

KHURAIS CRUDE FACILITIES – GOSPS’ KCC CIVIL WORKS (KHURAIS CENTRAL PROCESSING FACILITY)



PROJECT NAME	KHURAIS CRUDE FACILITIES - GOSPS' KCC (KHURAIS CENTRAL PROCESSING FACILITY)
LOCATION	KHURAIS, SAUDI ARABIA
CLIENT	SNAMPROGETTI / SAUDI ARAMCO
CONSTRUCTION PERIOD	28 MONTHS



MAC was commissioned by Snamprogetti of Milan, Italy to carry out the multi-discipline construction of Khurais Crude Facilities – GOSPS KCC. For Saudi Aramco to increase the development of Dry Arabian Light (AL) Crude, associated gas and C3+ NGL product. The PROJECT, executed in joint venture with Kettaneh Construction Saudi Arabia Ltd., involved construction of KCC project Civil works for the following plants:

- Nos. B-32, B-33, B-34 and B-35 for GOSPS' 1, 2, 3 and 4 a 24.94 hectares for GOSP Areas
- No. B-37 Inlet/ Outlet Areas GOSP Offsite Facilities, having an area of 11.67 hectares
- Evaporation ponds and Feeding Pipeline having an area of 100 hectares
- Four GOSP Trains Areas, each with Gas/Oil Separation Facilities, Wet Crude handling Facilities, Crude Stabilization facilities and Gas gathering and Compression facilities involving:
 - 1,016 m long x 4 to 10 m wide Main Pipe Rack
 - 2,389 m long x 2.7 to 12 m Secondary Pipe Rack
 - 682 m long x 4.5 to 13 m Steel Structures
- Inlet/Outlet Areas with production manifold, lift station, depressurizing vessel/pump, involving:
 - 551 m long x 10 and 16 m wide Pipe Rack
 - 446 m long x 2.5 to 13.5 m wide Steel Structures



- 16-Ha. Evaporation Pond Areas for the water inflow from surge relief lines from Water Injection Pump WIP, Boiler blow-down from utilities area and Water Oil Separator WOSEP water that discharge through the Waste Water Drainage WWD diffusers;
- 4-Ha of oily water ponds. Ponds were built using compacted earth fill for embankment and lined with HDPE material.

The scope of work consisted of:

- 44,300 m of Underground Piping Systems for Fire Water, Drinking Water, Raw Water, Oily Water and Sea Water Sewer, and Sanitary Sewer Systems, ranging from 2" to 48" diameter. Involving Two joint types: Taper/Taper joint and laminated joint (internal & external).
- 7,700 m of Fire Water lines used RTR Pipes ranging from 2" to 16" diameter.
- 31,000 m of OWS, SW and SWS Systems used RTR Pipes ranging from 2" to 48" diameter.
- 5,700 m of Drinking and Raw Water lines used RTR Pipes ranging from 2" to 4" diameter.
- 200 m of UPVC for SWS was used.
- Five Lift Stations with 10m deep foundations were built.
- CIVIL WORKS
 - 308,000 m³ of earthworks including 150,000 m³ of rock excavation using both blasting and mechanical Jack-Hammer rock breaking techniques.
 - 38,250 m³ of structural concrete were poured for Pipe Racks foundation, Compressors Foundations, Sleepers, Electrical Pits, Instrument Pits, Oily Water Sewer / Sanitary/Acid Neutralizing Manholes, culverts, including pipe supports scattered along the plant. Of an estimated 4,000m of security fences were constructed at evaporation pond area.
 - 310 m³ and 675 m³ of concrete and sprayed AV800 material were used for fireproofing works using wire mesh as reinforcement. Spraying was done by machine and trowel finished on structural steel structures columns and beams including small structural pipe supports, vessels and equipment supports.
 - 113,000 m² of asphalt work were performed: 26,800 m² Asphalt Paving for road network around GOSP 1 to 4 and 86,200 m² for yard and open areas.
 - 132,000 m of concrete paving were performed: 82,600 m² for 150mm and 49,400 m² for 100mm thick.
 - 4,500 m of reinforced concrete ditches ranging from 0.50m to 1.00m width at variable depth were built interfacing with the other contractors concrete ditches.
- Electrical Works involved installation of 87,300 m of Electrical Grounding System with cable sections ranging from 50mm² to 300mm² with 125 earth rods which were installed





Manpower and safety:

Manpower reached a peak of 1,089 Direct and 229 for Indirect manpower. All personnel was accommodated and catered for in MAC-KCS JV camp constructed near the project site, with full support facilities. Camp peak occupancy reached 2400 persons.

A Safety Record of 5,200,000 worked man-hours was achieved without a Lost-Time Incident.



