

Scandinavian Academy
Training Center

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Riyadh - Al Khaleej District - Sheikh Abdul Aziz Bin Abdul Rahman Bin Bishr Street - 13223 - Office No. 5 | P.O.BOX : 13224

Course: Process Plant Optimisation and Energy Conservation

Code	City	hotel	Start	End	price	Language - Hours
MA-128SA	Al Baha	Hotel Meeting	2027-04-04	2027-04-08	13950 SR	En - 25

The Course

Plant integrity and reliability is the cornerstone of process plant optimization. For optimization benefits to be sustainable, production interruptions must be kept to a minimum which requires effective management of degradation processes that affect equipment and systems and effective inspection and maintenance strategies, plans and methods. Plant optimization can be an effective way to achieve improved profitability without the large investment associated with building a new plant.

Common industrial processes and systems, such as steam, cooling water, process heating, and electric motors consume most of the energy and offer significant opportunities for savings. Process changes such as advanced controls, new catalysts, and new technologies also present opportunities for plant optimization. This course will provide a comprehensive review of the various aspects of process plant integrity as the essential foundation for sustainable plant profitability and optimization.

Principal emphasis is placed on:

- understanding the elements of plant optimization
- systematic and coordinated efforts by engineering, operations, and maintenance functions
- maximisation of plant availability, reliability and productivity
- minimising operational costs
- safeguarding of plant integrity over its intended life based on total life cycle cost principles

The Goals

- To assist participants in clearly understanding what plant optimization and energy conservation is all about – the drivers, the potential benefits, and how to realize them
- To enhance the business focus of participants and equip them to make more contributions to sustainable plant profitability
- Learn how to identify the most attractive opportunities for energy savings
- Provide the delegate with managerial tools to effectively optimise plant operations
- To provide participants with practical and effective methods and tools to perform technical and economic evaluations of the alternatives

The Process

The course combines presentations and discussions of topics covered with relevant practical examples. It combines sound engineering and economic principles, methods, and best industry practices and enforces the learnings with Case Studies and Question & Answer workshops to maximize the benefits to the participants.

The Benefits

Delegates will:

- Gain a sound understanding of the main elements of plant integrity and reliability and why this is the cornerstone of sustainable plant optimization and energy efficiency.
- Improve their understanding of the business aspects of the process plant which will help them focus on improving the economic performance.
- Learn how to perform key project analyses including technical, economic, and environmental evaluations.
- Enhance their competence and productivity thereby enhancing their competence

and performance level and making additional value added contributions to their organization.
- Develop technical and analytical skills necessary for conducting technical evaluations.
- Have skills necessary to participate in plant energy audits.
- Be able to apply risk-based methodologies in inspection and maintenance.

The Results

- Through effective management of energy use, the plant can minimize the overall cost of energy.
- By diligent use of process optimisation techniques, the company can improve production rates while maintaining best safety practices.
- Management can lessen the risk associated with production operations while realizing direct measurable bottom line savings.
- The company will be able to enhance its plant reliability and integrity by using improved maintenance strategies and methods based on risk-based inspection and maintenance.
- Lower life cycle costs can be achieved while complying with codes and standards, and other regulatory requirements.
- The company will have personnel who will have the economic and analytical skills necessary for performing credible economic evaluations.

The Core Competencies

Planning and predictive maintenance of plant is vital to the budgetary success of the operations organisation. On completion of this seminar the delegate will be able to critically analyse the methodologies employed within the organisation and instigate improvements where required.

Technical knowledge is key to effective control and peer respect within any maintenance organisation; when this is achieved personal satisfaction follows. This seminar will give the delegate the required level of technical knowledge and skill to

achieve that personal satisfaction.

The Programme Content

Day One : Process Plant Operation, Integrity and Reliability

- Process Plant Optimization and Energy Conservation – Overview
- Asset Integrity Management (AIM) and Optimization - Integrating operation, inspection, maintenance effort
- Plant Integrity and Reliability – Cornerstone of Plant Optimization and Energy Management
- Operation and Maintenance Impacts on Plant Integrity and Reliability
- Equipment condition monitoring and assessment
- Establishment of Operating Windows (OW) - Maximize throughput within the limits defined by mechanical-structural integrity over the expected life of the asset components
- Effective management of change (MOC) program – On-going link between engineering, operations and maintenance
- Process Plant Economics

Day Two : Process Plant Optimization

- Process Control Basics
- Elements of Process Plant Optimization
- Components Required To Optimize An Industrial Process
- Process or a mathematical model of the process, and process variables which can be manipulated and controlled
- Application Of Simulation Technology To Plant Optimization And Control - Plant Optimization Models
- The Basics Of Heat Integration
- Pinch technology
- Heat exchanger train optimization

- Optimization procedure
- Application Of Simulation Technology To Plant Optimization And Control - Plant Optimization Models

Day Three : Industrial Energy Management – Energy Efficiency: Good for Business – Good for the Environment

- Energy Use and Optimization in Process industries
- Industrial Energy Management Techniques
- Industrial Energy Management and System Standards
- Industry Program for Energy Conservation
- Best Practices in Process Plant Energy Management
- Developing Customized Energy Management Program
- Obstacle that Face Energy Management Programs
- Workshop - Examples of energy management programs and standards – CIPEC, UNIDO. Incentives for energy assessment and energy retrofit projects

Day Four : Energy Conservation Opportunities

- Implementing an Energy Management Program
- Benchmarking Energy Intensity and Usage
- Technology Options - New energy-efficient technologies. Examples include Corrosion analyzer for advanced materials and fabricated components Fiber optic sensor for combustion measurement and control
- Energy Conservation Checklist
- Plant processes
- Mechanical Systems
- Electric Power
- Technical and Economic Evaluation of Potential Opportunities

Day Five : The Implications of Plant Optimization Activities

- Relating Energy Efficiency To Business Outcomes

- Impact of optimization activities and technological modifications to the plant
- Plant integrity and safety
- Technology licenses
- Financing agreements
- Impact on Human Resources – The human factor

The Scandinavian Academy for Training Center adopts the latest scientific and professional methodologies in training and human resource development, aiming to enhance the efficiency of individuals and organizations. Training programs are delivered through a comprehensive approach that includes:

- Theoretical lectures supported by PowerPoint presentations and visual materials (videos and short films).
- Scientific evaluation of participants before and after the program to measure progress and knowledge acquisition.
- Brainstorming sessions and practical role-playing to simulate real-life scenarios.
- Case studies tailored to align with the training content and participants work nature.
- Assessment tests conducted at the end of the program to evaluate the achievement of training objectives.

Each participant receives the training material (both theoretical and practical) in printed form and saved on a CD or flash drive. Detailed reports, including attendance records, final results, and overall program evaluations, are also provided.

Training materials are prepared professionally by a team of experts and specialists in various fields. At the end of the program, participants are awarded a professional attendance certificate, signed and accredited by the Scandinavian Academy for Training Center.

Program Timings: 9:00 AM to 2:00 PM

The program includes:

- A daily buffet provided during the sessions to ensure participants comfort.
- A closing ceremony on the final day to distribute certificates and celebrate participants achievements.
- **Note: All prices are exclusive of 15% Value Added Tax (VAT).**

Our Success Partners

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