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**MAJOR PROJECTS
UPSTREAM (FEED & DETAIL
ENGINEERING)**

UEP FEED OF NAIMAT WEST GAS FIELD

Petrochem Engineering Services has been retained by United Energy Pakistan for Front End Engineering Design of Naimat West Gas Field. Feed gas contains 21% CO₂, 14% N₂ and HC. Detailed technical evaluation has been carried out between Conventional Absorption process with UOP Membrane and Hybrid process for CO₂ removal down to 3%. Compare the technical aspects and estimate CAPEX/OPEX and revenue for 10 years of production.

STUDYING & TRANSIENT MODELING OF GAS GATHERING NETWORK IN TAL BLOCK

Total of 13 wells are contributing in the production from the respective fields. 02 produce through MGP, 03 from MEPF and rest of the 08 through CPF. Capacity enhancement at CPF with the installation of Makori GPF (150 MMSCFD) as a third train of the CPF is in progress.

SERVICES CONTRACT WITH ENI PAKISTAN

Petrochem Engineering Services and Eni Pakistan has Three years contract for Engineering Services. Under this agreement PES maintaining "Design House (provision of all design and engineering facility including Process, Mechanical, Electrical, Instrumentation, Civil, etc)" facility for Eni Pakistan for their Kadanwari, Bhit & Sukhpur fields.

The earlier Contract was awarded to PES from July 2009 to April 2013 and we have successfully design and deliver, here are some of the following jobs:

- Kadanwari Well K12 Surface facility and Tie-In design.
- Kadanwari Well K18 Surface facility and Tie-In design.
- Kadanwari Well K19 Surface facility and Tie-In design.
- Kadanwari Well K20 Surface facility and Tie-In design.
- Kadanwari Well K25 Surface facility and Tie-In design.
- Kadanwari Well K26 Surface facility and Tie-In design.
- Kadanwari Well K27 Surface facility and Tie-In design.
- Kadanwari Well K27 Surface facility and Tie-In design.
- Kadanwari Well K28 Surface facility and Tie-In design.
- Kadanwari Well K30 Surface facility and Tie-In design.
- Kadanwari Well K12 Surface facility and Tie-In design.
- Bhit 15 Well Head Development and Tie-In
- Bhit 16 Well Head Development and Tie-In
- Badhra B North-1 Well Head Development and Tie in
- Bado Jabl Well Head Development and Tie-In
- Designing of Inlet Manifold at KCF Plant.
- Cost estimation for Abandonment of Eni operated Assets.

COMPRESSION STUDY FOR BHIT WELL HEADS

Compression Study for Eni Bhit block comprising of 10 nos. wellheads. Dynamic Hydraulic model was developed over OLGA. Study indicates the compression requirement for each well head with its suction and discharge pressure, liquid hold-up and estimated pressure drop.

DETAILED ENGINEERING DESIGN OF KADAWNARI WEST VALVE STATION (WVS)

Eni Kadanwari block comprises of nearly about 24 wells coming from North, South and west location of the block. Valve station is proposed and design by PES at South, North and West location of the block. Hydraulic analysis has been to estimate the header pressure at each valve station. LP, MP and HP pressure header philosophy has been suggest to cater the maximum production from each well.

PULSATION STUDY FOR COMPRESSOR INSTALLATION

Study has been carried out for the rehabilitation of two redundant reciprocating compressors which are proposed to be installed at West valve station in series with each other. Harmonic study is performed to check the suitability of these reciprocating machines with each other.

DETAILED ENGINEERING DESIGN OF KADAWNARI SOUTH VALVE STATION (SVS)

Transient hydraulic model is used to estimate the pressure drop of each flow line. LP, MP and HP pressure header philosophy has been suggest to cater the maximum production from each well.

DYNAMIC SIMULATION OF MEHAR 01, 02 AND 03 FLOW LINES

The objective of this study is to determine the basis for the design of downstream liquid handling facility by performing Transient Hydraulic analysis from Mehar Wells head Locations to GPF. The Study covers the analysis of various forms of slugs which includes:

- Terrain induced Slugs
- Hydrodynamic slugs
- Ramp up and Start up
- Pigging Slugs

The slugging study was performed by using the OLGA ver7.0 transient pipeline simulator. OLGA is the most versatile and powerful multiphase pipeline simulator and has the capability for both steady state and transient flow simulations.

FRONT END ENGINEERING DESIGN OF EPF FACILITY OF PAKISTAN PETROLEUM LIMITED

Scope of work included the review design and estimate the maximum handling capacity of the plant with a stabilized condensate i.e. < 8 psi. Suggestions for the improvement in the optimal use of the installed instruments/ equipments, identification of the effects of HP, MP& LP gas to different plan streams. Estimation of relief load and the adequacy of flare system & development of PFD's and P&ID's.

FEED & DETAILED ENGINEERING OF HALINI PRODUCTION FACILITIES

FEED and Detailed Engineering design Hallini Oil production facility for Mari Gas Company Limited.

DETAILED ENGINEERING OF SUJAWALX-1.

Detailed engineering design of Sujawal Gas field for Mari Gas Company limited. Facility comprises of Well Head surface facility, Glycol Dehydration Plant, Amine treating unit and Hydrocarbon dew point control unit.

RELIEF AND BLOWDOWN CALCULATION OF MEHAR GAS FIELD

PES performed sizing of all Pressure Relief valve and Blow down valve of Mehar Gas Processing Facility. Different relief scenarios are evaluated for the estimation of peak load through relief valve and fire case scenarios for blow down load estimation of processing facility. Relief load calculations and relief valve orifice sizing is performed using API 520/521 guideline.

