



EMPOWERING NATION



**BHARAT ENGINEERING AND
CONSTRUCTION**

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BHARAT ENGINEERING AND CONSTRUCTION

SUBSIDIARY OF
MALLAHAN INDUSTRIES PVT. LTD.

BE&C is an EPCM Organization and
TECHNOLOGY Supplier for various chemicals,
Pharmaceutical, Paints, Pigments, Aromatics,
fertilizer, FMCG

If you prefer to study our proposal, then review
our featured chemical plant profile
Contact us for detailed offer



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Our Mission

We at BE&C create environment where our nation, clients and employees has ample opportunity to grow limitless. With the team of dedicated

We promote innovation and commitment for everlasting growth and success.

With the team of dedicated and experienced workforce we help our clients to complete the projects on time



Flexible in approach

Our Values

Ownership

Responsible

Team Work

Respect

Honest Communication



Quality

We are committed to our service of finest quality. We are backed by highly skilled and experienced professional with exposure to international standards of engineering and a commitment to exceptional client service



Customer Commitment

We believe in collaborative effort and ownership of each project. We strive to the best of our ability to complete the project in the stipulated frame.



Integrity

We keep our commitment and word with respect, act with moral wisdom. We value and respect clients reputation



Our Vision

Empowering Nation

Empowering nation with Latest Technology for various areas of Chemical, Mechanical, electrical and instrumentation



Shaping the future by preserving our heritage, discovering new knowledge, and sharing our resources with the world



About us

BE&C is an EPCM organization based in INDIA. The company provides engineering, procurement, construction and management services to chemical, petrochemical, fertilizer, pesticides, insecticides, Distillery, ethanol, FMCG.

BE&C is also a **Technology Supplier** of various chemicals, paints, Varnishes, pigments, pharmaceuticals(Formulations, Bio Pharma, API), Surfactants, Aromatics, Bio Fertilizer, FMCG(OILS, Soaps, Detergents, Agro-foods), carbon black, Battery Recycle.

Services we offer



Engineering Division

- Pre Project-Services



We Provide chemical technologies for various products of Inorganics Chemicals, Surfactants, Pesticides, Insecticides, Aromatics, Paints, Pigments, Grain distillery, Oils, Soaps and detergents

We Study process systems for manufacture of a new product or to implement improvements / changes in existing production units.

We Prepares economic studies associated with Research and development, Products Valuation, Process performance, Profit Analysis, growth scope.

We Designs and/or specifies items of equipment required to define the process flowsheet or flow system.

Scale up of Plant from Laboratory & Pilot Plant to Commercial Scale Production

- Process design & Basic Engineering Service

Feasibility Study

Concept Engineering

Front End Engineering Design (FEED)

Proposal Engineering for EPC Bid

- Detail Engineering

Architectural

Layout & Piping

Civil & Structural

Electrical

Instrumentation

Mechanical

Environmental, Health & Safety, Fire Protection

Project Management

- Trouble Shooting, Debottlenecking & Revamping

- HAZOP & Safety Studies

- Detailed Engineering in all discipline

- Procurement, Inspection and Expediting

- Site / construction management and commissioning assistance



1. Pre Bid Engineering

Feasibility Study

- Establish elements & building blocks of agreed concepts.
- Review technical feasibility, cost and schedule for concepts and blocks.
- Compare, evaluate and rank the concepts with a set of agreed criteria.
- Identify preferred options for study.
- Prepare preliminary engineering deliverables for each option.
- Generate cost estimate ($\pm 40\%$ accurate) and schedule for each option.
- Select the feasible concept and issue Feasibility Study Report.

Concept Engineering

- Review Feasibility Report
- Review applicable codes, standards & legislation.
- Develop preliminary Process Design (H&MB, PFD, Equipment List)
- Develop preliminary Equipment datasheets and Plot Plan.
- Develop preliminary Engineering Philosophies (HSE, Electrical, C&I, Civil)
- Perform HAZID and risk analysis
- Generate cost estimate ($\pm 30\%$ accurate).
- Develop preliminary Project Development, Execution and Procurement Plans.
- Prepare and Issue Concept Design Report and Basis of Design.

