

Aker Kvaerner

Hydrocarbons

BP Refinery (Kwinana) Limited Continuous Catalytic Regenerative (CCR) Reformer, CR3 Mogas Project, Kwinana, WA

Project Value: AUD150 million

- Services:
- Front End Engineering Design
 - Estimating
 - Engineering
 - Procurement
 - Construction
 - Lump Sum Turnkey

Aker Kvaerner successfully completed a lump sum contract for a CCR Reformer complex in July 1995. The new facilities were constructed at BP's Kwinana refinery, Western Australia and were the major part of the AUD230 million investment made by BP in the Mogas expansion.

The 22,000 bpd CCR Reformer is based on UOP Technology and includes a 35,000 bpd naphtha hydrotreater, naphtha splitter, platformer and continuous catalyst regeneration unit (CCR).



FEED Phase

Aker Kvaerner carried out the front-end engineering package for the complete facilities based on a UOP Schedule A package. The assignment also included a definitive cost estimate to facilitate BP's project funding.

The CCR Reformer technology from UOP incorporated the latest process operating parameters including HP hydrotreating, pressurised regeneration, low Reformer Pressure and Naphtha Feedstock Splitter. There were also extensive offsites and tie-ins associated with the Reforming Unit.

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The other main feature of this project was the extremely tight time schedule and the need for Aker Kvaerner to execute the front-end engineering package in parallel with the release of the Schedule A package from UOP. For the definitive cost estimate, Aker Kvaerner used in-house cost database for similar projects installed in Australia.

BP used the world-wide resources of Aker Kvaerner for this project, drawing on both Melbourne and Chicago to assist with process optimisation and for the development of the plot plan. The Aker Kvaerner Chicago office is very close to UOP, and has a wealth of refining expertise.

Front end engineering design package for this project was completed by Aker Kvaerner in June 1993.



Implementation Phase

Following completion of the FEED package, BP chose Aker Kvaerner as the prime contractor for the Mogas expansion. For the AUD150 million CCR Reformer, Aker Kvaerner was responsible for all aspects of the project, including process design, detail engineering, procurement and construction on a lump sum turnkey (LSTK) basis.

The project was executed by a dedicated taskforce (peaking at 120 personnel) in the Aker Kvaerner Melbourne office using 3D and 2D-CAD and integrated design, procurement and construction management software systems. Over 3,000 piping isometrics were produced by this system.

During the construction phase, a workforce of 400 personnel was required at site. As construction work on the CCR Reformer progressed at site, BP awarded Aker Kvaerner the EPC lump sum contract for the AUD15 million Isomerisation Conversion project, also part of the Mogas expansion programme at Kwinana.

The CCR project was highly successful and was completed by Aker Kvaerner in 22 months, some three and a half months ahead of schedule which in turn was some five months ahead of BP's original schedule, allowing BP to commission the plant much earlier than planned.

The project was also later reviewed in the benchmarking of seven plants world-wide for BP by IPA from Dallas, and subsequently ranked as one of the best projects in the BP-world at the time. The project was completed in July 1995.

Aker Kvaerner received a 1996 Engineering Excellence Highly Commended Award from the Institution of Engineers Australia (Victorian Division).