


<p style="text-align: center;"><b>KLM Technology Group</b></p> <p>Practical Engineering Guidelines for Processing Plant Solutions</p>		<p style="text-align: right;">Page 1 of 7</p> <p style="text-align: right;">Rev 3.0</p>
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## **Advanced Course in Building Operational Excellence in the Operation's Team**

### **Introduction**

The success of every company depends of each employee's understanding of the key business components. Employee training and development will unlock the companies' profitability and reliability. When people, processes and technology work together as a team developing practical solutions, companies can maximize profitability and assets in a sustainable manner. Training and development is an investment in future success - give yourself and your employees the keys to success


It is strategically important that your operations team understands the fundamentals of process unit operations concepts. This is the difference between being in the best quartile of operational ability and being in the last quartile. There is vast difference in the operational ability of operating companies and most benchmarking studies have confirmed this gap in operational abilities.

The unit on stream time is an indication of operations training. A first quartile-operating unit's on stream factor is greater than 97%. If the on stream factor is below 97% a review of operation training and development is warranted. If on stream factor or average years of operating experience is declining a review of operations training and development should be considered.

Whether you have a team of new or seasoned employees, an introduction or review of these concepts is very beneficial in closing the gap if you are not in the best quartile, or maintaining a leadership position. Most studies show that a continuous reinforcement of best practices in operational principles is the most effective way to obtain the desired results. Training and learning should be an on going continuous life long goal.

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## Course Objective

This course will guide the participants to develop key concepts and techniques to operate and troubleshoot key fundamental unit operation systems. These key concepts can be utilized to make operating decisions that can improve your unit's performance.

Many aspects of operations can be improved including, product recoveries, purities and energy utilization, and safety. This cannot be achieved without first an understanding of basic fundamental principles of design and operation. These principles need to be understood in advance of operating and trouble shooting a process unit operation for the operator or problem solving to be effective.


This seminar focuses on the core building blocks of the process unit equipment. The program will emphasize process unit equipment fundamentals, safe utilization of these fundamentals by operations and maintenance personnel, and equipment troubleshooting techniques.

Unit Operations sectors covered include;

- 1) Furnaces,
- 2) Boilers and Steam Systems,
- 3) Steam Turbines, Pumps, and Compressors,
- 4) Distillation,
- 6) Piping and Heat Exchangers,
- 7) Process Control Systems,
- 8) Electrical Systems,
- 9) Catalyst and Molecular Sieve Systems,
- 10) Cooling Water Systems and Treatment,
- 11) Process Utilities
- 12) Relief Valve and Flare Systems.

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### **What You Can Expect To Gain;**

- The Process Unit Equipment Fundamentals – how each system functions from a hands on viewpoint
- Safe commissioning and utilization of process equipment
- Maintenance Guidelines
- Process furnace concepts and application
- Rotating equipment concepts and application
- Catalyst and mole sieves concepts and application
- Distillation concepts and troubleshooting
- Cooling water concepts and application
- Flare safety guidelines
- Safety Hazard Analysis
- Team Building
- Quality Assurance

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## Syllabus

1. Overview of the Processing Industry
2. Introduction to the Fundamentals of Unit Operations

Goal – To understand the basis fundamentals of process unit operations

What you will get – An overview of each of the process unit operations with emphasis on safety, commissioning, operation and maintenance.

- 1) Furnaces,
- 2) Boilers and Steam Systems,
- 3) Steam Turbines, Pumps, and Compressors,
- 4) Distillation,
- 6) Piping and Heat Exchangers,
- 7) Process Control Systems,
- 8) Electrical Systems,
- 9) Catalyst and Molecular Sieve Systems,
- 10) Cooling Water Systems and Treatment,
- 11) Waste Water Treatment and Process Utilities
- 12) Relief Valve and Flare Systems.


3. Process Economics

Goal – Introduction to economics while increasing the understanding of how process units can become more profitable.

What you will get – Techniques for developing key performance levers and tools to improve business performance and manage assets in a sustainable manner.

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4. Process Energy Management

Goal – Introduction to the fundamentals and economics of energy systems, while developing methodologies to assess and optimize energy management

What you will get – Specific opportunities to improve energy efficiency and ways to establish or improve an on going energy management program, including unit monitoring and benchmarking

5. Environmental Management

Goal - Introduction to the key concept of management of assets for long-term environmental sustainability.


What you will get – How to develop process industries that can maintain the environmental surroundings during construction and operation of process units.

6. Safety Training

Goal – To develop each person as an independent safety monitor – instead of a few dedicated safety personnel, each employee is a safe employee.

What you will get – An overview of safety incidents that has occurred in the past and techniques to prevent future incidents

- A. Hazard Analysis
- B. Root Cause Analysis
- C. Incident Investigation
- D. Process Safety Management Guidelines

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## 7. Team Building

Goal – To develop guidelines for working together in team environments.

What you will get – Techniques for working with individuals and building a functioning team

- A. Working in a Team
- B. Building a functioning Team
- C. Leading a Team

## 8. Quality Assurance and Improvements

Goal – Introduction of the key concept of continuous quality improvements.

What you will get – Statistical Process Control tools to help manage and improve process operations


## 9. Introduction to Project Management

Goal – Introduction to the fundamentals of project management. At some point almost every person in the process industry will be involved in a project. The primary goal of a project manager and the project team is to finish the project as specified, on schedule and within budget.

What you will get – How to develop the keys of project management - plan, organize, and control - This applies to virtually every activity on the project - starting with the kick off meeting and extending to all engineering, procurement and construction activities.

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## Who Should Attend:

- People who are making day to day decisions regarding operation, design, and economics of processing plants;
  1. 1<sup>st</sup> Line Operations personnel,
  2. Operation Supervisors,
  3. 1<sup>st</sup> Line Maintenance personnel,
  4. Maintenance Supervisors,
  5. Senior Plant Supervisors,
  6. Operations Engineers
  7. Process Support Engineers,
  8. Design Engineers,
  9. Cost Engineers.
- Ideal for veterans and those with only a few years of experience who want to review or broaden their understanding in Processing Plant Operations.
- Other professionals who desire a better understanding of subject

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