

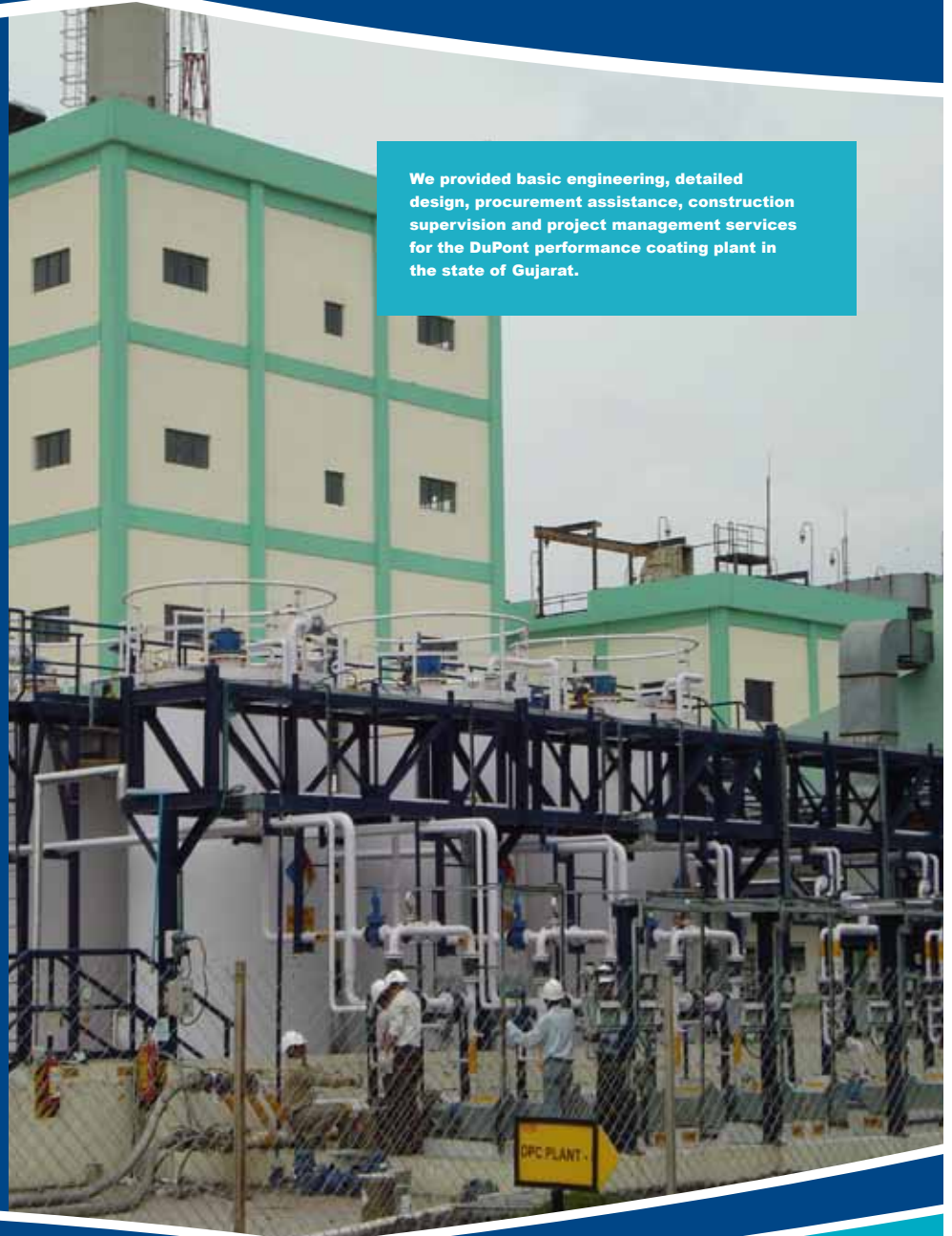
Chemicals and petrochemicals

Delivering leading expertise in India

Mott MacDonald is a uniquely diverse global management, engineering and development consultancy. Our US\$1.7 billion business spans 140 countries with over 14,000 staff working in 12 core sectors.

Chemicals and petrochemicals industries have been the focus of our core competency and a major market for our business globally. Over the last four decades, we have served the entire spectrum of the chemical sector covering more than 1000 projects right from project identification to techno-economic feasibility studies, pilot plant studies to detailed engineering, construction supervision to commissioning assistance, post commissioning services, due diligence and beyond. Our projects involve various process technologies from all over the world. Our in-house specialists including process engineers, environmentalists, project managers and safety experts provide an independent, quality-assured and award-winning service to our clients.

We provided basic engineering, detailed design, procurement assistance, construction supervision and project management services for the DuPont performance coating plant in the state of Gujarat.