DEPRESSURIZATION AND LOW TEMPERATURE STUDY FOR MEHAR GAS FIELD

PES carried out Depressurization and Low Temperature study for Mehar Gas Field and Flow Lines/ Trunk Lines flaring system is evaluated for the estimation of peak vapor flow rate, Orifice size, minimum vapor temperature inside pipeline/equipment, minimum vapor temperature at valve outlet and depressurization time. While depressurization of Mehar-1 and Mehar-2 flow lines to North Gathering Manifold venting system is considered. The calculation and the study is conducted as per API standards and recommended practices.

DEHYDRATION PLANT GAS VENTING AND EMERGENCY SHUTDOWN SYSTEM OF PAKISTAN PETROLEUM LIMITED

An emergency shutdown system is installed to isolate the Dehydration Plant unit-3,4 & SDHU from inlet & outlet through ESD valves and to depressurize through seven ROV's as installed at Plant to meet any emergency and release gas in cold vent.

RELIEF AND FLARING VENTING SYSTEM STUDY FOR MEHAR GAS FIELD

Scope of work of this study is to carried out Dispersion and Radiation Modeling for the sizing Flare and Vent stack header.

SCALING STUDY FOR MEHAR GAS FIELD

The objective of this study is to analyze the possibility of formation of scaling in the flow line and mitigates taken to reduce the scale formation and maintain the capacity of flow lines or pipelines.

GAS SUPPLY TO DELTA IV POWER PLANT-NIGERIA:

Dynamic Pipeline from Escravos Lagos Pipeline (ELPS) to the proposed Gas Treatment Facility approximate 3.6 Km & also for Power Plant for Shell Petroleum Development Company (SPDC) Nigeria.

Work also included the following:

- Development of pipeline alignment drawings and crossing drawings

- Gas Conditioning and treatment skids
- Development of Plot Plant / Equipment Layout
- Development of Piping Layout with Isometrics and supports
- Complete Civil, Electrical and Instrumentation design works.

DETAILED ENGINEERING DESIGN OF BYCO REFINERY CDU REVAMP PROJECT

Project aimed to Detail Engineering Design works anticipated for 40,000 BPD expansion of entire ORB-I facility. PES performed the Process Scheme optimization/Hydraulic review of by performing Process Simulation on HYSIS of Crude distillation unit and Hydraulic Analysis suggest alternative which reduce the cost of revamp by 40%.

FEASIBILITY STUDY FOR THE CONVERSION OF PIPELINE

Petrochem Engineering Services performed the feasibility study for Byco Pakistan Pvt Ltd. Study aimed to investigate Technical and commercial impacts of using existing black oil pipeline into white oil pipeline with backflow option

FEASIBILITY STUDY FOR KEAMARI-PORT QASIM PIPELINE CONNECTIVITY PROJECT FOR PSO

Petrochem Engineering Services performed the feasibility study for Direct Pumping of HSD from Keamari to WOTS-1 by performing Hydraulic analysis on PIPESYS and suggest the suitable line size on the basis of CAPEX and OPEX.

HEAT FLUX LEVELS, RADIATION & DISPERSION MODELLING OF THE FLARE OF JAMSHORO JOINT VENTURE LIMITED

Heat flux levels, Radiation & Dispersion modeling of the Flare as per International standards & OGRA Requirements and check whether the Radiation level exceed the Allowable limits with the maximum air flow to the flare through the blower arrangement of the flare stack.

FEASIBILITY STUDY FOR DIRECT PUMPING OF HSD FROM PORT QASIM (WOTS-I) TO SHIKARPUR (WOTS-II) FOR PAPCO

PES carried out the Feasibility Study for Direct Pumping of HSD from WOTS-I to WOTS-II by performing Hydraulic analysis on PIPESYS and suggests the Maximum and Minimum flow rate for the said pipeline operation. PES also recommends the optimum operation based on CAPEX and OPEX.

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FEASIBILITY STUDY FOR ADDITIONAL STORAGE TANK AT (WOTS-II) SHIKARPUR FOR PAPCO

PES estimates the HSD delivery potential of existing system and suggests different Options to meet peak demand of Oil marketing Companies at Shikarpur region. PES also performed the financial analysis of Additional Tank based on NPV and IRR Calculation.

BASIC AND DETAILED ENGINEERING DESIGN OF FIRE & GAS DETECTION SYSTEM FOR PAKISTAN PETROLEUM LIMITED

Pakistan Petroleum Limited hired the services of Petrochem Engineering Services for basic and detailed engineering design of Fire and Gas detection system for its 25 nos. Well head and dehydration plant of Kandhkot facilities.

GAP ANALYSIS OF EXISTING FIRE FIGHTING SYSTEM FOR BHP PAKISTAN

BHP Petroleum Pakistan (Pty) Ltd. Hired Petrochem Engineering Services to carry out Fire safety and consequence study at Zamzama Plant to recommend modifications and additional requirements accordingly.

FRONT END ENGINEERING DESIGN FOR AFRICAN GAS AND OIL LIMITED (AGOL)

New LPG Facility of 50,000 MT in 3 different phase's adjutant to existing LPG Facility. The project executed in phase wise as 10000 M. Tons capacity in phase I and phase II and 30000 M. Tons capacities in phase III.

DETAIL ENGINEERING FOR AFRICAN GAS AND OIL LIMITED (AGOL)

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DETAIL ENGINEERING FOR SINSINA CORNER COMPANY, JUBAIL, SAUDI ARABIA FOR EPC PROJECT

Design and Detail Engineering for Pipeline associated with Hexene, Isoprene and Multi Product Pipelines from Jetty to Storage Tanks for Arabian Chemical Terminals, Jubail Saudi Arabia in Joint Venture with Petrochem Engineering Services.