Case Study

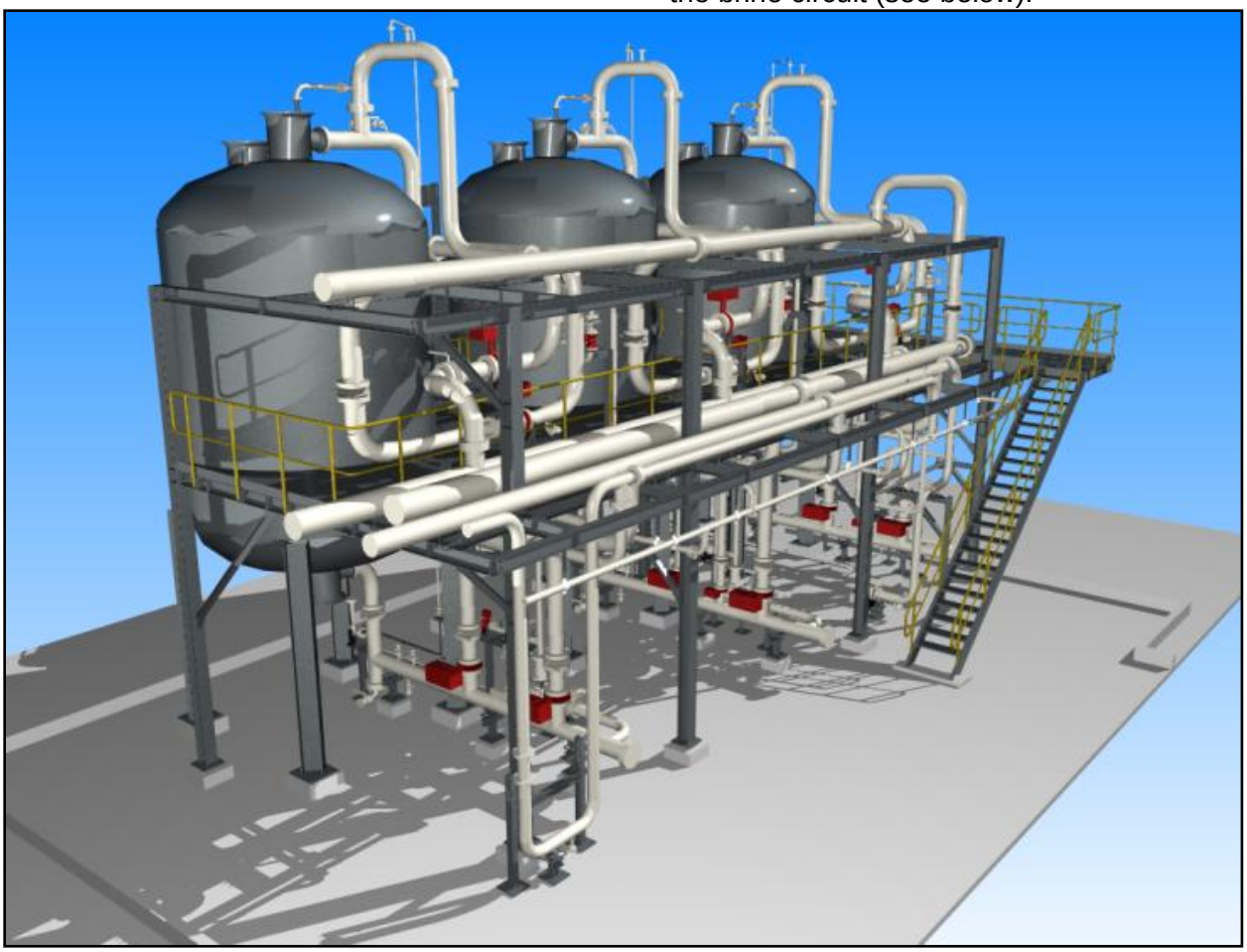
Modular Dual Laminate Piping System

Provided to the Chemical Industry (Chlor-alkali)

History:

The Solvay Company originated in Belgium in 1863 by Ernest Solvay when he discovered the key to industrial manufacture of soda ash (NaOH) from sea salt. Today it is a large multinational chemical company; generating sales of around 12·4 billion € in 2012 and employing over 29,000 people.

