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To be known for delivering high quality engineering services to the global oil and gas, refining, chemical, power and other engineering industries.

01 WHO WE ARE

02 BUSINESS AREAS

03 ENGINEERING

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01

WHO WE ARE

01

WHO WE ARE

- ▶ **VERINGER** PROVIDES ENGINEERING AND CONSULTANCY SERVICES TO THE INDUSTRY.
- ▶ WE PROVIDE THESE DESIGN SERVICES TO THE FOLLOWING INDUSTRIES: PETROCHEMICAL (OFFSHORE AND ONSHORE), CHEMICAL, POWER GENERATORS, PHARMACEUTICAL, FOOD, REFRIGERATION, HEATING AND VENTILATION, ETC.
- ▶ OUR CLIENTS ARE FABRICATORS, DESIGN HOUSES, MECHANICAL AND CIVIL ENGINEERING CONSULTING FIRMS, ETC. (OUR CLIENT BASE INCLUDES MORE THAN 50 WELL ESTABLISHED AND RECOGNIZED FIRMS IN THE UK, EU AND AMERICA.)
- ▶ VERINGER ENGINEERING SERVICES WAS ESTABLISHED IN 1994 AND HAS BUILT UP A GOOD REPUTATION WITHIN THE INDUSTRY.
- ▶ OUR WIDE CUSTOMER BASE HAS EVOLVED THROUGH HIGH QUALITY AND INNOVATIVE DESIGNS, UTILIZING THE LATEST DESIGN AND ANALYSIS SOFTWARE, AS WELL AS EXTENSIVE EXPERIENCE AND KNOW-HOW.

02

BUSINESSES AREAS

02

BUSINESSES AREAS



OIL, GAS & CHEMICAL



POWER



INDUSTRIAL



WATER&AIR TREATMENT

02

BUSINESSES AREAS

OIL, GAS & CHEMICAL

- ▶ We have been working on many projects for major global corporations/companies and are being updated with all the technologies currently in use. The company is therefore continually improving in terms of knowledge and experience gathered during the execution of each project.

- ▶ In addition, our experienced team can also assist you during the start-up of your plants, troubleshooting and optimisation of the production, as well as during the operation and maintenance work.

LNG

Pipelines

Petroleum Refining, Chemical and Petrochemical

Onshore/Offshore Oil & Gas production and storage

- ▶ Our engineers have worked and gained experience on projects with different fuel sources e.g., coal, gas, nuclear and renewable energies. We could therefore provide you with broad engineering services.

RENEWABLE ENERGY

Experience in this area includes the full design of wind farm, biofuel, solar energy, biomass and biogas power plants.

Cogeneration-CHP (part design)
Gas-CCPP (part design)
Nuclear Plants (part design)

NON-RENEWABLE ENERGY

Our experience covers full design of Cogeneration (CHP) plants and part design of large gas and nuclear power plants.

Cogeneration-CHP (part design)
Gas-CCPP (part design)
Nuclear Plants (part design)

▶ **VERINGER** industrial plant engineers have extensive experience in the design, optimisation and management of many industrial processes.

➔ Agro-industry

➔ Food

➔ Pharmaceutical

➔ Glass

➔ Cement

➔ Manufacturing industry

▶ We have know-how and practical experience needed for the design of waste water and air pollution treatment plants, as well as plants for the reduction of green house gases and gas clean up. Hence, we can provide you the project services for these plants.

◆ Green house gas treatment

◆ Clean up gas

◆ Solid/Liquid Separation: Decantation, Coagulation/Flocculation, Sedimentation/Precipitation Filtration

◆ Biological Treatments: Aerobic Treatment Units, Sequencing Batch Reactors (SBR), Rotating Biological, Contactors (RBC), Sludge Treatment

◆ Adsorption: Activated Carbon

◆ Ion Exchange: Cationic, Anionic and Mixed

◆ Membrane Technology: MF, UF, RO, and EDI

◆ Evaporation: Multiple effect evaporators and Mechanical Vapour Recompression (MVR)

03

ENGINEERING

03

ENGINEERING



PROCESS



PIPING & DUCTING



MECHANICAL EQUIPMENT



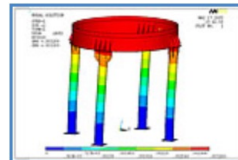
STRUCTURAL & CIVIL



INSTRUMENTATION & ELECTRICAL



COST CONTROL & SCHEDULING



FEA

- ▶ We have knowledge and experience in providing a well known range of industrial processes, covering process design, process modelling and simulation by using the best available software.

