

COMPANY

Tata Chemicals Limited (TCL)

LOCATION

Mumbai, India

SOFTWARE

**Autodesk® Plant 3D
Autodesk® Navisworks**

Enhancing precision and speed

AutoCAD Plant 3D and Autodesk Navisworks help Tata Chemicals generate all Production isometric and Orthographic views, saving time, money and adding precision to its water treatment plant design

With AutoCAD® Plant 3D, we could generate complete production isometric views of the project along with orthographic views, spool drawings and floor cut outs that helped us save time and cost significantly

– **Haresh Makwana**

Deputy Manager (Detail Engineering)
Tata Chemicals



Image courtesy of Tata Chemicals Limited (TCL).

Project summary

Tata Chemicals Limited (TCL) is a global company with interests in businesses that focus on LIFE: Living, Industry and Farm Essentials. With the objective of harnessing the fruits of science for goals that go beyond business, the corporation has expanded from its original plant in Gujarat – that raises a wealth of marine chemicals from the ocean – to a market-leading international business with operations spanning four continents. Its living essentials portfolio has positively impacted the lives of millions of Indians. Tata Chemicals is the pioneer and market leader in India's branded Iodised salt segment. With the introduction of an innovative, low-cost, nanotechnology-based water purifier, it is providing affordable, safe drinking water to the masses. As the world's second largest producer of soda ash with manufacturing facilities in Asia, Europe and North America, its industry essentials product range provides key ingredients to some of the world's largest manufacturers of glass, detergents and other industrial products. With its farm essentials portfolio, Tata Chemicals has

carved a niche in India as a crop nutrients provider. It is a leading manufacturer of urea and phosphatic fertilisers and, through its subsidiary, Rallis, has a strong position in the crop protection business. In line with its mission, 'serving society through science', the company is applying its expertise in sciences, to develop high-tech and sustainable products.

This project involved the phase-wise expansion of an existing water treatment plant at the TCL Mithapur Plant in Gujarat so that it could match steps with the continuous development of the connected process plant. The requirements included installation of two demineralising vessels (3m diameter x 3m height) along with interconnected and new piping, supporting structure, pipe rack extensions and new pumps. The latter feed 450 GPM water into the vessels for demineralisation of water and the outlet of the vessels serve as boiler feed water. For this project, the in-house team of Tata Chemicals had to provide production isometrics and GA drawings for all piping besides requisite

documents for equipment fabrication, structure and civil work, hook up diagrams and cable tray routing.

The TCL Mithapur Plant has been conferred the FICCI Chemical and Petrochemicals Award for efficiency in water usage in the chemicals sector in 2013. The bestowed honour lauds the team's commitment to sustainability for revamping its entire technology of water usage to reduce dependency on external fresh water resources, which are critical for its arid location.

The challenge

The Tata Chemicals team has been using AutoCAD as a drafting tool but tasks such as clash detection have, until now, been done manually. For a project such as this where piping is entirely specification-driven, valves have to be designed for a hundred-year life and precision needs to be on a millimeter basis, it became imperative that errors, more likely, by manual methods be avoided as that would have led to more time consumption and increased costs due to rework.

"Before using AutoCAD Plant 3D, we were facing issues pertaining to the many interconnections stemming from the single piping. Our customers also found difficulty in reading 2D drawings since many interconnections meant referring to many documents," says Mr. Haresh Makwana, Deputy Manager (Detail Engineering) – Tata Chemicals.

The solution

To address the challenges that the project presented, the in-house team of Tata Chemicals chose to work with the multi-faceted features of AutoCAD Plant 3D plant layout design software, which supports productivity while improving accuracy and enhancing coordination. Built on the familiar AutoCAD software platform, its tools bring modern 3D plant design to designers and engineers who model and document process plants. The 3D modeling capabilities and timesaving plant design features of AutoCAD Plant 3D helps them generate and share isometrics, orthographics, and materials reports with precision and speed.

Along with AutoCAD Plant 3D, Tata Chemicals has also implemented Autodesk Navisworks Manage

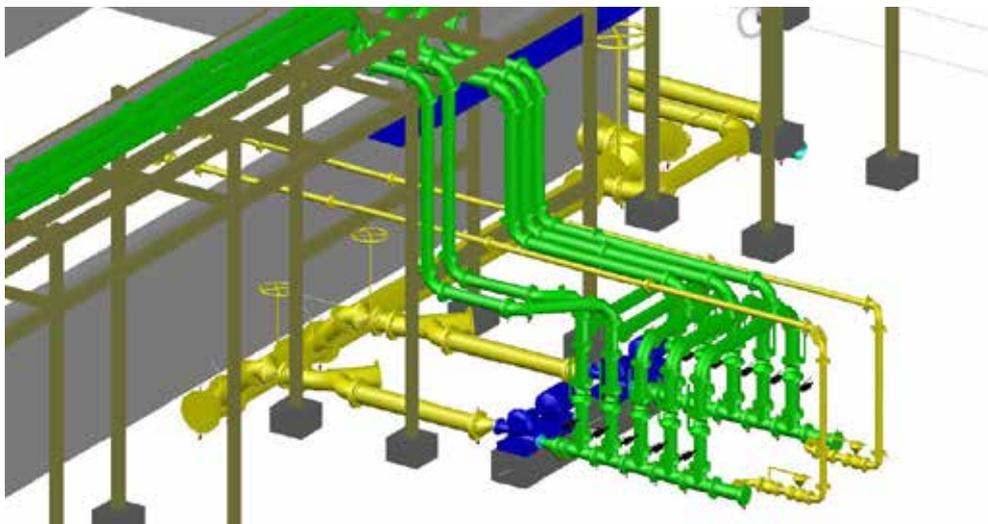


Image courtesy of Tata Chemicals Limited (TCL).

software to improve the workflow with its customers. Mr. Haresh Makwana adds, "With the help of Navisworks, our customers can easily understand the number of interconnections, and actually visualise the vessel arrangement along with the structure".

Faster Generation of High-Quality Isometrics for Cost-Effective Results

The prominent benefits of AutoCAD Plant 3D include generation of isometric faster and more clear for better representation in drawings which reduces intricacies in the piping. Given that the requirements of this plant design were highly specialised and thus costlier to rework, the accuracy of visualisation further reduced any probability of the errors. "AutoCAD plant 3D software's orthographic view generation takes less time compared to similar software in the same category," says Mr. Haresh. Mr. Anil L. Kava, Sr. Engineer – Tata Chemicals, adds, "AutoCAD Plant 3D helped us produce all the production isometric drawings from project model. We could check for any fouling to avoid unnecessary fittings and thus reduce cost of the project."

Easy Compatibility and Coordination

It worked to the advantage of Tata Chemicals that the AutoCAD software platform forms the basis of AutoCAD Plant 3D. The familiarity with its interface facilitated an easy and seamless

integration for the team to maximise the potential of AutoCAD Plant 3D. Mr. Haresh Makwana notes, "We can generate orthographic views from the model so that we can directly use it in AutoCAD 2D layout drawings. The user-friendly specifications editor and auto route command are some of the many features that made our transition to working with AutoCAD Plant 3D simple and trouble-free."

The result

Initiating the software application with their Mithapur Plant, the TCL in-house team has derived advantageous results with the usage of AutoCAD Plant 3D and Autodesk Navisworks by cutting back on time with better-handled issues such as lower RFIs and number of change orders besides ensuring error-free documentation. Mr. Haresh Makwana says, "With AutoCAD Plant 3D, we could generate complete production isometric drawings of the project along with orthographic views, spool drawings and floor cuts out that helped us save time and cost significantly".