Our sub-sectors

- Agrochemicals and pesticides
- Catalysts and additives
- Dyes and intermediates
- Edible oil
- Fertilisers and petrochemicals
- Fine and speciality chemicals
- Organic and inorganic chemicals
- Pigments and paints
- Polymers
- Print inks
- Soaps and detergents
- Synthetic fibre resins

Mott MacDonald provided design, procurement services and project management services to the Caustic Soda Project, Rasayani for Hindustan Organic Chemicals.

Our services

Business advisory

- Acquisitions and disinvestment
- Business case and location studies
- Financial feasibility studies
- Inward investment advice
- Market evaluation and demand modelling

Due diligence services

- Asset and business valuation
- Environmental audits
- Owners' and lenders' engineer
- Solid waste management
- Technical due diligence and expert witness

Facility planning

- EIA and planning services
- Feasibility and concept design
- Geotechnical and contamination surveys
- Statutory approvals assistance
- Surveys and site appraisals

Project management

- Contract administration
- Cost monitoring and control
- Planning and scheduling
- Plant de-bottlenecking
- Programme management
- Supply chain logistics
- Tender documents and negotiation

Facility construction

- Architecture and landscape design
- Civil and structural engineering and foundations
- Construction supervision and management
- Design planning and co-ordination
- Electrical and instrumentation
- Front-end design and basic engineering
- Inspection and expediting services
- Mechanical and piping engineering
- Plant layout and craneage
- Process engineering
- Procurement
- Safety audits and commissioning

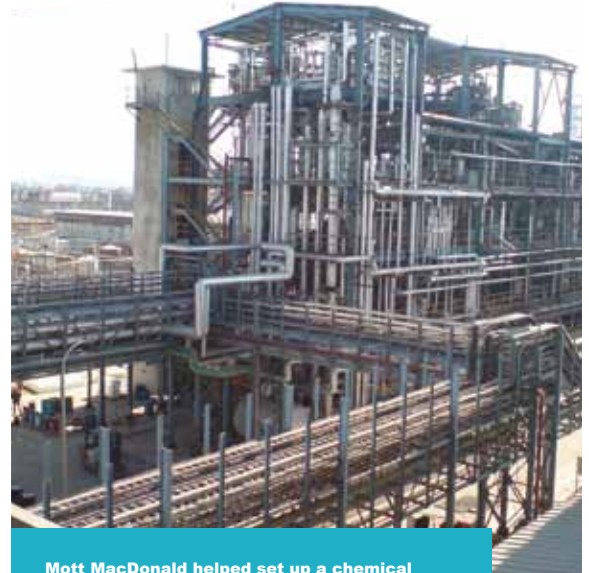
Engineering and environmental

- Building management systems
- Combined heat and power
- Control and SCADA systems
- Cooling water systems
- Effluent treatment systems
- Energy conservation
- Fire safety
- Fuel oil and gas systems
- HAZOP studies and risk analysis
- HVAC and refrigeration
- Material and energy balance
- Materials handling
- Scale-up from pilot plants
- Steam generation and distribution
- Stress and seismic analysis
- Water supply and distribution

Our track record

ATBS chemical plant, Maharashtra We provided basic and detailed engineering services for ATBS (a substance used as catalyst in acrylic fibre production) plant located at Lote Parashuram in Maharashtra. This production in the new plant is a co-monomer having applications in acrylic fibre, water treatment, emulsions, paints and oil field drilling industries. The INR 320 million project comprises of the main process plant, utility, tank farm and offsite facility.

Speciality grade epoxy products, Thailand At this grass root facility for speciality grade epoxy products for an Indian major, we scaled up the process from research and development and pilot plant data. The main plant structure with six levels had around 6,000 m² of production area. Highly automated plant was controlled by DCS hooked up with more than 1000 analogue and discrete instruments. The 3D design tool, PDMS was employed for total engineering solutions. Besides the main production unit, supporting facilities included utilities, tank farms, electrical substation, steam generators, cooling towers and chillers. We were engaged to provide all the engineering and project management services.



Mott MacDonald helped set up a chemical intermediate manufacturing unit for SRF in Rajasthan, India.



We provided detailed engineering, procurement assistance, construction and project management, and safety monitoring for the rubber chemical manufacturing facility in the state of Gujarat.

Intermediate chemical plant, Bhiwadi, Rajasthan This project for manufacturing chemical intermediates features batch process/operations covering diverse exothermic and endothermic reactions and various unit operations such as dehydration, distillation, extraction, filtration, separation and crystallisation. Mott MacDonald's role involved review of basic engineering, residual and front end engineering plus detailed engineering covering civil/structural, process, mechanical/ piping, electrical and instrumentation.

Sodium bi-chromate plant, Andhra Pradesh This plant for manufacturing 40 000 MTPA of sodium bi-chromate from chrome ore spread is across 22 acres of land. The project has a 45 m high kiln building housing a 3 m diameter x 40 m long kiln, along with six 300 MT product silos plus other non-plant and utility buildings. Mott MacDonald provided detailed engineering services covering process, architectural, civil, mechanical, piping, instrumentation and electrical.



