enquiries@tesari-eng.com www.tesari-eng.com

Power Generation HAZOP & LOPA

HAZOP of the Safi IPP, a 2 x 693 MW coal fired power plant being designed in India and constructed in Morocco. The scope of the study covered coal unloading and pulverising, cooling water, boiler feed water, main steam, cold reheat and hot reheat lines, steam turbine utilities, turbine extraction, feed water heating, drain, dump and vents, flash tank, condenser shells, and attemperating spray systems. Additionally, the balance of plant was studied, including demineralised water production, closed cooling water circuit, compressed air systems, and chemical storage and dosing. The only scope exclusions were the burners and flue gas systems.

HAZOP for Horizon Power's open cycle gas turbine powered station, to be installed close to Port Headland, Australia. The plant will consist of 4 dual fuel GE TM2500 transportable Gas Turbine Generator (GTG) units, to deliver 60 MW power at the extreme ambient conditions of the location. Future expansion is planned up to 100 MW, therefore, all balance of plant is being designed for the future capacity in Stage 1 of the development. The scope also included the demineralised water plant and other balance of plant items.

HAZOP and LOPA for Rio Tinto's combined cycle power station at Cape Lambert in the Pilbara region of Australia. The project is installing 2 dual fuel GE LM6000 Gas Turbine Generating (GTG) units, with air inlet chilling, 2 supplementary fired Once Through Steam Generators (OTSG), a Steam Turbine Generator (STG), an Air Cooled Condenser (ACC) and associated balance of plant.

Revalidation HAZOPs for Occidental's (OPQL) facilities located offshore Qatar. The scope of work was the entire portfolio of offshore assets producing from the North and South dome of the Idd El Shargi field, operated by OPQL in the Arabian Gulf. The assets consist of Production Station 1 (PS-1), a series of 11 bridge linked platforms producing 330,000 bbl of gross liquids with 110,000 bopd, as well as associated gas used for power generation and gas lift purposes. In addition to the production station there are over 40 remote wellhead platforms linked by in excess of 100 subsea pipelines.

LOPA for the Oman Oil Company Exploration and Production (OOCEP) Gas Processing Plant. The plant will process well fluids from Block 60 of the Abu Tubul field, separating them into gas and condensate streams for export and produced water meeting the environmental specifications for discharge to an evaporation pond. The analysis was conducted using ABB's TRAC software for recording.

HAZOP of a coal seam gas compression facility for Arrow Energy, in Queensland. The facility receives low pressure gas with produced water at approximately 40 kPag, the free water is knocked out and collected in an inline boot separator, followed by a separator and coalescer on the compressor suction side, prior to being compressed to approximately 1000 kPag. The compressor is a flooded screw design and compressor oil is separated from the discharge gas stream using a separator and vortex, before being tempered and finally filtered and recirculated. The produced water drains to an oily water separator to a holding tank from where it is exported from site. The facility includes blowdown and flare capability. Compressed gas flows into a pipeline to the downstream customer.

HAZOP & LOPA of modifications to KleenHeat's Kwinana LPG plant in Western Australia. The project objective is to provide greater control and flexibility in the domestic and export propane product streams. This is achieved by the installation of new connections to the existing export storage refrigeration process to provide a 2-stage flash process to separate propane rundown into higher ethane content (domestic grade) and lower ethane content (export grade).

FEED HAZOP of the wellhead expansion project for the Chayvo onshore processing facility on Sakhalin, for Exxon Neftegas Ltd. The project is installing 4 new production and 1 new re-injection wells, with provision for a further 14 production wells and 1 re-injection well. The HAZOP covered the project scope: the new production wellheads to valve manifolding, via flowlines: production header to existing export pipeline, including a pressure balancing crossover line with the existing production header; test header and new 3-phase separator, including crossover line to existing test header; new blowdown header and tie-in to existing blowdown system; and new flowline tie-in to the existing re-injection header to new re-injection wellhead.

FEED HAZOP for ESSO Australia's Longford processing facilities Inlet Treater & Condensate Handling Modifications project. Implementation of the Kipper Tuna Turrum Project resulted in higher condensate flowrates in the rich gas produced on the Marlin platform which impacted the condensate heating system. This required modifications to the condensate treating and hot oil systems at Longford. The HAZOP was conducted at the end of FEED and reviewed two new H_2S analysers, sample and return lines, the effects on hot oil users caused by modifications to hot oil control valves, and hot oil pump seal upgrades.

Independent Chairman for the HAZOP and LOPA for an Ausmelt Smelting Furnace for the Svyatagor Copper Plant design undertaken by Outotec Australia. The Syvatogor Copper Smelter will incorporate an Ausmelt Smelting Furnace (ASF) and an Outotec Electric Settling Furnace (ESF). The ASF will treat 543,673 dry tonnes per year of copper concentrates, with 45.000 dry tonnes a year of clinker, 42,580 dry tonnes a year of slag concentrates and fluxes to produce a mixture of copper matte and a low copper slag.

HAZOP for Carmen Copper Corporation's expansion of processing facilities from 40 ktpd to 60 ktpd, at the Toledo copper mine located in Cebu, Philippines. The project scope entails reconfiguring the primary milling circuit to change it from closed to open circuit operation. The major capacity increase comes from the installation of two new secondary ball mills set up in closed circuit grinding down to a P80 of 197 microns. Downstream of these new mills there will be trash screening of the new cyclone banks' overflow prior to flotation. Flotation will be achieved using: 4 new TC300 rougher cell units; 10 new OK16 cells for High Grade (HG) cleaning; utilising the existing scavenger banks A and B for scavenging; and use of the existing InSol cleaner, Low Grade (LG) cleaning banks A and B. Additionally, the two existing concentrate thickeners will be upgraded, and the two existing tailings thickeners are to be replaced.

TESARI

ENGINEERING