Mass and energy balance.

Process design.

Optimisation and redesign process.

Process flow diagrams (PFD).

Process simulation with specialised software.

Heat transfer process design with specialised software.

Process Equipment Specifications.

▶ We are specialises in the mechanical design of piping & ducting (2D/3D drafting, piping stress analysis, pipe support design, ducting stress analysis, etc.) to the following industries:

◆ Petrochemical (offshore and onshore)

◆ Chemical, power generators,

◆ Pharmaceutical,

◆ Food,

◆ Refrigeration,

◆ Heating and ventilation, etc.

- ◆ Conceptual design development, design studies and design optimisation.
- ◆ Development of piping and instrument diagrams (P&ID's).
- ◆ Development of general arrangements.
- ◆ Development of detailed piping/ducting drawings, including isometrics and supports.
- ◆ When required or specified, perform piping/ducting stress analysis calculations.
- ◆ Management of vendor drawings.
- ◆ Estimation and the preparation of M.T.O., costing and schedule control.
- ◆ Start-up procedures.
- ◆ Problem Solutions (in design, commissioning and plant operation phases).

◆ **SPECIALISED CALCULATIONS:** *fatigue assessment, wind loads and vibrations, seismic loads, liquid sloshing effects, effect of piping external loads on nozzles/shells, secondary & discontinuity stresses, creep effects, ocean wave slamming, 'Water hammer', pressure surges and mixed flow induced loads (slugs, etc.) Calculations are performed using the best available industry software and in-house spreadsheets.*

◆ **CODES:** *ASME/ANSI B31.1, B31.3, B31.4, B31.8, API PP 530, BS 806, IP 6, API 6A and IGE/TD/12.*

◆ PIPING STRESS ANALYSIS, PIPE SUPPORT and PIPING DESIGN

- PIPING/DUCTING STRESS ANALYSIS - USING COMPUTER ANALYSIS (CAESAR II, ALGOR'S PIPEPLUS, ETC.), 'APPROXIMATE METHODS' AND HAND-CALCULATIONS FOR A NEW OR EXISTING PIPING SYSTEMS.
- CODES: ASME/ANSI B31.1, B31.3, B31.4, B31.8, API PP530, BS 806, IP6 & IGE/TD/12.
- PIPING/DUCTING STRESS ANALYSIS AUDITING TO ABOVE CODES.
- PIPE/DUCTING SUPPORT DESIGN/DRAFTING TO ABOVE CODES AND BS 3974 (PARTS 1, 2 & 3), MSS SP 58, SP 69 & BS 449.
- VESSEL NOZZLE CALCULATION CHECK TO ENSURE PIPING LOADS ON VESSEL NOZZLES MEET APPLICABLE CODES (WRC107/297 OR PD5500) AND VENDOR SPECIFIED LIMITS
- FATIGUE ASSESSMENT TO PD5500, ASME OR DNV CODES
- FE ANALYSIS OF PIPE INTERSECTIONS, ATTACHMENTS, ETC.

- CONCEPTUAL DESIGN DEVELOPMENT, DESIGN STUDIES AND DESIGN OPTIMISATION.
- PIPING GENERAL ARRANGEMENTS AND ISOMETRIC DRAWINGS PRODUCTION (CAD).
- ESTIMATION, M.T.O. AND COSTING.
- PROBLEM SOLUTIONS (IN DESIGN, COMMISSIONING AND PLANT OPERATION PHASES).

