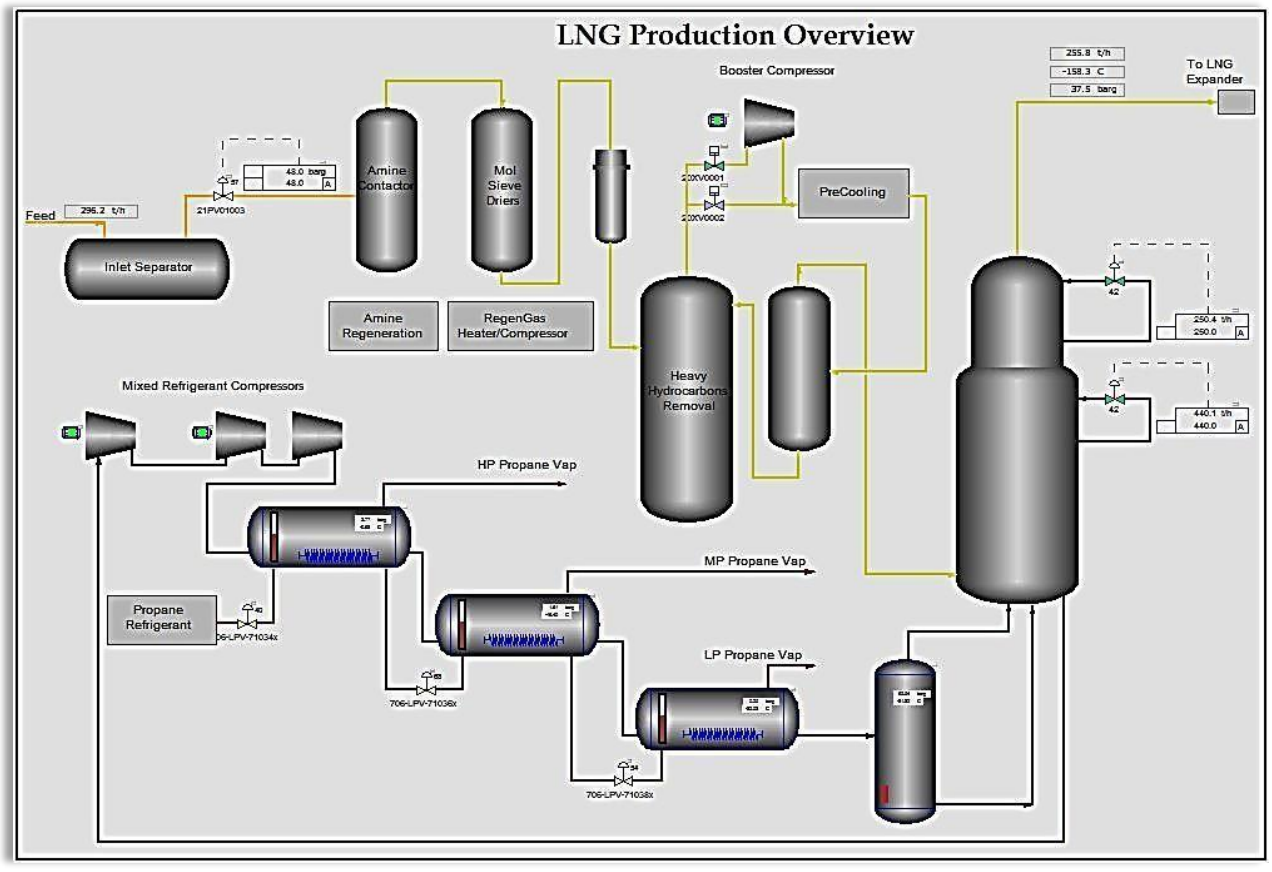
LNG Production Training

Simtech Oil & Gas



LNG Production Training

Delivery Method: - Instructor led Simulator-based LNG Production classroom Training

Location: - At Simtech Oil & Gas Office or Client premises

Course Title: - **LNG Production**

Language: - English

Duration: - 4 days (9:00 AM – 5:00 PM)

Course Material: - A complete set of course materials will be supplied. Software licenses will be valid during training.

Certificate: - Course attendance certificate, stating the core learning objective of training, issued upon completion

Prerequisites: - Basic knowledge of gas processing, controller tuning, Heat & Mass Transfer, Fluid Mechanics and unit operations, along with some understanding of Thermodynamics and phase equilibria is assumed, however, no previous experience using K-Spice is required.

