - Living Hinges
 - Designing for Assembly
 - Snap Fits
 - Screw Bosses
 - Ease of Assembly, Etc
 - Tolerances Expected for Injection Molded Parts
(Based on Size and Resin Type)
 - Designing for Improved Mechanical Characteristics
- Injection Molds
 - “A” & “B” Series
 - Three Plate Molds
 - Hot Manifolds
 - Stripper Plate Molds
 - Reverse Ejection Molds
 - Slides and Lifters
 - Mechanicals and Hydraulics
 - Plate Sequencers
 - Double Ejection
 - Gate Types
- Molding
 - Injection Molding Machine
 - Interfacing Between the Mold and the Machine

- Most Common Injection Molding Defects
 - Flash
 - Knit Lines
 - Cold Flow
 - Brittle Parts
 - Warp and More
 - Cause/ Effect and Solutions.
- Course Wrap-up: Recap, Q/A, and Evaluations

How You Will Learn

- A highly experienced plastics engineer with a life-time of hands-on design, management, consulting, and training experience will present this course in an interactive lecture format.
- Along with the lecture, we use interesting group activities and a large set of props (including molds and defective plastic parts) to enrich the instruction and drive home the essential points.
- You will receive a Participant Handbook that includes all materials presented in class, which will help you remember and retain what you learned and apply it on your job.
- You will learn key plastics engineering concepts and techniques from a practical perspective.

Rev 2JI-jv