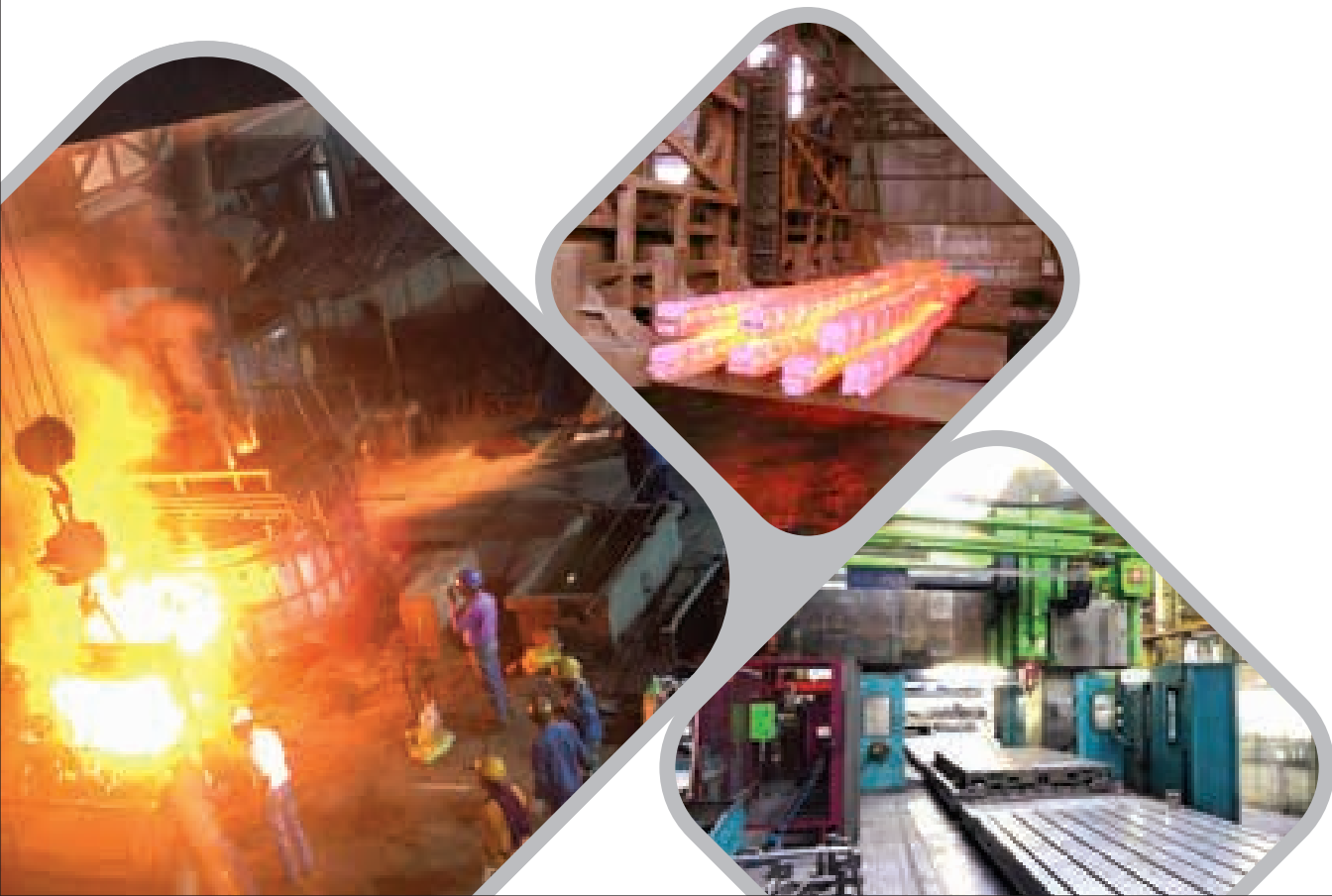


ALWAYS INSPIRING

FOUNDRY & HEAVY STEEL FABRICATION

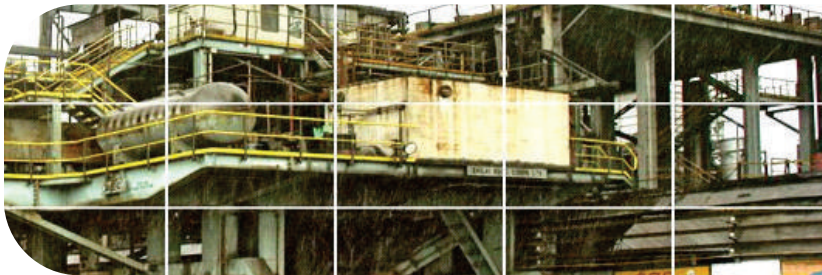
Commitment for Better Tomorrow



BEC – GROUP COMPANIES



Foundry & Fabrication Division
 Integrated Foundry & Fabrication Facility



Project Division
 EPC & Turnkey Projects



Engineering Division
 Manufacturing of Engineering Equipment's

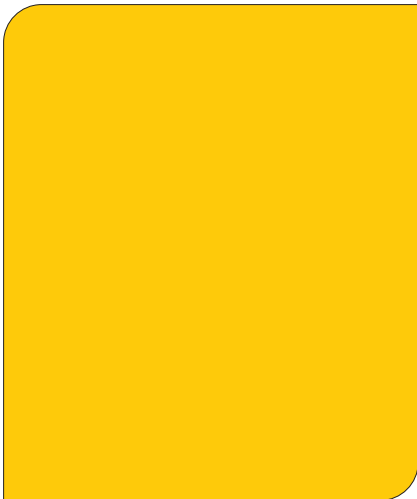


Fertilizer Division
 Manufacturer's of SSP Pesticides & Plant Regulator



Food Division
 Food & Dairy Processing cum Packaging Plant



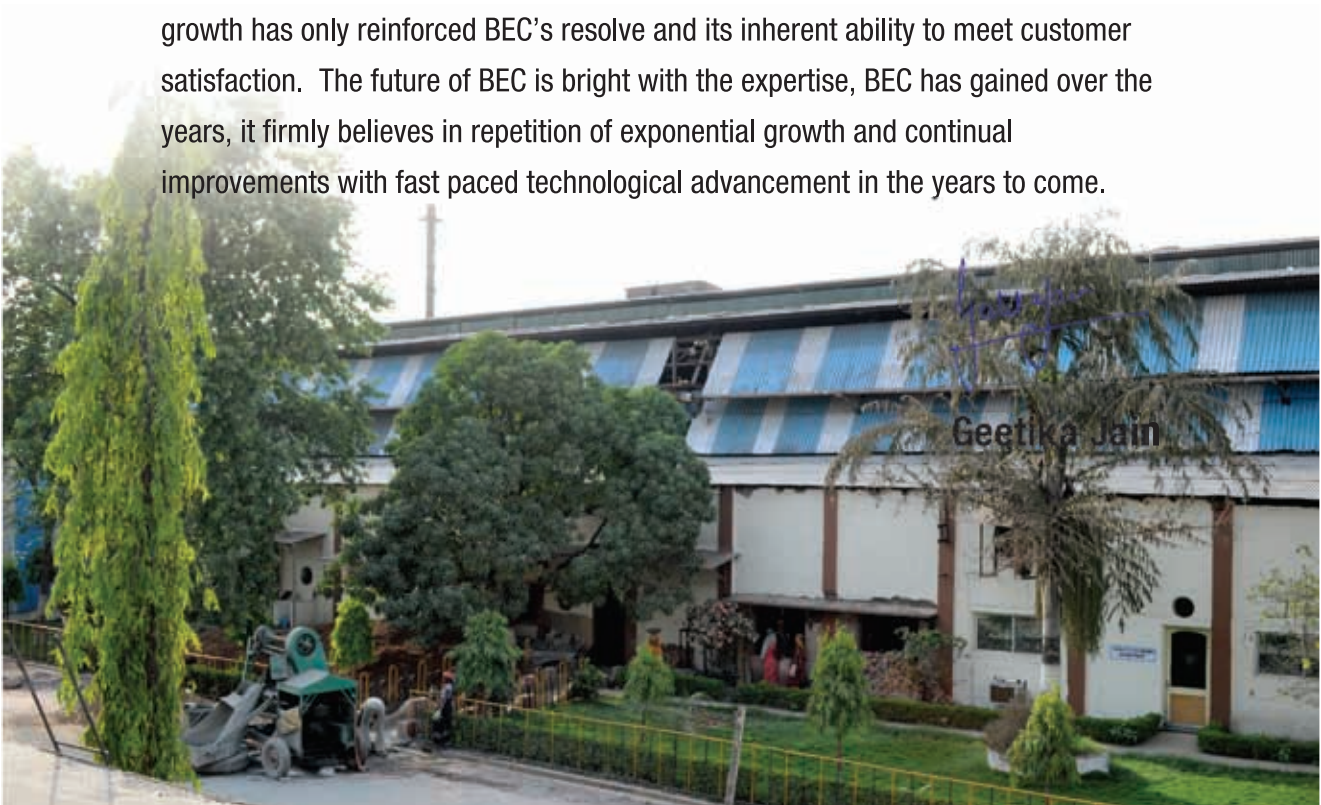


Message from

MANAGING DIRECTOR

BEC Foundry is committed to excellence in Quality and Delivery of Quality Castings Equipment, Machined Parts through dedication and competence. We at BEC have prime objectives towards Ethical and Professional Business practices and enjoy total Customer Trust. Riding on the trust vested by our Customers, the Company has been steadily growing and widening its product range. We have identified Export as a power tool to strengthen our Technological Talents and heighten competitiveness.

The economic growth in India has opened up big challenges for the BEC team like steady increase in Output, growing needs for best in Quality and speedy product development. It offers new opportunities to compete, succeed and lead. This rapid growth has only reinforced BEC's resolve and its inherent ability to meet customer satisfaction. The future of BEC is bright with the expertise, BEC has gained over the years, it firmly believes in repetition of exponential growth and continual improvements with fast paced technological advancement in the years to come.



