FERTILIZER ACADEMY

Knowledge hub for the Fertilizer industry

Course title:

Ammonia Plant Operation - Advanced Training

Introduction:

Ammonia Plant Operation – Advanced Training is developed for more experienced operators and can transition field operators to control room operators.

Trainees will better understand potential operational upsets and troubleshooting during ammonia plant start-up, routine operation, and emergency shut-down.

This training course combines operation experience with incidents and case studies from ammonia plants and lessons learned and findings during numerous HAZOP and HAZID studies.

Duration 28 hours. (4 days)

Course outline:

Module 1

1. Natural Gas Desulphurisation
2. Natural Gas Compression Unit
    a. Start-up of the unit
    b. Potential incidents during start-up
    c. Operation of the unit
    d. Potential incidents during routine operation
    e. Shut-down of the unit
    f. Potential incidents during emergency shut-down
    g. Operation mistakes with long term impact

Module 2

1. Steam Reforming
2. Waste Heat Recovery
    a. Start-up of the unit
    b. Potential incidents during start-up
    c. Operation of the unit
    d. Potential incidents during routine operation
    e. Shut-down of the unit

Author(s) / Trainer(s):

Venkat Pattabathula

Ammonia Process Consultant

Venkat Pattabathula has more than 35 years of experience in nitrogen manufacturing industry in various parts of the world such as Asia, North America, and Australia.

Extensive experience in process design and engineering of world scale ammonia/urea projects valued at more than US$ 600 million engineered by different process licensors and EPC companies.

A Technology Manager experienced in being responsible for economic evaluation and technology selection in plant upgrades and performance guarantees on all ammonia plant related projects.

Dan Cojocaru

Ammonia Process Safety Consultant

Dan has over 20 years of operational, engineering and consultancy experience in ammonia plants and LNG projects.

He started his career as a field operator at ammonia plant and worked his way up being uniquely exposed to Operator, Licensor and EPC worlds on his professional path. His experience in all project phases starting from Concept and Front End Engineering (FEED) through Detailed Design, Commissioning and Operation is extensively enhanced by his Process Safety expertise. All of that brings Dan to founding Fertilizer Industrial Services – the UK based company providing Owner Engineer support to fertilizer companies developing greenfield and revamp projects. The team experience is also shared with operators and engineers worldwide via online training courses of Fertilizer Academy platform, and ammoniaknowhow.com industry forum.

Dan is a Chartered Chemical Engineer of The Institution of Chemical Engineers IChemE, a Registered Professional Engineer of Queensland (RPEQ) and senior member of American Institute of Chemical Engineers (AIChE).

f. Potential incidents during emergency shut-down
g. Operation mistakes with long term impact

Module 3

1. Process Air Compressor
2. Secondary Reformer
    a. Start-up of the unit
    b. Potential incidents during start-up
    c. Operation of the unit
    d. Potential incidents during routine operation
    e. Shut-down of the unit
    f. Potential incidents during emergency shut-down
    g. Operation mistakes with long term impact

Module 4

1. CO - Shift Conversion
    a. Start-up of the unit
    b. Potential incidents during start-up
    c. Operation of the unit
    d. Potential incidents during routine operation
    e. Shut-down of the unit
    f. Potential incidents during emergency shut-down
    g. Operation mistakes with long term impact

Module 5

1. CO2 removal
    a. Start-up of the unit
    b. Potential incidents during start-up
    c. Operation of the unit
    d. Potential incidents during routine operation
    e. Shut-down of the unit
    f. Potential incidents during emergency shut-down
    g. Operation mistakes with long term impact

Module 6

1. Methanation
    a. Start-up of the unit
    b. Potential incidents during start-up
    c. Operation of the unit
    d. Potential incidents during routine operation
    e. Shut-down of the unit
    f. Potential incidents during emergency shut-down
    g. Operation mistakes with long term impact

Module 7

1. Syngas Compression Unit
    a. Start-up of the unit
    b. Potential incidents during start-up
    c. Operation of the unit
    d. Potential incidents during routine operation
    e. Shut-down of the unit
    f. Potential incidents during emergency shut-down
    g. Operation mistakes with long term impact

Module 8

1. Ammonia Synthesis Unit
    a. Start-up of the unit
    b. Potential incidents during start-up
    c. Operation of the unit
    d. Potential incidents during routine operation
    e. Shut-down of the unit
    f. Potential incidents during emergency shut-down
    g. Operation mistakes with long term impact

Module 9

1. Ammonia Refrigeration
    a. Start-up of the unit
    b. Potential incidents during start-up
    c. Operation of the unit
    d. Potential incidents during routine operation
    e. Shut-down of the unit
    f. Potential incidents during emergency shut-down
    g. Operation mistakes with long term impact

Module 10

1. Ammonia Recovery
    a. Start-up of the unit
    b. Potential incidents during start-up
    c. Operation of the unit
    d. Potential incidents during routine operation
    e. Shut-down of the unit
    f. Potential incidents during emergency shut-down
    g. Operation mistakes with long term impact

Module 11

1. Steam Generation System
    a. Start-up of the unit
    b. Potential incidents during start-up
    c. Operation of the unit
    d. Potential incidents during routine operation
    e. Shut-down of the unit
    f. Potential incidents during emergency shut-down
    g. Operation mistakes with long term impact

Learning outcomes:

By the end of this training course you will understand:

- What are the major ammonia plant units upsets
- How to prevent operation mistakes that will lead to long term impact on plant operability
- Experience and lessons learned from operation mistakes
- Recommendation for improvement that might be beneficial for current operations

Who will benefit:

Employees responsible or share responsibility for the ammonia plant operation: plant operators, process engineers, mechanical, maintenance, instrumentationandinspection engineers.

Course materials:

- Hand-out presentation slides in PDF format

Price:

€ 2,800

Discounts:

- 2 places – 10% discount
- 3 places – 15% discount
- 4 or more places – 20% discount.

In-company training:

This course is also available as an in-company course (face-to-face or online) where content can be customised to meet your organisation's specific needs and delivered on a date/location that suits your requirements.

Contact us for more information.

Training code: AMO04