Strategic DCS Migration and Alarm Management Training Course

19 - 23 Oct 2026

Cape town

4600 € (Per Person)

Ref: #ERE8705_273994

Course Introduction / Overview:

This comprehensive training course provides an in-depth exploration of modernizing industrial control systems through strategic Distributed Control System (DCS) migration and the implementation of effective alarm management systems. In today's competitive industrial landscape, reliance on aging legacy control systems poses significant risks, including operational inefficiencies, increased maintenance costs, and potential safety hazards. Similarly, poorly managed alarm systems can lead to operator overload and catastrophic incidents. This course, offered by BIG BEN Training Center, addresses these challenges head-on by providing a structured, holistic framework for planning and executing seamless DCS migrations while establishing a robust alarm management lifecycle. Drawing upon internationally recognized standards such as ISA 18.2 and EEMUA 191, the curriculum delves into both the technical complexities of system upgrades and the critical human factors involved. We will explore concepts discussed by leading experts like Nicholas P. Sands and in seminal works such as "The Alarm Management Handbook", ensuring participants gain a deep, practical understanding. This program is designed to equip professionals with the strategic foresight and technical skills necessary to lead successful modernization projects, enhance operational safety, and drive plant performance to new heights.

Target Audience / This training course is suitable for:

- Control Systems Engineers.
- Process and Operations Engineers.
- Automation and Instrumentation Specialists.
- Maintenance Supervisors and Technicians.
- Plant and Operations Managers.
- Project Managers and Engineers involved in system upgrades.
- Process Safety Professionals.
- IT/OT professionals responsible for industrial networks.

Target Sectors and Industries:

- Oil and Gas Production and Refining.
- Petrochemical and Chemical Manufacturing.
- Power Generation and Utilities.
- Pharmaceuticals and Biotechnology.
- Water and Wastewater Treatment Facilities.
- Pulp and Paper Manufacturing.
- Mining and Metals Processing.
- Governmental bodies and public sector utilities.

Target Organizations Departments:

- Engineering and Technical Services.
- Plant Operations and Production.
- Maintenance and Reliability.
- Project Management and Execution.
- Health, Safety, and Environment (HSE).
- Process Safety Management (PSM).
- Information Technology (IT) and Operational Technology (OT).
- Capital Projects and Planning.

Course Offerings:

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

- Develop a comprehensive, risk-based strategy for legacy DCS migration.
- Master the principles of the alarm management lifecycle according to the ISA 18.2 standard.
- Create and implement a robust alarm philosophy document for their facility.
- Lead alarm rationalization workshops to eliminate nuisance alarms and improve operator response.
- Evaluate different DCS migration and cutover strategies, including hot, cold, and parallel approaches.
- Design high-performance Human-Machine Interfaces (HMIs) that enhance operator situational awareness.
- Manage the technical and logistical challenges of project execution, from FEED to commissioning.
- Analyze alarm system performance using key performance indicators (KPIs) for continuous improvement.
- Integrate industrial cybersecurity considerations into control system modernization projects.
- Apply effective change management techniques to ensure smooth adoption of new systems by operations staff.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be highly interactive, engaging, and practical, ensuring that participants can immediately apply their learning in a real-world context. This course moves beyond traditional lectures by incorporating a dynamic blend of expert-led presentations, in-depth case study analyses of successful and challenging DCS migration projects, and collaborative group workshops. Participants will engage in hands-on exercises focused on critical tasks like alarm rationalization and developing an alarm philosophy document. Team-based problem-solving sessions will encourage the sharing of diverse experiences and foster a deeper understanding of complex project management and change management issues. The course emphasizes a participatory learning environment where open discussions and Q&A sessions are encouraged, allowing for tailored insights into specific challenges faced by attendees. Through this multifaceted approach, which combines theoretical knowledge with practical application, participants will build not just competence but also the confidence to lead and execute complex control system modernization and alarm management initiatives within their own organizations.

Course Agenda (Course Units):

Unit One Foundations of DCS Modernization and Alarm Management

- The business case for DCS migration and operational excellence.
- Evolution of Distributed Control Systems (DCS) and legacy system challenges.
- Introduction to alarm management principles and historical context.
- Understanding key industry standards: ISA 18.2 and EEMUA 191.
- The alarm management lifecycle model.
- Defining the roles and responsibilities of the cross-functional team.
- Initial benchmarking of your current DCS and alarm system performance.

Unit Two Strategic Planning for DCS Migration Projects

- Front-End Loading (FEL) and Front-End Engineering Design (FEED) for migration.
- Developing a detailed project scope and migration roadmap.
- Technology selection and vendor evaluation criteria.
- Comprehensive risk assessment and mitigation planning.
- Budgeting, scheduling, and resource allocation for automation projects.
- Managing obsolescence and developing a long-term lifecycle plan.
- Gaining stakeholder buy-in and effective project justification.

Unit Three Migration Execution, Testing, and Cutover

- Detailed design and engineering phase management.
- I/O migration strategies: reuse, rewire, and remote I/O.
- Control logic and HMI graphics migration techniques.
- Factory Acceptance Testing (FAT) and Site Acceptance Testing (SAT) protocols.
- Developing a robust cutover and commissioning plan.
- Comparing cutover strategies: hot, cold, parallel, and phased approaches.
- Post-migration support, stabilization, and performance monitoring.

Unit Four The Alarm Philosophy and Rationalization Process

- Developing a comprehensive and effective alarm philosophy document.
- The principles of alarm design and prioritization.
- Conducting effective alarm rationalization workshops.
- Techniques for alarm documentation and master alarm database management.
- Implementing alarm shelving and suppression strategies correctly.
- Introduction to state-based and dynamic alarming concepts.
- Managing change control for the alarm system.

Unit Five HMI Design, Human Factors, and Continuous Improvement

- Principles of high-performance HMI design for operator effectiveness.
- Addressing human factors and reducing operator fatigue and error.
- Designing effective alarm displays and summary screens.
- Monitoring alarm system performance with Key Performance Indicators (KPIs).
- Conducting regular alarm system audits and performance reviews.
- Implementing a culture of continuous improvement for alarm management.
- The future of control systems: advanced analytics and autonomous operations.

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:

As control systems become increasingly autonomous, what is the evolving role of the human operator in managing alarms and non-routine situations?

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

This course distinguishes itself by offering a uniquely integrated and strategic perspective on industrial automation, treating DCS migration and alarm management not as separate technical tasks but as interconnected pillars of operational excellence and process safety. While many courses focus narrowly on either the hardware upgrade or the alarm rationalization process, this program provides a holistic roadmap that encompasses the entire project lifecycle, from initial business justification to long-term performance optimization. It places a significant emphasis on the often-overlooked human factors, dedicating substantial content to high-performance HMI design and change management to ensure that technological advancements translate into tangible improvements in operator effectiveness and safety. By grounding every module in the practical application of leading industry standards like ISA 18.2, the course moves beyond theoretical knowledge. Participants will analyze real-world case studies and engage in practical workshops, equipping them with a strategic framework to foresee challenges, mitigate risks, and lead modernization projects that deliver lasting value and a safer, more efficient control environment.