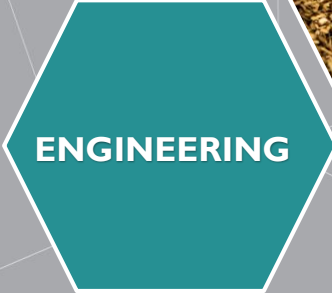


BERR



INDUSTRIAL ENGINEERING SERVICES





INDUSTRIAL
ENGINEERING SERVICES

BERR INDUSTRIES

BERR Industries is a developing company in Engineering, Procurement, Fabrication, Construction, Maintenance, and Project Management.⁹ Active across four continents, we work with governments and multinational companies to design, build, and maintain many of the world's most complex and challenging capital projects.

BERR offers you a multidisciplinary team with engineers and experimented technical based in Turkiye Germany as well as representatives around the world. We are adapted and committed to supply you with the best services to maintain and develop with you a reliable partnership throughout the life of the project. BERR is an independent power solutions service provider with experience across Middle East since 2001 in working with Gas Turbines, Steam Turbines, HFO Engines, High-Speed Diesel Engines, PV, and Power Station Design, Containerized Engine Gensets, EPC Contracting Business, and O&M services in The Middle East, Africa, Europa and Caucasus Countries.

Office:

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DE : Abteiwegh – Bremen 27798
NIG : Sapele WS Delta State
CHN : Chengdu, Sichuan

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NIG : [+234 906 957 3078](https://www.whatsapp.com/business/contact?phone=2349069573078) << Click for Whatsapp >>





INDUSTRIAL ENGINEERING SERVICES



ENGINEERING

- Engineering Feasibility
- 3D Plant Design



EPCm CONTRACTING

- Engineering
- Relocation Engineering
- Execution
- Procurement
- Commissioning
- Maintenance
- Operation
- Project Management






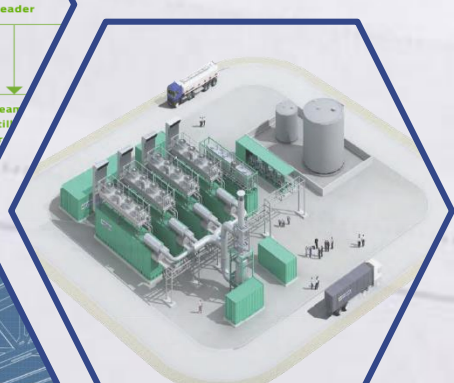
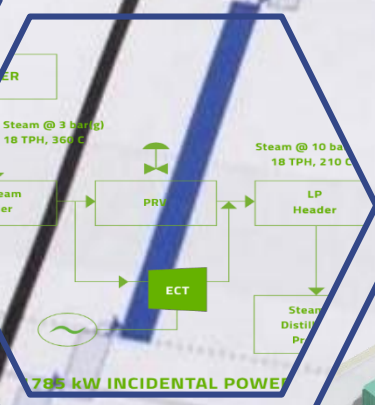
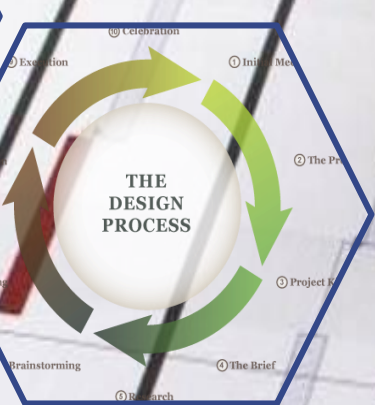
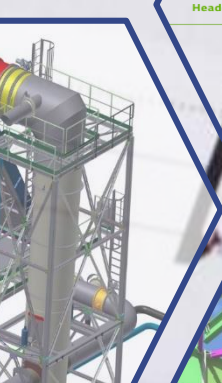
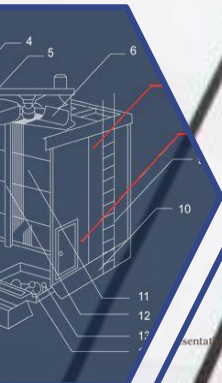
MANUFACTURING

- Process Equipment



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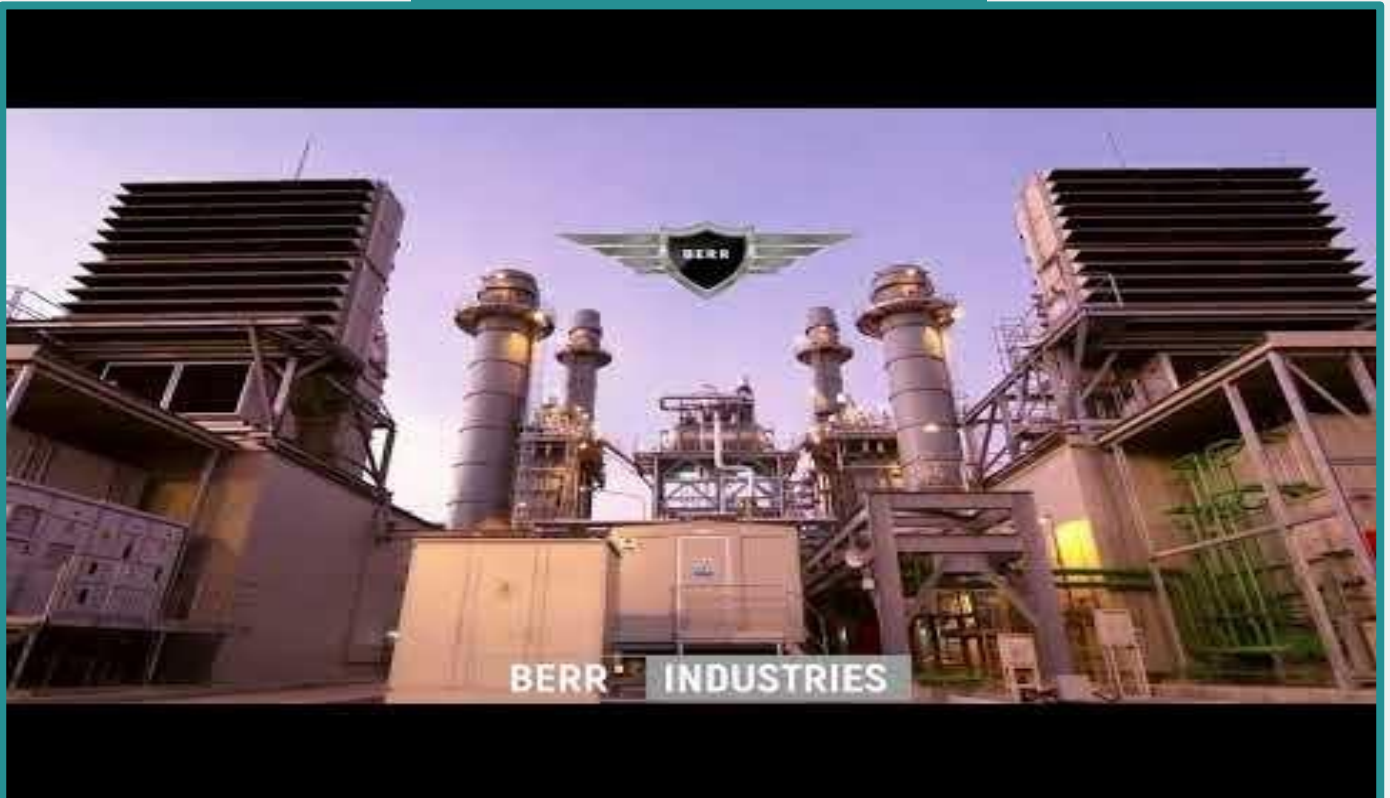
About Us

Introduction

BERR Industry is a global leader in engineering, procurement, fabrication, construction, maintenance, and project management. Active across four continents, we work with governments and multinational companies to design, build, and maintain many of the world's most complex and challenging capital projects. Clients trust BERR to deliver services to optimized their assets, improve their competitive position, and increase their long-term business success. Our primary objective is to develop, execute, and maintain projects with operational excellence, and we are consistently rated as one of the world's safest contractors.

Briefly, BERR is a high talented engineering and contracting company operating in the oil & gas and refining industries for more than 30 years. We provide a full range of services covering design and supply of *Turnky Power Plants, Skid-Mounted and Modular Packages and Special Process Equipment* in the field of Energy-Oil&Gas.

VIDEO PRESENTATION



! Please click on the video to watch here as online it Or Click the button for go to youtube. 

About Us



BERR provides an integrated life-cycle approach to support our Clients' capital investments. BERR serves Clients in a wide variety of traditional and evolving industries worldwide, including power/energy and oil & gas, cement, mining and metals, industrial, and government. BERR Industries is one of the largest suppliers of special industrial equipment and auxiliary units/parts for power plants and petrochemical processes, especially in the Middle East, Africa and European Countries. Although its head office is in Istanbul, it continues its activities in Ankara under the umbrella of Zack Power. In addition, Berlin - Germany / California-New York USA is structured in Erbil-Baghdad Iraq. BERR has contracted heavy-duty workshop facilities in Istanbul / Çorum / Tekirdağ – Türkiye

ÇORUM - TR
2.000M2 & 35 Prsnl

ISTANBUL – TR
1.200M2 & 20 Prsnl

TEKIRDAG - TR
10.000M2 & 110 Prsnl



Our workshops has advanced production lines andertical-horizontal CNC machineries for manufacture heavy parts and also to manufacture about pressure vessel systems and cooling radiators, exchangers, preheaters, air heaters, reboiler, economisor, etc with ASME and U Stamp Certificates

Our Team

Our team has extensive experience in the power generation, transmission, distribution sector and even refinery and other heavy industry facilities. We believe that the experiences of our team will be one of the most useful instruments for the investors and project managers.



Murat Cengiz



Richard Moore



Richard Battaglia



Bilal Koyuncu



Zekeriya Merzifonlu



Our Partners



INDUSTRIAL ENGINEERING SERVICES

I - ENGINEERING

- ❑ PROJECT FEASIBILITY
- ❑ PLANT DESIGN

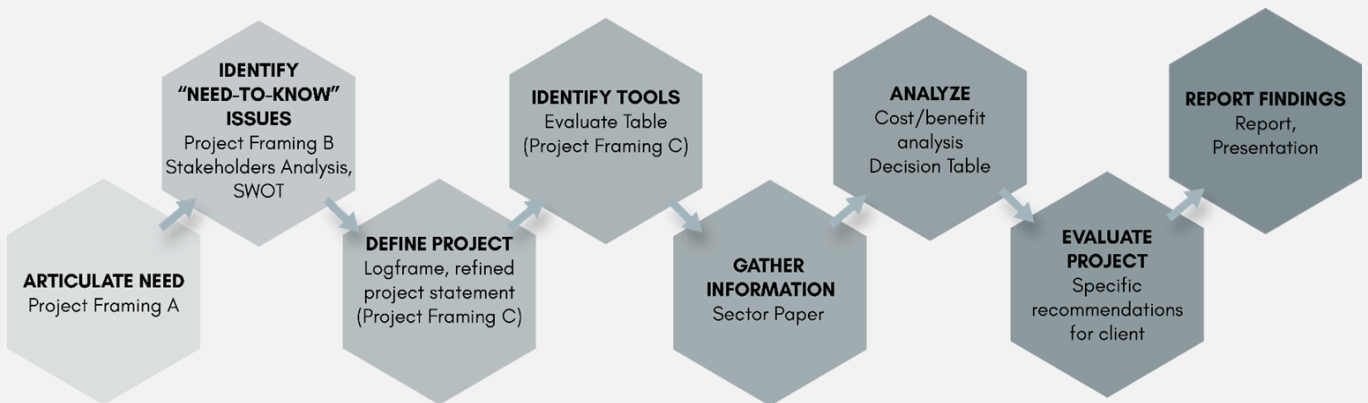
a. Engineering Feasibility

i. Fundamentals of Feasibility Study at the UNIDO :

Modern power plants running on fossil fuels transform primary energy sources, such as coal, oil, gas as well as industrial residues and municipal waste, into heat, steam or electrical energy. BERR Industry provides its demanding customers with services such as technical and economic pre-feasibility studies, tender design, and project management for small- and large-scale power plants, and furthermore power generation systems for offshore facilities and pumping stations along large pipeline systems.

Although feasibility studies can help project managers determine the risk and return of pursuing a plan of action, several steps should be considered before moving forward.

Bankable & Comprehensive Feasibility Studies that tell you everything you need to know when planning of Power Plant Projects.



Here you will see some summary case studies. To review more studies, please go to the web page.

[Read More >>](#)



Relocation Feasibility Study on 165MW Riederschbach Coal Fired Thermal Power Plant.

- Westinghouse S.T.
- F. Tosi S.G.



Relocation Feasibility Study on 119MW Hastedt Power Station Coal Fired Thermal Power Plant.

- Siemens S.T.
- Heidelgergen S.G.



Relocation Feasibility Study on 180MW Worktinton Natural Gas Fired Combined Cycle Power Plant.

- GE LM6000 PG G.T.
- Skoda Condensing S.T.
- Skoda HRSG

a. Engineering Feasibility

5 Areas of a Project Feasibility Study :

The Economic Feasibility Study is its most important component among them, although the Legal Feasibility Study is not generally regarded as a feasibility study. There are five areas of feasibility or **5 types of feasibility study**, that is measured in a project feasibility study that we have listed here.

Technical Feasibility

Under technical feasibility, the assessment is **centered on the technical resources available for the project**. It helps organizations assess whether the technical team is capable of converting the ideas into working systems or not. Technical feasibility also involves evaluation of the hardware and the software requirements of the proposed system.

Economic or Financial Feasibility

Economic feasibility of a project helps organizations **assess the viability, cost, and benefits associated with projects**; before financial resources are allocated. It helps decision-makers determine the positive economic benefits to the organization that the proposed system will provide, and helps quantify them too. This assessment typically involves a cost/ benefits analysis of the project.

Legal Feasibility

This area investigates if the **proposed system conflicts with legal requirements** like data protection acts or social media laws.

Operational Feasibility

This study helps analyze and determine **whether the business needs can be fulfilled using the proposed solution** or not. It helps to study if the business problem is worth solving.

Scheduling Feasibility

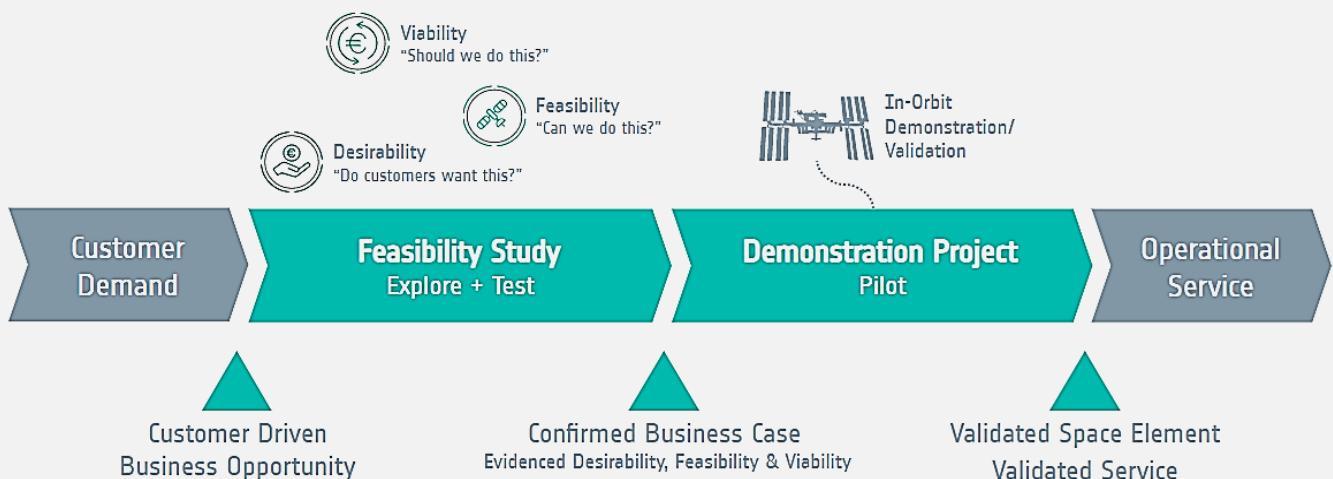
Scheduling feasibility is the most important for project success. A project will fail if not completed on time. In scheduling feasibility, **project teams estimate how much time the project will take to complete**.

Other Factors

Additional factors that can affect a project's feasibility include:

Cultural Feasibility: this can include aspects such as environmental impact, compatibility with local mores, etc.

Resource Feasibility: This aspect looks at the resources that are required to complete the project and whether the amount of available resources are sufficient to complete the project effectively.



a. Engineering Feasibility

ii. Essentials of the Industrial Plant Relocation Study :

BERR Industries has been providing a comprehensive "Industrial Plant / Production Facility / Factory / Machine Lines Relocation Engineering Services".

The first and most important issue to be done in facility transportation projects: Preliminary and final feasibility must be made for high accuracy costing-budgeting.

In industrial facility transportation engineering, feasibility studies are inevitable in order for the investor / purchasing company to make the right budget and work-time schedule and planning at a high level.

Our experienced service-engineers provide the following activities:

- ✓ Planning, organization and supervision of entire relocation process
- ✓ Assistance and supervision of disassembly, transportation and reconstruction
- ✓ Implementation of upgrades, optimization strategies and other improvements
- ✓ Procurement and delivery of additional components and spare parts

An industrial relocation-moving project includes the following multidisciplinary issues and these should be clearly identified at the outset of the project.

