

Manderstam International Group Experience in Refineries

Manderstam International Group has extensive global experience in Petroleum refining, including crude oil evaluation, distillation, high vacuum distillation; processing long residues to catalytic cracker feed and bitumens. Bitumens - straight run, blown, semi-blown, cut-backs. Development work on storage of bitumen, including blockage, bagging, coating. Revamping of straight-run vacuum plants; conversion of straight-run plant to blowing plant. Treatment of effluents from vacuum systems and blowing units. Lubricating oil plants including solvent extraction and dewaxing. Production of refined wax. Fuel oil blending.

Global Benchmarking

Manderstam carries out global benchmarking studies in oil and gas processing plants, marine terminals, offshore platforms, pipelines, refineries, and petrochemical complexes. MIGL holds a global database of cost and operating parameters and performance

Clients: BP Amoco, Mobil, Arco, Phillips, Agip, Conoco, Statoil, Norsk Hydro, Dong, William's Field Services, BHP, British Gas, Shell, Total, NAM (Holland).

Since 1995, Manderstam have undertaken annual benchmarking studies of oil and gas plants (76 plants worldwide) providing analysis of unit costs and working practices including mechanical condition surveys and efficiency assessments. This has enabled Manderstam to have an unrivalled overview of global oil and gas processing, design and operating practices and costs.

Client:-Pemex, Mexico

In 2003, Manderstam surveyed and benchmarked 72 installations in Mexico on behalf of the state oil company, Pemex. The work included offshore platforms, marine terminals, oil and gas processing plants, 7 major refineries (5% of global refining capacity) and various petrochemical complexes.

Client:-BP, Azerbaijan

In 2003, Manderstam undertook a review of future operating costs for the expansion of BP assets over nine-year period in the Azerbaijan onshore processing terminal expansion project.

Specific Refinery Projects

Cyprus Refinery Ltd, Larnaca Cyprus.

Manderstam sent a survey team to review the technical and financial performance of the Cyprus Refinery Ltd on behalf of a potential purchaser who is importing diesel into Iraq and now wishes to consider purchasing the existing refinery (which is closing at the end of April 2004) and dismantling it, transporting and rebuilding it in Iraq.

Exxon Mobil, Fawley, UK

Carried out a hazard and operability study on behalf of Exxon followed by seconding a team of engineers to the refinery for six months to implement the recommendations.

Monrovia, Liberia- carried out for technical audits of refinery;

Mombasa, Kenya-carried out technical audits on behalf of a potential purchaser.

Pertamina, Indonesia

Plaju-carried out an optimisation study on behalf of Pertamina, following the purchase from Shell of the refinery.

Pelembang-carried out a technical evaluation of the Stanvac refinery on behalf of Pertamina.

Balik Papen-carried out an optimisation study on behalf of Pertamina following purchase from Shell .

Wonokronjo-carried out a technical evaluation of the refinery on behalf of Pertamina.

Nieuport, and Vietnam-carried out an evaluation of feet stuck for potential petrochemical plant customer.

Assab, Ethiopia (now Eritrea)-carried out an evaluation for privatisation. Further work included studies for redesign relocation of refinery.

Port Sudan-technical and financial evaluation of refinery for potential purchaser.

Design studies

Carried out design studies for refineries in Greece, Libya, Ireland, Jamaica, Trinidad, Nicaragua, Indonesia, Canada, Saudi Arabia.

Expert Witness Work

Manderstam International Group are approved expert witnesses by the UK Law Society and have undertaken the following projects in relation to disputes at oil refineries.

- 2000/01 Prepared an expert report and **gave evidence** on project management issues (contract execution, cost estimation and scheduling) on behalf of I. S. A. B. (Italy) in the International Court of Arbitration. This was in defense of a \$200 million claim brought by Foster Wheeler and Snamprogetti regarding the design, construction and commissioning of an integrated gas combined cycle power plant using heavy ends from the refinery in Sicily. (Instructing solicitors Clifford Chance, Paris).
- 2001 Prepared an expert report on the global market and technical requirements for the manufacture of tetraethyl lead (TEL) fuel additive including a review of global refining capacity/technology investigating the rate of displacement of the purchase of TEL by refineries.. (Confidential)
- 1995-1996 Prepared expert report for Total Oil in their successful defense of £4.5M claim by BP over mechanical failure of a turbo expander machine (Denton Hall, London instructing solicitors).
- 1990 Prepared evidence for ARCO (Atlantic Richfield) in defense of failure of mechanical equipment at an oil refinery. (McKenna & Co, London instructing solicitors).
- 1989-1990 Prepared Expert Report for Wimpey, as Contractor, in their successful defense of a £6M claim by Texaco, the Owner, relating to design of pressure vessels and mechanical failure of a vacuum loading system for diesel desulphurisation at the Texaco Pembroke oil refinery. (Reynolds, Porter Chamberlain, London instructing solicitors).