Aditya Birla Chemicals (Thai Epoxy) Limited is located at Maptaphut Industrial Estate, Rayong, Thailand. We used Plant Design Management System (PDMS) to provide total engineering solutions. This process was scaled up from research and development to pilot plant data.

EMA speciality chemical plant, Gujarat A 2500 MTPA speciality chemical plant was set up in Gujarat. The green field development spread over 3 acres of land has a plant construction area of 600 m². The basic technology supplied by the parent group of Gulbrandson using aluminium ingots as a main raw material was further developed and customised locally. One of the key items of processing equipments was a spray dryer over 20 m high. Mott MacDonald provided services in basic and detailed engineering, procurement assistance and construction supervision.

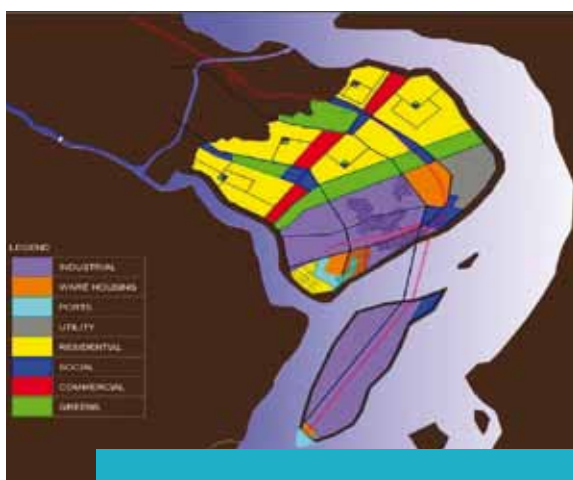
Rubber chemical manufacturing facility, Gujarat A new rubber chemical manufacturing facility located at Jhagadia in the state of Gujarat comprises of three production plants, three tank farms, two warehouses, and various process equipments – heating and cooling reactors, fractional distillation, solvent recovery, pastillation, synthesis and scubbing. Piping is designed on 3-D PDMS platform. We provided detailed engineering, procurement assistance, construction and project management, and safety monitoring for the manufacturing facility.

Offset printing ink manufacturing facility, Gujarat We were appointed as the EPCM consultant for the Greenfield offset printing ink manufacturing facility located at Dahej in the state of Gujarat with a total capacity of 30,000 tons annually. We provided full engineering services for the manufacturing facility covering production unit (ink and varnish) utilities, offsite, and RM and FP stores. The facility has a three stage manufacturing process – rosin crushing and melting; varnish production and ink manufacturing. With over 400 pieces of equipment housed in the facility the major ones include 15kl reactors, 30m³ dilutors, varnish storage tanks, hot oil heaters, steam boilers, air compressors, chillers, nitrogen plant and thermic fluid heaters. We also provided specialized services including a HAZOP and risk assessment study and safety monitoring for the manufacturing facility.

Dupont performance coating plant, Gujarat The present coating paint blending plant located at Savli in the state of Gujarat envisages creating a capacity of over 2800KL involving PLC based instrumentation and controls. The existing five storey facility involved structural adequacy checks and enhanced fire resistance. The process involved solvents and resin, bulk storage, distribution, high speed paint dispersion vessels, bead mills, over 30 agitated vessels, high speed filling and packing lines. There is a dedicated dust and vapour extraction system along with a forced ventilation system. We provided basic engineering, detailed design, procurement assistance, construction supervision and project management services for the facility.



We were appointed as the EPCM consultant for the Greenfield offset printing ink manufacturing facility in the state of Gujarat.



Apart from carrying out feasibility studies and project structuring, we have been providing infrastructure advisory services on policy formulation, concept planning and site selection as well as economic analysis for Petroleum, Chemicals and Petrochemicals Investment Region (PCPIR) hub in the state of West Bengal.

Business advisory experience

- Study on development of engineering plastics in India for Philip Townsend Associates
- Market for ethylene oxide and ethylene glycol for The UB Group and SM Dyechem
- Technology status study on Purified Terephthalic Acid (PTA) for the Department of Scientific and Industrial Research (DSIR), Ministry of Science and Technology, Government of India
- Preparation of development plan for plastic processing industry in Madhya Pradesh for MPSIDC
- Advisory services to the Department of Chemicals and Petrochemicals for PCPIR
- Market survey and study for solid caustic soda in India, Pakistan, Bangladesh, Thailand, Singapore, Philippines, and Indonesia for QIMCO, Qatar
- Market survey on stable bleaching powder for Gujarat Alkalies and Chemicals Limited
- Technology sourcing for PVC-coated foamed fabrics manufactured on calendaring line from suspension grade PVC resin suitable for shoe uppers, garments, automobile lining, furnishings and other products for Marvel Vinyl's Limited, New Delhi
- Detailed market survey on maleic anhydride for Cochin Refineries Limited

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