Industrial Relocation Engineering Planning Steps:



- Full Site Survey And Comprehensive Inspection
 - Assessment and Technical Evolution Reporting
 - Financial Reports / CaPex - OpEx / SWOT Analysis
 - Preparing of the Method Statements And Risk Assessments
 - Relocation Management & Project Planning
 - Health & Safety & Environment (HSE) Planning
 - Match Marking of the Mechanical Equipment
- Match Marking of the Electrical Parts
 - 3D Facility Scanning Studies
 - Decommissioning / Dismantling Plan
 - Packaging Study Due To International Standarts
 - Lifting & Loading Study
 - Transportation Study
 - Maintenance & Equipment Modification Planning
 - Mechanical Installation & Insulation Schedule
 - Electrical Installation & Insulation Schedule



a. Engineering Feasibility

ii. Site Assessment and Technical Evaluation Reporting :

Berr Industry, in heavy industry facilities, especially in HFO - Diesel - Natural Gas - Biomass fueled simple or combined cycle power plants (Gas Turbine, Steam Turbine, Waste Heat Boilers, Steam Systems, Material Handling Systems) requested site evaluation and technical provides analysis services.

- Facility Credit Need
- Before Facility Selling/Buying
- Facility Relocation/Moving Projects
- Facility Expansion Projects
- Facility Major Maintenance Planning

Evaluation Criteria are the standards by which accomplishments of required technical and operational effectiveness and/or suitability characteristics or the resolution of operational issues may be assessed.

The plant assessment identifies how the latest technology could improve output, efficiency or plant availability. It consists of three phases:

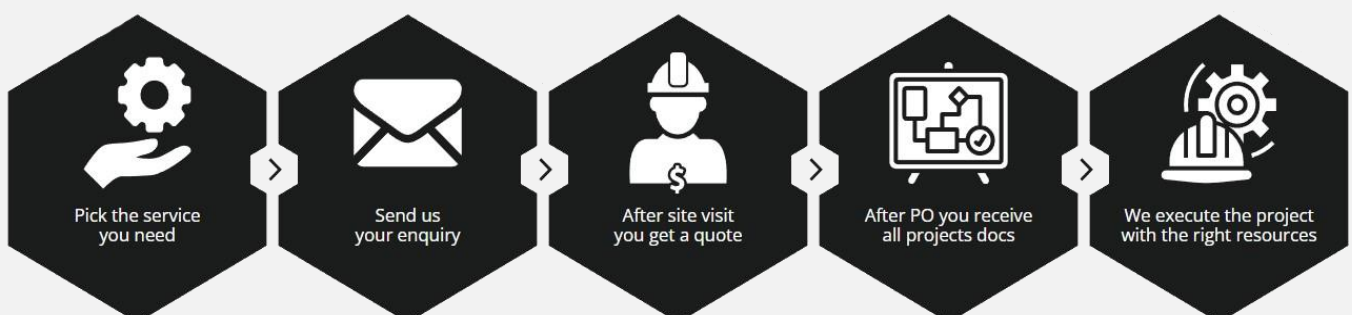
- Phase 1: Initial data collection and agreement of assessment scope
- Phase 2: Detailed data collection, analysis and recommendations
- Phase 3: Execution of improvements in line with your financial model

The result is improved plant profitability and performance of the plant.

We offer:

- A phased approach to the assessment, which provides you with a clear decision-making process
- BERR engineering capability and knowledge
- Application of the latest technology
- Optimisation of plant performance within your business environment

After the initial site visit, our experts prepare a written report based on their findings. The report typically addresses topics such as plant condition, efficiency, availability and assignment of personnel as well as recommendations for improvement.



a. Engineering Feasibility

ii. Estimation, Costing, SWOT, CapEx, OpEx Analysis for Industrial Plants :

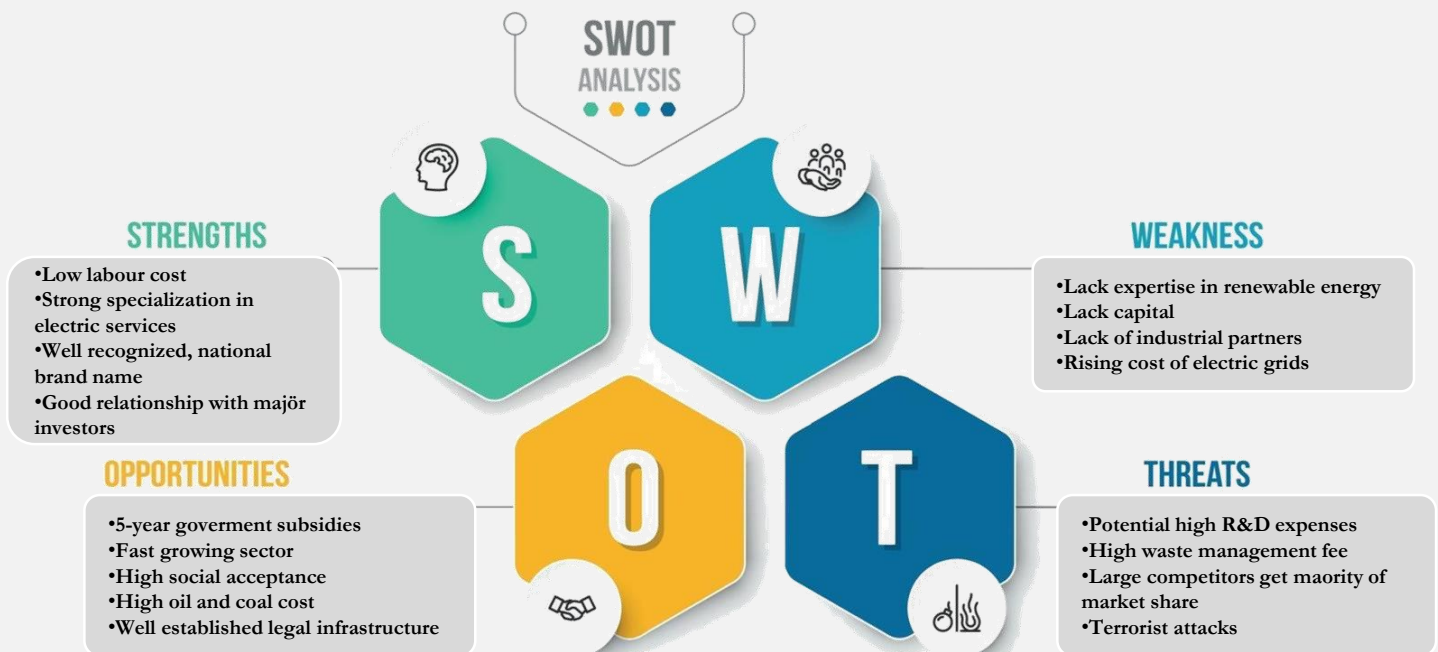
Our Engineering Studies regarding of the estimation-Costing-Valuation, cover the various aspects of estimating of quantities of items of works involved in industrial facilities, calculations and feasibility of the upgrading and extension project, plant relocation-moving works, new or second equipment buying, power house building, tank farm building or/and complex industrial engineering services buying. This also covers the rate analysis, valuation of properties and preparation of reports for estimation of various items.

- Multi-Disciplinary Preliminary Engineering
- Bill of Materials/Quantities
- Schedule of Rates
- Collection of Vendor Offers
- Rate Analysis
- Cost Analysis and Comparison
- Overall Project Costing
- Technical Specifications
- Execution Tender Preparation



SWOT definitions should be known and detailed in any investment consideration in industrial facilities. Our experts use Stanford University's methodology for their SWOT analysis. As BERR, we understand that the power sector varies across regions in terms of fuel use for electricity generation and end-use. But the operational structure of the sector remains almost the same across the world. Therefore, we have performed a SWOT analysis for companies in the power sector to analyze internal and external components.

Benefits of SWOT Analysis : Maximize your strengths / Reduce your weaknesses / Take advantage of opportunities Identify potential threats / Improve decision-making processes



a. Engineering Feasibility

ii. Estimation, Costing, SWOT, CapEx, OpEx Analysis for Industrial Plants :

Elements of Cost Estimation in Project Management:

There are two key types of costs addressed by the cost estimation process:

Direct costs: Costs associated with a single area, such as a department or the project itself. Examples of direct costs include fixed labor, materials, and equipment.

Indirect costs: Costs incurred by the organization at large, such as utilities and quality control.

Labor: The cost of team members working on the project, both in terms of wages and time

Materials and equipment: The cost of resources required for the project, from physical tools to software to legal permits

Facilities: The cost of using any working spaces not owned by the organization.

Vendors: The cost of hiring third-party vendors or contractors.

Risk: The cost of any contingency plans implemented to reduce risk.

CapEx Vs OpEx: Head-to-Head Comparison:

Both CapEx and OpEx entail spending money, but the two models require you to invest in different ways:

- CapEx is an upfront fee to buy or improve a fixed asset.
- OpEx is ongoing spending necessary to keep a fixed asset running.

Point of comparison	CapEx	OpEx
Short for	Capital expenditures	Operating expenses
Purpose	Funds for acquiring or upgrading a fixed asset	Ongoing costs of day-to-day business operations
Another common name	No	Revenue expense
Payment type	Upfront lump sum (one-time purchase)	Recurring (weekly, monthly, or annually)
Listed as	Property or equipment	Operating cost
Expected ROI	Provides long-term value beyond the tax year in which you buy an asset (between 3 and 20 years, depending on what you buy and in what industry)	Fully "consumed" in the tax year
Examples	Machinery, buildings, laptops, vehicles, patents, IT equipment	Office rent, utilities, salaries, cloud services, repairs
Tax deduction	Cannot be deducted from income for tax purposes	Fully tax-deductible
Depreciation	There is depreciation for tangible assets and amortization for intangible assets	No depreciation
Listings	Listed in the investing activities of a company and its cash flow statement	Shown on the income statement of a company
In throughput accounting	Money spent on inventory falls under CapEx	Money spent turning inventory into throughput is OpEx
Typical approval process	Slow as high-price assets and items typically go through several layers of management	Fast if the item is budgeted for in the operating expense budget
Upfront costs	Must pay all or most money upfront	Low or zero
Typical flexibility	Has less flexibility as the asset is a fixed, long-term investment	Provides greater flexibility as you can "cut" the expense off and look for an alternative

The table above offers a more detailed comparison of the two payment models:

b. Power Plant Design Engineering

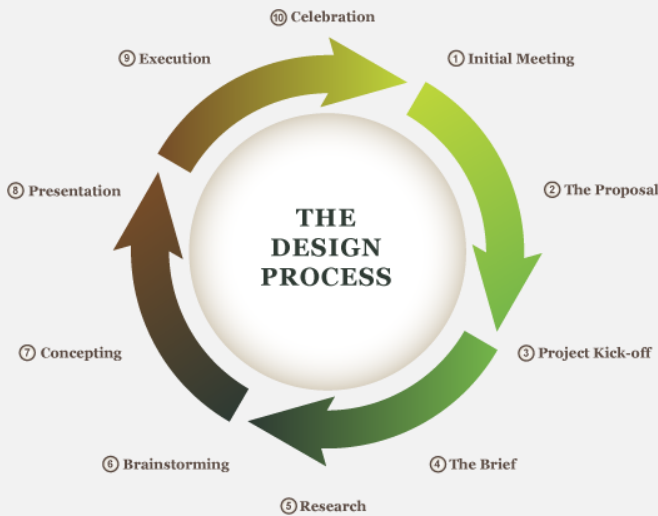
“ Engineering design is a thoughtful process for generating plans or schemes for devices, systems, or processes that attain given objectives while adhering to specified constraints ”

i. Front End Engineering Design :

With its quarter-century of experience, BERR Industries provides turnkey facility commissioning services to the sectors it serves. With its experienced engineer staff, vast project database and robust productions with quality control at every stage, BERR provides quality commissioning services to our valued customers.

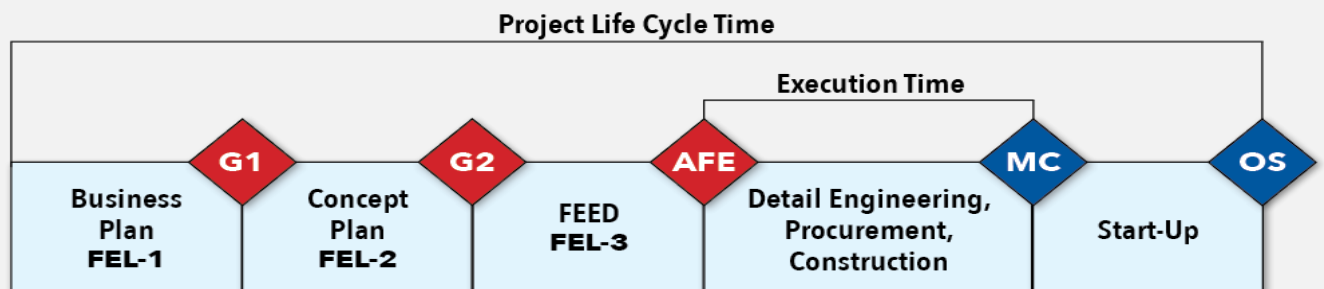
As with most undertakings, the quality of inputs in the earliest stages of a decommissioning project will usually dictate the level of success that can be achieved.

BERR therefore recognises that detailed research, planning and the bringing together of competent resources are all factors that will impact on the eventual project outcome. Our front-end engineering services are therefore the foundation stones on which safe and secure projects are built.



Multi-Disciplinary Front End Engineering (FEED)

- Validation of Concept Engineering
- Preliminary Engineering
- Material Selection
- **Finalization of Front End Engineering (FEED)**
 - Piping & Instrumentation Diagram (P&ID)
 - Preliminary Layouts
 - Major Equipment Sizing
 - Process Calculation Sheets
 - Design Review
 - Electrical Load List
 - Risk Assessment



FEL: Front-End Loading

AFE: Authorization for Expenditure

MC: Mech. Completion

OS: On Stream

◆ Gate

◆ Milestone

b. Power Plant Design Engineering

ii. Conceptual Plant Design :

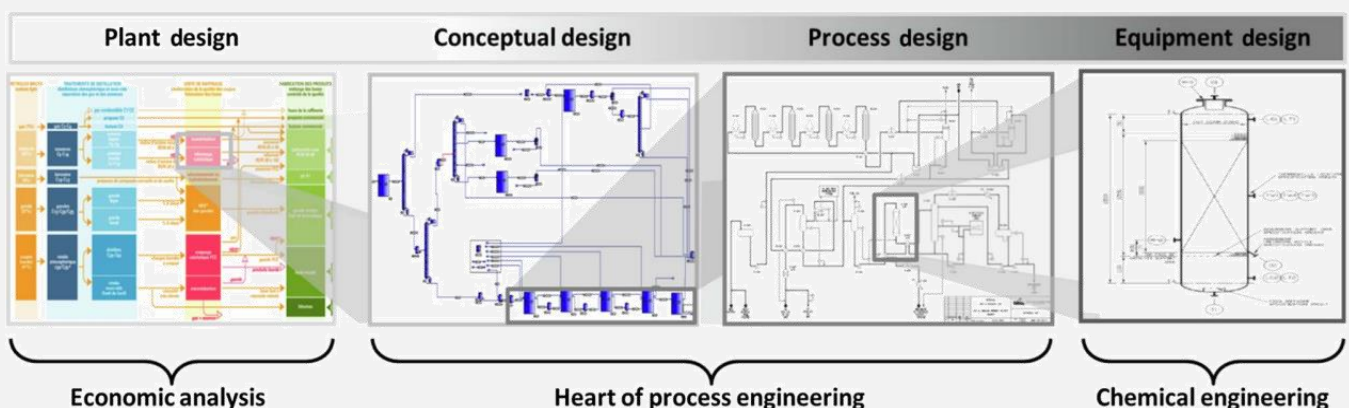
The accepted definition of an electrical power plant is that it is an aggregation of machinery and apparatus for converting the latent energy of some combustible or the potential energy of falling water into electrical energy. The engineer must keep in mind the fact that for every set of conditions there is a particular type of plant which, under those conditions, will return the largest dividends. The most important conditions affecting the design of a power plant are:

(1) *The site;* (2) *the cost of coal;* (3) *water supply;* (4) *character of load;* (5) *capacity of the station.*

The site of a proposed plant is important because accessibility to a market for power often means lower investment cost and subsequent maintenance of transmission lines, and available sources of coal and water must always be large factors in the determination of a proper site. In congested districts where real estate is high the designer must keep within certain reasonable limits as to floor space to keep down investment costs. Coal prices determine largely the result of possible competition. Hydroelectric plants cannot compete with steam plants when coal prices fall much below \$2.25 per ton. On the other hand they are serious competitors if prices rise to \$3.00 and above. Water supply affects power plant design very largely both in hydroelectric and steam plants. Abundance of water supply is not alone sufficient. Certain localities possess water supplies favorable for hydroelectric plants but very adverse to steam plants because vegetable growths and chemical properties lead to annoying boiler and condenser scale. Load characteristics determine machine types and initial investments. Lighting loads are heavy at night and usually very light during the day.