Front End Engineering Design (FEED)

- Review Concept Design Report and Basis of Design.
- Review applicable codes, standards & legislation.
- Develop firm Process Design (H&MB, PFD, Equipment List)
- Detailed Flow Assurance Evaluation
- Perform Process Studies and selection of technologies.
- Develop Process Philosophies
- Major Equipment sizing, selection and datasheets.
- Develop P&ID and perform sizing of major piping.
- Develop Material Selection Report
- Develop Plot Plan
- Perform HAZOP review & issue HAZOP report
- Develop Mechanical datasheets and specifications for major equipment.
- Develop engineering design for Pipeline, Piping, Civil, Electrical, HSE, C&I, Telecom etc.
- Produce MTOs (Piping, Structural, Civil, Electrical, Instrument etc.)
- Issue Request for Budget quotations for major equipment.
- Generate Requisitions & issue RFQs for long lead items.
- Perform Technical & Commercial Bid Evaluations of vendor quotes and provide recommendations.
- Develop Procurement Plan, Preferred Suppliers list, Logistics study.
- Generate Cost Estimate ($\pm 20\%$ accurate)
- Define Project Execution Plan.
- Update Basis of Design
- Generate Invitation to Tender for Engineering, Procurement & Construction (EPC) Contract.

1. **Process Engineering**

- Preparation of DBM
- Steady state & Dynamic Simulation by using ASPEN software
- Safety studies such as HAZOP, HAZID, SIL, Risk Assessment, HSEIA, QRA
- Development of PFD, H & M Balance, P & IDs
- Line Sizing, Equipment Sizing Calculation (Pump, heat exchange etc.)
- Hydraulic Calculation
- Preparation of operation & Maintenance Manual

2. **Plant Engineering**

- Plot Plan Development of various process plant
- Development of Conceptual Study Layout
- Development of Equipment layouts, piping layouts
- 3D modelling using PDMS, PLANT3D & Drafting using AutoCAD
- Selection of Piping Components and Special Parts
- Preparation of Material Specification Sheet and Data Sheets
- Preparation of Engineering Design Basis
- Preparation of Tendering Documents and MTO
- Analysis of various piping systems using CAESAR II
- Annotation work of isometrics & layouts in MicroStation
- Selection of Various pipe supports and Support Sketches
- Preparation of Nozzle Orientation of Process Equipment's
- Preparation of Construction Isometrics
- Preparation of As Built Drawings required for record
- Use of various CODES and STANDARDS for designing
- Construction assistance during Construction and Erection
- Checking of Vendor drawings and Approvals
- Technical BID Evaluation and selection of Vendors

3. **Equipment Engineering**

- Preparation of Mechanical Data Sheets
- Material Selection
- Design of supports like LUG, LEG, SADDLE, SKIRT
- Preparation of Engineering Design Basis Using of CODE and STANDARDS
- Pressure part calculations for Internal and External Pressure
- Preparation of Fabrication Drawing
- Preparation of Bill of Material
- Fabrication procedure of complicated parts with Inspection and testing guidelines
- Transportation details of various equipment
- Preparation of rotary equipment's specification
- Storage Tank design using API 650
- Construction assistance during Construction and Erection
- Checking of Vendor drawings and Approvals
- Technical BID Evaluation and selection of Vendors
- Preparation of Tendering Documents.