◆ SPECIALIZED CALCULATIONS

Other than the formal design and analysis calculation requirements stipulated by the code (i.e., sustain loads, pressures, temperatures, occasional loads, etc.), we also specialize in the following:

- FATIGUE ASSESSMENT
- WIND, WIND VIBRATIONS & WIND VORTEX LOADS
- SEISMIC CALCULATIONS
- OCEAN WAVE SLAMMING & STREAM LOADS ON PIPING/PIPE SUPPORT STRUCTURES
- WATER HAMMER' & PRESSURE SURGE CALCULATIONS
- MIXED FLOW INDUCED LOADS (SLUGS, ETC.) CALCULATED IN RESPECT OF PIPING DYNAMIC CHARACTERISTIC
- PULSATING FLOW LINES (RECIPROCATING COMPRESSORS, ETC.) AND DESIGN OF SUCH PIPING AND PIPE SUPPORTS. VIBRATIONS DAMPENING BY SPRINGS AND MISC. DEVICES
- PRESSURE REACTION FORCES (SAFETY VALVES, LINES WITH UN-TIED BELLOWS, ETC.) AND ASSOCIATED EQUIPMENT SELECTION
- THERMAL/MECHANICAL STRESS CALCULATIONS
- SECONDARY & DISCONTINUITY STRESSES
- PIPING UNDER VACUUM CONDITIONS (AND/OR EXTERNAL PRESSURE)
- JACKETED PIPING
- EFFECT OF PIPING LOADS ON SHELLS OF VESSELS & TANKS (LOCAL LOADS CALCULATIONS)

- FLANGE DESIGN AND FLANGE JOINT LEAKAGE CALCULATIONS

- ◆ We are specialised in the mechanical design and production of CAD drawings for pressure vessel, storage tank, heat exchanger and stack design, for the following industries:

- Petrochemical (offshore and onshore), chemical, power generators, pharmaceutical, food, refrigeration, heating and ventilation, etc.

- ◆ We can design to the following codes:

- EARTH RETAINING SYSTEM.
- PRESSURE VESSELS: ASME VIII DIV. I & II, PD 5500 & PRESSURE EQUIPMENT DIRECTIVE (PED).
- SHELL & TUBES HEAT EXCHANGERS: TEMA, ASME VIII DIV I, PD 5500 & PED.
- AIR COOLED HEAT EXCHANGERS (FIN-FAN): API 661 (INCLUDING HEADER BOXES DESIGN).
- STORAGE TANKS: API 650, API 620, BS EN 14015 AND RECTANGULAR TANKS TO GEP.
- STACKS (CHIMNEYS): BS 4076 AND GEP.
- SPECIALISED CALCULATIONS: FATIGUE ASSESSMENT, THERMAL/MECHANICAL STRESS CALCULATIONS, WIND LOADS & VIBRATIONS, SEISMIC LOADS, LIQUID SLOSHING EFFECTS, EFFECT OF PIPING EXTERNAL LOADS ON NOZZLES/SHELLS, SECONDARY & DISCONTINUITY STRESSES, CREEP EFFECT CALCULATIONS AND ANY ASSOCIATED FINITE ELEMENT ANALYSIS (FEA). CALCULATIONS ARE PERFORMED USING THE BEST AVAILABLE INDUSTRY SOFTWARE AND IN-HOUSE SPREADSHEETS.

- ◆ Wide design and analysis experience in all types of structures, ranging from small frames and skids right up to 5000 tonne weight of steel, in the onshore and offshore industries.
- ◆ In addition, we provide design services related to all foundation types, soil and fluid retention structures, as well as civil design of engineering projects with difficult soil conditions, indoor spaces without pillars, etc.
- ◆ The design is generally tailored to the project requirements for equipment, personnel and maintenance access.