Conceptual Design and Engineering Service includes:

- Preliminary layouts
- Single line diagrams
- Integration elements
- Basis of Design
- Development Engineering
- Project Controls (scope of work, cost estimate, risk assessment, HSE, Scheduling, etc.)
- Technology Review and Engineering Development



b. Power Plant Design Engineering

iii. As Built Plant Design :

Integrated End-to-End Plant Project Engineering

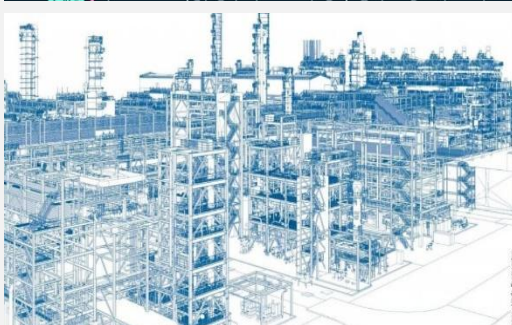
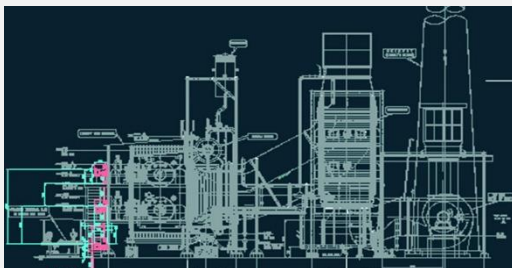
The main objective of any digital plant design process is to obtain the most accurate design and planning data possible, along with a realistic representation of your plant or installation prior to construction or modification. A digital model can be used for feasibility studies, easily incorporating additional information, such as preliminary costings and material requirements, from existing project data.

Power Plant & Boilers Design Engineering

Our wide range of cogeneration and heating skills allows us to develop sustainable systems for our clients – striking the right balance between production and distribution.

Areas of Expertise

- ✓ Design of power plants, boiler plants and auxiliary equipment according to tenders requirements
- ✓ Buildings and civil structures design in relation to power plants and power plant equipment
- ✓ Low emission systems design of operation optimization effectiveness and reliability increase
- ✓ Measuring, monitoring and control systems
- ✓ high-voltage and low-voltage electric equipment and distribution systems design
- ✓ Design of conveyors of loose material, transportation and storage of liquids and gases
- ✓ Digitalization and software for power engineering
- ✓ Control & Automation



Field of Experience

- ✓ Biomass boiler plants, Biofuel energy plants, renewable fuels,
- ✓ Combined heating and power plants (CHP)
- ✓ Electrical power, Hydropower, Solar, Wind
- ✓ Steam and gas turbines, gas engines, heat recovery

Software

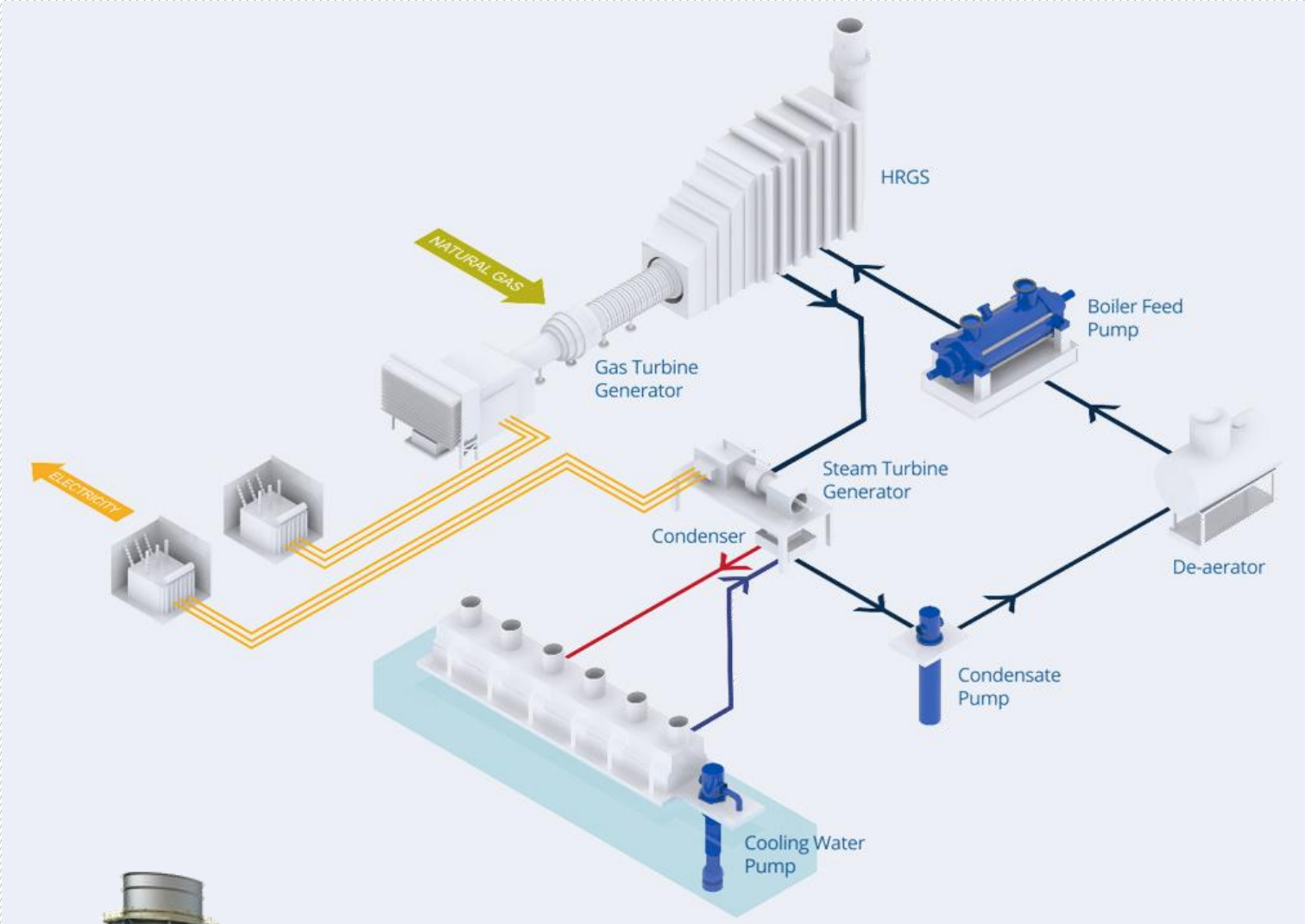
- ✓ In our engineering projects, we use automated design systems:
- ✓ AutoCAD 2D/3D // PDMS/E3D // NavisWorks 3D
- ✓ Revit MEP 3D // TEKLA Structures // EPLAN

Services

- ✓ Steel detailing. Structural engineering using Revit, Tekla,
- ✓ Steam flow diagrams; Steam cycle simulation
- ✓ Heat balance diagrams and water balance diagrams
- ✓ P&ID, Piping design and instrument diagrams Piping and ducts engineering with isometric drawings of pipes
- ✓ Equipment, pipeline, valve
- ✓ Pressure vessels and heat transfer equipment design
- ✓ Steel equipment thermal and structural design
- ✓ Construction documentation; workshop drawings



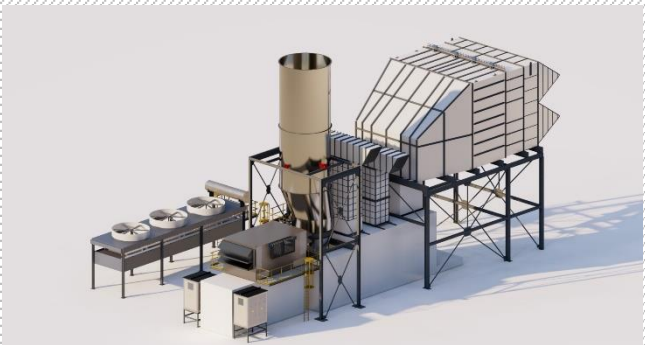
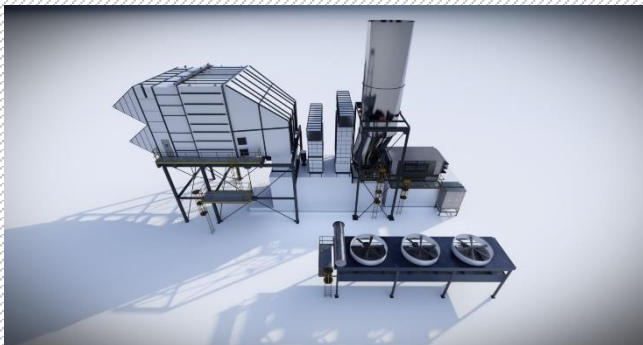
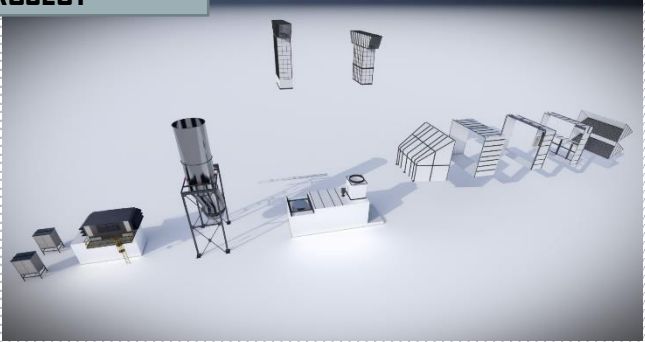
INDUSTRIAL ENGINEERING SERVICES



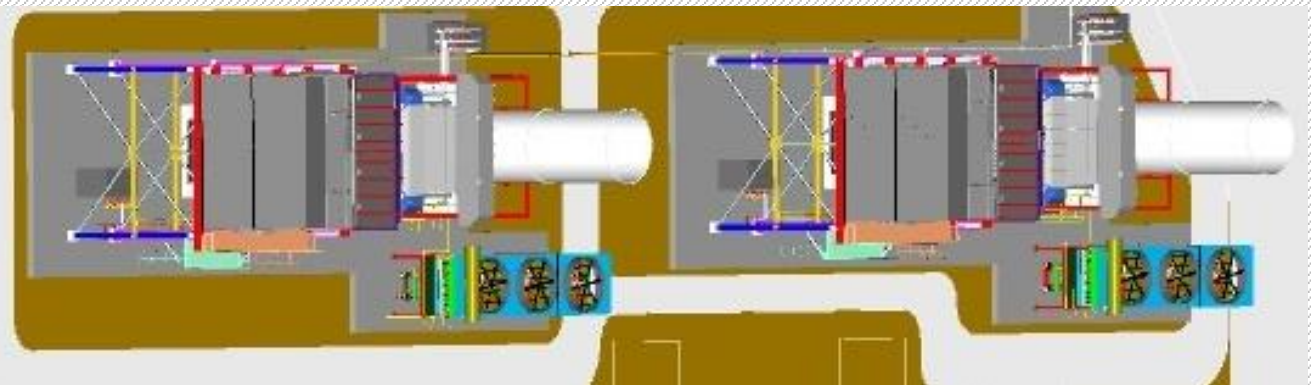
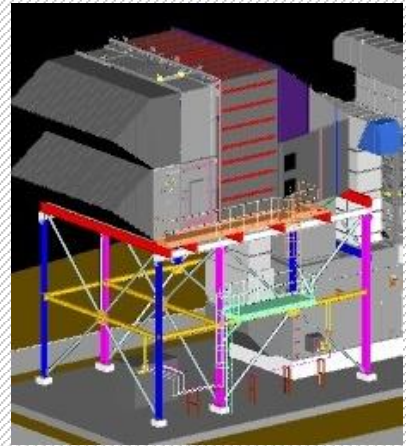
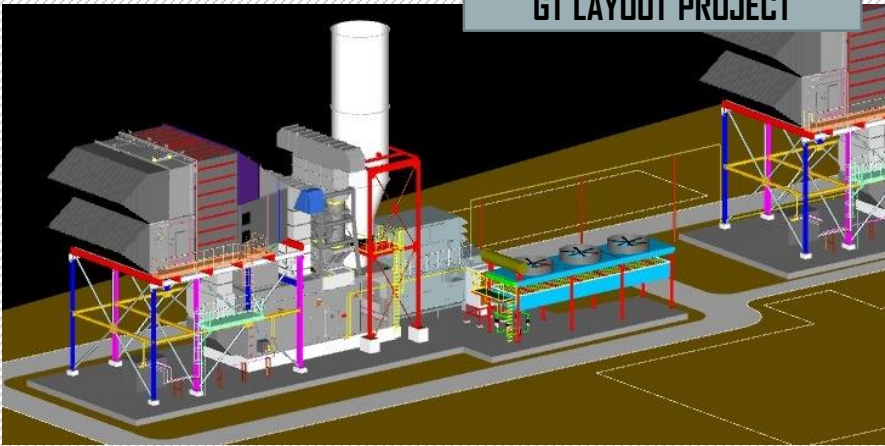


INDUSTRIAL ENGINEERING SERVICES

3D PROJECT



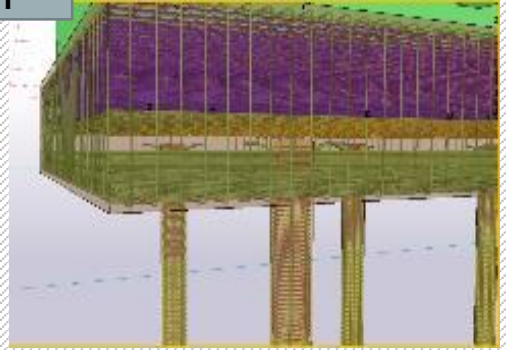
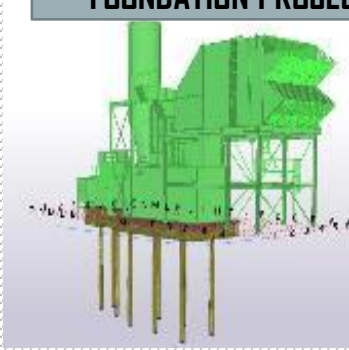
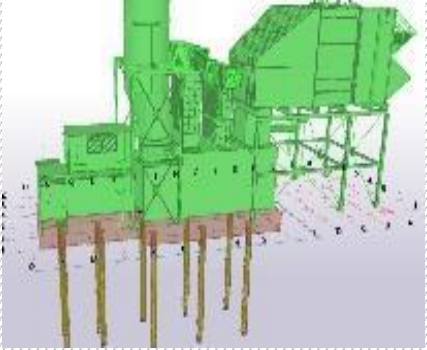
GT LAYOUT PROJECT



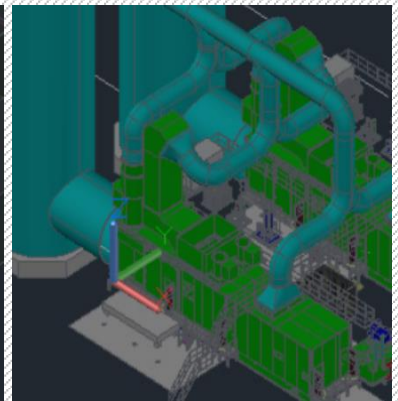
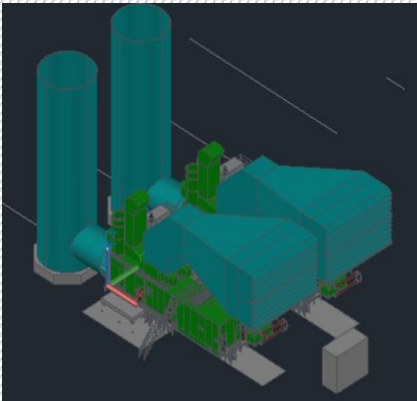