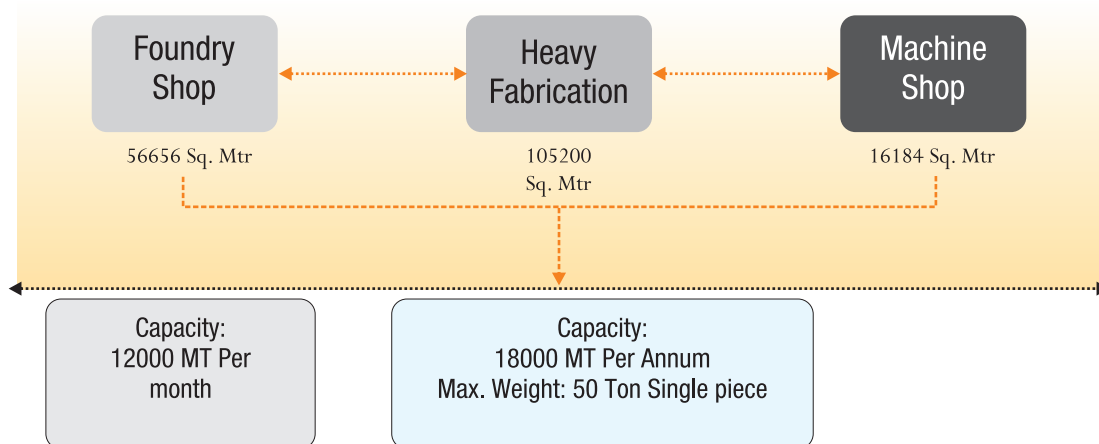
Established in 1960, Bhilai Engineering Corporation Limited is one of the largest family-owned manufacturing & project management company in the central part of India. BEC – Foundry & Heavy Fabrication Division is an integral part of BEC group companies. It has three manufacturing facilities @ Bhilai & Raipur in the state of Chhattisgarh, India. The advanced foundry & fabrication facility are integrated with captive machine & assembly shops.

The company was set up with an objective of manufacturing high quality Ferrous castings, Heavy Fabrication in machined condition. Our products are built to stringent International standards, and have been received with distinction and acclaim by all users, both in the International and Domestic market. Company is managed by a team of highly technical professionals, Competent, experienced and committed work force. Activities at BEC are implementation of highly customized ERP system for Production, Planning & Control.

The Steel Foundry consists of following Divisions, namely: –

Vision Statement:

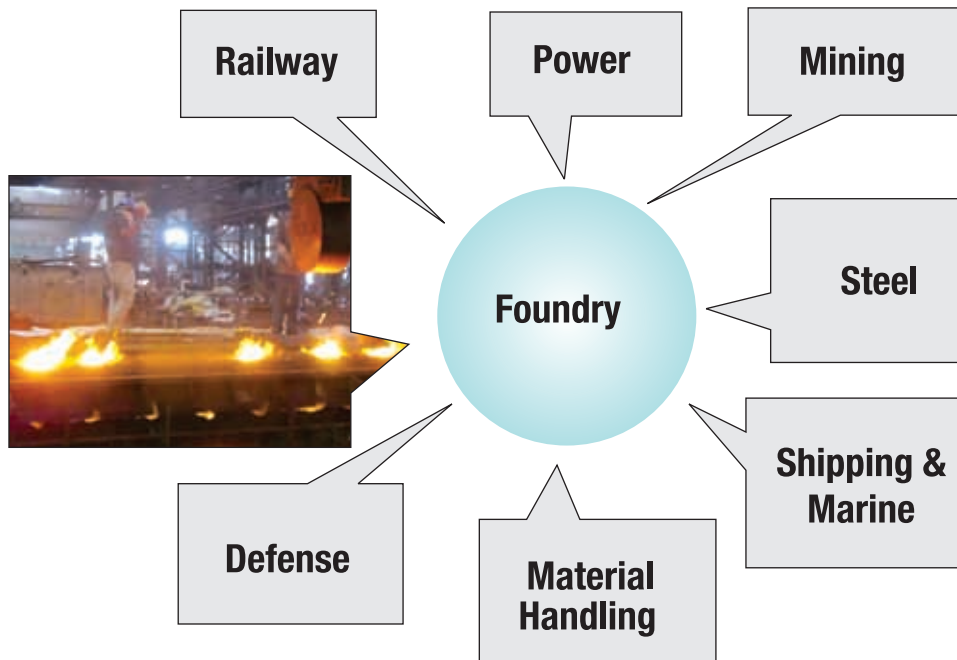
BEC family is committed to strengthen its growth for its engineered products and to provide value added goods and services for its customers on a global platform through business excellences, innovation and technology up-gradation



