

Steam Methane Reformers – Design, Operation & Integrity Mgt

Potential PDH: 8

Description:

This course focuses on how to avoid component failures on steam methane reformers used in ammonia, methanol and hydrogen plants.

One of the biggest fears for owners of ammonia, methanol and hydrogen plants is a significant failure event on the heart of the plant, the Steam Methane Reformer (SMR). This training reviews failures and near misses on 40 SMR's, located in eleven countries globally. The intent of this training is to provide insight into:

- What damage mechanisms have historically led to failures on SMR components.
- What critical design, construction and operating controls were absent which allowed these damage mechanisms to occur.
- What preventative measures (controls) need to be put into place to prevent these failures from occurring on your steam methane reformer.

This training also provides a methodology for completing a detailed analysis of your SMR to ascertain what components have weak or absent controls and consequently are most at risk of becoming the next significant unplanned plant outage.

Outline:

- Summary of failure events on 40 steam methane reformers
- Inlet loop failures and damage mechanisms
- Catalyst tube failures and damage mechanisms
- Outlet loop failures and damage mechanisms
- Transfer Lines / Cold Collector failures and damage mechanisms
- Convection Section failures and damage mechanisms

Who Should Attend:

- **Process Engineers, Senior Operators, Integrity Engineers, Reliability Engineers and Inspectors**, focused on the operation and reliability of steam methane reformers.
- **Project Engineers** tasked with the design, construction and fabrication of steam methane reformer components such as catalyst tubes, manifolds, pigtails, convection coils and piping



systems.

Subject Matter Expert (SME):

David Keen is a qualified Metallurgist with over 45yrs domestic and international experience in fertilizer and explosives manufacturing facilities across 12 countries globally. These facilities include Ammonia, Urea, Nitric Acid, Sulphuric Acid, Phosphoric Acid, Ammonium Nitrate, Fertilizer plants and Steam Generation utilities. David is a Subject Matter Expert (SME) on equipment integrity management and has in recent years downloaded this knowledge into a series of training modules focused on preventing equipment failures through experiential learning and team problem solving sessions.

Venkat Pattabathula is a highly experienced Subject Matter Expert in ammonia, hydrogen, and energy transitions, with over 40 years in process engineering and project management. He has led diverse projects, from small-scale to mega-projects, across various regions, including Asia, North America, and Australia. Venkat's expertise spans feasibility studies, technology evaluation, optimization, and energy transitions, with a strong focus on ammonia, urea, and hydrogen production. A chartered engineer with Engineers Australia and a member of AIChE's Ammonia Safety Committee since 2005, Venkat has published over 140 papers and contributed a chapter on "Ammonia" for the Kirk-Othmer Encyclopedia. His educational background includes a postgraduate degree from IIT and a certificate from MIT. His consultancy, SVP Chemical Plant Services, provides technical services to the global hydrogen, ammonia, and urea industry.