Instructor: - Simtech Oil & Gas appointed Instructor

Objectives: - The simulator-based LNG Production interactive training course is intended to introduce the fundamental concepts of LNG Production facility. The objective of the LNG production training course is to give the participant's the possibility to operate and understand a typical LNG production facility. The high fidelity process simulation model (with C3MR liquefaction process) reflects the behaviour of a real plant, which allows for holistic learning of realistic process operations. The participants will learn about process, automation, safety and operational aspects of LNG production by following the most efficient concept of learning, '**Learn by Doing'**.

The key learning objectives of the course are;

- What is LNG, why it is produced?
- Understand the overall process of turning natural gas into LNG
- The basics of natural gas conditioning and liquefaction
- Learn the concept of Integrated control in LNG production
- Learn the C3MR Liquefaction Process in details
- Recognize how safety is designed and implemented to have safe production
- Learn about different Liquefaction processes
- Understand the dynamics of each unit operations and their interaction
- Discover the interaction of DCS with process dynamics
- Analyse operational aspects of LNG production
- Learn about key gas processing equipment, like compressor, compressor control, heat exchanger etc.

Who Should Attend?

The courses are designed to put your knowledge & skills in practice. This course will certainly help in developing facility & operability knowledge to build the concrete foundation for their chosen domains for

- Engineers (Process/Facility, Petroleum, Automation, Maintenance)
- Designers
- Operations Personnel
- Field Supervisors
- Project Managers
- along with the commercial people involved in LNG processing and contracting

basically, all those involved with the selection, designing, installation, evaluation, or operation & management of natural gas processing and LNG production facilities. In fact, anyone interested in a solid technical understanding of the principles of a LNG plant.

The day's will: -

Be divided into five sessions, timings are approximate, due to the nature of the dynamic simulator trainees may work at different paces, and this will be allowed for throughout the training course.

09:00 - 10:15 *session 1*
10:15-10:45 Tea break
10:45 – 12:00 *session 2*
12:00-01:00 Lunch
01:00 - 14:15 *session 3*
14:15-14:30 break
14:30 - 15:30 *session 4*
15:30-15:45 break
15:45 - 17:00 *session 5*

Session times subject to practical exercises and course generated discussion.

No session will run longer than 75 minutes without a break.

All the sessions are interactive and trainee participation will be actively encouraged.



Day One

Session 1

Introduction and Overview of course

- Introduction of Course Participants
- Simulator Installation
- Overview of Course

Session 2

Simulator Familiarisation

- Simulator HMI
- File Format
- Simulator software components
- Simulator features and functions

Session 3

Simulator Topography

- Process Model
- Process Control
- Safety Layers

Session 4

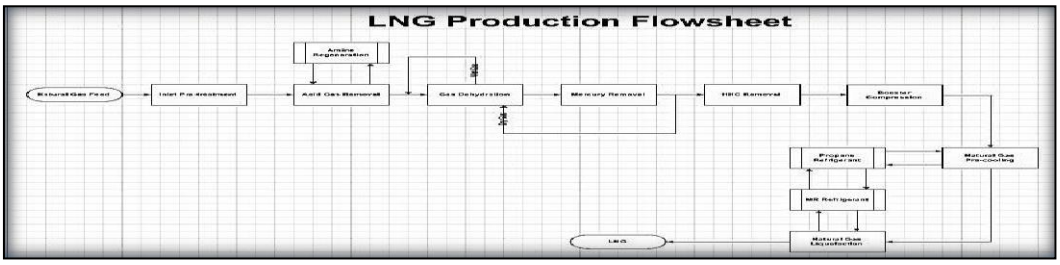
Introduction to LNG Business Portfolio

- Typical Composition of FEED gas, Condensate, NGL, LNG
- Advantages of LNG
- LNG Economics
- Typical LNG facilities

Session 5

Liquefaction & LNG production simulator

- Different Liquefaction Processes
- Comparison between Liquefaction processes
- Typical utilities of LNG facility
- Simulator model (with C3MR Liquefaction Process) scope compares to Typical LNG facility



Day Two

Session 1

Quick Revision
Typical LNG facility start-up & Inlet Pre-treatment

- Typical LNG facility start-up Philosophy
- Inlet Pre-treatment system
- Typical Condensate Stabilisation process
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Session 2

Inlet Pre-treatment

- Inlet Pre-treatment process
- Inlet Pre-treatment control & safety
- Inlet Pre-treatment equipment safety
- Line-up Inlet Pre-treatment process
- Commission Inlet Pre-treatment system