Mission Statement:

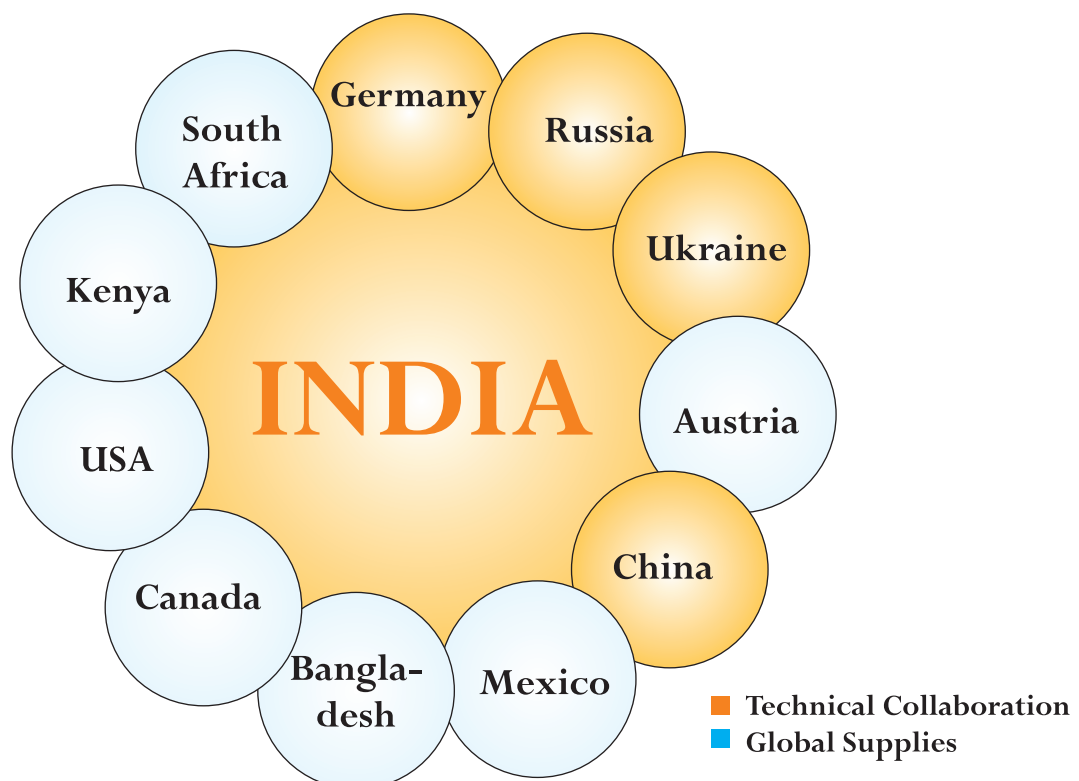
- Be a preferred and competitive Supplier of goods and services.
- Ensure customer satisfaction through high technical standards with world class quality to meet India's and Global Infrastructure needs.
- Corporate excellence through Innovation, Design, Technology up-gradation and Modern Management Practice.

WHT WE PRODUCE GOES TO....



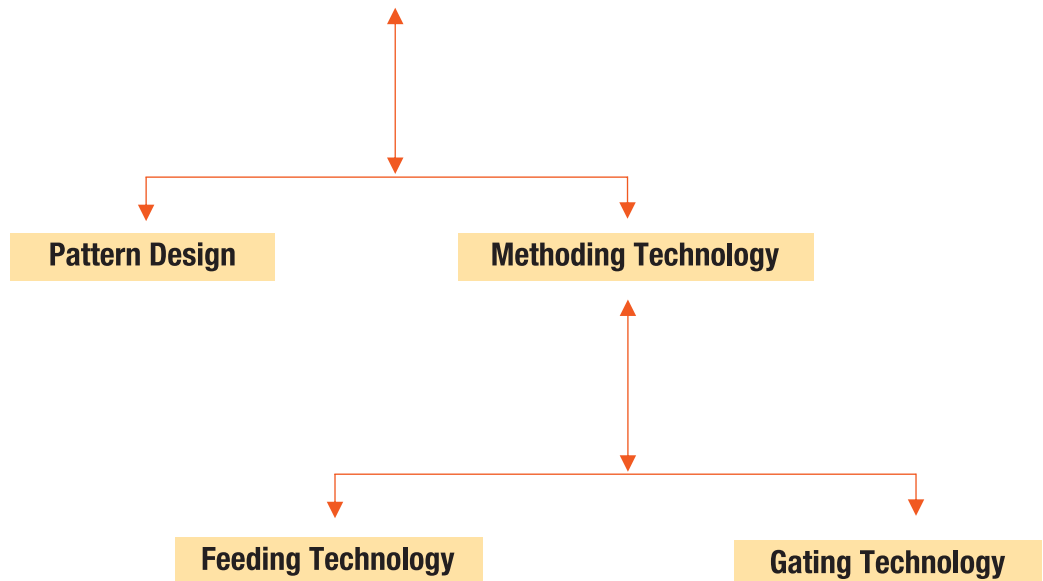
The company is active in these core sectors through supplies of technological parts, products, assemblies & Projects.

GLOBAL PRESENCE



METHODING & PATTERN SHOP

Methoding of casting is the HEART and SOUL of making a sound casting in economical way.
The total methoding technology is carried out in two parts:



We have 3D modeler “ SOLID WORKS” which facilitates pattern design. Other than modeling software we also are fully equipped with Solidification Simulation package “CAST CAE” through which we can check sample casting up to NDT quality Level – I , before producing it in the shop floor

VIEW ON FOUNDRY CASTING PROCESS



Pattern Manufacturing &
Rectification rea



Mold Ready for Pouring



Mold Preparation Area



Mold Pouring Area



Medium Pouring Area



Big Pouring Area



Small Pouring Area



Heat treatment Area

MELTING

The Liquid Metal is produced by using Three Phase Electric Arc Furnace and Induction Furnace.

Direct Arc Furnace: – Furnace capacity 10.5 & 7.5 Tons
Induction Furnace:– Furnace capacity 2.5 Tons