One of its subsidiaries – Vinythai Co., Ltd., operates one of the world's largest chlor-alkali electrolysis plants, in Rayong, South East Thailand. Vinythai has engaged the tialoc group on several occasions since 2010 to supply a variety of products including pipes, tanks and scrubber/absorber system. Most recently we supplied a complex piping system into the brine circuit (see below).



Autocad Rendered Drawing of tialoc Piping System in Brine Circuit of Vinythai's Chlor Alkali Plant in Thailand

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Introduction:

The trend globally in recent times has been to contract suppliers to produce increasingly "modularized" units for supply.

In 2011, Solvay's Vinythai chlor-alkali plant in Thailand required a complex piping solution in their brine circuit. It was to be completely supplied and commissioned within five months of order placement, so naturally, they turned to tialoc Composite.

Challenge:

The scope was to design, fabricate, assemble, factory-test, disassemble & pack, deliver, re-assemble on site, re-test and commission a complex chemical piping system including the support structure, walkway and stairs, in less than five months from purchase order in Sep 2011.

Solution:

After careful consideration of the design conditions, cost, timing, logistics and safety, tialoc's engineers proposed a process piping system using our superior dual laminate pipes and fittings. These components consisted of a thermoplastic in-liner (PP & UPVC) bonded to an FRP outer layer.

Dual laminates combine the high chemical resistance of thermoplastics (in-liner) with the outstanding mechanical strength of FRP (outer structural layer). Nothing compares to dual laminates when it comes to strength-to-weight ratio and chemical resistance.

The unit was delivered on schedule in early 2012, and now delivers a reliable flow to the filter units withstanding the high temperature, pressures and aggressive chemical attack of the media.

Scope Summary:

The tialoc Composite team provided the dual laminate piping system as a complete modular system which included the following products and services:

- PPH/FRP liner pipes and fittings
- UPVC/FRP liner pipes and fittings
- ASMI Standard pipes and fittings
- Complete support structure (including walkway, safety barriers and access ladder)
- Project management
- Logistic management
- Jobsite management
- Safety management
- QA/QC management
- Installation and Commissioning
- Documentation
- Co-ordination of secondary and tertiary hardware
- Assistance to deal with local authorities
- Sourcing, contract management and supervision of local construction labour team by tialoc Thailand

tialoc Manufactured and assembled Pipes & Fittings (PP/PVC/FRP) installed at Vinythai's Chlor-alkali Electrolysis Plant in Rayong, South Eastern Thailand

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Project Summary:

The manufacturing of pipe and fittings took place wholly in our factory in China.

Approximately 45 tons of materials in 650 individual pieces were transported via sea freight to the project site in Thailand within three 40ft, and one 20ft shipping containers.

In total, tialoc provided the client with around 250m of piping and around 600 fittings. Only 15 welding seams were performed on site, resulting in quick installation.

At peak level approximately 8 tialoc staff members and 25 contractors were involved in the project.

Advantages of tialoc's Factory Completed Modular Piping System:

Tialoc can provide a completely factory pre-assembled and tested, skid-mounted "modular" manufacturing option, and the advantages are clear:

- Better management control over supply chain and production
- Better quality control
- Faster and cheaper production
- Safer production and installation
- Reduction of on-site manpower, material and tool requirements

In this instance, the site requirement for plastic/FRP welding was reduced from over two hundred, down to fewer than twenty.

tialoc Composite installation of Piping System at Vinythai's Chlor-alkali Electrolysis Plant in Rayong, Thailand

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Other References:

Tialoc's has supplied modular skidded systems to various projects as per below:

Above shows pump and heat exchange skids for Evonik's SAP project in Saudi Arabia before delivery

Above shows preassembled gas control skids for BASF's waste gas incinerator project before delivery

Tialoc's modular skids are:

- Assembled in low cost regions under German QAQC supervision.
- Fabricated to international engineering standards (DIN, ASME, BS, GB, AS).
- For petrochemical, pharmaceutical, micro-electronics, mineral processing, oil & gas and other industries.
- Designed to standard delivery windows

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