INDUSTRIAL ENGINEERING SERVICES

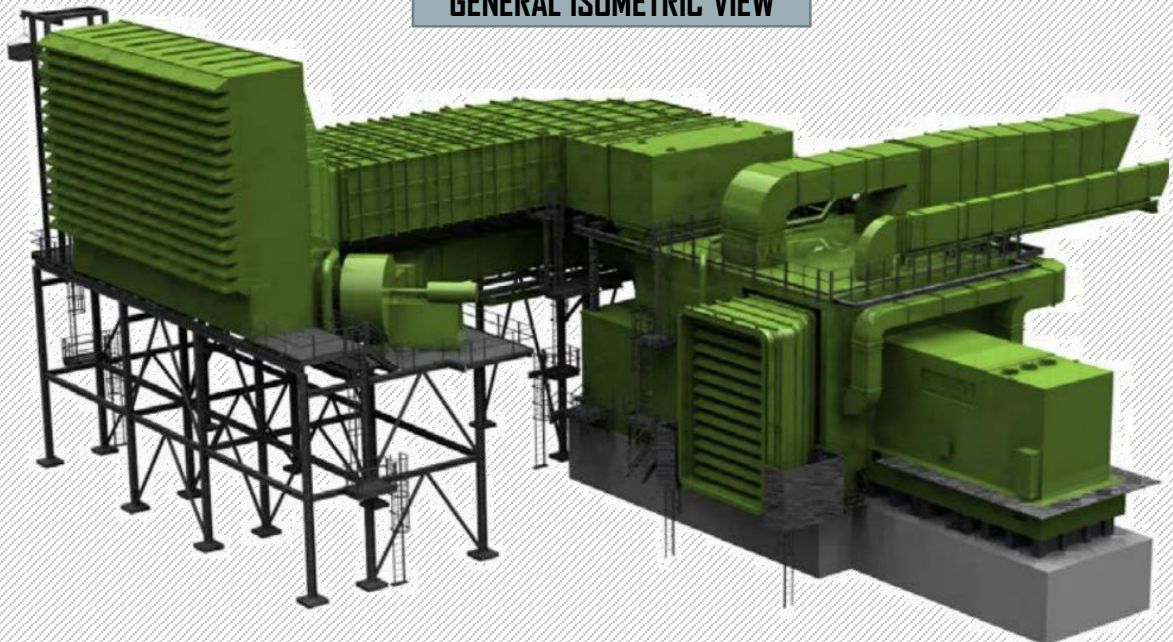
FOUNDATION PROJECT



GT HOUSING PROJECT



GENERAL ISOMETRIC VIEW

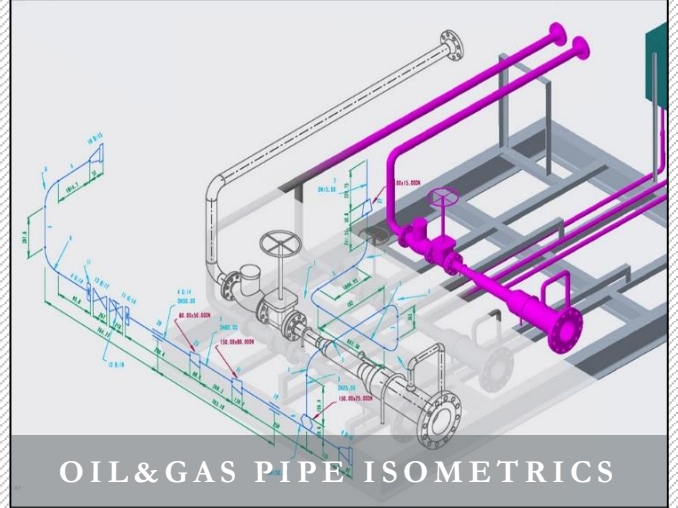




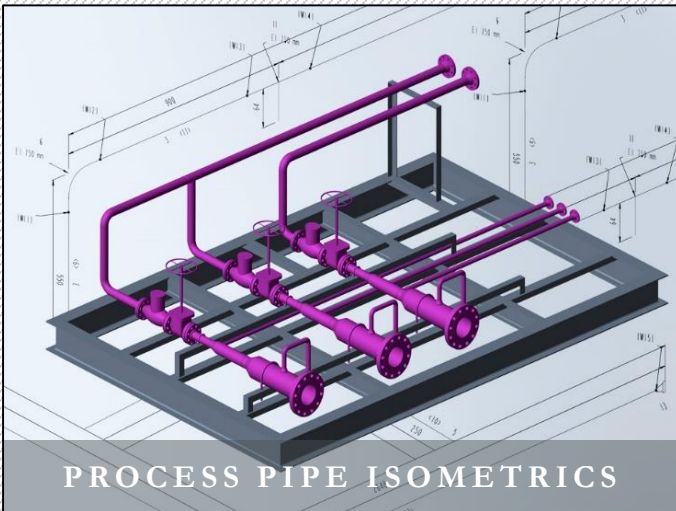
INDUSTRIAL ENGINEERING SERVICES



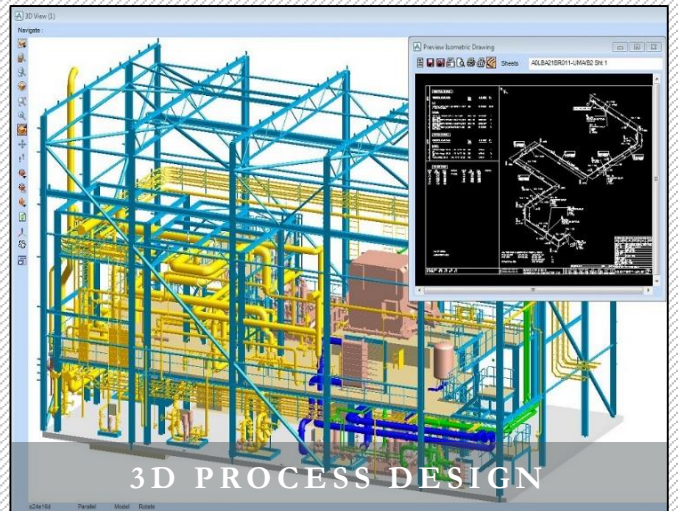
3D OIL & GAS PLANT



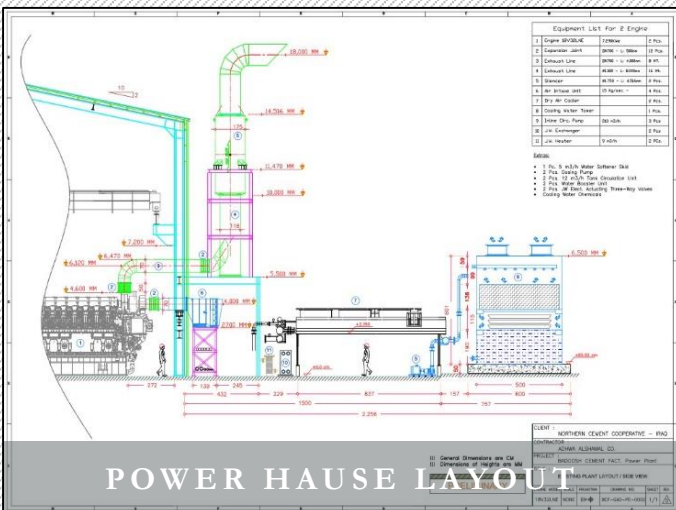
OIL & GAS PIPE ISOMETRICS



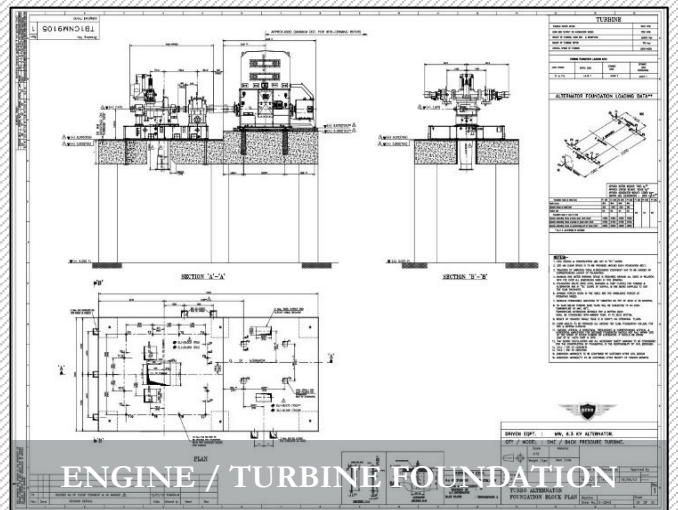
PROCESS PIPE ISOMETRICS



3D PROCESS DESIGN



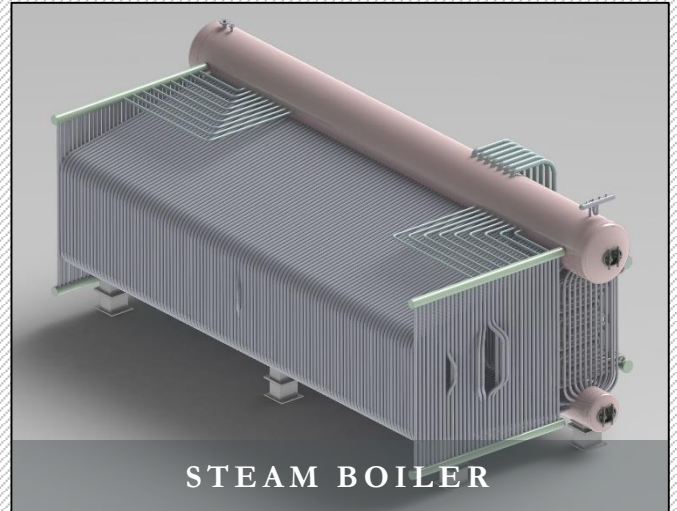
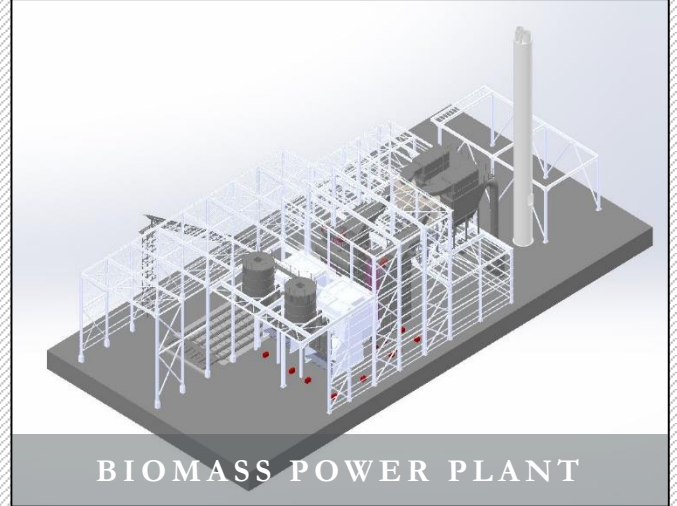
POWER HOUSE LAYOUT



ENGINE / TURBINE FOUNDATION



INDUSTRIAL
ENGINEERING SERVICES





INDUSTRIAL ENGINEERING SERVICES

II – EPCm

- ❑ ENGINEERING
- ❑ PROCUREMENT
- ❑ CONSTRUCTION
- ❑ MANAGEMENT





INDUSTRIAL ENGINEERING SERVICES



CCPP - HRSG



GAS TURBINE



BIOMASS



HFO DIESEL

Introduction

Introduction:

We have been working about "Electro - Mechanical Engineering, Procurement, Construction Contracting" for Power Plants & Industrial Plants in Turkiye, Europa, Middle East and Africa Countries for over 20 years. BERR Industry's modular design strategy enables us to deliver integrated EPC services to construct power plants in cogeneration, combined cycle and simple cycle gas turbine configurations. We implement tested and proven processes to provide fast-track reliable power solutions.

Also BERR Industry provides engineering services for "Power Plant Conceptual Engineering, Implementation and Upgrading". BERR has extensive experience in a variety of power generation systems while providing expertise in Control Systems, Mechanical Design and Electrical Engineering. Also Power Plant Erection, Supervising, Commissioning, Maintenance, Operation, Training and ReLocation Services are in our scope of works.

From feasibility to structural, civil and power engineering, grid connection and compliance, our full turnkey solution addresses every aspect of a highly complex process, with each element handled with meticulous attention to detail by our engineering team.

EPC Contracting Business For:

1. HFO Diesel Power Plants
2. Gas Engine Power Units
3. Gas Turbine Power Plants
4. Biomass Power Plants
5. ORC Power Plants
6. Power Plant Extension Projects
7. Turbine Refurbishment Projects
8. Engine Overhaul Projects
9. Industrial Plant Relocations
10. HV - MV Substation Projects
11. Electrical SVC (Static Var Compensation)
12. Isolated Phase Bus Ducting (IPBD)
13. Segregated Phase Bus Duct. (SPBD)
14. Automation Projects
15. SCADA Projects
16. Synchronization Systems
17. Maintenance Projects
18. Steam & Thermal Oil Boiler
19. Heat Recovery Steam Generator
20. Flue Gas Heat Recovery Systems
21. Exhaust, Silencer Systems
22. Air Cooled Heat Exchangers
23. Shell&Tube Heat Exchangers
24. Preheater Exchangers
25. Industrial Cleaning Projects:
 1. Tank Cleaning/Filtration Projects, Substaion
 2. Transmission Line Online-Offline Cleaning Projects

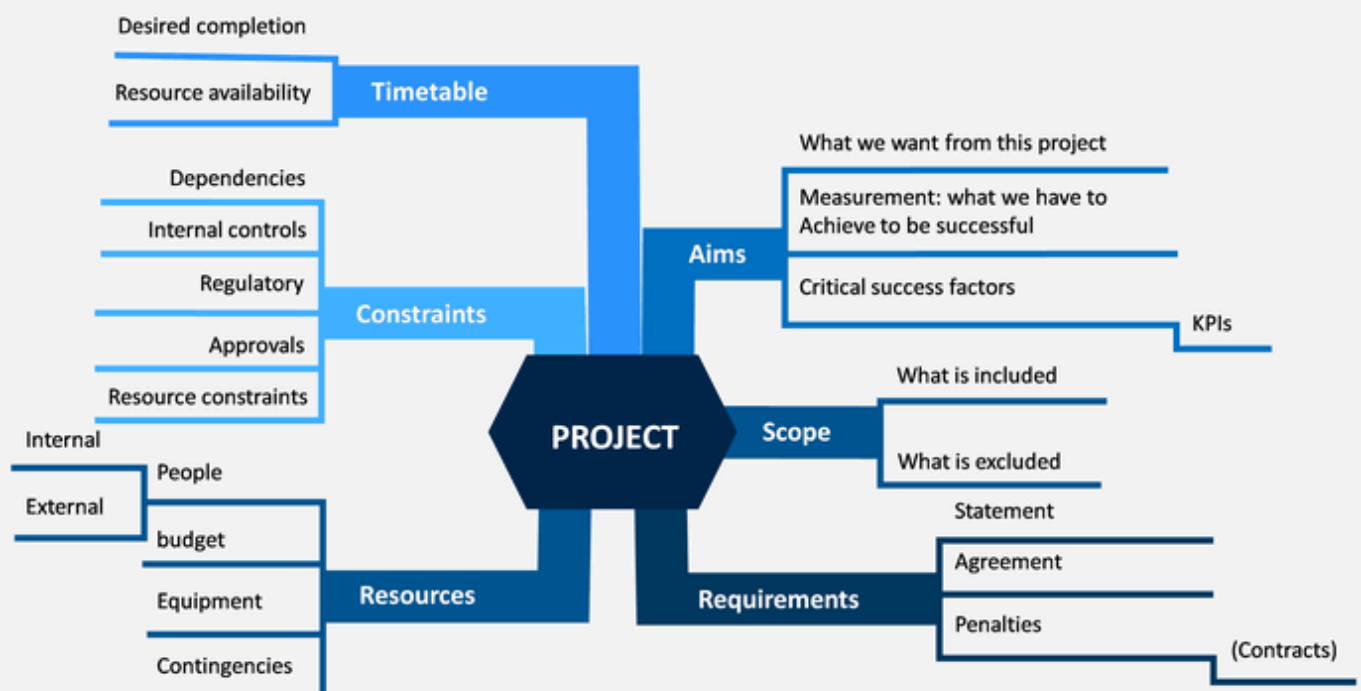


a. Engineering

i. Pre-Mobilization & ii - Design Review Phase :

The Mobilization phase is a short interval between the completion of construction documents and the start of construction. There are two primary areas of focus during Mobilization:

Finalizing General Contract award and contract issuance (small project); Finalizing GMP (large project)
Securing full Building Permit - all projects.



iii. Relocation Engineering:

BERR Industries has been providing a comprehensive "Industrial Plant / Production Facility / Factory / Machine Lines Relocation Engineering Services".

The first and most important issue to be done in facility Relocation/moving projects: Preliminary and final feasibility must be made for high accuracy costing-budgeting.

Our factory relocation project management includes consultation, planning, risk analysis and implementation through milestone objectives to completion to carry out your project efficiently, within budget and on time. Disassembling, Transport, Reconstruction and Other Services Related to the Relocation Projects.

Brand new isn't always the only option. Sometimes, constructing new process, industrial or power plants isn't the best approach for a number of reasons: cost effectiveness, fast-tracked scheduling or environmental issues, for example.

Industrial Relocation Engineering & Feasibility

In industrial facility transportation engineering, feasibility studies are inevitable in order for the investor, purchasing company to make the right budget and work-time schedule and planning at a high level.

Our experienced service-engineers provide the following activities:

- Planning, organization and supervision of entire relocation process
- Assistance and supervision of disassembly, transportation and reconstruction
- Implementation of upgrades, optimization strategies and other improvements
- Procurement and delivery of additional components and spare parts

Industrial Relocation Steps

We offer a full package of services for the dismantling of plant, transportation and reinstallation at the new site. Our factory relocation project management includes consultation, planning, risk analysis and implementation through milestone objectives to completion to carry out your project efficiently, within budget and on time. Disassembling, Transport, Reconstruction and Other Services Related to the Relocation Projects.

- Relocation Management and Planning
- Plant Dismantling / Decommissioning
- Pipe Lines and Equipment Disassembling
- Steel Structures Dismantling
- Machine Line and Equipment Removal Works
- Mechanical & Electrical Match Marking and Labeling
- Equipment Packaging and Loading
- Transportation and UnLoading
- Equipment Mounting / Assembly
- Machine & Equipment Overhaul/Refurbishment
- Automation UpGrading and Commissioning
- Electrical and Mechanical Tests and Commissioning

iii. Relocation Engineering:

Gas Turbine and Auxiliary Equipment Relocation works. Air Inlet / Intake Filters, Generator Rooms, Lube Oil Skid, Fuel Feed Skids, Heaters & Filters, Fire Protecting (Automatical Extinguisher) Systems, Cooling Raidators, Exhaust Fans, Dampers, Stacks, Enclosure, MCC, Transformator, Compressors, Gas Reducing and Metering Units, WorkShop.



Steam Turbines, Turbine Parts, Rotor, Casing, Blades, Pipes, Pipe Racks, Platforms, CatWays, Ladders, Steel Structures, etc. Cement Plants, Concrete Plants, Chemical Factories, Pharmatucal Factories, Steel Constructions, Steel Supports, Steel Rooftops, Steel Structures, Steel Platforms, Stack & Chinmeys, Exhaust Lines, Production and Office Buildings, Containers, Treatment Systems, Enclosures, Prefabricated Factory Buildings, Mechanical Lines, Electrical Panels & Lines, Lightenings.

Balance of Plants, Auxiliaries, Common Units, Major Parts, Cover-Body Parts, Heavy Lifting, Packaging, Labelling, Marking, Lifting, Loading, Unloading, Foundation, Anchoring, Replacing, Relocated, Maintenance, Refurbishment, Removal, Dismantling, Disassembly.

