

CASE STUDY



CADWorx & Analysis Solutions



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PRODUCT INDEX

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CADWorx Plant and CADWorx Design Review help Tata Chemicals achieve aggressive project schedules

Tata Chemicals Limited is part of Tata Group, India's largest business group with US\$ 70 billion in annual revenue with manufacturing in Asia, Europe, Africa, and North America. The world's second largest soda ash producer, they also provide key ingredients for glass and detergents, urea, phosphates for fertilizers, insecticides and pesticides. They introduced a low cost, nanotechnology-based water purifier that provides affordable and safe drinking water to the masses and are also India's leader in branded iodized salt, producing 0.8 million tons annually.

Designing a new 900 tons-per-day salt plant in record time

To meet growing demand, Tata Chemicals decided to build a new 900-tons-per-day green field vacuum evaporated salt plant and do so within an aggressive 21-month schedule. The plant was to include a seven-floor steel structure and cover 2500 square meters with a total plant area of 65,000 square meters. The project required 1,900 metric tons of structural steel; 20,300 titanium tubes; 105 metric tons of titanium plates; 125 metric tons of stainless steel plate; 500 metric tons of mild steel plate; 14 km of carbon, stainless steel, and fiberglass reinforced piping; 5,000 cubic meters of concrete; and 150 pieces of equipment. Equipment included six large titanium evaporator bodies, heater sections, three condensers, 12 pre-heaters, 17 tanks, 70 pumps and a 600m pipe rack. Tata Chemicals performed engineering in-house and produced all equipment, piping drawings and fabrication drawings and even performed in-house fabrication of the equipment.

Expediting design and reviews with CADWorx for 3D modeling

When Tata Chemicals first chose CADWorx Plant Professional for 3D modeling, they had their people trained and productive within three days. Recognizing the software's capabilities and easy adoption, they used CADWorx for the complete facility modeling, including structures, equipment, piping, electrical, instruments, and routings. A major advantage came during reviews. With the 3D model, all stakeholders could clearly visualize and discuss the facility's dense and congested piping areas, correcting any issues. This could not have been possible with 2D drawings.

Avoiding costly design surprises

A major benefit of CADWorx was avoiding surprises that detected later might prove costly later. For example, when they neared completion of structural modeling and were adding braces, they noticed several clashes with tanks, piping, and other equipment. Since most tanks were already installed and piping and cable trays drawings released for construction, they just reshaped and redesigned the bracings before the erection of piping. This avoided costly rework.

Achieving timely completion

Because of the tight schedule, they operated two shifts and also modeled equipment in 3D to be uploaded into the main CADWorx model. From the model, they produced more than 520 isometric drawings for piping. They also produced process flow and process and instrumentation diagrams (P&IDs). By using CADWorx and overlapping activities, they completed modeling and all drawings in four months with just five draftsmen, making a schedule that would have otherwise been difficult. They also avoided time delays in placing orders and procurement, keeping the project on schedule for commissioning.