Lean Six Sigma for Oil and Gas Operational Excellence Training Course



21 - 25 Dec 2026

Tokyo

5800 € (Per Person)

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Course Introduction / Overview:

The global oil and gas industry operates within a uniquely challenging environment characterized by market volatility, immense capital investment, and stringent safety and environmental regulations. In this context, achieving operational excellence is not merely an advantage but a fundamental necessity for survival and growth. This intensive training course is meticulously designed to equip professionals with the powerful methodologies of Lean and Six Sigma, tailored specifically to address the complexities of upstream, midstream, and downstream operations. Participants will delve into a structured framework for process improvement, waste elimination, and variation reduction, moving beyond theoretical concepts to practical application. Drawing on the foundational principles established by pioneers like Dr. Mikel J. Harry, this program demonstrates how to systematically enhance efficiency, reliability, and profitability. We will explore concepts akin to those in seminal works such as "The Goal" by Eliyahu M. Goldratt, focusing on identifying and resolving bottlenecks in production and supply chains. BIG BEN Training Center has developed this curriculum to empower organizations to build a sustainable culture of continuous improvement, ensuring they can navigate industry pressures and drive superior performance in every facet of their operations.

Target Audience / This training course is suitable for:

- Operations Managers and Supervisors.
- Process Engineers and Production Engineers.
- Project Managers and Team Leaders.
- Quality Assurance and Control Professionals.
- Maintenance and Reliability Engineers.
- Health, Safety, and Environment (HSE) Specialists.
- Supply Chain and Logistics Coordinators.
- Continuous Improvement and Operational Excellence Practitioners.
- Financial Analysts and Cost Controllers involved in operations.
- Geoscientists and Reservoir Engineers seeking process efficiency.

Target Sectors and Industries:

- Upstream Exploration and Production (E&P) companies.
- Midstream transportation, storage, and pipeline operators.
- Downstream refining, petrochemical, and marketing organizations.
- Oilfield services and equipment manufacturing companies.
- Engineering, Procurement, and Construction (EPC) contractors.
- Liquefied Natural Gas (LNG) processing and export facilities.
- Governmental bodies and regulatory agencies overseeing the energy sector.
- Renewable energy companies adapting process optimization principles.

Target Organizations Departments:

- Operations and Production.
- Engineering and Design.
- Maintenance and Asset Management.
- Health, Safety, and Environment (HSE).
- Quality Assurance and Quality Control (QA/QC).
- Supply Chain Management and Logistics.
- Project Management Office (PMO).
- Finance and Cost Control.
- Drilling and Well Services.
- Research and Development (R&D).

Course Offerings:

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

- Implement the DMAIC (Define, Measure, Analyze, Improve, Control) methodology in oil and gas projects.
- Utilize Value Stream Mapping to identify and eliminate non-value-added activities in operational workflows.
- Apply statistical process control (SPC) to monitor and manage critical processes in refining and production.
- Conduct effective Root Cause Analysis (RCA) to solve complex operational and safety-related problems.
- Develop robust control plans to sustain process improvements and prevent regression.
- Lead Kaizen events to drive rapid, focused improvements in specific work areas.
- Integrate Lean Six Sigma principles with existing Health, Safety, and Environment (HSE) management systems.
- Measure process capability and performance using key metrics relevant to the energy sector.
- Drive a culture of continuous improvement within their teams and departments.
- Manage change effectively during the implementation of process optimization initiatives.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be highly interactive, engaging, and directly applicable to the professional challenges faced by participants in the oil and gas industry. We move beyond traditional lectures to create a dynamic learning environment that fosters deep understanding and practical skill development. The course is built upon a foundation of expert-led instruction, where complex concepts are broken down into understandable and actionable components. This is heavily supplemented with real-world case studies drawn from upstream, midstream, and downstream scenarios, allowing participants to analyze and solve problems they are likely to encounter in their own roles. A significant portion of the training is dedicated to hands-on workshops and group exercises, where teams collaborate on simulated process improvement projects, applying tools like Value Stream Mapping and Root Cause Analysis. Interactive sessions, facilitated discussions, and peer-to-peer feedback are integral to the learning process, encouraging the exchange of diverse perspectives and experiences. This immersive approach ensures that participants not only learn the theory of Lean Six Sigma but also gain the confidence to apply these powerful tools to drive tangible operational excellence back in their workplace.

