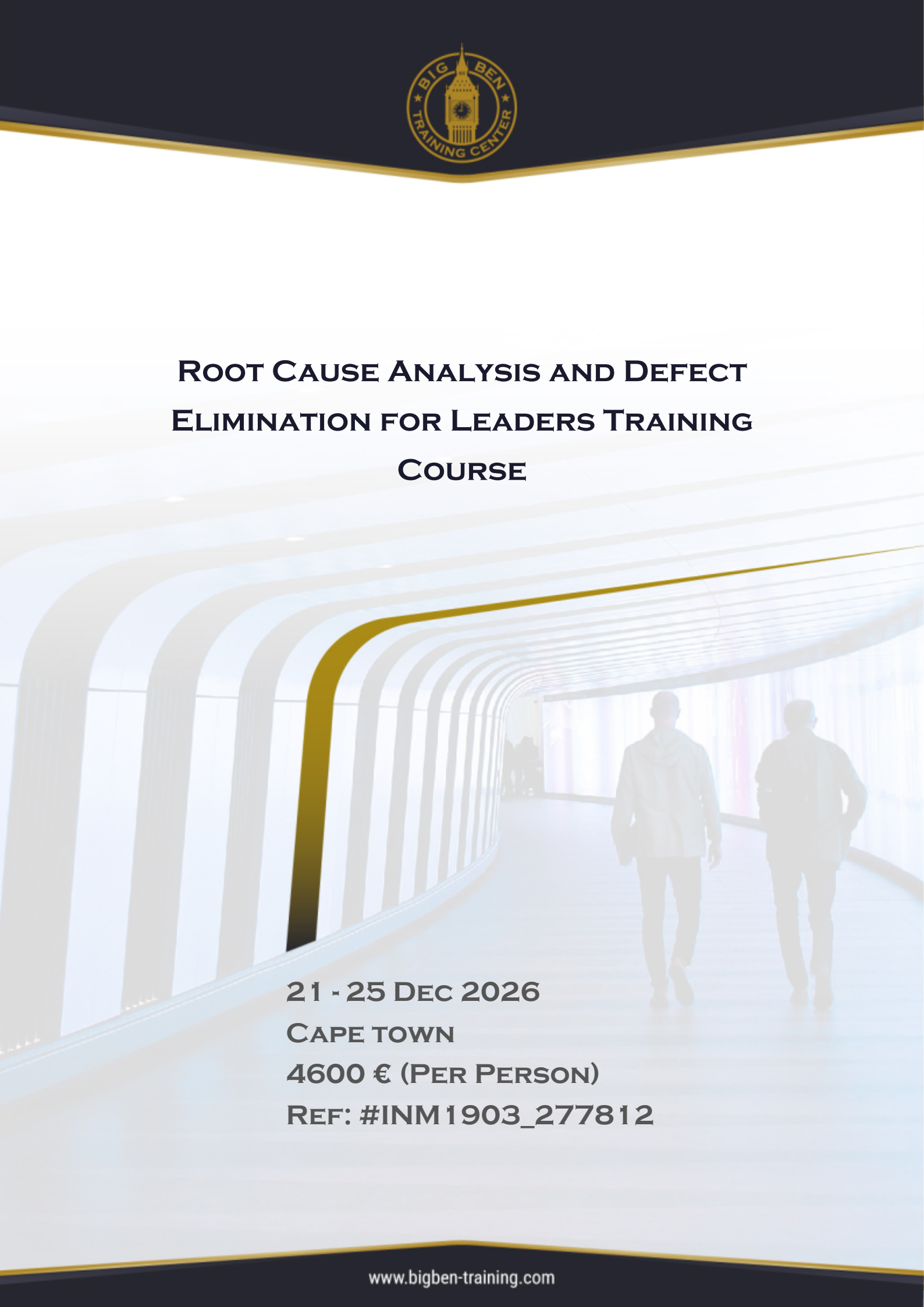
Root Cause Analysis and Defect Elimination for Leaders Training Course



21 - 25 Dec 2026

Cape town

4600 € (Per Person)

Ref: #INM1903_277812

Course Introduction / Overview:

This intensive training course is designed to transform maintenance leaders from a reactive to a proactive mindset, focusing on the core principles of Root Cause Analysis (RCA) and systematic defect elimination. In today's competitive industrial landscape, simply fixing breakdowns is no longer sufficient; true operational excellence is achieved by preventing them from ever occurring. This program delves deep into the methodologies that uncover the latent causes of equipment failure and process inefficiencies. Drawing upon foundational concepts from quality pioneers like W. Edwards Deming, who emphasized understanding and controlling variation, participants will learn to look beyond the immediate symptoms of a problem. The curriculum explores structured problem-solving frameworks discussed in literature such as "Root Cause Analysis: The Core of Problem Solving and Corrective Action". At BIG BEN Training Center, we provide a comprehensive learning journey that equips leaders with the analytical tools and leadership skills to foster a culture of reliability and continuous improvement, ultimately driving down costs, enhancing safety, and boosting plant productivity. This course is the definitive guide for any leader committed to achieving world-class maintenance performance and asset management.

Target Audience / This training course is suitable for:

- Maintenance Managers and Supervisors.
- Reliability Engineers and Specialists.
- Operations and Production Leaders.
- Lead Technicians and Maintenance Planners.
- Continuous Improvement and Quality Assurance Professionals.
- Plant and Facility Managers.
- Engineering Team Leaders.
- Technical Services Managers.