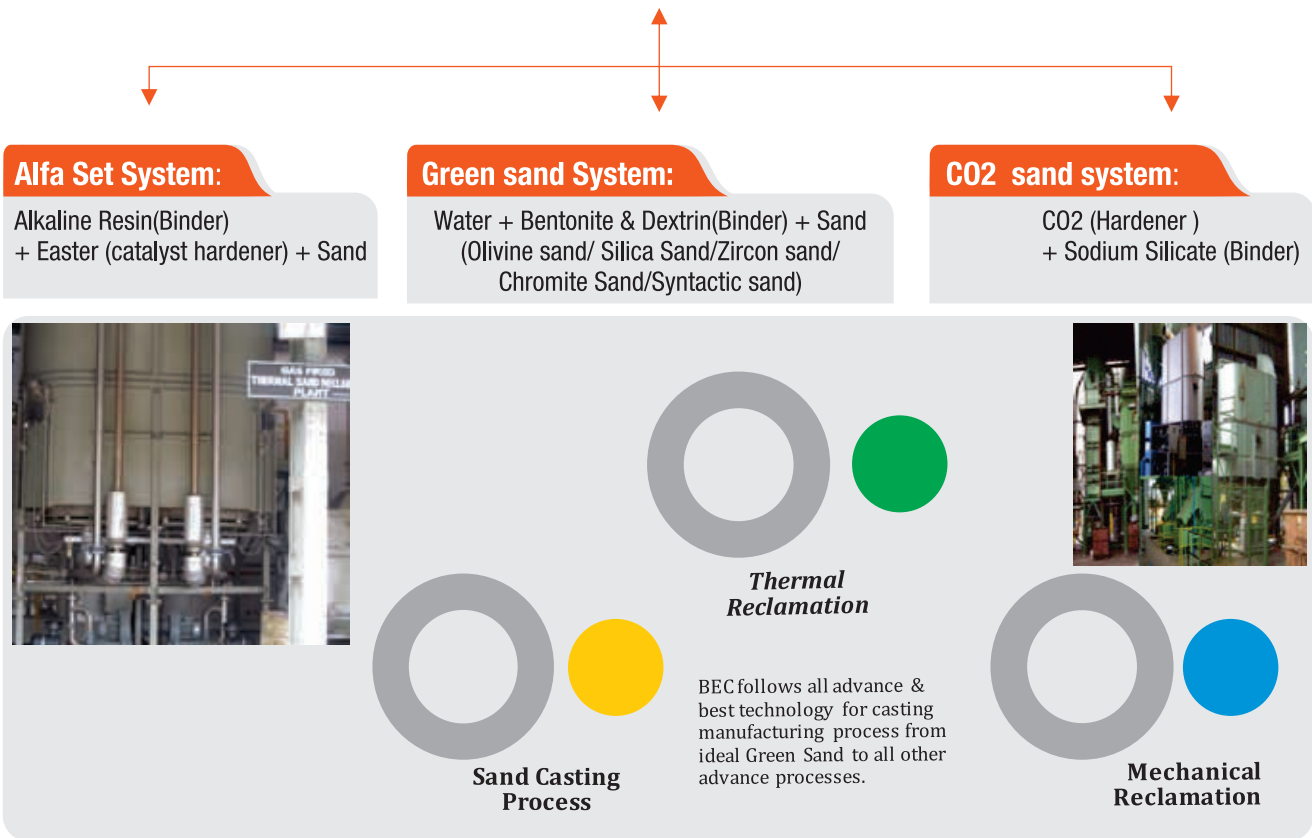
HEAT TREATMENT

For Heat Treatment we have a battery of Gas fired and oil furnaces having capacities as per mentioned below with an arrangement of automatic multipoint temperature recording of various zones of each furnace. We also have facilities for Water Quenching and Rapid Quenching.



| Type | Capacity | Size | Remarks |
|-----------|----------|------------------|-------------------------------|
| Oil Fired | 60 Tons | 8.0 x 6.3 x 3.7m | With Water Quenching facility |
| Gas Fired | 25 Tons | 6.6 x 4.2 x 2.0m | With Water Quenching facility |
| Gas Fired | 16 Tons | 8.5 x 2.2 x 1.0m | With Rapid Quenching facility |
| Electric | 5 Tons | 3.0 x 3.0 x 1.5m | For Tempering |
| Induction | 2 Tons | 3.0 x 3.0 x 1.5m | For Handling |

SAND SYSTEM & SAND RECLAMATION SYSTEM



MOULDING PROCESS



Hand Molding: (Semi Automatic)

- Continuous Sand Mixer (20 T / hr. and 30 T/hr.) and Compaction Table
- Sand Mixers (5T / hr.) – 3 Mixers. : for Core making

Machine Molding:

- Kunkel Wagner Jolt, Squeeze with Rollover. Bed Size : 3.2 m x 1.2 m.
- ARPA – 900 Jolt, Squeeze molding machine. Bed Size : 110 cm x 90 cm.

BEC has modern and sophisticated semi-automatic Molding Machine for Small Heavy Castings up to 10 Ton of single piece casting with Alfa set and Green Sand technology. To feed with quality sand to saw mixer BEC has a Thermal Reclamation Plant also.

HANDLING FACILITIES

Facility spread over **125,000 sq.mt.** with specialized Fabrication, Machining & Assembly capabilities in designated area.

Foundry Shop is well equipped with Material Handling facilities for movement of produce based on operations as Melting, Molding, Fettling, Heat Treatment, Raw Material etc.



- EOT Cranes : 5 – 25 Tons
- Radio Remote Control EOT Cranes : 5 – 8 Tons
- Ground Transfer Trolleys : 30 Tons – 3 Nos.
- Semi Gantry Cranes : 5 Tons
- Jib Cranes : 4 tons
- Mono rail Cranes : 2 – 4 Tons
- Fork Lifters for water quenching : 2 Furnaces

MACHINE SHOP FACILITIES



- Heavy floor type CNC Milling Machine (TOS – KURIM)
- View of the Machine Shop with more than 50 CNC / NC machine tools of different capacities

QUALITY ASSURANCE

Quality inspections are crucial.
BEC has setup numerous quality practices
to ensure Customer receive High Quality
Castings as per their Specifications.

Stage – I

Liquid Metal Temperature
Chemical Composition

Stage – II

Visual check – Before H.T.
Visual check – After H.T.
Mechanical Testing /
Hardness of Test Piece

Qualified NDT personnel –
ASNT/ISNT Level – II & BARC Level – I,II

Metallography – 1200 X

**Volumetric Analysis &
Sand Testing Lab**

**NDT: T, RT (IR – 192 & X – Ray),
LPT, MPT**

Stage –IV

Dimension check using various
Gauges, after Machining.
Final Check after Assembly.

Stage –III

Dye Penetration Testing.
Magnetic Particle Testing.
Radiography & Ultrasonic



Portable Analyzer:
Scrap and Ferro Alloys identification

**Mechanical : UTS (40 Ton & 60 Tons)
Impact at sub zero temperature,
Hardness (BHN /Rockwell)**

**Scrap Metal
Inspection and Testing**

Spectro Analysis:
Up-to 32 elements

- Complete metallurgical/chemical lab with Spectrometer, Microscope, Volumetric analysis
- Complete Destructive testing lab for UTS, Impact, Hardness etc.
- Complete NDT lab for RT, UT, MPI, DPT testing
- Hydro testing Facility up to 500 kgf/CM²
- Testing Lab Certified by Lloyds
- Calibrated Inspection Tools & Instruments including CMM

All products manufactured are thoroughly inspected, tried & tested for quality, efficiency and reliability. Our in-house testing Laboratories are equipped with advanced and sensitive testing equipment controlled by experienced Engineers, infatuated with quality. The scope of Quality Control begins with Incoming Material and Components and persists until the Finished Product is tested & rolled out.

BEC EXPORT

BEC has good global presence & its 60% of revenue from Foundry Division is thru exports to USA, Europe & third countries.



Spider / Motor Housings for USA



Centre Pivot & Yoke



End Shield



Draw Bar



Two Axle Bogie Frame



Tri Axle Bogie Frame



One of the biggest manufacturers of Locomotive Bogie Frames and also exporting to USA.