Foundation design:

- Shallow Foundations (Spread footings, Mat Foundations, Semi-Deep footings).
- Deep Foundations (Auger-cast shafts, Composite piles, Drilled Shafts, Pressure-injected piles (pifs), Precast-prestressed concrete piles (pcps), Timber piles, Steel piles, Micro-piles).
- Retaining Structures. (Anchored wall, cantilever wall, gravity wall, piling wall, Reinforced concrete walls, Pre-cast crib walls, flexible walls, Mechanically stabilized earth walls, etc.).
- Tunnels.

Structure design:

- Large span structures.
- Frameworks design (wood, steel), mixed structures.
- Concrete structures and prefabricated concrete structures (building structures, equipment supporting concrete frames, towers & Chimneys, bridges, Vaults and deposits, Special anchorages, etc.).
- Steel structures and prefabricated steel structures (building frames, bridges, process building, process skids, piperacks and pipe supports, equipment supporting steel frames, etc.).
- Some Codes: AISC, AISI, SSPC, ACI, CTE, BS 5950, EUROCODE EC3, NS3472, DnV & NORSOK codes.

- ◆ Our electrical and instrumentation engineers have the experience and capacity to deliver a design of high quality and efficiency, covering full electrical and instrumentation design in a wide range of industrial plants, such as petrochemical, chemical, power, utility systems, etc.
- ◆ Our extensive experience and knowledge in turn key projects and our continuing innovative approach enable us to provide the best technical and economical solutions to our clients.

Electrical Engineering and Design of

- Network analysis
- Dynamics & Transients
- Protective Devices
- Transmission Line
- Distribution Systems
- Cable Systems
- Transformer
- Ground Grid Systems
- Power Quality
- DC Systems
- Control Systems

Instrument Engineering and Design of

- Theory of Operation and Control Philosophy documentation.
- HMI platforms in process control applications.
- Data historian and graphics development.
- Process control and computer-based information systems.
- Instrumentation application and motor control and monitoring circuit design.
- Design of SCADA, PLC and DCS systems.
- Development of detail engineering documentation.

- ◆ It is important for us to prevent any extra cost being incurred by our clients. We therefore, take every measure to assist our clients with the monitoring of project life cycle, scheduling and cost control.
- ◆ Our engineers can assist with project scheduling and the identification of deviations and their causes during the engineering works. Thus, the client can take continuous corrective measures to limit the impact of these deviations on scheduling, budget and resources.

- Scheduling and cost control
- Evaluation and Forecasting Causes of variations
- Resource Allocation and Estimating
- The Baseline

◆ **Capability:** Comprehensive equipment components Finite Element Analysis (FEA) of structural and equipment components in the petrochemical, O&G, power generation, pharmaceutical, automotive the general mechanical engineering industries, covering piping, vessels, structural and machine components.

- The FEA could generally cover:
 - Linear Elastic F.E.A.
 - Nonlinear F.E.A.
 - Static Analysis
 - Thermal Analysis
 - Dynamic Analysis
 - Buckling Analysis
 - Creep
 - Fitness For Purpose Assessment
 - A typical mechanical FEA would obtain engineering analysis solutions such as displacements, stresses, natural frequencies and buckling modes, for static and dynamic loading.

04

OFFSHORE

➤ **ENGINEERING DESIGN ON SEMI-SUBMERSIBLE/FIXED PLATFORMS AND FPSO'S**

➤ **OFFSHORE INSTALATIONS**

- Risers: Riser piping under slamming waves, current & wind loads and special pipe support design .
- Platform Topside: High pressure discharge piping, flare piping, process, etc. (rating up to 2500#) and associated pipe supports and frames
- Skid piping in offshore projects (up to 350mm dia., steady and cyclic pressure and temp., up to 240barg)
- HP Water Injection Piping
- HP Flare Header & Branch Piping on fixed & FPSO platforms
- etc.

➤ **STRUCTURAL DESIGN**

- Structural design and analysis of offshore skids and piperacks, including lifting design and FPSO ship's motions. Our wide structural experience ranges from smaller skids right up to 500 tonne offshore structures. The design is tailored to the project requirements for vessels and equipment, pipe supports and TP loads, and personnel and maintenance access. Drawings show typical fabrications and major connection details.