Natural Gas, Diesel and H.F.O. Fuel Fired Engine and Co-Generation Systems. Black Start and Stand By Generators. Engine Power Plant Equipment, Auxiliaries and Process Lines.

Steel Process, Rolling Mill Machines, Cooling Platforms, Gearboxes, Cooling Towers, Chillers, Furnances, Fans, Machine Lines, Chemical Processes, Process Lines, Machine Lines, Machine Tools, Steam Generators, Boilers, Flues Gas Heat Recovery Units, Heat Recovery Steam Generators, Distillation Units, Major Heavy Industrial Parts, Cranes, Platforms, Pump Rooms, Compressors Rooms.

Heavy Machines and Machinery Lines: Plastic Machines, Extruders, Mixers, Reactors, Silos, Filters, Siklons, Heaters, Process Pumps, Transfer and Feeding Pumps, Chemical Pumps, Chemical Tanks, Chemical Baths, Distillation Columns, Food Process, Food Machine Lines, Storage and Feeding Tanks, Process Cooling Systems, Filtering Units, Cable Machines, CNC Machines, Universal Metal Processing Machines.

Exhaust Lines, Flue Gas Treatment Systems, Silencers, Mufflers, Spark Arrestors, DeSOx, DeNOx Systems, Heat Recovery Systems, Exhaust Fans, Stacks and Chimneys, Catalytic Convertors, Economizors, Condensers, Gas Soperators, Lube Oil Soperators, Fuel Oil Soperators, Clarification and Purification Systems, Water and Oil Treatment Units, Fuel Storage Units.

HV - MV – LV Electrical Equipment. Main Switch Panels, Electrical Panels, Transformators, SwitchGears, Circuit Breakers, Relays, Top Changers, Bushings, Insulators, Parafudrs, Cable Lines, Instrumentation and Control Units, Accumulators, PLC-SCADA Control Units.



INDUSTRIAL
ENGINEERING SERVICES



BIOMASS POWER PLANT



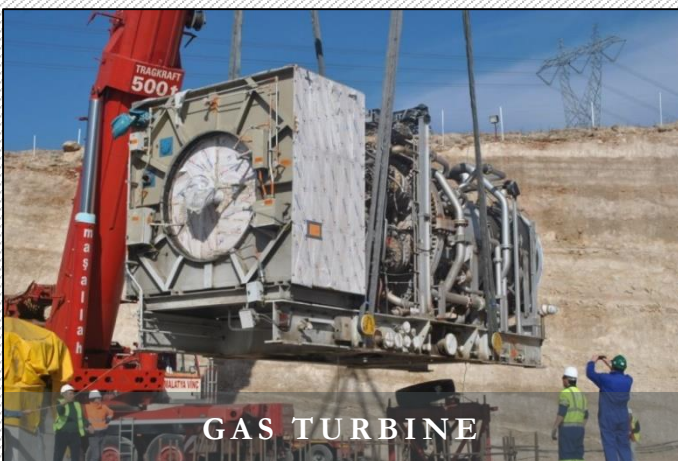
BIOMASS POWER PLANT



GAS ENGINE



HFO DIESEL ENGINE



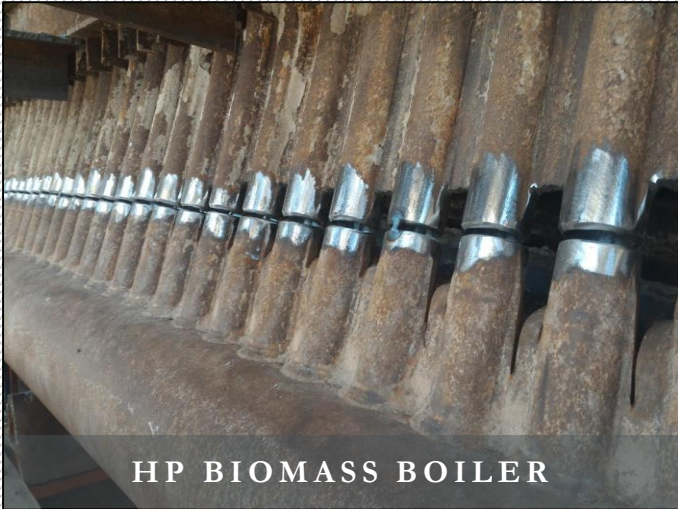
GAS TURBINE



BOP PROCESS EQUIPMENT



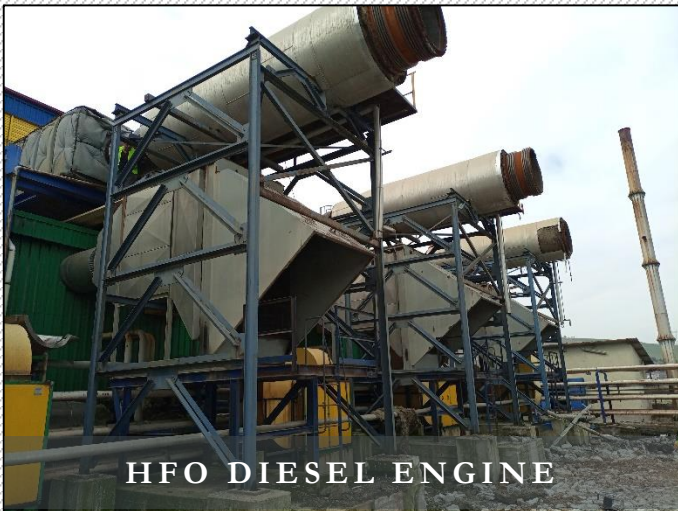
**INDUSTRIAL
ENGINEERING SERVICES**



HP BIOMASS BOILER



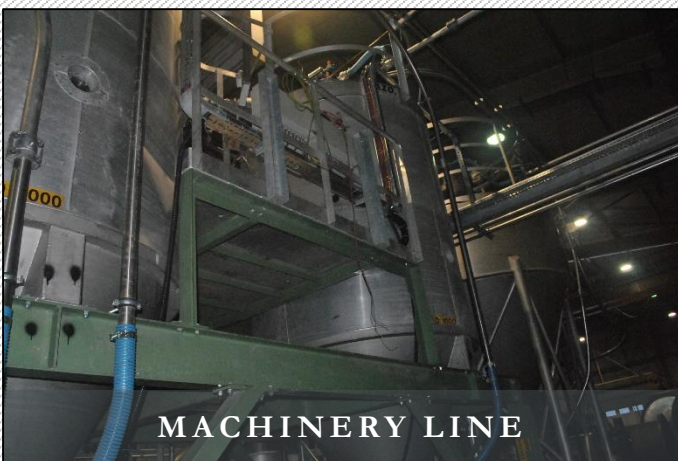
HP BIOMASS BOILER



HFO DIESEL ENGINE



TRANSFORMER



MACHINERY LINE



TURBINE GENERATOR

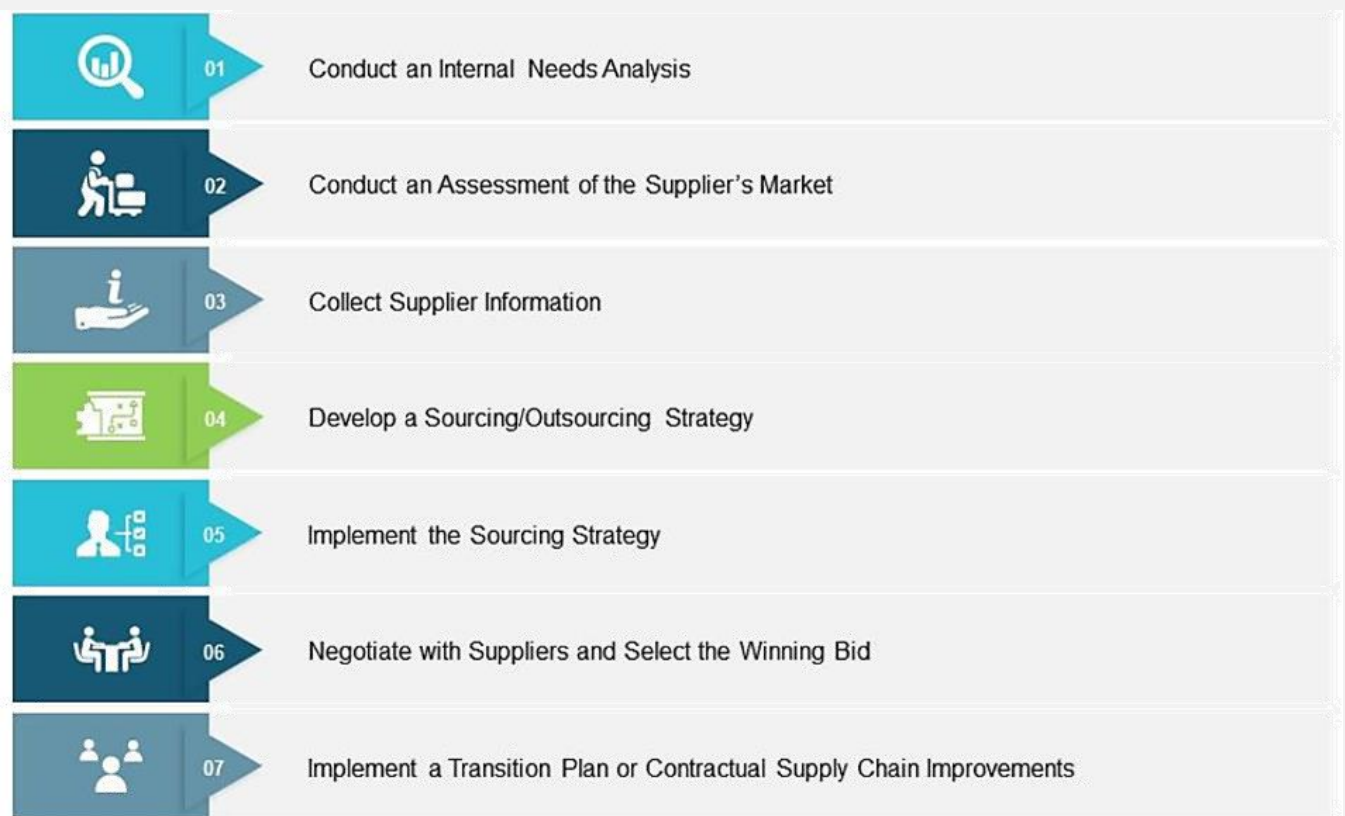
b. Procurement

i. Definition of the Procurement Scope:

For a project manager to successfully deliver a project, they need to have a proper construction procurement process. How organizations and professionals carry out the procurement process heavily impacts their operations in the construction industry. Risks typify the construction process, and once stakeholders identify these risks, they prioritize a suitable procurement process that matches the risk profile selected.

Procurement is handled by a project manager and typically includes the following five areas of responsibility:

- Define project requirements.
- Solicit bids for and select services.
- Buy or lease supplies and equipment.
- Monitor construction contracts, potential cost fluctuations, and completion schedules.
- Resolve conflicts with budgets, timelines, or quality, among other issues.



The key to procurement process success is using the right strategy and procurement technology to make sure materials and services are high quality and available on the job site when required.

b. Procurement

ii. What We Purchase ?

BERR procurement department purchases a variety of engineered equipment, materials and services to support our capital projects. We serve all of our large operating divisions – Energy and Water. Below is a partial list of what we purchase.

Oil & Gas – Distillation Column, flamer, flame arrestor, sucubber, vacuum residium, merox unit, isomerisation unit, bitumen unit, visbreaker unit, heat exchangers, preheaters, pressure vessels, API pumps, valves, pipe, controls systems, structural steel, pipe supports, and related balance of plant equipment and materials.

Power Generation – Gas & Steam Turbines, boilers, Heat Recovery Steam Generators (HRSGs), condensers, air cooled condensers (ACC), air cooled heat exchangers, dry air coolers, cooling towers, oil&fuel seperators, oil&fuel filters, circulation & gear pumps, valves, fabricated pipes, pipe supports, structural steel, cable, electrical commodities, cooling tower parts, fire protection, tanks, control systems, and related balance of plant equipment and materials.

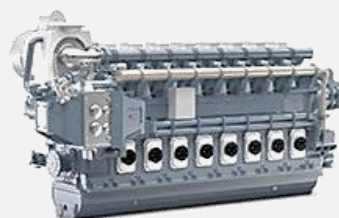
Air Quality – OEM technology for flue-gas desulfurization, fabric filter systems, selective catalytic reduction, electrostatic precipitator systems, and related balance of plant equipment and materials.

Power Delivery – Gas-insulated switchgear, transmission poles (mono and lattice), high-voltage transmission cable, transformers, substation equipment, and related balance of plant equipment and materials.

Water - Treatment and Wastewater – Civil materials, chemical feed systems, digesters, conveying systems, dryers, pumps, wastewater treatment systems, filtration systems, agitators, mixers, electrical controls, piping, and related balance of plant equipment and materials - Desalinization – Reverse osmosis and related Equipment.

TURBINE & EQUIP.

- ▶ GAS TURBINE
- ▶ STEAM TURBINE
- ▶ DIESEL ENGINE
- ▶ GAS ENGINE
- ▶ COMPRESSORS
- ▶ ROTARY EQUIPMENTS



EQUIPMENT

- ▶ COOLING UNITS
- ▶ CONDENSING UNITS
- ▶ PIPELINES
- ▶ PIPE RACKS
- ▶ FIRE PROTECTING
- ▶ MEASURING UNITS



c. Construction

i. Civil Works

As Berr Industries, we meticulously planning and carry out the construction, machanical and electrical infrastructure works of the facilities and the installation of structural equipment in the projects we undertake. As a result of detailed calculations and the needs of the facilities, we carry out solution-oriented works with our experienced engineers, thinking that the products and / or energy produced in your facilities can be transferred safely and without loss by creating the right infrastructures.

Our Company has been succeed following on infrastructure works:

- Site Buildings & Container Camp
- Industrial Buildings
- Power House
- Pump House
- Water Cooling Tower
- Underground Pipelines
- Pipe and Cable Trench
- Underground Transmission Lines
- Discharge, Purification Systems
- Water and Sewage Systems
- Electrical Infrastructure Systems



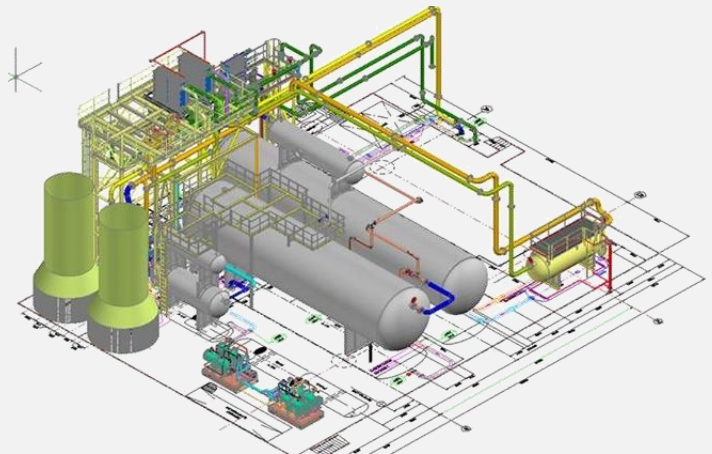
ii. Mechanical Works

Berr, with years of experience, carries out sensitive works such as making preparations for heavy-duty equipment such as turbines, diesel engines, transformers, steam boilers, mills before assembly, performing the assembly safely, and making post-assembly alignment and measurements.

It is specialized in the assembly works of main and auxiliary equipments that are large in weight and volume such as "Gas Turbine, Steam Turbine, Generator, HFO - Diesel Engine, Natural Gas Engine, Water Pipe Wall Steam Boilers, Thermal Oil Boilers, Combustion Chambers, Air Intake Systems.

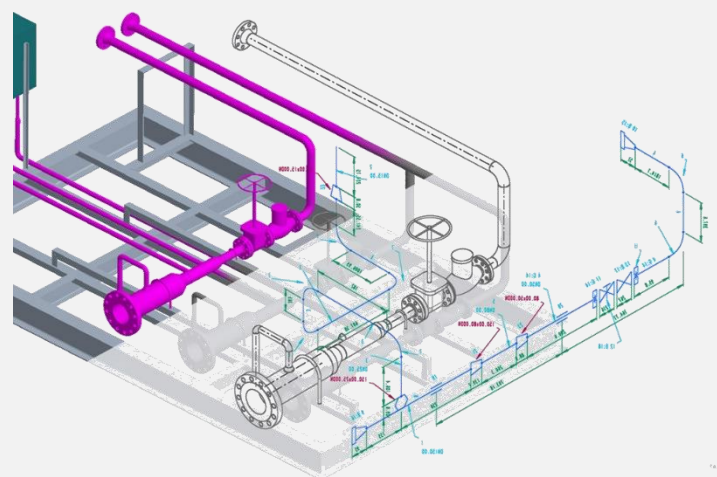
Pipeline Installation:

We carry out the on-site manufacturing and assembly of pipelines with our expert welders and pipe fitters in accordance with international standarts. In addition, we reduce the load on field works by preparing the pipes in the workshop according to isometric measurements and sending them to the field.