Locomotive Bogie Frame



Steel Crossing



Cast Steel Locomotive Bogie Frame Assembly



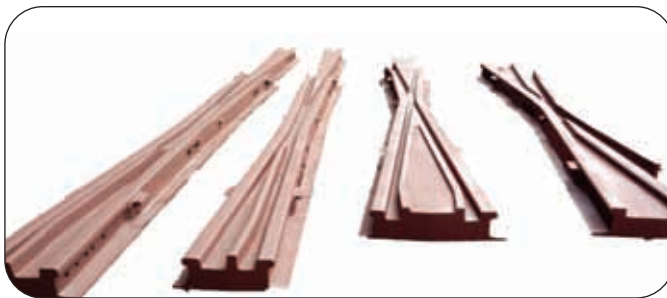
Flexi-coil Bogie



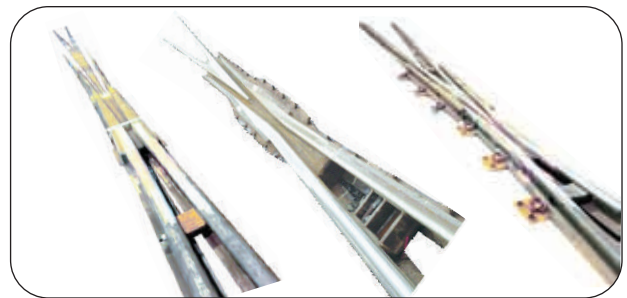
Freight Car – Wagon Casnub

TRACKS / CMS CROSSINGS

We offer a wide range of Railway crossings that includes Cast Manganese Steel Crossings (Frog) as per USA and Indian Railway design specifications.



Scissor Crossings



Flash-Butt Welded CMS Crossings

BEC Foundry has long experience to produce various types of Frogs & Inserts

| | |
|---------------------|-------------|
| Indian Railway – | 12 types |
| Export – | |
| Frogs | – 25 types. |
| Inserts | – 26 types. |
| Spring Frogs | – 04 types |
| Universal Crossings | – 02 Types |



COUPLER & DRAFT GEAR

Draft Gear



AAR "E" Type



Assembled E Type Coupler



"H" Type Couplers of different Shank length.



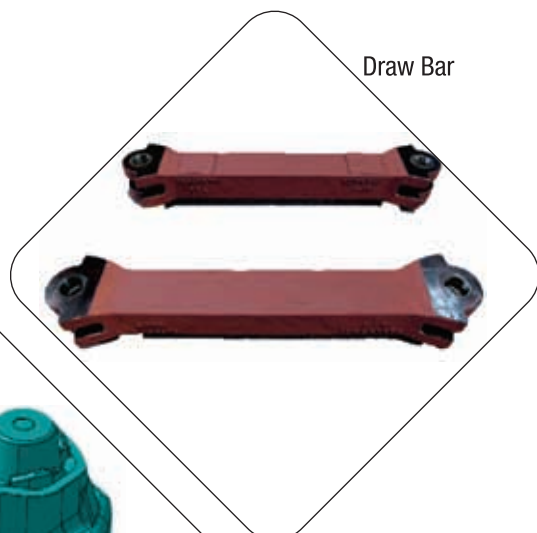
Coupler Assembly



Balance Draft Gear



Draw Bar



Draft Gear

Complete Solutions for manufacture of:



Advanced Bogie Frames:

"BEC" has invested millions of dollars in foundry, fabrication & machining technology including 5-axis CNC Plano Millers & Coordinate Measuring Machine (CMM) for the measurement of Bogie Frames

*Cast Freight Car Bogie assembly including side frame & bolster up to 25-ton axle load including bogies for Container Handling

*Cast Locomotive Bogie Frames for tri-axle & two-axle: Co-Co, Flexi Coil Bogie Frames & Truck Frames for Diesel Loco

*Fabricated & Hybrid Bogie Frames for Locomotives, Coaches, Train Sets & Metro Cars



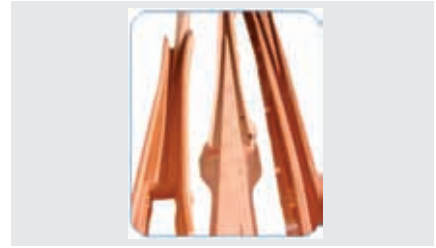
Couplers & Draft Gears:

The advance foundry technology with AAR certification ensures "BEC" Coupling Systems meets global standards. SPM's & appropriate gauges are foremost requirement in achieving successful assembly including interchange.

*Coupler Assembly: AAR "E" type, AAR "E/F", AAR "H" — Head Type tight lock coupler with / without balance draft gear

*Draft Gear for Freight & Passenger Coach

*Main Coupler Component & replacement parts: Knuckle, Yoke etc.



Track Crossings:

The most mechanized foundry integrated with CNC machining facility makes "BEC" as the largest Track Crossing Manufactures in India. The 50% of our manufacturing capacity is for export to third countries including USA & Canada since more than two decades.

*Cast Mn-Steel Crossings for 52 Kg & 60 Kg Rails

*Mn-Steel Frogs & Inserts Bridge Joints

*Weldable Crossings, Scissor & Diamond Crossings

*EDH Crossings



General Cast Items:

Continuous development of parts for rail sector has been our desire @ "BEC". Parts for Rolling Stock & Track Work has been our primary focus area.

*Centre Pivot

*Cast Items for Fabricated Bogie Frames for Locomotives, Coach, Freight & Metro

*Special steel castings in alloy steel, manganese steel etc.



Extra-large Fabrication:

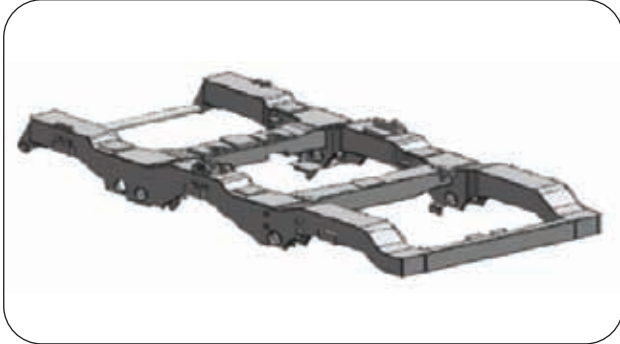
The most advanced fabrication facility with auto weld line, robotic welding line & advance fabrication technology has been our priority to achieve manufacturing excellence @ "BEC".