1. Civil and structure engineering

- Concept Stage Civil-Structural Work for the Client: Approximate Design / BOQ of plant Structures based on Basic Conceptual Layouts & arrive at the Basic Cost of the Project
- Ring Stage: Manual & Computer aided analysis, Design & Detailing in Various International Codes of Concrete & Steel Industrial Structures, (Process Plant, Non-Plant, Offsite, Utility Structures, Pipe racks, Pipe supports.
- Developing civil / structural design criteria / specifications / deliverable list, Rework Log, Variation Notes, Design Change Notes, Design Calculations, QA preparations, Independent design review, Technical Audits
- Preparing BOQ, RFQ, TQ, preparing & analysis of work packages, All for Chemical, Oil & Gas refinery, Petrochemical, Hydrocarbon, Metallurgy, Fertilizer, FMCG and Pharmaceutical Plants. Power & Energy etc. industries.
- Value plus Solutions ...discussing various alternatives design - Detailing approaches to help client arrive at the most economic, safe solution, thus doing Value Addition.
- Shallow, Deep Foundations, Ring foundations
- Geotextiles & Stone Column
- Shop drawings review & vendor coordination
- Geotech Tests location mark-up drawings, Soil RFQ Study of soil investigation report, Interaction & Coordination with Soil Investigation contractor.
- Interacting with PE, resolving PE queries & obtaining stamping from PE for US projects (PE: Professional Engineer Licence holder)
- Key role in building QA Procedures, Work Processes, Checklists, Design Guides for the department
- Analysis, Design & Detailing of concrete / steel structures in Industrial plants.
- FEED / Pre-Bid Stage: All Structural Design, Drawings, BOQ, RFQ, TQ, TA, Shortlisting of contractor, Cost Estimation
- Equipment foundations, Embankment & liquid retaining structures, Masonry Structures, Various Underground drainage systems
- Co-ordination with LSTK subcontractors - Client -Site – vendors, inter discipline coordination, Squad Checks, attending Telecoms, site coordination, site queries., site visits
- Doing Man hour estimation, manpower planning, etc.
- Steel Connection Design
- Precast, Composite, Steel, RCC pipe racks
- LSTK coordination & execution of
- Pre-Engineered Buildings
- Bar Bending Schedule
- Software worked with: STAAD Pro V8i, STAAD Foundation, TEKLA, Foundation3D - Mat3D, PDS-PDMS-SP3D review, MS Office
- Experience of Work share projects right from developing Work share plan/ Scope Split matrix
- Preparing & analysing tender documents, responding to TQs, preparing TR-technical requisition & TBA-technical bid analysis for the tenders for various LSTK packages

Proposal Engineering for EPC Bid

- Review of FEED documents supplied along with Tender.
- Check consistency among documents, design basis, compliance with project specification, codes and standards.
- All engineering documents and drawings related to Process, HSE, Mechanical, Pipeline, Piping, Civil, Structural, Electrical, C&I, Telecom etc. are studied critically for consistency with the scope of work and adequacy for meeting the design intent by respective discipline.
- Review process requirements / guarantees / warranties.
- Review safety aspects of the design.
- Prepare MTO and BOQ.
- Issue Request for Budget quotations for major equipment.
- Generate Requisitions & issue RFQs for long lead items.
- Perform Technical & Commercial Bid Evaluations of vendor quotes and provide recommendations.
- Develop Procurement Plan, Logistics study.
- Develop Project Execution Plan and schedule.
- Prepare manhour estimate.
- Prepare FEED verification report and /or Technical Proposal.
- Identify risk items in the proposal.
- Generate Cost Estimate and prepare Commercial Proposal to bid for the EPC contract.

Detailed Engineering after award of EPC contract

- Review scope of work.
- Development of organization chart.
- Finalize Technical Document Register (TDR).
- Review FEED documents and update Design Basis.
- Review applicable codes, standards & legislation.
- Validate and update Process Design (H&MB, PFD, Equipment List).
- Validate and update Flow Assurance Evaluation.
- Perform Process Studies.
- Update Process Philosophies (Operating & Control, Isolation, Shutdown, Blowdown, Flaring, Draining, Sparing, Insulation & Winterization etc.).
- Validate Equipment sizing, prepare Equipment list and Process Datasheets.
- Detail out and update P&ID, validate sizing of piping and prepare line list.
- Validate and update Material Selection Report.
- Validate and update Plot Plan.
- Perform HAZOP review, issue HAZOP report and close-out HAZOP actions.
- Develop Mechanical datasheets and specifications for all equipment.
- Detail out engineering design for Pipeline, Piping, Civil, Electrical, HSE, Instrumentation, Telecom etc.
- Produce MTOs (Piping, Structural, Civil, Electrical, Instrument etc.)
- Generate Requisitions & issue RFQs for all equipment and items.
- Perform Technical & Commercial Bid Evaluations to shortlist vendor quotes for procurement and order placement.
- Review of post-order vendor documents for design consistency.
- Issue Engineering Design Manual.
- Prepare and issue Pre-Commissioning and Commissioning Procedures.
- Prepare and issue Operating & Maintenance Manuals.