Common Used Process Pipes:

SMLS pipe is produced by heating a round billet of steel and then piercing it with a bullet-shaped piercer, over which the steel is stretched. This is followed by rolling and drawing to produce the desired dimensions. The final product is hydrostatically tested, inspected, coated if required, and stenciled with the specification. SMLS pipe is used in high-pressure, most critical locations and under most severe operating conditions. SMLS pipe is supplied according to ASTM Specifications A53, A106, A333, A312, A358, etc., and API 5L pipe



Main Process Lines:

- HFO-Diesel Fuel Lines. Between 3 and 13 barsHF
- Natural Gas Main Lines. Between 20 and 65 bar
- Natural Gas Internal Utility Lines Max. 19 bars
- Lubricating Oil Lines. Between 2 and 25 bar
- Thermal Oil Lines. Max 25 bar
- High Pressure Steam Lines. Between 65 and 120 bar
- M-L Pressure Steam Lines. between 8 and 65 bar
- Cooling Water Lines. Between 2 and 12 bars
- Exhaust Pipelines. Hot Crossing Pipelines

Pipe Types:

Seamless / ERW / Welded / Fabricated / LSAW Pipes

HASTELLOYP IPES

*ASTM B 622 ASME SB 622 / ASTM B 619 ASME SB 619, ASME B36.10M, ASME B36.19M
ASTM A312, A358, A778, A53, A106, API 5L
ASME/ANSI B36.19 B36.10*

Size Chart - ASME B36.10M Schedule Chart15- 150" NB
INSCH 20 - 30 - STD - 40 -60 - XS - 80 -100 - 120 -XXS



INDUSTRIAL
ENGINEERING SERVICES



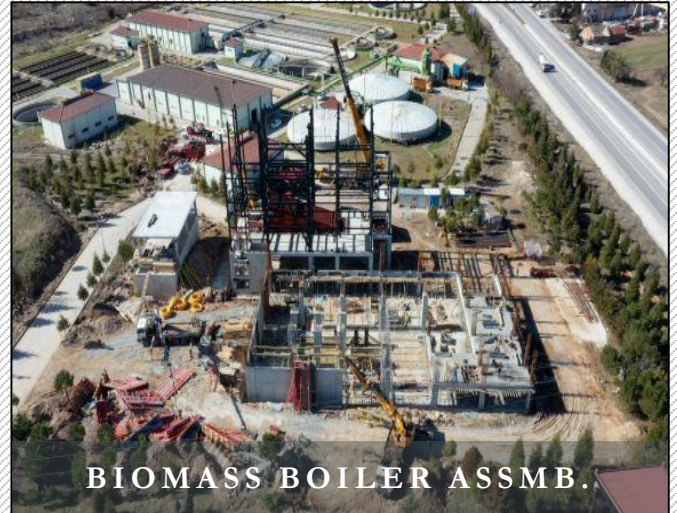
TURBINE GENERATOR ASSMB



GAS TURBINE ASSMB.



HFO DIESEL ENGINE ASSMB.



BIOMASS BOILER ASSMB.



AIR COOLED HEAT EXCH. ASSMB.



STEEL FACTORY ASSMB.



INDUSTRIAL
ENGINEERING SERVICES



GAS TURBINE ASSMBL.



BIOMASS ASSMBL.



PROCESS PIPELINE INST.



STEAM TURBINE ASSMBL



GAS TURBINE ASSMBL.



MOBILE TURBINE ASSMBL.



INDUSTRIAL
ENGINEERING SERVICES



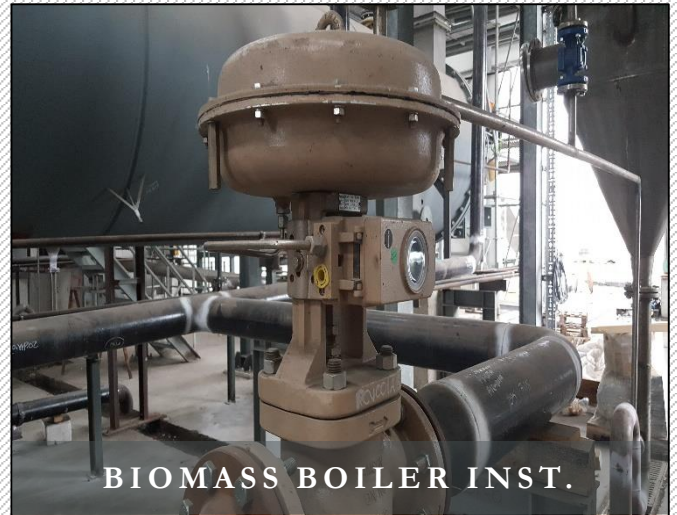
COOLING PIPELINE INST.



GAS PIPELINE INST.



PROCESS PIPELINE INST.



BIOMASS BOILER INST.



HEAVY FUEL OIL PIPELINE INST.

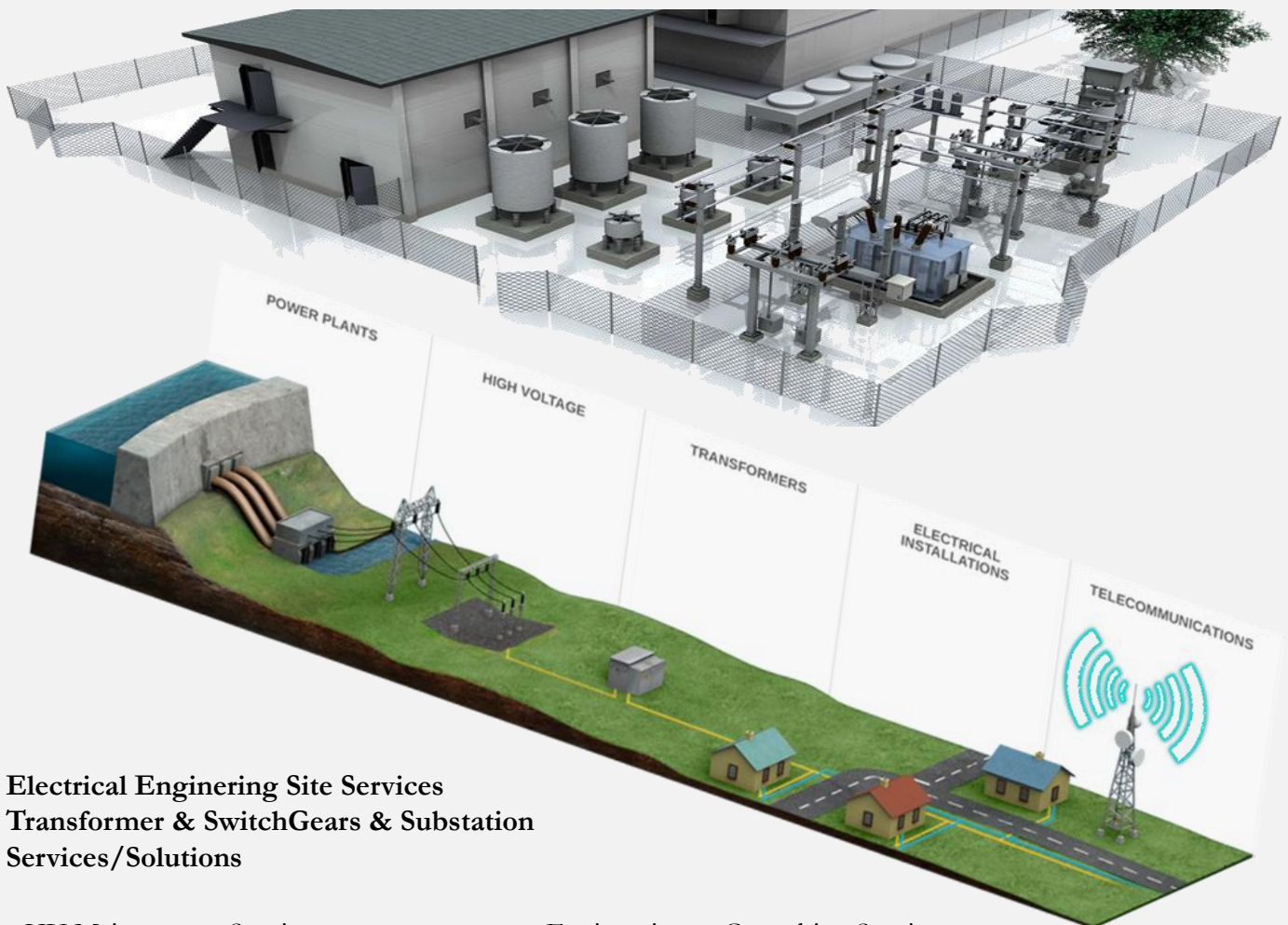


WATER COOLING PIPELINE INST.

iii. Electrical Works

BERR, an Electro-mechanical Contracting Co. is a contracting firm, registered in Istanbul since 2001 and have been executing contracts of all kinds in Design, Utilities & Infrastructure scope all around in the Turkiye We maintain high standards of quality at par with industry standards to provide best results to our customers. Hence, the strategic and reliable services provided by us help you to optimize operations and profit to the maximum

Also, We provide consultancy services to you with our experienced technical team. When the project works we carry out professionally are combined with the positive feedback from our valued customers, our motivation increases. We continue to carry out all the work we do for this purpose with great care.



Electrical Engineering Site Services Transformer & SwitchGears & Substation Services/Solutions

- HV Maintenance Services
- Isolated Phase Bus Ducting IPBD
- Supervision Services
- Automation - SCADA - MMC
- Site Survey & Inspection Services
- Test and Calibration Services
- Substation Cleaning & Coating
- Engineering & Consulting Services
- Inspection & Assessment Services
- Erection & Installation Services
- Civil Works & Grounding Works
- HV – MV Power Cabling Services
- Fibre Optical Cabling Services
- MV Maintenance Services

Power Station:

A well prepared set of services which includes installation from first to fifth stage is provided. With proper attention given to detailed aspects of power station like cabling, testing of electrical and auxiliary equipments, we strive to provide you high performance power stations.

Substaion / Transmidssion:

Immense attention is given by us to include all the essential features of substation in our services. Therefore the services for substation consist of high voltage switchgear, fire fighting system, cooling system, drainage system, auxiliary low voltage AC supply and similar other essential supplements.

It is important to have an efficient transmission system in order to get the full leverage of the high performance generation system. Hence we provide carefully structured transmission systems which consist of LV power and control cables, HVDC lines for great distance feasibility and AC power lines.

BERR support the entire portfolio of all brand switchgear products that include indoor and outdoor circuit breakers, indoor switchgear cubicles, gas insulated switchgear, generator circuit breakers, disconnectors, instrument transformers and surge arrestors.

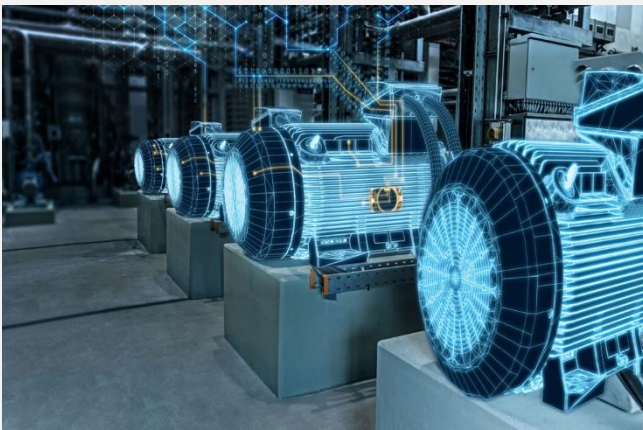
Use **BERR's** know-how to identify opportunities for improving system and equipment performance, optimizing your processes economically and technically, with regulatory compliance.

The reliable, cost-effective, long term solution to pollution induced flashovers of high voltage insulators. Insulator contamination has been a problem since the birth of electrical power distribution. Salt spray, industrial pollutants, and even desert sand can lead to costly power interruptions due to arcing and flashover. While numerous attempts with other protective methods have had their limitations, there is a solution that utility maintenance engineers can rely on: SYLGARD High Voltage Insulator Coating (HVIC).



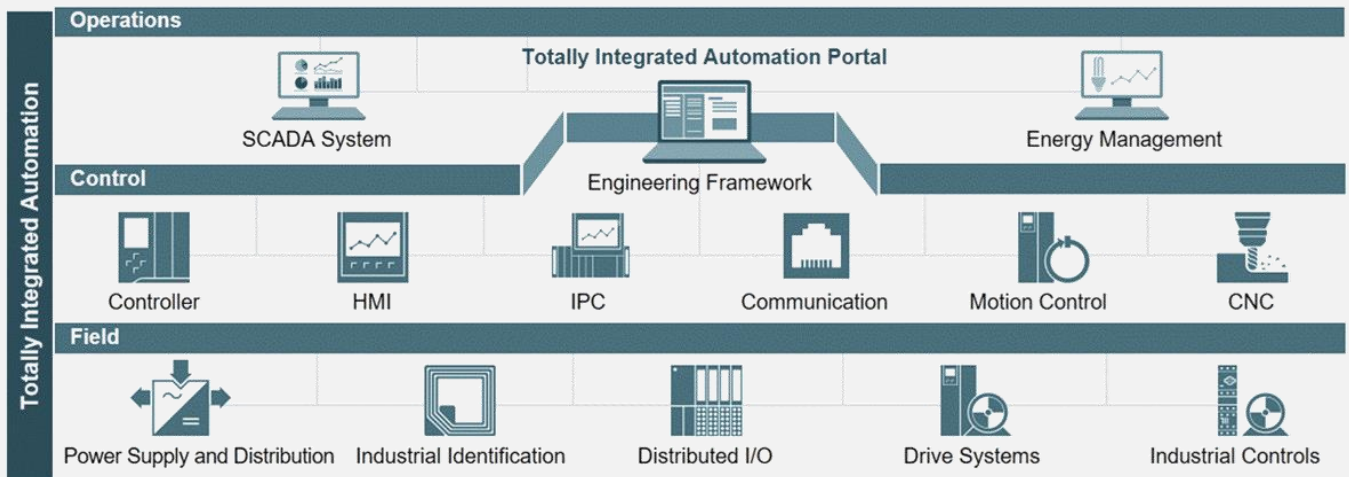
Automation:

With broad and in-depth knowledge from across multiple industries and technical fields, BERR delivers single-source solutions to customers that lower their production costs, accelerate delivery of their products and improve quality control. We engage with our customers on both greenfield programs, such as equipping new factories, and brownfield programs, such as capacity expansions, line moves, equipment upgrades, software upgrades, efficiency improvements and factory optimization.



We have been helping customers around the world transform, streamline and optimize their manufacturing operations since 2001. From planning and justifying a program to designing, building, and commissioning an automation solution to after sales and services and ultimately retirement of an asset, BERR has been there to assist customers with asset life cycle management.

- **Pre-Automation Services**
- **Automation & Integration Services**
- **Post-Automation Services**



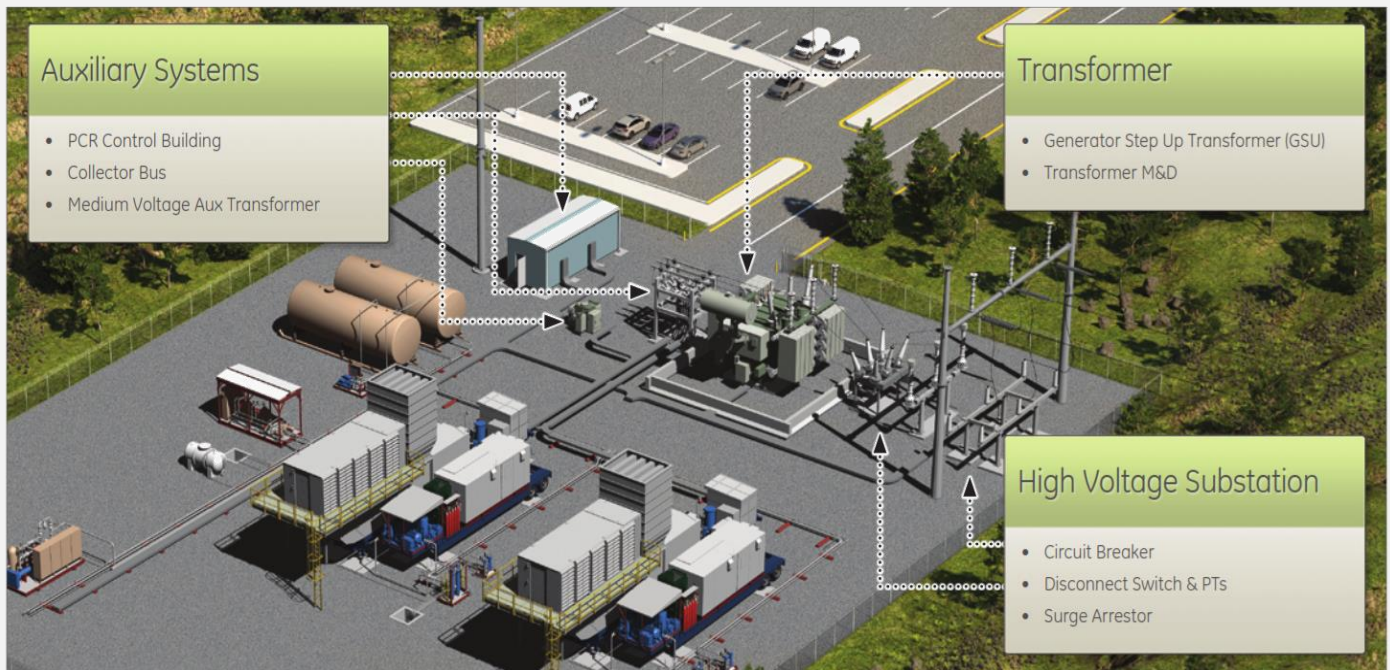
We have been providing Automation Solutions for industrial Plants as below.