*Shell Assembly for Locomotive including under frames, side wall & roof

*Critical Fabricated Items for Locomotive, Passenger Coach & Metro Cars in Carbon & Cr-Mo Steel

ADVANCE BOGIE FRAME

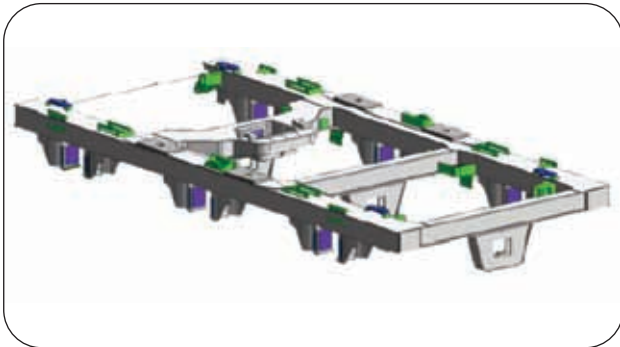
Bogie frame (FAB-II) for WDP 4 & WDG 4 Locomotives



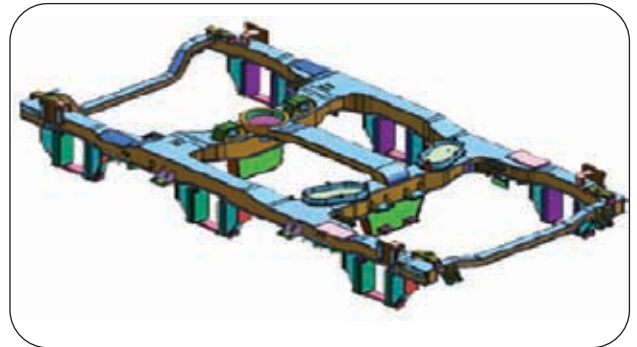
Fabricated Bogie frame for Conventional and Advanced Railway Coaches



Bogie frame for WDM 3D Locomotives



Bogie frame for WDM 3A (ATHS) Locomotives

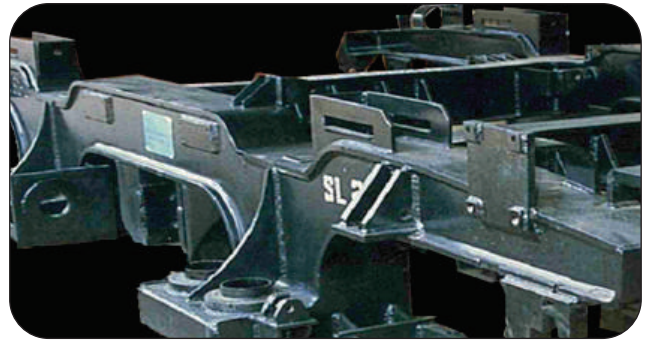


Fabrication, Machining & Assembly of Bogie Frames For Metro & Passenger Coaches

POWER PACK ITEMS

“BEC” is amongst the few manufacturing company globally to manufacture the fabricated Crank Case & Engine Block for Diesel Locomotives & other mode of transportation. A dedicated production line is set – up to meet the global technicality requirements:

- Crank Case & Engine Block for 2 – Stroke & 4 – Stroke Engines up to 16 Cylinder
- Oil Pan
- Base Frames

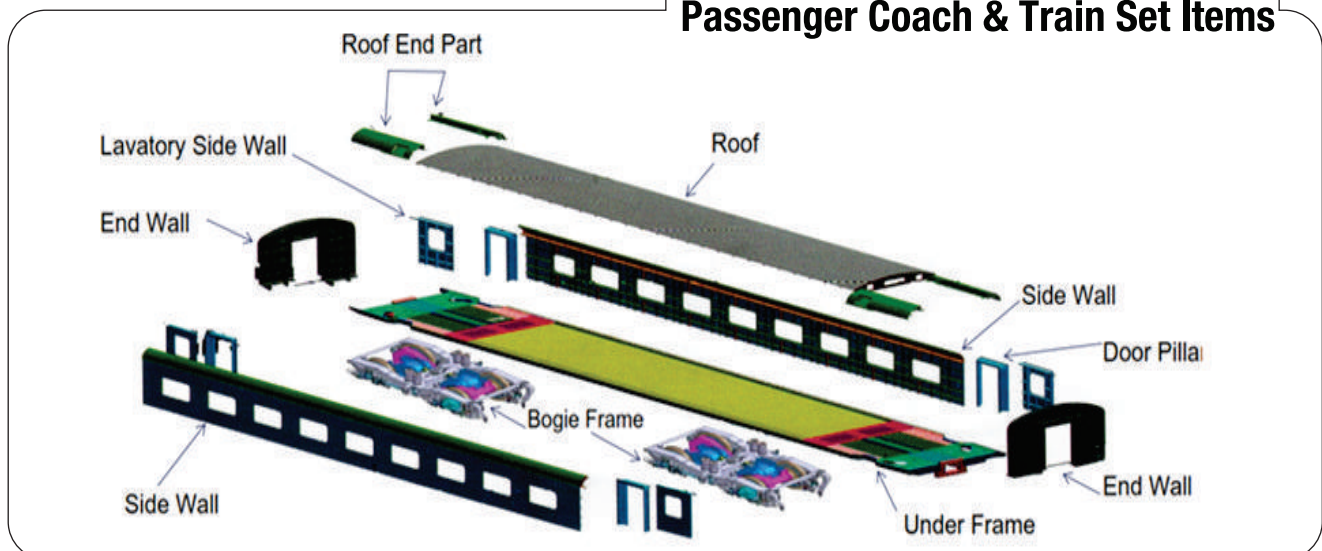


BEC is a preferred supplier for Crank Case Assembly with heavy fabrication, 5 axis machining, tandem SAW welding, precision measurement which brings out cost saving approximately by 66 (43%).