Session 3

Amine Regeneration System

- Process, Control, and Safety Philosophy
- Line-up & Commission system
- Amine Regeneration Column

Session 4

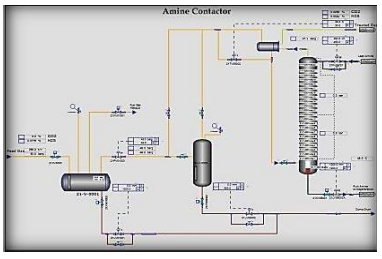
Acid Gas Removal Unit

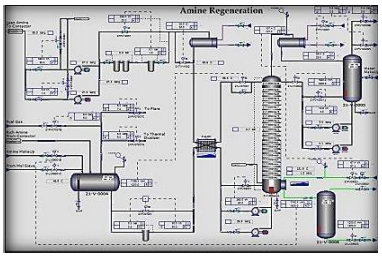
- Process, Control, and Safety Philosophy
- Line-up & Commission system
- Amine Scrubber

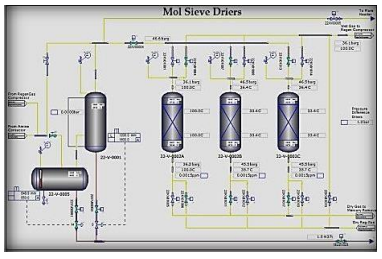
Session 5

Natural Gas Dehydration

- Dehydration Methods
- Process, Control, and Safety Philosophy
- Regeneration Gas System
- Mercury Removal Process







Day Three

Session 1

Quick Revision
Commissioning Of Natural Gas Dehydration & Mercury Removal System

- Line-up & Commissioning of Gas Dehydration System
- Regeneration Gas Heater and Compressor
- Line-up & Commissioning of Mercury System

Session 2

Heavy Hydrocarbon Removal System

- Heavy Hydrocarbon Removal Process Philosophy
- Booster Compressor System Philosophy
- Line-up Heavy Hydrocarbon Removal System
- Line-up Heavy Booster Compressor System

Session 3

Commissioning of Facility up to HHC removal

- Commission the HHC Separation Column
- Treated Gas Booster Compression System
- Flare the Gas to HP Flare header

Session 4

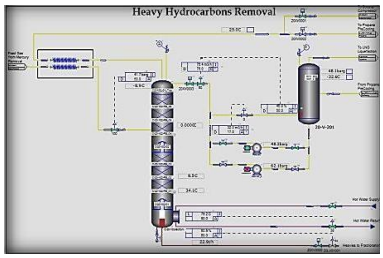
Refrigeration Loop

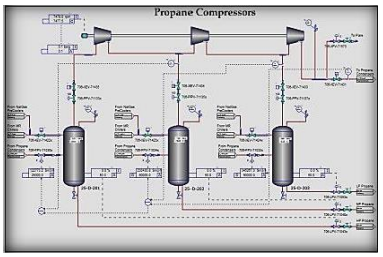
- Process philosophy & Schematic of Refrigeration Loops
- Line-up Propane Refrigeration loop
- Line-up Mixed Refrigerant loop

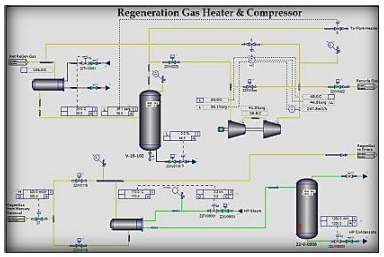
Session 5

Commissioning of Refrigeration Loops

- Commission Compressor and Cooling system of Propane Refrigeration Loop
- Commission Compressor and Cooling system of Mixed Refrigerant Refrigeration Loop
- Achieve the refrigerant temperature







Day Four

Session 1

Quick Revision of Learning
Continue Commissioning of Refrigeration Loops

- Commission Compressor and Cooling system of Propane Refrigeration Loop
- Commission Compressor and Cooling system of Mixed Refrigerant Refrigeration Loop
- Achieve the refrigerant temperature

Session 2

Gas Pre-cooling System

- Line-up Gas Pre-cooling Units
- Circulate the NG around the Pre-cooling Loop until it achieves cooling temp.

Session 3

Commissioning of Liquefaction

- Line-up Treated Gas to Liquefaction
- Commissioning of Cold-Box
- Route the gas to cold HP Flare till it gets liquefied

Session 4

Continue Commissioning of Liquefaction

- Stabilise the overall facility

Session 5

Conclusion of Course

- Question & Answer
- Feed back
- Award of Certification