- PLC - HMI Programming – Siemens / Scheneider / Mitsubishi / Allen Bradley
- SCADA Dession
- DCS – Distributed Cotrol Systems
- Electrical Control Panels
 - Synchronisation Panels / MCC Motor Control Center / Tank Farm Automation / Seperator & Filtarion Skid Panels / Fibre Optical Systems
- Governor Unit Control – Heinzman & Woodward
- Speed Control Modules
- Temperature - Pressure - Level - Ultrasonic Sensors and Process Instruments

c. Construction

Packaged Substations for TM-2500 Application is a turnkey switchyard solution for 145kV class, 2-TM2500+ power delivery applications. Traditional substations incorporate custom design-and-build high voltage (HV) switchyard and medium voltage (MV)/low voltage (LV) auxiliary systems. GE's Packaged Substations are pre-engineered, pre-packaged and pre-tested to provide full HV, MV, and LV functionality in modular ISO® standard shipping containers.

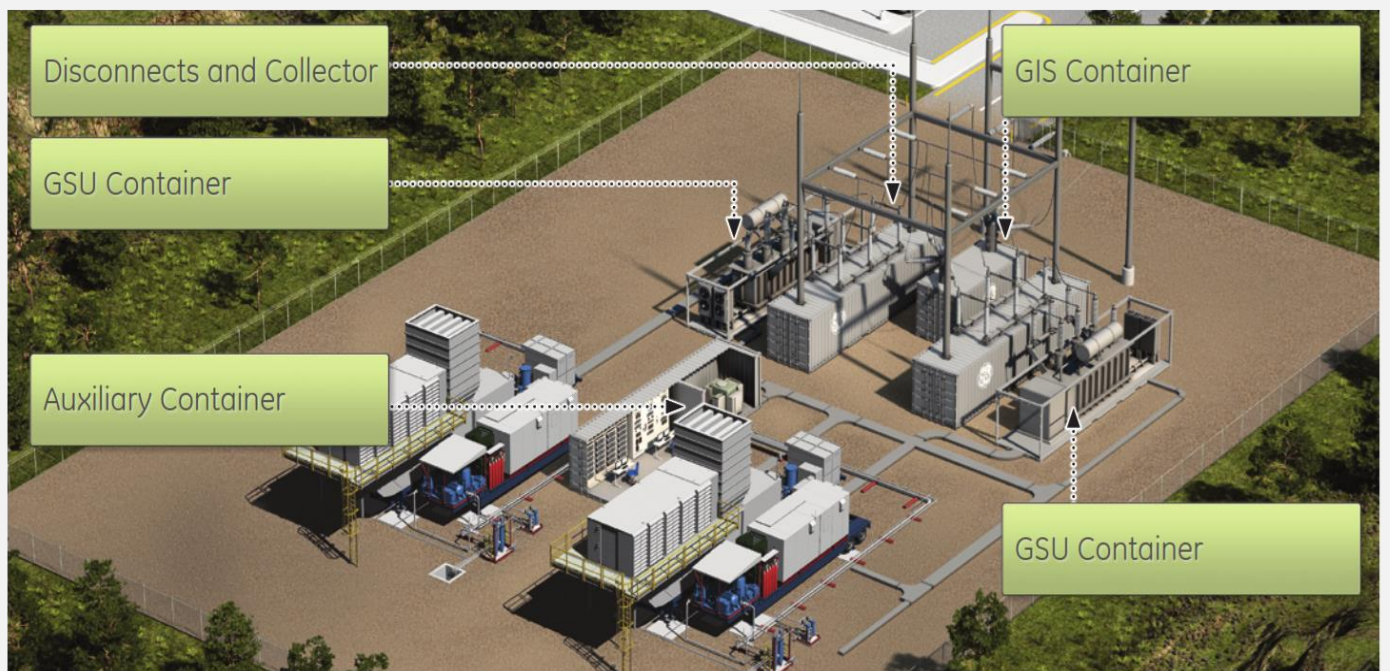
Conventional Approach to Substation Construction



2

GEDigitalEnergy.com

GE's Fast Cycle, Containerized Approach to Substation Construction

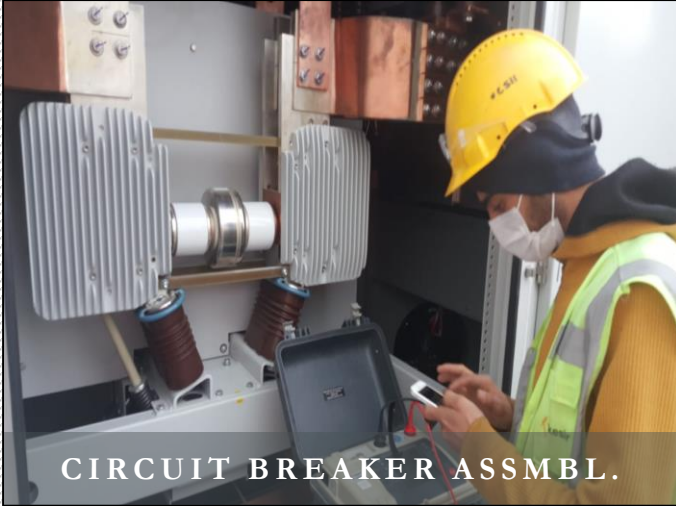


GEDigitalEnergy.com

3



**INDUSTRIAL
ENGINEERING SERVICES**



CIRCUIT BREAKER ASSMBL.



SUBSTATION ASSMBL.



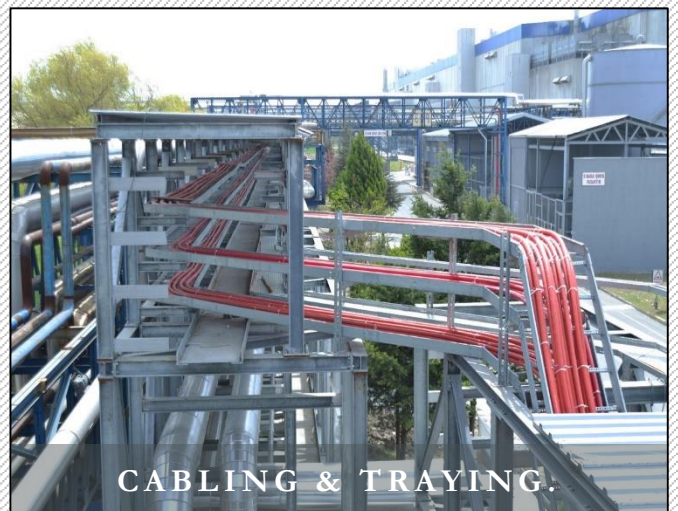
IPB DUCTING



TRANSFORMER ASSMB.



STATIC VAR COMPANSATION ASSMB.



CABLING & TRAYING.



INDUSTRIAL
ENGINEERING SERVICES



MOBILE SUBSTATION



POWER PLANT SCADA



MV METAL CLAD BRAKERS



MV RELAY



AUTOMATION PANELS



AUTOMATION PANELS

c. Construction

iv. Supervision & Commissioning:

This is the main core of our service range and the purpose of it is to protect the interests of the industrial investors within the construction period of the investment/project. All phases are closely supervised such as transportation, offloading of main components, set up of turbines / generators / balans of the plant equipment prior to installation, pre-installation phase, preparation, main erection, mechanical and electrical completion and final punch list correction upon TOC. Site supervisors are dedicated to supervise the assembly of the final product daily on the actual field and through documentation providing high quality control for our clients.

Before a plant or facility is handed over for normal operation, it should be inspected, checked, cleaned, flushed, verified and tested. This process is called commissioning and involves both the contractor and operator of a facility.

During the installation of power plants in parallel there is always the need of pre-commissioning and commissioning works, with or without the presence of Grid power. BERR can provide commissioning technicians sometimes already on site to perform works such as Generator Alignment using high tech Laser equipment. When the grid is present on site it is easy for us to support the local teams of our client and team up with them for efficient results and meeting the time schedules. All technicians are highly skilled and competent.



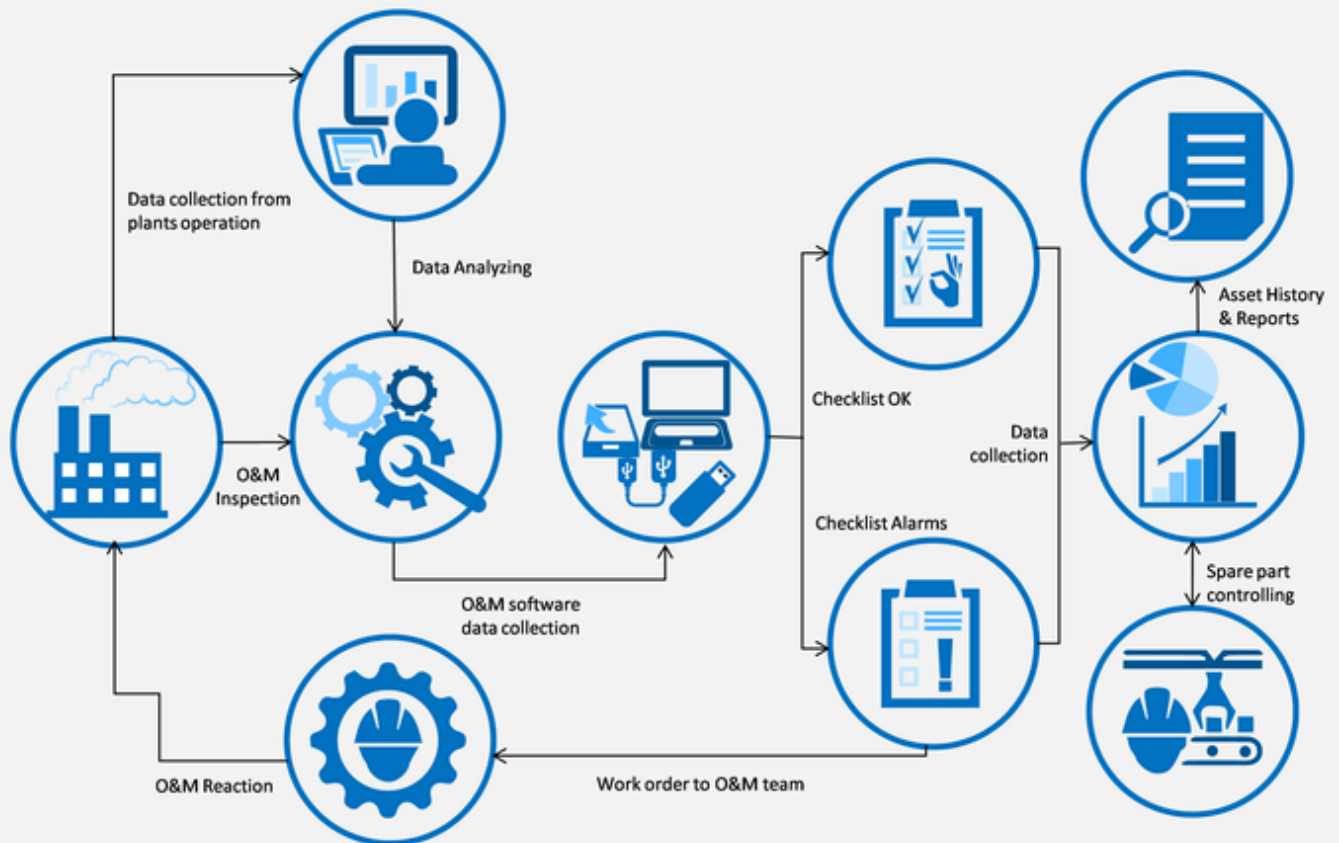
c. Construction

v. Operation & Maintenance:

The Operation and Maintenance (O&M) Plan is typically a formal document that describes how the system is to be safely operated on a daily basis. It outlines how the system will provide service while adhering to permit requirements and safeguarding public health. The plan should contain a comprehensive description of the system's resources and treatment processes. The O&M plan provides details of daily routine operational and maintenance procedures. It should include examples of record-keeping and emergency response procedures.

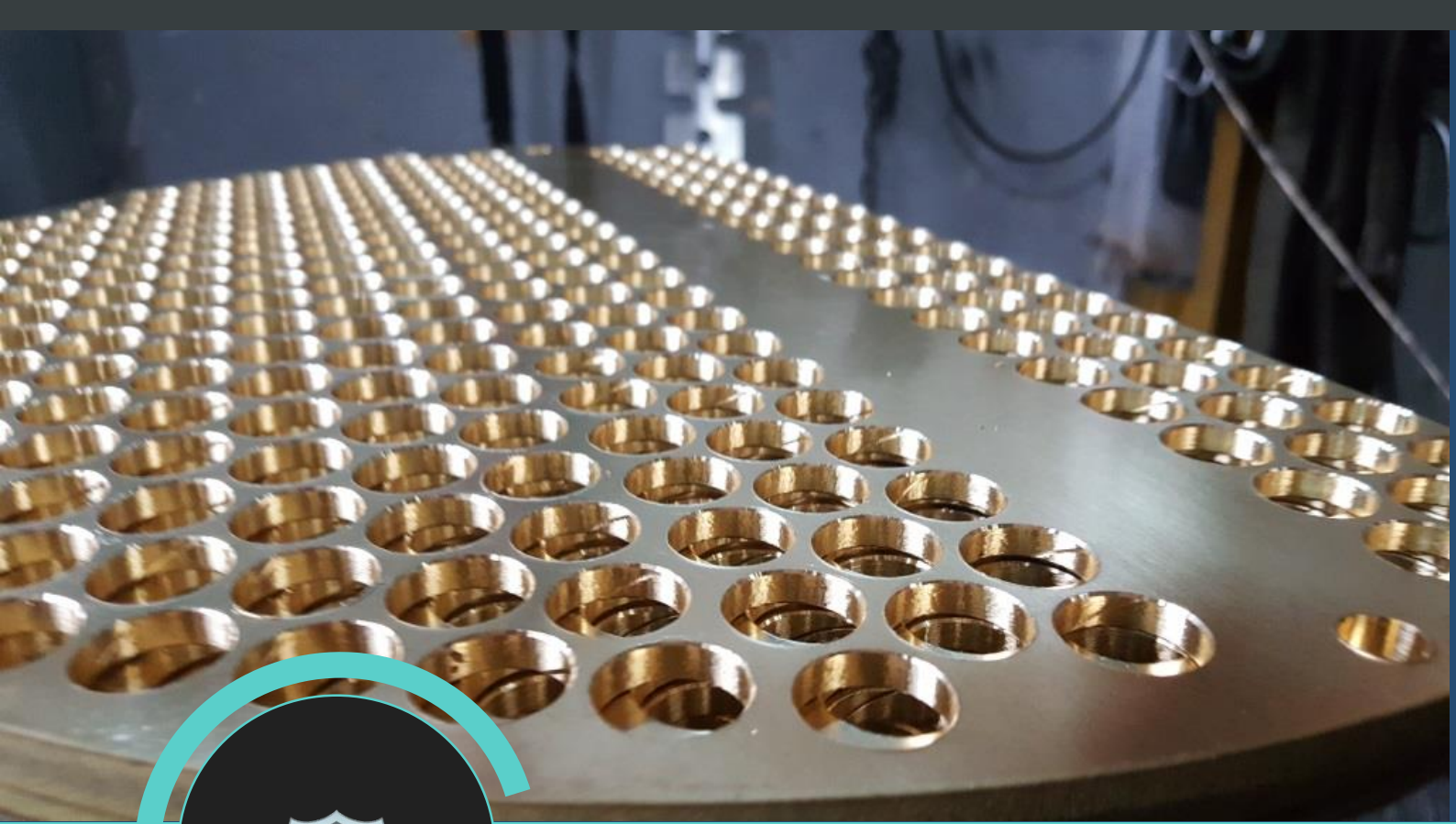
The O&M Plan should be clearly written such that a person knowledgeable in the operation of water assets would understand how to operate and maintain the system to meet the desired level of service (including staying in compliance with all regulations). The plan should outline the operational and maintenance roles and responsibilities of the staff.

Workflow of O&M



Operation & Maintenance (O&M) service means that we care about your assets. With our experienced and highly qualified personnel, we can provide a variety of services.

- Custom-Tailored Contracts
- Environment, Health & Safety
- Remote Operation
- Plant Value Enhancement
- Training and Qualification
- O&M Assessment
- Our flexible portfolio ranges from individual O&M service to an all-inclusive long-term operation and maintenance program.
- Based on your business model, we can optimize your asset focusing on O&M costs and Performance
- BERR offers customized O&M Assessments supporting you in the identification of improvement opportunities and strengths of your organization which allows you to further improve the performance of your asset.