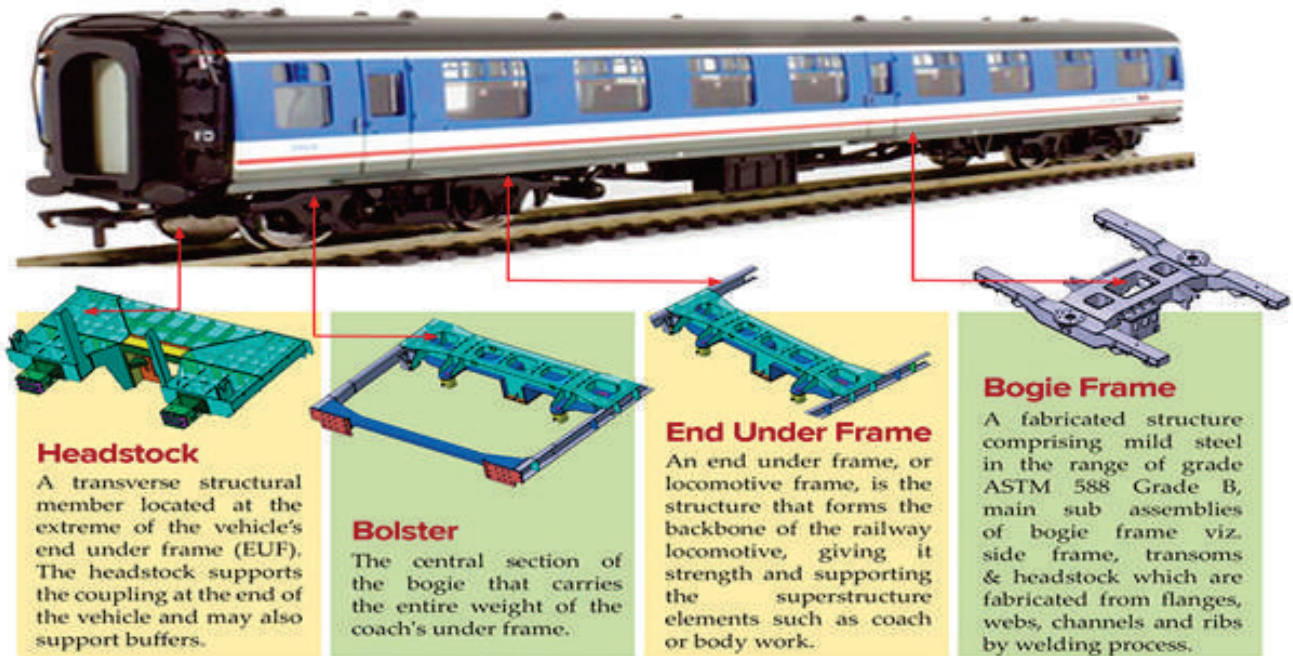


Crank Case & Engine Block

Passenger Coach & Train Set Items



ITEMS FOR LOCOMOTIVE MANUFACTURED by BEC – DIESEL & ELECTRIC



Shell Assembly

Locomotive Under Frame

Fabricated 16 Cylinder Crank Case & Engine Block

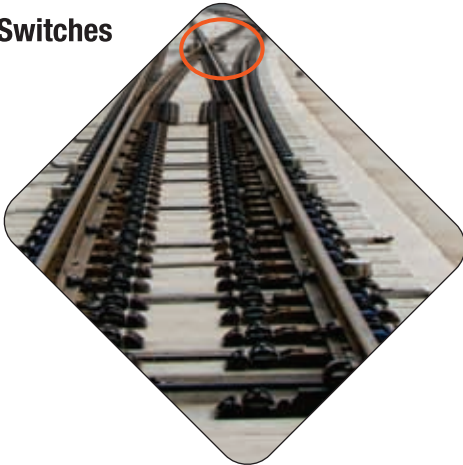
Oil Pan & Fuel tank

Cast Bogie Frame, Fabricated Bogie Frame & Hybrid Bogie Frame & Bogie Bolster

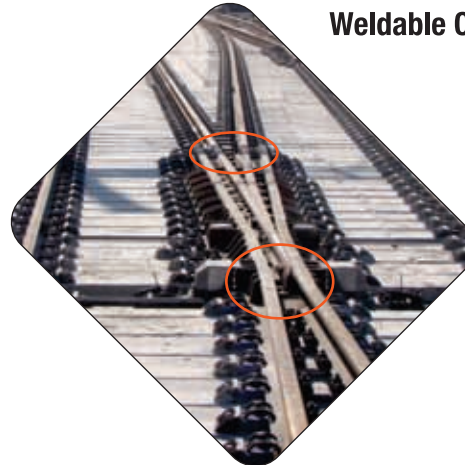
TURNOUTS



Thick Web Switches



Weldable CMS Crossings



BEC IN HEAVY FABRICATION

BEC is equipped with Heavy Fabrication, Machine & Assembly Shops and offers complete Technological & Metallurgical Equipment.

We specialize in the Welding of all types of metal alloys in addition to quality welding of complex parts where precision is critical. Our Quality Assurance Department is well equipped with modern testing facilities to control right from Raw Material to finished stage components.

Facility Includes :

- Fabrication Shop
- Radiography Lab
- Ultrasonic Testing
- Metallurgy Lab
- Easy Laser
- Paint Booth
- Blasting Booth
- Pneumatic & Hydraulic Testing
- High quality performance is maintained at every stage of fabrication and welding. The division's Quality Assurance system meets or exceeds our Accreditations listed.

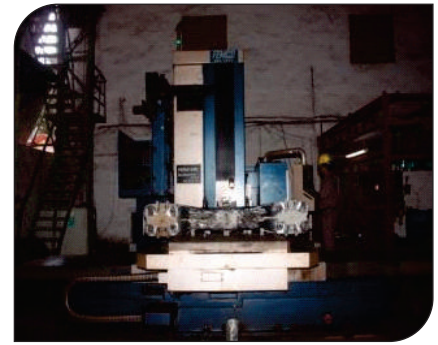




CNC Cutting Machine



Column Boom Welding Machine



CNC Boring Machine



Corimpex Advanced Welding Technology Machine



Tower Bay Shop



Shot blasting Facilities



Nicolus Corus CNC



Advanced Welding Technology
& CNC Cutting Machine



Tube / Pipe Bending machines



Machining in Toss Machine



Laser Cutting Machine



VTL Machine



STRUCTURES FOR POWER SECTOR AND MATERIAL HANDLING

BEC Shops are approved by BHEL, Enercon, Sandvik, Metso & SIEMENS for the manufacture of Fabricated parts & Assemblies. Our offerings includes: Fabricated items for Electrical Parts, Infrastructure, Material Handling Equipments and their Assemblies.

It includes:

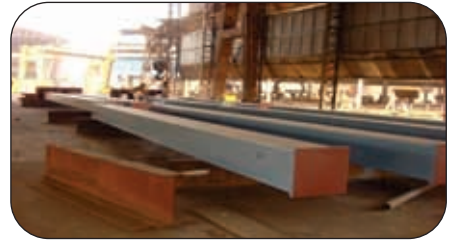
- Boiler & Turbine Structures: Primary & Secondary
- Buck Stays
- Wind Boxes
- Wind Mill Towers for Wind power
- Radial Gates for the Hydel Power, Cyclones, Silos, Hoppers, Bunkers, Chimneys & Stacks



Towers in finished condition coming out of 32 MT Paint Booth



Generator End Shield



Box Columns



Stator Frame



Tank Storage Fabrication

SPECIALTIES IN MANUFACTURING DIFFERENT TYPE OF MINING EQUIPMENT

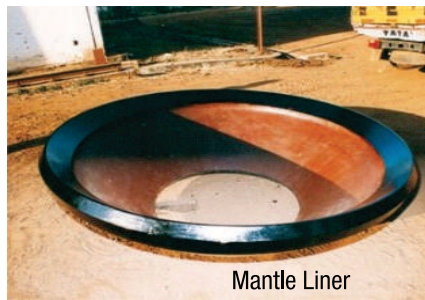


BEC wear package solution for Mining & Aggregate industries ensures complete interchangeability with assured performance.

BEC provides complete cast solutions from design to delivery for GET's. BEC is an emerging global leader in manufacture & supply of Manganese steel & alloy steel castings.



Upper Mantle



Mantle Liner



Bowl Liner



Track Pad

Track Pad –70 inch–Crawler–Shoe



Shovel Bucket Assembly



Dipper Front Wall



Mantle

CASTINGS FOR MARINE & SHIPPING APPLICATIONS



We offer castings for Marine & Shipping Applications.

The range includes:

- “A” Bracket & “C” Bracket
- Stern Boss
- Rudder Stock
- Naval Pipe etc.

These quality castings are approved by **American Bureau of Shipping (ABS)** for Marine Applications and are offered at very competitive price and assure timely delivery of all large and small orders and thereby meet the manufacturing requirements at customer end.



