Global Horizon
TRAINING CENTER

Training Course:
Investigating and Prevention of Failure in Plastic Components

7 - 11 September 2025
In-House

Training Course:
Investigating and Prevention of Failure in Plastic Components

Training Course code: EN236184 From: 7 - 11 September 2025 Venue: In-House - Training Course Fees: Euro

Introduction

In today's competitive industrial landscape, plastic components are widely used across automotive, aerospace, consumer goods, medical, and packaging industries. Despite their benefits, these materials can fail due to environmental factors, design flaws, material selection errors, or processing issues.
This training program, designed by Global Horizon Training Center, aims to equip engineers, quality professionals, and technical managers with the knowledge and practical skills required to investigate, analyze, and prevent failure in plastic components. The program blends theory and application to improve product reliability, reduce recalls, and enhance performance.

Objectives

By the end of this program, participants will be able to:

- Understand the mechanisms and root causes of failure in plastic components.
- Apply scientific and engineering methods to failure investigations.
- Analyze failure modes using microscopy, thermal, and mechanical analysis.
- Develop effective preventive strategies in design, material selection, and manufacturing.
- Enhance component reliability and improve failure documentation and reporting processes.

Course Methodology

- Instructor-led sessions with real-world case studies.
- Interactive discussions and scenario-based learning.
- Visual presentations and analysis of failed parts.
- Structured investigation frameworks and problem-solving approaches.
- Technical documentation and failure report development.

Organizational Impact

- Reduction in product recalls and warranty costs.
- Improved reliability and customer satisfaction.
- Enhanced capability in design validation and risk mitigation.
- Strengthened failure documentation and traceability processes.
- Development of internal expertise in plastic component evaluation.

Target Audience

- Product and Design Engineers
- Quality Assurance & Quality Control Engineers
- Failure Analysis and Reliability Engineers
- Materials and Process Engineers
- R&D Personnel involved with plastic components
- Technical Managers and Supervisors in manufacturing industries

Outline

Day 1: Introduction to Plastic Materials and Failure Modes

- Classification of plastics: thermoplastics vs thermosets
- Common applications and performance characteristics
- Introduction to failure modes brittle fracture, creep, fatigue, environmental stress cracking
- Factors influencing plastic failures: thermal, mechanical, chemical, and environmental

Day 2: Failure Investigation Techniques and Tools

- The failure analysis process: data collection to root cause identification
- Visual inspection and macroscopic analysis
- Microscopy techniques: optical and scanning electron microscopy SEM
- Thermal analysis: DSC, TGA
- Spectroscopy: FTIR, Raman

Day 3: Case Studies in Plastic Component Failures

- Real-world failures in automotive, electronics, and packaging
- Analysis of design flaws and processing errors
- Environmental and service life factors
- Correlation of material properties with failure behavior
- Lessons learned and corrective action planning

Day 4: Prevention Strategies and Design Considerations

- Design for reliability in plastic components
- Best practices in material selection and processing
- Mold design and injection molding parameters
- Additives and fillers: their role and risks
- Accelerated life testing and validation techniques

Day 5: Documentation, Reporting, and Continuous Improvement

- Structuring a failure analysis report
- Communicating findings to stakeholders
- Implementing corrective and preventive actions CAPA
- Integrating lessons learned into design and production cycles
- Group activity: simulated failure investigation and report development

Registration form on the Training Course: Investigating and Prevention of Failure in Plastic Components

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Complete & Mail or fax to Global Horizon Training Center (GHTC) at the address given below

Delegate Information

Full Name (Mr / Ms / Dr / Eng): .....
Position: .....
Telephone / Mobile: .....
Personal E-Mail: .....
Official E-Mail: .....

Company Information

Company Name: .....
Address: .....
City / Country: .....

Person Responsible for Training and Development

Full Name (Mr / Ms / Dr / Eng): .....
Position: .....
Telephone / Mobile: .....
Personal E-Mail: .....
Official E-Mail: .....

Payment Method

- ☐ Please find enclosed a cheque made payable to Global Horizon
- ☐ Please invoice me
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Easy Ways To Register

Telephone: +201095004484 to provisionally reserve your place.	Fax your completed registration form to: +20233379764	E-mail to us : info@gh4t.com or training@gh4t.com	Complete & return the booking form with cheque to:Global Horizon 3 Oudai street, Aldouki, Giza, Giza Governorate, Egypt.