INDUSTRIAL ENGINEERING SERVICES

III - MANUFACTURING

- ❑ PROCESS EQUIPMENT
- ❑ OUT SOURCE SPARE PART



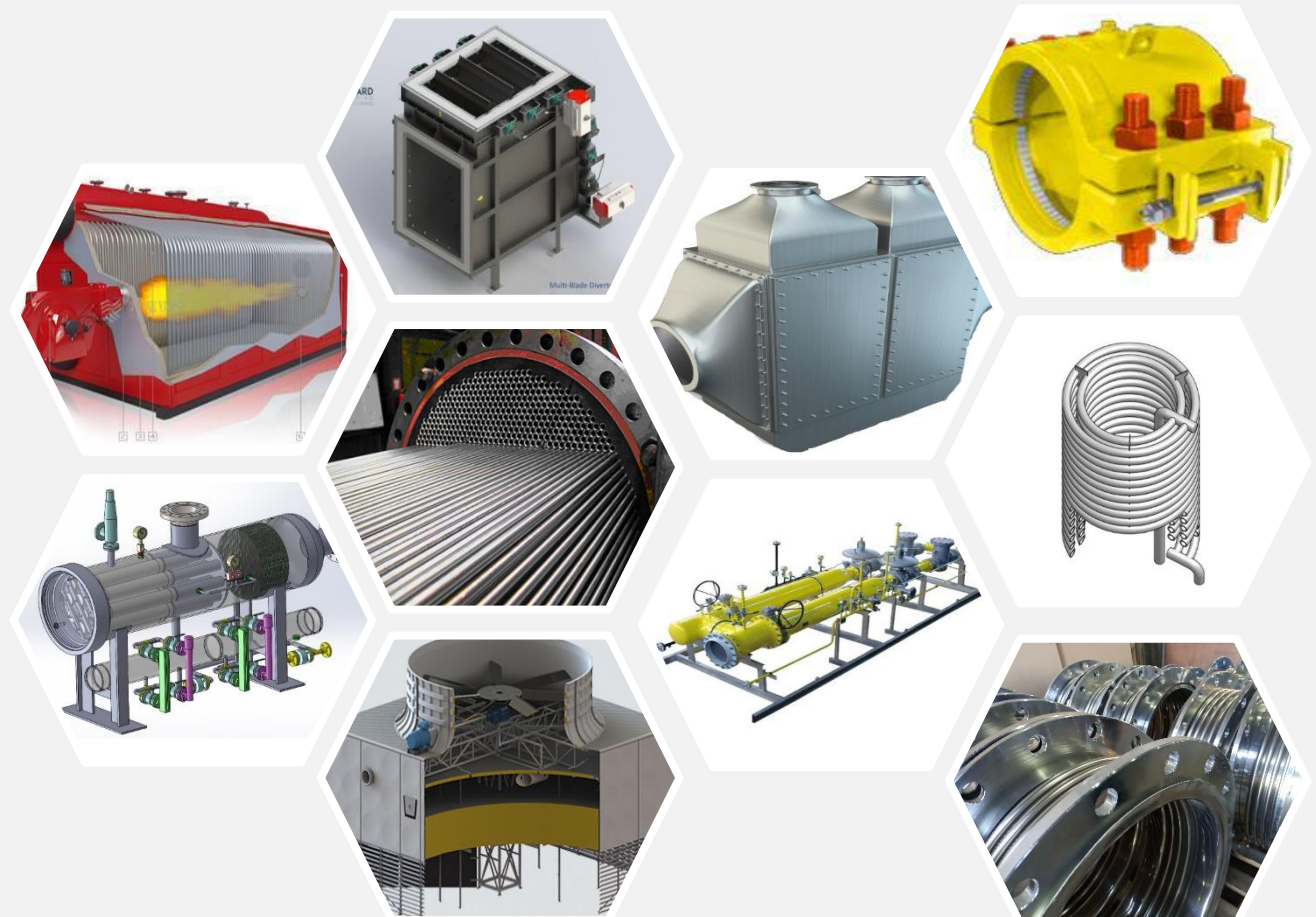
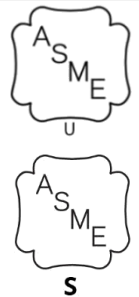
a. Manufacturing

i. Process Equipment

BERR has been producing some of critical Process equipment. Kaiser Process-Berr Industries Equipment provides process equipment manufacturing and site services for commissioning. Our work includes design, as well as custom equipment for rehabilitation works or new processes. Also we have been manufacturing certain basic process equipment like coolers, heaters, filters, blowers, etc...

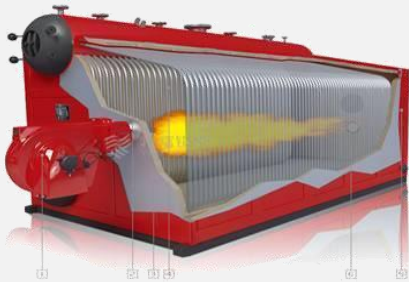
For over 25 years, we have been serving a wide variety of industries (especially for Oil&Gas Industry) on projects that range from simple to complex. We strive to understand your operation to help us determine the best way to fix the problem, working within your time constraints.

- | | |
|--|--|
| <p>A. Boilers</p> <ul style="list-style-type: none"> • Water Wall Steam Boiler • Heat Recovery Steam Boiler • Thermal Oil Boiler <p>B. Exchangers – Coolers</p> <ul style="list-style-type: none"> • Shell&Tube Heat Exchanger • Air Cooled Heat Exchanger • Water Cooling Tower | <p>C. Special Spool Pipe Fabrication</p> <p>D. High Pressure Pipe Repair Clamp</p> <p>E. Pipe Expansion Joints – Fabric Joints</p> <p>F. Exhaust Silencer Spark Arrestor</p> <p>G. Oil Sludge Filtration Systems</p> <p>H. Gas Reduction & Metering Station</p> <p>I. Oil Bath Air Intake Filter</p> <p>J. Fuel Booster Mixing Systems</p> |
|--|--|



a. Manufacturing

A- Boilers



Membran Wall Steam Boiler

The structure of heavy oil fired water tube boiler is arranged as drum longitudinal type “D” shape, it’s quickly assembled boiler with water tubes, has the characteristics of high steam quality, sufficient output, and high thermal efficiency (97%), etc. The structure of furnace water cooling wall and convection gas pass is membrane wall, have good sealability, and effectively reduce refractory brick quantity and maintenance workload. The layout of economizer at boiler tail could effectively reduces exhaust gas temperature and improve boiler thermal efficiency.



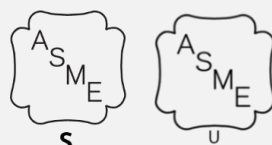
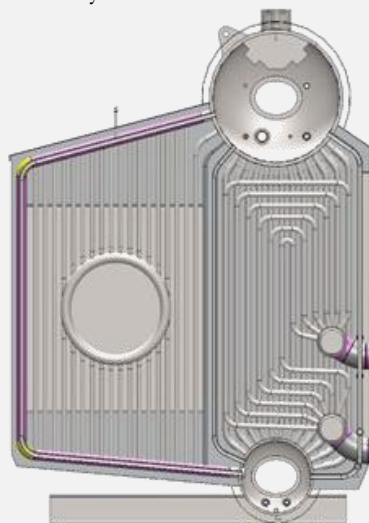
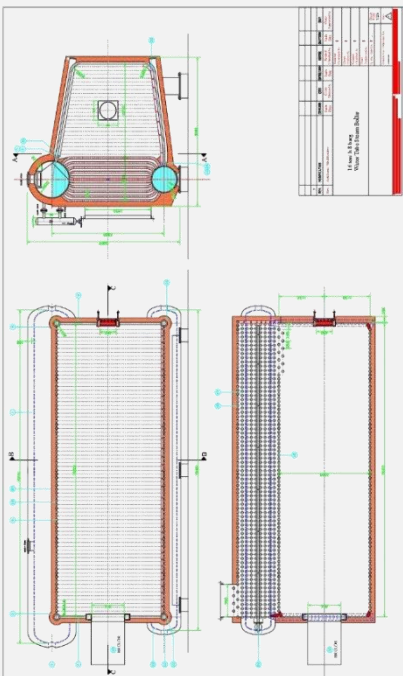
Heat Recovery Steam Boiler

Our heat recovery boilers provide capacities up to 100 t/h steam (or hot water equivalent) with water tube types and 30 t/h steam (or hot water equivalent) with fire tube types without external firing system applications. Boilers can be designed as single pass or multi pass type according to the site conditions. Further to complete design and manufacturing, Selnikel provides turn key solutions complete with installation and commissioning of these waste heat recovery – HRSG (heat recovery steam generation) systems.

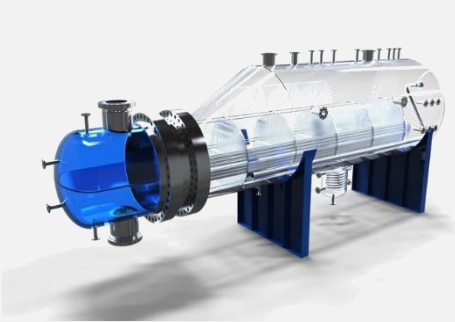


Vertical Thermal Oil Boiler

Thermal Oil Heaters are built according to DIN 4754 and the classification Societies’ rules for pressure vessels. The forced circulation heaters of vertical or horizontal design are available of outputs of 200-15000kW. Thermal Oil Heaters, with at heating capacity of 800 kW and upward, can use heavy fuel oil burners (viscosity to 700 cSt at 50 C). On request, we can supply burners with a rotating cups and heaters designed for combustion of waste oil and sludge.



B- Exchangers



Shell & Tube Heat Exchangers

TEMA Type AEU BEU
Removable Bundle U-Tube. For heating or cooling oil, water and process fluids or condensing process steam or vapor.

TEMA Type AEL/BEM/NEN
Fixed Bundle Straight Tube For heating or cooling oil, water and chemical process fluids.

Fully customizable. Variety of sizes, tube diameters and materials available.
Applications:

Can meet all TEMA classes as well as ASME Section VIII Div 1 and ASME Section III N stamp for Nuclear. Other codes available.



Air Cooled Heat Exchangers

Air cooled heat exchangers are used throughout the entire oil and gas industry from upstream production to refineries and petrochemical plants, under conditions including high pressure and temperature, as well as corrosive fluids and environments.

A finned tube bundle consists of finned tubes (in special cases unfinned tubes are also possible), the headers for distributing the product and a supporting frame.

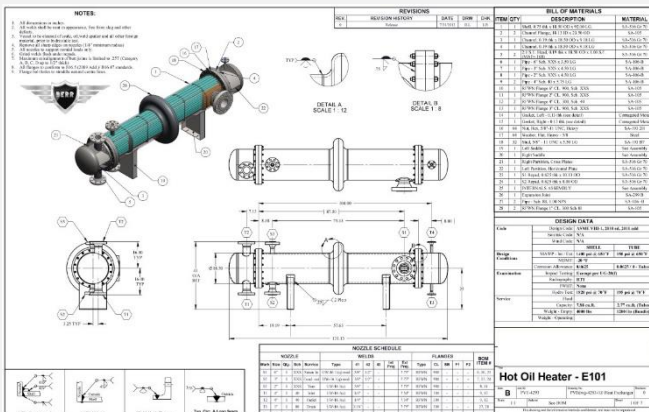
- B-FIN (Extruded)
- L-FIN
- G-FIN
- Welded Bonnet Header
- Plug Header



Water Cooling Towers

Construction Type W. C. Towers
Construction-type towers are those that have a volumetric size so that assembled booster is not possible. For this reason, they are manufactured in piece shape and are shipped to assembly.

Package Type Water C. Towers
Package type towers are the ones built with the plug and play logic in computers. After the production and installation of these trolleys which are made to be suitable for transporting trucks and trucks in volume sizes are completed, the customer is shipped.



Hot Oil Heater - E101

NO.	DESCRIPTION	DATE	BY	CHK
1	ISSUED FOR FABRICATION	10/15/10	JM	SM

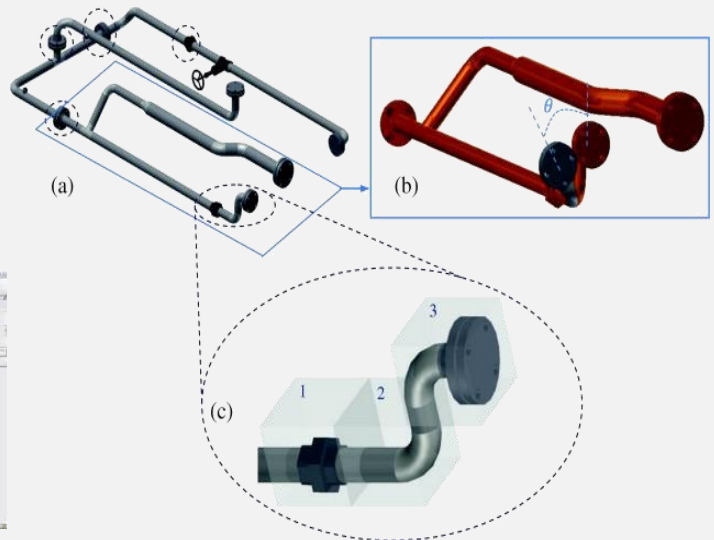
ITEM NO.	DESCRIPTION	QTY	UNIT	REMARKS
1	Shell	1	EA	
2	Tube	1000	FT	
3	Header	1	EA	
4	Flange	2	EA	
5	Gasket	2	EA	
6	Support	4	EA	
7	Leg	4	EA	
8	Stair	1	EA	
9	Handrail	1	EA	
10	Platform	1	EA	
11	Accessories	1	EA	



a. Manufacturing

C- Spool Pipe Fabrication

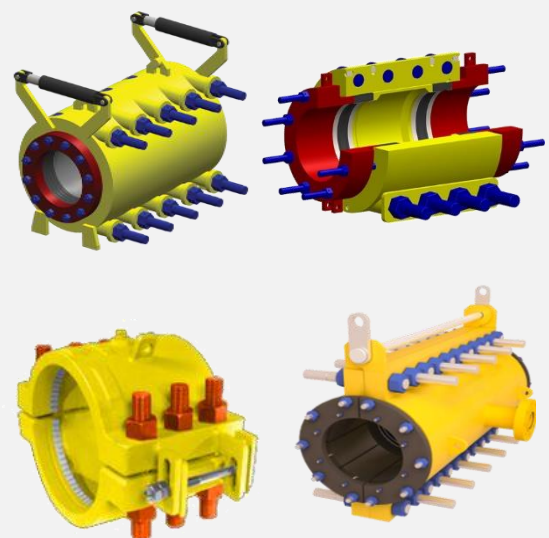
BERR can offer pipe spool fabrication to most specifications including API, ASME, AS/NZ, EN or custom client standards. We provide specialised fabrication, welding and machining for pipe spooling with high quality professional workmanship. We can also provide CAD drawings in 2D or 3D for our pipe spools if required.



D- High Pressure Pipe Repair Clamp – Split Sleeve

Clamps, made for use in leaks made of flange gaskets, have a central edge and two wide edges. The central edge is placed inside the joint between the two flanges. Its purpose is to reduce the volume of the injected material between the two flanges and to avoid the transverse displacement of the flange during the injection phase. Since the gap between the flanges must be installed in accordance with the central edge of the blade, the team company can strengthen the central edge according to the customer's specifications.

Two transverse edges cover the O.D. flanges. These edges can be tightened with a sealing hammer, correctly to obtain a complete mechanical adjustment, clamps on the flanges. On the other hand, this rigid working process allows the same compaction of the compound in the injection cavity.



E- Pipe Expansion - Fabric Joints

Expansion joints are used in piping systems to absorb thermal expansion or terminal movement where the use of expansion loops is undesirable or impractical. Expansion joints are available in many different shapes and materials. Below you will find a short description of Metallic, Rubber and Teflon® joints.

Metallic Expansion Joints are installed in pipe work and duct systems to prevent damage caused by thermal growth, vibration, pressure thrust and other mechanical forces.

There is a wide range of metallic bellows designs in a variety of materials. Options range from the simplest convoluted bellows used in petroleum refineries.

Materials include all types of stainless steels and high grade nickel alloy steels.

Any pipe connecting two points is subjected to numerous types of action which result in stresses on the pipe. Some of the causes of these stresses are.

- Internal or external pressure at working temperature
- Weight of the pipe it self and the parts supported on it
- Movement imposed on pipe sections by external restraints
- Thermal expansion



a. Manufacturing

ii. Spare Parts

- Gas Turbine Parts
- Steam Turbine Parts
- HFO-Diesel Engine Parts
- Process Pipeline Equipment

Gas turbine parts are generally identical, but due to the difference in terminology for each manufacturer, the naming of gas turbine parts varies slightly among the OEMs. Gas turbines are composed of three main components: compressor, combustor, and power turbine sections. But these three main components consist of hundreds of sub-components and parts. Gas turbine service is a term that refers not just to the maintenance of gas turbine but also to routine inspections, installation of parts, regular reporting, systems integrations, and reviews, and scheduled preventative maintenance all of them required to keep the system up and running in a good order constantly. Finding the right gas turbine parts, especially in unscheduled maintenance and service is very essential and has always been a challenge for the maintenance team as it affects directly the operation of any plant. At Linquip you have seamless access to a variety of gas turbine parts and components by all verified lists of gas turbine parts and service providers which helps you to quickly find your spare parts from the inventory database of all gas turbine parts suppliers. At the same time, you can contact directly with our gas turbine parts suppliers directly to find the latest information about their parts inventories and services.

Spare parts for power machines

Maintaining a stockholding of operational spares on-site ensures that you are prepared for any planned or unplanned events.

We can meet your global spares support requirements. Whether it's the provision of parts or the refurbishment of your accessories and components, we can support you.



L+V20/27, L+V23/30,
 T23LH-4E, L28/32A,
 L28/32H, L+V32/40, 16/24
 21/31 27/38 23/30 T23LH
 28/32 32/40 L+V40/54
 L+V52/55 K(S)Z 52/90
 52/105 60/105 70/120 K(S)Z
 70/125 70/150 78/155
 8L22HLX, L28/30DF,
 L28/32DF, L23/30
 6R-8R 32/40, 6L-8L 32/40,
 16V32/40, 18V32/40



WÄRTSILÄ



GE LM-TM 2500 G.T:
 Frame 5001 – 5002
 Frame 6001B – 6001 FA
 Frame 7EA – 7FA
 Frame 9E – 9FA



FT4000 SwiftPac
 FT8 SwiftPac
 FT8 MobilePac



Fiat TG20 – TG40
 Westinghouse B252