1. HVAC Engineering

- Selection and Sizing of Air Conditioning Systems
- Heat load calculation
- Selection of Equipment's - AHU, Chillers, Cooling Towers.
- Selection of Pumps and Blowers
- Selection of Diffusers for various requirements
- Design and analysis of comfort air conditioning systems
- Design and analysis of Pharma air conditioning systems
- Design and analysis of Industrial air conditioning systems
- Duct sizing and layouts developments
- Material selection and Building Management Systems
- Estimation and planning
- HVAC piping selection and installation
- Preparation of Bill of Material
- Construction Assistance



DETAIL ENGINEERING AVAILABLE FOR

Acids

Alkalis

Aluminium Compounds

Arsenicals

Barium Compounds

Boron Compounds

Bromine Compounds

Cadmium Compounds

Calcium Compounds

Carbon Compounds, Inorganic

Chlorine Compounds

Chromium Compounds

Magnesium Compounds

Manganese Compounds

Mercury Compounds

Nitrogen Compounds

Organometallic Compounds

Osmium Compounds

Oxygen Compounds

Phosphorus Compounds

Platinum Compounds

Potassium Compounds

Ruthenium Compounds

Selenium Compounds

Chlor-Alkali

Chemicals from SEA

Cement and Lime

Fluorine Compounds

Free Radicals

Gases

Gold Compounds

Hydrogen

Hydroxides

Iodine Compounds

Iron Compounds

Lithium Compounds

Silicon Compounds

Silver Compounds

Sodium Compounds

Sulphur Compounds

Technetium Compounds

Thorium Compounds

Tin Compounds

Tungsten Compounds

Uranium Compounds

Vanadium Compounds

Zinc Compounds

Salts

COMPOUNDS IN DETAIL

- 
- ACTIVATED CARBON
 - ALUMINIUM CHLORIDE, ANHYDROUS
 - AMMONIUM BICARBONATE (FOOD GRADE)
 - AMMONIUM CHLORIDE
 - AMMONIUM MOLYBDATE
 - AMMONIUM PERSULFATE
 - AMMONIUM PHOSPHATE, DIBASIC
 - AMMONIUM PHOSPHATE, MONOBASIC
 - AMMONIUM THIOCYANATE
 - ANTIMONY TRIOXIDE
 - ARSENIC TRIOXIDE
 - BARIUM CARBONATE
 - BARIUM CHLORIDE
 - BARIUM HYDROXIDE
 - BARIUM METABORATE
 - BARIUM NITRATE
 - BARIUM SULPHATE PRECIPITATED
 - BASIC CHROME SULPHATE
 - BLEACHING POWDER
 - BORAX DECAHYDRATE
 - BORIC ACID
 - CALCIUM CARBIDE
 - CALCIUM CARBONATE, PRECIPITATED, LIGHT
 - CALCIUM CHLORIDE
 - CALCIUM HYPOCHLORITE (BLEACHING POWDER)
 - CALCIUM NITRATE
 - CAUSTIC SODA (SOLID/FLAKE)
 - CHROMIC ACID
 - COBALTOUS OXIDE
 - COPPER SULPHATE
 - DICALCIUM PHOSPHATE (DENTAL GRADE)
 - DICALCIUM PHOSPHATE (FEED GRADE)
 - DISODIUM PHOSPHATE
 - ELECTROLYTIC MANGANESE DIOXIDE
 - FERRIC CHLORIDE, ANHYDROUS
 - HYDROGEN PEROXIDE
 - LEAD NITRATE
 - LEAD SULOHATE, TRIBASIC
 - LITHIUM CARBONATE
 - LITHIUM HYDROXIDE (MONOHYDRATE)
 - MAGNESIUM CARBONATE LIGHT
 - MAGNESIUM FLUOSILICATE
 - MAGNESIUM OXIDE LIGHT
 - MAGNESIUM SULPHATE
 - MANGANESE CARBONATE
 - MERCURIC CHLORIDE
 - MOLECULAR SIEVES
 - MOLYBDENUM DISULFIDE
 - MOLYBDENUM OXIDE
 - NICKEL SULPHATE
 - PHOSPHORIC ACID (TECH. & FOOD GRADE)
 - PHOSPHORUS, RED
 - PHOSPHOROUS, ACID
 - PHOSPHORUS OXYCHLORIDE
 - POLISHING COMPOUND
 - POTASH ALUM
 - POTASSIUM BICARBONATE
 - POTASSIUM BROMIDE
 - POTASSIUM CARBONATE
 - POTASSIUM CHLORATE
 - POTASSIUM FERRICYANIDE
 - POTASSIUM FERROCYANIDE
 - POTASSIUM FLUORIDE
 - POTASSIUM NITRATE
 - POTASSIUM PERMANGANATE
 - POTASSIUM PERSULPHATE
 - POTASSIUM PHOSPHATE
 - DIBASIC
 - POTASSIUM PHOSPHATE MONOBASIC
 - POTASSIUM THIOCYANATE
 - SILICA FINE-PORED BALL
 - SILICA GEL SELF-INDICATION
 - SODIUM ACID PYROPHOSPHATE
 - SODIUM BICARBONATE, EDIBLE GRADE
 - SODIUM COPPER CHLOROPHYLLINE
 - SODIUM FERROCYANIDE
 - SODIUM FLOORIDE
 - SODIUM HEXAMETAPHOSPHATE
 - SODIUM HYPOPHOSPHITE
 - SODIUM HYPOSULPHITE (PHOTO GRADE)
 - SODIUM META-BISULPHITE
 - SODIUM NITRATE
 - SODIUM PERSULPHATE
 - SODIUM SILICOFLUORIDE
 - SODIUM SULPHATE, ANHYDROUS
 - SODIUM SULPHIDE (SOLID FUSED)
 - SODIUM SULPHITE, ANHYDROUS
 - SODIUM THIOCYANATE
 - SODIUM TRIPOLYPHOSPHATE
 - STANNOUS CHLORIDE
 - STANNOUS SULPHATE
 - STRONTIUM CARBONATE
 - SULFUR
 - THORIUM NITRATE
 - TRISODIUM PHOSPHATE
 - VANADIUM PENTOXIDE
 - ZINC CARBONATE
 - ZINC CHLORIDE
 - ZINC SULPHATE HEPTAHYDRATE