PRODUCT RANGE FOR STEEL PLANTS

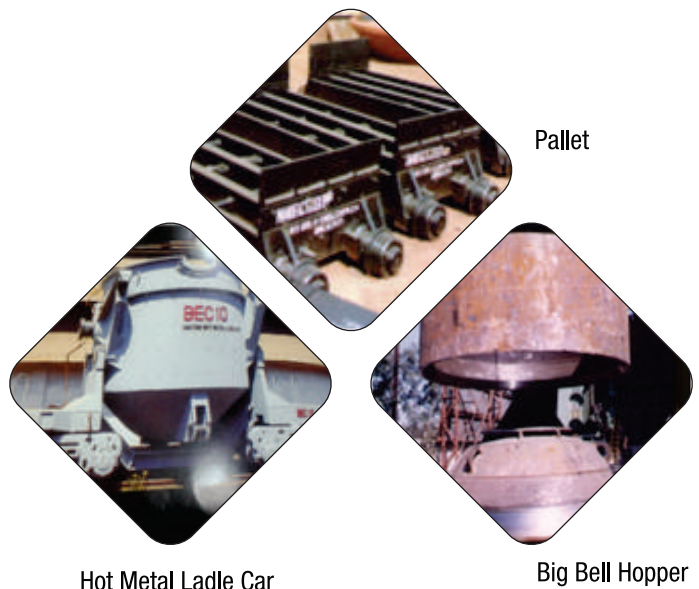
BEC is leading Supplier for different Castings that are used in Steel Plants.

We manufacture wide range of qualitative multi-dimensional Product line/ Equipments for Steel Plants in various sizes and specifications which also can be customized as per Customer's requirement.

BEC believes in better Engineering and develop customized solution as required by Steel Applications.

Our Motto at BEC is to deliver the best and meet up to the Industrial expectations for competent Strategies.

Our major objective is to give our client full support so that they meet their objectives and not to superimpose on them a 'Fixed Process or Project Model'.



Hot Metal Ladle Car

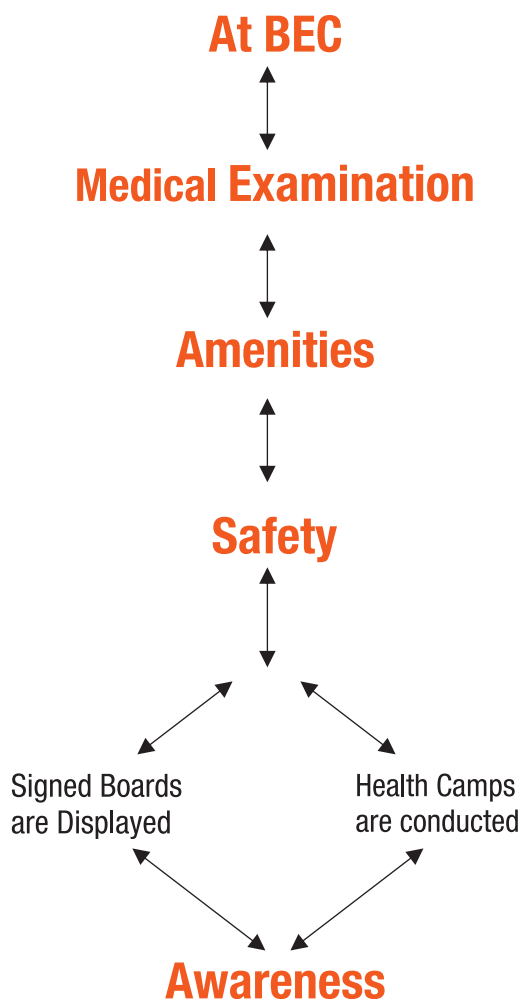
Big Bell Hopper

CERTIFICATION

Health Safety & Management Environment (HSE)



Health Safety Meet



Corporate Social Responsibility (CSR)

BEC has always been driven by its Values.

“We accept that our actions must accord in the interest of our Society”.

Corporate Social Responsibility is an integral part of everything that we do, in continuation to the legacy of a responsible Corporate Citizenship. Throughout the years we have focused on our values, reducing the impact on the environment and being engaged with our communities.

Corporate Social Responsibility is instilled in our Vision, our Strategies and Management Goals. We have adopted Ethical Practices and creation of a Healthy Workplace Environment, Corporate Social Responsibility is embedded in our Culture. BEC and Business Solutions through the years has been loyal to the Fundamentals that drive the Corporate Social Responsibility (CSR) Charter.



Independence Day Celebration



Medicine Distribution



Plantation Drive



Medical Camps



Swachh Bharat Abhiyan



Health & Eye Camp Check up

BEC operate a mature Environmental Health and Safety Management System which we continue to review and improve. BEC strive to achieve the goal that it is unacceptable for people or the environment to be harmed as a result of our work, whether physically or mentally.

CERTIFICATION

| |
|---|
| ➤AAR (Association of American Railroads) |
| ➤ISO 9001 – 2015 |
| ➤RDSO (Research Design & Standards Organization, Railways) approved Class ‘A’ Foundry |
| ➤Star Export House – Ministry of Commerce & Industry (GOI) |
| ➤Self–Certification by BEML for supply of Steel & Manganese Steel Castings. |
| ➤American Bureau of Shipping (ABS) Certification for supply of Steel & Iron Castings for Marine Appl. |
| †RDSO Approved supplier for Truck Frame Assembly for EMD Locomotives |
| †RDSO Approved supplier for Tri–Axle and Flexi–coil Bogie Frames & CS Bolster for BG Locomotives. |
| †RDSO Approved supplier for HTCB Coupler and Draft Gear for Freight Wagons. |
| †DAkKS (Germanischer Lloyd SE) GL System Certification for Fabrication & Manufacture of Heavy Boiler Component & Structural Fabrication of Tubular Tower Sections for Wind Mill & ther Industrial Application |
| †RDSO Approved supplier for Cast Manganese Steel Crossings. |
| †Approved with Indian Railway Production units for range of products & approved with Delhi Metro rail Corporation, India, for Metro Bogie Frames |
| †EN – 15085 CI 2 certification under way |

BEC

New Developments / Initiative Future Vision

In the era of continuous developments, BEC has/developing followings items / facilities:

- AAR H–Type Tight Lock Coupler Assembly
- 71BD Draft Gear for Indian Railways Wagon Coupler
- Balance Draft Gear for H–Type Coupler
- 1:8.5, 60Kg & 1:6, 60Kg Obtuse Crossings
- Scissors Crossings
- 25T LWLH Bogie for Freight Cars
- Weldable Crossings, EDH Crossings
- Joint–Partnership/Buy–back arrangements for Railway infrastructure
- Fast loop moulding line put up.
- Special Steel Casting for Mining Vehicles
- Rehab, re–built for Power assembly & Turbo–charger.

BEC takes pride in continuous upgradation of its infra facilities & have thirst for offering advanced product & equipment solutions. We look for buyer & technology partners to have meaningful discussion in mutual interest for:

1. **Long term supply purchase agreements:** BEC can develop dedicated production line to meet your annual requirements with full satisfaction for quality & timely deliveries.
2. **Technology tie up rail infra sector:** BEC presence in Indian Railways since five decades, whole looking forward the expansion, upgradation & investment plans of Indian Railways is looking for exclusive tie–ups for:
 - Signalling & Safety
 - Bonded fastening for BLT
 - Asset Management of rail vehicles
 - Semi – automatic coupling system for train sets & Metro Cars



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Email: neera@bec-group.com

Head Office & Bhilai Works

Foundry Division

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[f](#) [i](#) [t](#) [p](#) [i](#) [n](#) [/foundry](#)

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Fax: +91771 4262053

Would like to extend gratitude and thanks to all for viewing this presentation with us.
BEC has long made it a priority to reduce its environmental impact.
At our facilities, we are constantly seeking new ways to recycle and reduce energy consumption

