Fabrication and Welding for Maintenance Professionals Training Course



16 - 20 Nov 2026

Cape town

4600 € (Per Person)

Ref: #INM1209_265583

Course Introduction / Overview:

This comprehensive training course is designed to empower maintenance professionals with the critical skills needed for modern welding and fabrication. The program moves beyond basic repair, offering an in-depth exploration of advanced techniques and industry best practices. It covers a wide range of topics from different welding processes like Shielded Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), and Flux-Cored Arc Welding (FCAW) to the principles of metal fabrication, including cutting, bending, and joining. Participants will gain practical knowledge in welding quality control, inspection techniques, and how to interpret blueprints and technical drawings. The curriculum is informed by established texts like Howard B. Cary's "Modern Welding Technology," ensuring a foundation in the core principles of the field. This course not only focuses on practical application but also addresses the broader context of welding safety and industry standards, providing a complete skill set for professionals. It is an essential program for those who want to improve their maintenance capabilities and contribute to the efficiency and longevity of assets. BIG BEN Training Center has designed this course to be hands-on, interactive, and directly applicable to real-world scenarios, ensuring every participant leaf with a high level of proficiency. The focus is on practical, repeatable skills that lead to improved operational performance and a safer working environment.

Target Audience / This training course is suitable for:

- Maintenance and repair technicians.
- Mechanical engineers and supervisors.
- Facility and plant maintenance staff.
- Construction and manufacturing professionals.
- Welders and metal fabricators are seeking to update their skills.
- Quality assurance and inspection personnel.
- Government agency employees involved in infrastructure maintenance.

Target Sectors and Industries:

- Oil and gas.
- Manufacturing.
- Construction.
- Aerospace and defense.
- Automotive.
- Marine and shipbuilding.
- Public work and government agencies.

Target Organizations Departments:

- Maintenance and engineering.
- Operations.
- Quality control and assurance.
- Production.
- Facilities management.
- Health, safety, and environment (HSE).

Course Offerings:

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

- Master various welding processes, including SMAW, GMAW, and FCAW.
- Apply best practices in metal fabrication techniques like cutting and shaping.
- Read and accurately interpret blueprints, technical drawings, and welding symbols.
- Perform effective welding quality control and non-destructive testing (NDT) inspections.
- Troubleshoot common welding defects and implement corrective measures.
- Ensure adherence to industry safety standards and regulatory requirements.
- Select the appropriate materials and equipment for specific fabrication projects.

Course Methodology:

This course uses a highly practical and interactive approach to ensure participants gain hands-on expertise in welding and fabrication. The training methodology combines theoretical instruction with extensive practical sessions in a simulated workshop environment. Each unit includes in-depth case studies based on real-world maintenance challenges, allowing participants to apply their knowledge in a structured way. This approach is reinforced through group discussions and team-based activities that encourage collaborative problem-solving and the exchange of practical insights. The instructor, an experienced professional in the field, provides continuous feedback and guidance throughout the course, helping each participant refine their techniques and build confidence. The program also incorporates a variety of instructional tools, including video demonstrations of complex processes, detailed equipment setup procedures, and interactive quizzes to reinforce key concepts. BIG BEN Training Center believes that this combination of focused theory, hands-on practice, and ongoing expert feedback is the most effective way to develop a high level of proficiency in welding and fabrication for maintenance professionals.

Course Agenda (Course Units):

Unit One: Foundations of Welding and Fabrication for Maintenance

- Fundamentals of welding processes and their applications in maintenance.
- Introduction to common metals and their properties.
- Safety protocols and personal protective equipment (PPE) in a welding environment.
- Understanding welding symbols on blueprints and technical drawings.
- Proper setup and use of welding equipment.
- An overview of shielded metal arc welding (SMAW) and its applications.
- Basics of oxyfuel cutting and plasma arc cutting.

Unit Two: Gas Metal Arc Welding (GMAW) and Flux-Cored Arc Welding (FCAW)

- Principles and operation of Gas Metal Arc Welding (GMAW).
- Setting up GMAW equipment for different materials and thicknesses.
- Practical exercises in GMAW for various joint configurations.
- Introduction to Flux-Cored Arc Welding (FCAW) processes.
- Selecting the right FCAW wire and shielding gas for maintenance tasks.
- Hands-on practice with FCAW to weld structural components.
- Troubleshooting common issues with GMAW and FCAW.

Unit Three: Advanced Fabrication Techniques and Materials

- Understanding various metal fabrication techniques.
- Bending, sharing, and forming materials using workshop tools.
- Precision layout and measurement for accurate fabrication.
- Working with different types of metal, including stainless steel and aluminum.
- Introduction to Gas Tungsten Arc Welding (GTAW) for precision work.
- Using jigs and fixtures to ensure accuracy and repeatability.
- Strategies for effective material selection and cost management.

Unit Four: Welding Quality Control and Inspection

- Importance of welding quality assurance and control.
- Visual inspection methods for identifying common weld defects.
- Non-destructive testing (NDT) techniques like dye penetrant and magnetic particle inspection.
- Understanding and applying welding procedure specifications (WPS).
- Reviewing and documenting inspection results.
- Common causes of weld discontinuities and how to prevent them.
- Case studies in quality control for maintenance repairs.

Unit Five: Maintenance Applications and Problem-Solving

- Applying welding and fabrication skills to real-world maintenance scenarios.
- Developing a systematic approach to repair and restoration projects.
- Advanced troubleshooting for complex fabrication failures.
- Practical exercises on repairing cracked or worn components.
- Implementing a maintenance program that includes welding and fabrication.
- The role of continuous improvement in welding and fabrication for maintenance.
- Final practical project review and certification preparation.

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:

In an increasingly automated industrial landscape, how does the mastery of traditional hands-on skills in welding and fabrication remain a critical, value-added capability for maintenance professionals?

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

This course stands out because it is not just about learning how to weld, but about mastering welding and fabrication specifically for the demands of a maintenance environment. Many courses focus on basic joining techniques, while this program offers a holistic view, integrating a deep understanding of materials science, advanced fabrication methods, and rigorous quality control. The curriculum is heavily practical, using a case-study approach to simulate real-world scenarios. We emphasize the skills needed to diagnose a problem, select the right approach, and execute a durable, reliable repair. Instead of simply training participants on tools, we teach them how to think like a maintenance professional. The expertise of our instructors, combined with BIG BEN Training Center's commitment to hands-on training, ensures that every participant is prepared to tackle complex challenges with confidence. This course's focus on both theoretical knowledge and practical application, from blueprint reading to defect analysis, makes it an indispensable asset for any organization that relies on the effective upkeep of its physical assets.