Construction Division

Construction and Commissioning is a mission-critical stage for any engineering project. This demands technical excellence as well as operational expertise. BE&C leverages its experience and acumen to offer comprehensive tactical and practical inputs to make this a success.

We combine core engineering and project management expertise along with strong domain specific knowledge to offer customised solutions that create best in class infrastructure for a wide spectrum of industrial space

- Planning/ Scheduling
- Material Management
- Efficient Deployment of Skilled/Unskilled Services
- Subcontractor Management
- Adherence to QA/QC
- Safety Control
- Testing and Commissioning
- Project Handover

SERVICE WE OFFER

PIPING FABRICATION	PIPING ERECTION	SITE TANK FABRICATION
SITE TANK ERECTION	STRUCTURE FABRICATION	STRUCTURE ERECTION
PIPE RACK FABRICATION	PIPE RACK ERECTION	SITE CONSTRUCTION
MECHANICAL MAINTENANCE	BREAK-DOWN MAINTENANCE	BROWN FIELD
INSTALLATION	COMMISSIONING	TESTING
REPAIR	REPLACEMENT	RECONSTRUCTION

BUILD YOUR PLANT WITH BE&C

- BE&C provides well proven solutions to build modern Chemical plants. One of our most important design principles is to provide our client with highly automatic Chemical plant. No extra operation staff needed except necessary engineer in the central control room.
- Flexible production
- Premium grade product
- Smart plant
- Superior plant
- Superior equipment
- Environment friendly



BE&C provides complete package of basic engineering, front end engineering design as well as detail engineering for Chemical products. BE&C integrates its experienced engineers team, strict engineering management system and advance engineering tools to provide modern and efficient engineering solutions to our global customers

If you prefer to have a well designed Aromatic chemical plant with state of art equipment workmanship then to get a competitive offer from **BE&C may be a nice decision**



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Empowering nation

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ESTABLISHED IN 2020.

FOR MORE DETAIL OF
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