Course Agenda (Course Units):

Unit One: Foundations of Operational Excellence in Oil and Gas

- Introduction to Lean, Six Sigma, and Operational Excellence.
- The unique challenges and opportunities in the energy sector.
- Understanding waste (Muda, Mura, Muri) in upstream and downstream processes.
- The DMAIC and DMADV methodologies overview.
- Roles and responsibilities in a Lean Six Sigma deployment.
- Linking process improvement projects to strategic business objectives.
- Case study on a successful Lean implementation in a major oil company.

Unit Two: Define and Measure Phases for O&G Projects

- Developing a project charter and defining project scope.
- Identifying stakeholders and understanding the Voice of the Customer (VOC).
- Introduction to process mapping and SIPOC diagrams.
- Value Stream Mapping (VSM) for production and supply chain processes.
- Developing a data collection plan for operational metrics.
- Measurement System Analysis (MSA) and Gage R&R.
- Calculating baseline performance and process capability (Cp, Cpk).

Unit Three: Analyze Phase for Root Cause Identification

- Conducting detailed process analysis to identify bottlenecks.
- Brainstorming and cause-and-effect (Fishbone) diagrams.
- Introduction to statistical analysis for process data.
- Graphical analysis tools (histograms, Pareto charts, scatter plots).
- Root Cause Analysis (RCA) techniques like the 5 Whys.
- Hypothesis testing to validate potential root causes.
- Failure Mode and Effects Analysis (FMEA) for risk assessment in O&G operations.

Unit Four: Improve and Control Phases for Sustainable Results

- Generating, evaluating, and selecting improvement solutions.
- Implementing mistake-proofing (Poka-Yoke) in critical tasks.
- Utilizing 5S methodology for workplace organization and safety.
- Running effective Kaizen events for rapid improvement cycles.
- Developing pilot programs to test solutions before full-scale implementation.
- Introduction to Statistical Process Control (SPC) and control charts.
- Creating robust control plans to sustain gains and standardize new processes.

Unit Five: Advanced Application and Sustaining a Culture of Improvement

- Integrating Lean Six Sigma with Health, Safety, and Environment (HSE) goals.
- Lean leadership principles and managing organizational change.
- Developing Key Performance Indicators (KPIs) for continuous monitoring.
- The role of digital transformation and Industry 4.0 in operational excellence.
- Total Productive Maintenance (TPM) for asset reliability.
- A3 problem-solving and reporting framework.
- Capstone project simulation. applying the full DMAIC cycle to an O&G case study.

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:

How can the principles of Lean Six Sigma be adapted to manage the inherent geological and market uncertainties unique to the oil and gas exploration phase?

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

This training course distinguishes itself by moving beyond generic Lean Six Sigma principles and immersing participants in a curriculum specifically architected for the oil and gas industry. Unlike standardized programs, every module, case study, and simulation is contextualized to address the distinct challenges of upstream, midstream, and downstream operations. We focus on practical application rather than abstract theory, exploring how to apply Value Stream Mapping to a drilling campaign, use Statistical Process Control to optimize refinery yields, or conduct a Root Cause Analysis for a pipeline integrity issue. The course content deeply integrates critical industry concerns, demonstrating how process improvement methodologies can directly enhance Health, Safety, and Environment (HSE) performance and support asset integrity management, which are paramount in this high-risk sector. Furthermore, we bridge the gap between traditional process improvement and modern digital transformation, discussing how Lean Six Sigma provides the foundational framework for leveraging data analytics and Industry 4.0 technologies effectively. The emphasis is on developing a holistic understanding, enabling participants to not just execute projects but to lead and sustain a culture of continuous improvement that drives tangible, long-term value in the complex energy landscape.