

Case Study

Robust Planning to Overcome Diverse Challenges

Project Snapshot

Melamine, is a chemical compound used for making adhesives, laminates, tableware, electrical equipment, moulding compounds, flame retardants and much more. Gujarat State Fertilizer & Chemicals Limited (GSFC), the only Melamine producer in the country, awarded a contract for a new Integrated Urea - Melamine plant to L&T Hydrocarbon Engineering (LTHE). The project featured a complex process known as Low Energy Melamine (LEM™), it involved conversion of urea directly into Melamine at high pressure without the use of any catalyst. Overcoming several engineering, procurement and construction challenges, LTHE succeeded in the mechanical completion of the Melamine section for the brownfield project in mid-December 2018 with plant getting commissioned on January 19, 2019. For LTHE, there couldn't have been a better start to the year.

Project Scope

The scope of LTHE's work included:

- Extended Basic Engineering
- Detailed Engineering including 3D Modelling
- Procurement and Supply
- Inspection and Expediting
- Stores Management
- Construction
- Pre-commissioning, and Commissioning of all the facilities mentioned above

The Challenge

Engineering

Designing a high-pressure Melamine plant in the available plot area was one of the biggest challenges our project team faced during Detailed Engineering.

Procurement

The Melamine plant required equipment and piping systems of special metallurgy which are supplied by only a handful of vendors. Sourcing of such materials proved to be a challenge.

Construction

Being a brownfield project set inside the GSFC Fertilizer complex, the Melamine plant was surrounded on three sides by live facilities – this posed major challenges during plant construction.

LTHE's Solution

- 3D models were developed at an early stage to finalize all pipe routings and equipment locations to ensure fitting within the limited space, while meeting all technical and statutory requirements.
- Meticulous management of the interface between various packages ensured that there were no hiccups during installation.
- Special care was taken to finalize the routing of piping materials of special metallurgy so that they were ordered well in advance.
- Procurement teams worked overtime to ensure timely and accurate supply.
- Dedicated expeditors were stationed at overseas vendor locations. Some equipment and items were airlifted to ensure timely installation at the site.
- L&T's facilities supplied many of the critical equipment. For instance, the Urea Reactor was manufactured at L&T's Hazira facility.
- The whole area was barricaded to ensure construction safety.
- The existing underground utilities were diverted to safer locations.
- Both OGT and Melamine plants are vertical plants with highest structure going up at 50-meter elevation. The three-storey substation building and three-storey control room cum warehouse buildings were constructed four months ahead of plant's mechanical completion.

40,000 MMTPA Melamine Plant for GSFC