



Key Benefits

- Complete plant skid-mounted for demineralization unit including the pressure vessels.
- Asset protection resulting from a completely pre-tested and mock-assembled module at workshop to avoid any mishaps / short supplies at site.
- Water savings due to the packed-bed technology used for lower chemical consumption and thus lower water requirements.
- Multitude of environmental benefits due to the modularized plant designed by Metito.



Demineralization Plant for Trinidad & Tobago Methanol & DiMethyl Ether Project - Caribbean Island

A Case Study



Key Data

Location	La Brea, Union Estate Industrial Estate Trinidad & Tobago, Caribbean Islands
Plant Type	Demineralization system
Capacity	2x192 m³/hr
Use	Process and boiler feed
Client	Mitsubishi Heavy Industries(MHI)
End User	Caribbean Gas Chemical Ltd. (CGCL)
Contract Type	Fixed price contract for manufacturing, engineering, design, procurement, inspection, delivery, technical advisory and field engineering services

Introduction

Caribbean Gas Chemical Limited a joint venture enterprise led by the consortium of Mitsubishi Gas Chemical Company Inc., Mitsubishi Corporation and Massy Holdings Ltd., are building a Methanol and Dimethyl Ether plant in Trinidad & Tobago (TMD Project). Mitsubishi Heavy Industries (MHI), Japan were awarded the EPC contract for the project that involved a 200 m³/hr demineralization plant for boiler feed and process requirements. MHI awarded Metito the design and supply of a module-mounted demineralization plant which is a very unique requirement for a plant of this size and for the challenging circumstances due to site location, criticality of skilled manpower and their availability in the region of the project site.

To address this requirement Metito overcame some key challenges: designing and developing such a large capacity module-mounted demineralization plant using minimum module size; ensuring that the module-mounted plant is resilient and able to survive and sustain travelling 8,207 nautical miles through Arabian Sea, Red Sea, and the Mediterranean Sea before its trans-atlantic voyage.

Trinidad & Tobago Dimethyl Ether plant will fulfill the need of Methanol demand in the Caribbean region and beyond, paving way for cleaner and more sustainable energy for generations to come.

Scope of Work

To overcome the challenges presented by this project, Metito proactively minimized site activities by developing a unique module design and incorporating the dynamic packed-bed technology.

Within the scope of work, Metito was responsible for the complete design and engineering, manufacturing, inspection, supply of equipment and materials and delivery to Hamriyah Freeport Zone.

Deliverables included:

- Demineralization plant – 2x 192 m³/hr consisting of activated carbon filter (ACF) and strong acid cation (SAC)
- Corrugated plate interceptor (CPI) – 50 m³/hr
- Cooling water side stream filtration unit – 2 x 131 m³/hr

Module #1

- Dimensions 21.5m length x 6.75m height x 8.3935m height
- 4 Demineralization unit feed pumps, capacity 205 m³/hr (each stream) for further treatment
- 1 Activated carbon filter (piping and cabling)
- 1 Cation exchanger (piping and cabling)
- 1 Anion exchanger (piping and cabling)
- 1 Mixed-bed polisher (piping and cabling)
- Equipped with all electromechanical accessories

Module #2

- Dimensions 17m length x 6.75m width x 8.3935m height
- 1 Activated carbon filter (piping and cabling)
- 1 Cation exchanger (piping and cabling)
- 1 Anion exchanger (piping and cabling)
- 1 Mixed-bed polisher (piping and cabling)
- Neutralisation piping network
- Equipped with all electromechanical accessories

Module #3

- Dimensions 16m length x 6m width x 4.05m
- 4 Chemical tanks and 8 chemical dosing pumps (piping and cabling)
- 4 Regeneration pumps (piping and cabling)

Module #4

- Dimensions 6m length x 3m width x 2.69m height
- 2 DMW unit wastewater pumps (piping and cabling)
- 2 DMW unit agitation blowers (piping and cabling)
- Equipped with all electromechanical accessories

Module #5

- Complete Vario Frequency Drive (VFD), Programmable Logic Controller (PLC) and Control System housed in a 40' standard container that controls the total plant.