Target Sectors and Industries:

- Manufacturing and Industrial Production.
- Oil and Gas Exploration and Refining.
- Power Generation and Utilities.
- Pharmaceuticals and Biotechnology.
- Aerospace and Automotive Manufacturing.
- Mining and Heavy Industry.
- Food and Beverage Processing.
- Governmental bodies including public works, defense, and municipal services.
- Logistics and Transportation.

Target Organizations Departments:

- Maintenance and Engineering.
- Operations and Production.
- Quality Assurance and Control.
- Health, Safety, and Environment (HSE).
- Asset Management and Integrity.
- Reliability and Continuous Improvement.
- Facilities Management.
- Technical Support.

Course Offerings:

By the end of this course, the participants will have able to:

- Master a variety of Root Cause Analysis (RCA) techniques from basic to advanced levels.
- Develop and implement effective defect elimination and error-proofing strategies.
- Lead investigation teams with confidence and structure.
- Utilize data analysis to identify failure trends and prioritize maintenance efforts.
- Create robust Corrective and Preventive Action (CAPA) plans that address systemic issues.
- Foster a proactive maintenance culture focused on continuous improvement.
- Enhance equipment reliability and reduce costly unplanned downtime.
- Effectively communicate investigation findings and recommendations to senior management.
- Measure the financial impact and return on investment of reliability initiatives.
- Apply human factors analysis to understand the role of human error in failures.

Course Methodology:

The training methodology at BIG BEN Training Center is centered on experiential learning and practical application to ensure that theoretical knowledge is translated into tangible skills. This course moves beyond traditional lectures, employing a highly interactive and engaging format. Participants will work through real-world case studies drawn from various industries, allowing them to apply RCA tools in a controlled environment. Group workshops and team-based problem-solving exercises form a core component, fostering collaboration and mirroring the cross-functional nature of real-life failure investigations. The sessions include facilitated discussions, brainstorming activities, and hands-on practice with tools like Fishbone diagrams and Fault Tree Analysis. Our expert instructors provide continuous feedback and guidance, ensuring each participant can overcome challenges and build confidence. The learning environment is designed to be dynamic and supportive, encouraging participants to share their own workplace challenges and develop practical solutions they can implement immediately upon returning to their roles. This immersive approach guarantees a deeper understanding and higher retention of the course material.

Course Agenda (Course Units):

Unit One: The Foundations of Proactive Maintenance Leadership

- The high cost of reactive maintenance and equipment failure.
- Shifting from a "fix-it" mentality to a "prevent-it" culture.
- Defining Root Cause Analysis (RCA) and Defect Elimination.
- The leader's role in driving reliability and accountability.
- Understanding the difference between symptoms, direct causes, and root causes.
- Introduction to the DMAIC (Define, Measure, Analyze, Improve, Control) framework.
- Key performance indicators (KPIs) for maintenance excellence (MTBF, MTTR).

Unit Two: Core Root Cause Analysis Methodologies

- The 5 Whys technique for simple and rapid analysis.
- Developing effective problem statements and scoping investigations.
- Ishikawa (Fishbone) Diagrams for brainstorming potential causes.
- Practical workshop on constructing detailed Fishbone diagrams.
- Introduction to Fault Tree Analysis (FTA) for complex systems.
- Logic gates and event symbols in FTA.
- Team-based exercise in applying the 5 Whys and Fishbone analysis.

Unit Three: Data-Driven Analysis and Advanced Tools

- Gathering and preserving effective evidence after a failure.
- Using Pareto Analysis to identify the "vital few" problems.
- Introduction to Failure Mode and Effects Analysis (FMEA).
- Calculating Risk Priority Numbers (RPN) to guide actions.
- Analyzing maintenance data and work order history for trends.
- Basics of scatter diagrams and stratification for data visualization.
- Workshop on conducting a simplified FMEA for a common piece of equipment.

Unit Four: From Analysis to Sustainable Solutions

- Developing effective Corrective and Preventive Action (CAPA) plans.
- The hierarchy of controls for implementing robust solutions.
- Techniques for error-proofing (Poka-Yoke) processes and tasks.
- Managing change and overcoming resistance within the maintenance team.
- Validating the effectiveness of implemented solutions.
- Documenting the RCA process and communicating findings to stakeholders.
- Case study analysis of successful and unsuccessful solution implementations.

Unit Five: Cultivating a Culture of Defect Elimination

- Principles of Reliability-Centered Maintenance (RCM).
- Integrating RCA into daily work management processes.
- Training and empowering technicians in basic problem-solving.
- Leadership strategies for sustaining continuous improvement (Kaizen).
- Conducting effective incident review meetings.
- Celebrating successes and sharing lessons learned across the organization.
- Developing a personal action plan for implementing course concepts.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

To what extent can a purely data-driven approach to defect elimination overlook the critical human factors that contribute to equipment failure?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by uniquely integrating the technical discipline of Root Cause Analysis with the essential principles of modern maintenance leadership. While many programs focus solely on the tools, this training course emphasizes the leader's role in cultivating a proactive culture where defect elimination becomes a shared responsibility, not just a specialist's task. We move beyond simply teaching how to use a Fishbone diagram; we explore how to lead a team through the analytical process, manage the human dynamics of an investigation, and effectively champion solutions to senior management. The curriculum is built on a foundation of practical application, using industry-relevant case studies and interactive workshops that challenge participants to solve complex problems collaboratively. Rather than a theoretical overview, this is an immersive experience designed to build tangible skills and confidence. The focus on developing sustainable Corrective and Preventive Action (CAPA) plans and understanding the principles of Reliability-Centered Maintenance ensures that the learning translates into long-term improvements in asset performance, safety, and operational efficiency, providing a strategic advantage that goes far beyond basic problem-solving.