



KMRI:

**A LEADING CASTINGS
MANUFACTURER**

Company Profile & Overview October, 2017



- **KMRI - Overview**
- **Business Strategy & Financial Information**
- **Product Portfolio & Certifications**
- **Product Development & Quality Metrics**



KMRI - Overview

Quality and Customer Satisfaction Focus are the Drivers of Our Success

A LEADING CASTINGS MANUFACTURER

Several Strategic Vendor Relationships with Large OEMs



OUR VALUES

Others see things as they are and say “Why” –
but we dream of things that never were and ask “Why not?”

–GB Shaw



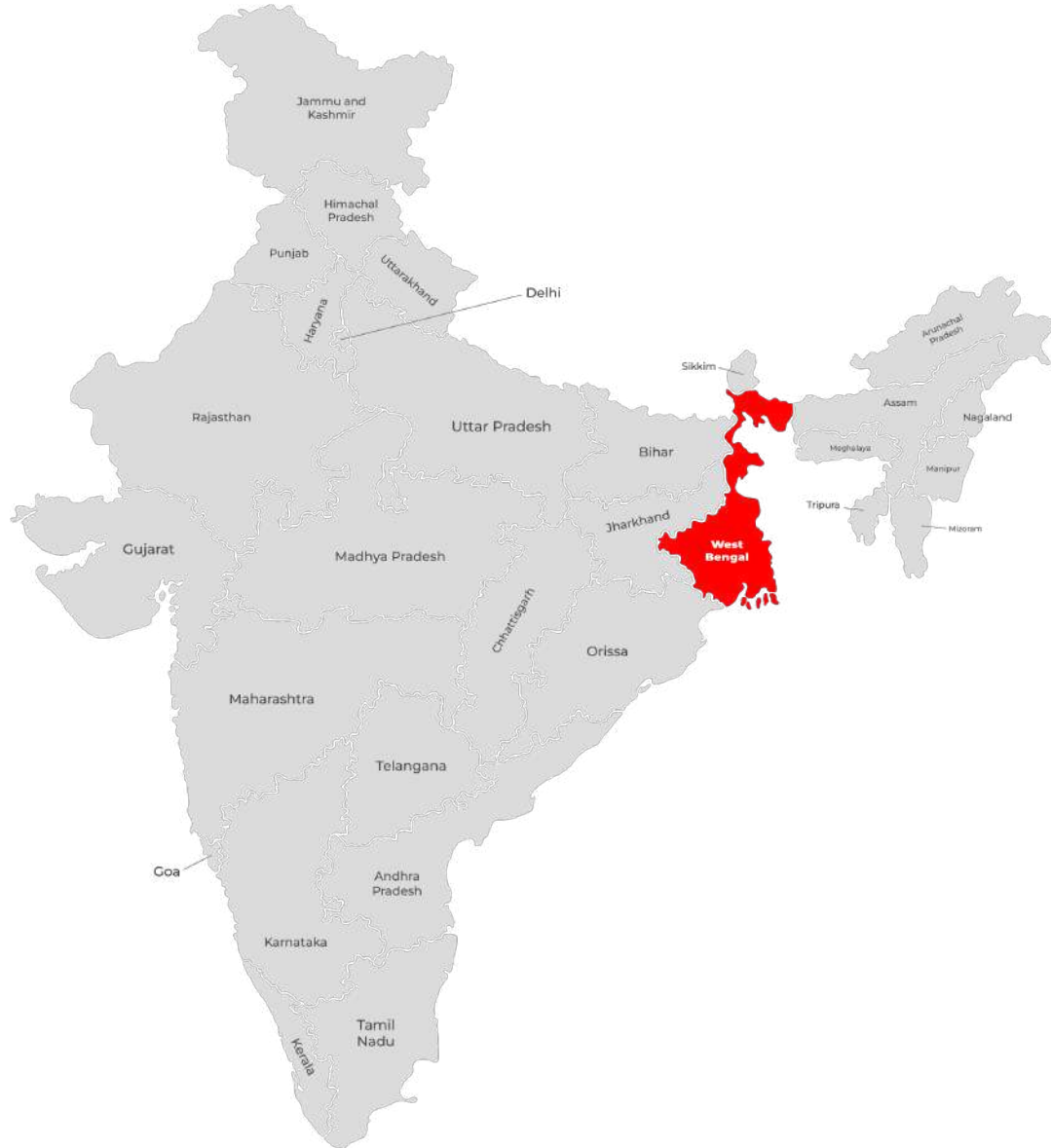
MISSION

Manufacture high-quality steel-castings, cast-steel motor shell, industrial spare-parts and other engineering products matching international quality standards at cost-effective prices

Kharagpur Metal Reforming Industries Pvt. Ltd.

- Has emerged as a leading manufacturer of various types of cast-steel, S.G. iron, cast-iron and fabricated mechanical spare parts & components
- Strategic Suppliers for Indian Railways Locomotive, Railway Bogies, Railway Coaches, Automotive & Steel Plants, General Engineering, Bearing Companies, Earth Moving Equipment and Other Special Purpose sectors

At KMRI, we are proud of a successful history of executing on our ambitious vision of delivering quality castings



OUR SCALE OF OPERATIONS

Situated in Kolkata West Bengal, an eastern-Indian state where skilled man-power availability is abundant

LOCATION OF UNITS

FOUNDRY: UNIT-I

Kharagpur Metal Reforming Industries Pvt. Ltd. (CAPTIVE FOUNDRY)
(Registered Office) Koushallya, Kharagpur, District - Paschim Midnapore
P.S. -Kharagpur, Pin Code -721301, West Bengal, 03222-255340 | 03222-255589
Website: www.kgpmetal.com

MACHINE SHOP: UNIT-II

Kharagpur Metal Reforming Industries Pvt. Ltd.(CONVENTIONAL MACHINE SHOP)
AndulRoad,Thanamakua, P.O. -D.S.Lane,District -Howrah, P.S.-Sankrail,
Pin Code 711109, West Bengal
033-2688 6283 | 033-2688 5084 | 033-2688 5714 | 033-2688 7452

MACHINE SHOP: UNIT-III

Kharagpur Metal Reforming Industries Pvt. Ltd.
(CNC MACHINE SHOP & FABRICATION UNIT) ChadmariRoad, P.O.-
D.S.Lane,District -Howrah, P.S.-Jagacha, Pin Code -711109, West Bengal

FOUNDRY: UNIT-IV

Kharagpur Metal Reforming Industries Pvt. Ltd. (HI-TECH CAPTIVE FOUNDRY)
Khatranga, Kharagpur, District -PaschimMidnapore
P.S. -Kharagpur, Pin Code -72, West Bengal

MACHINE SHOP: UNIT-V

Kharagpur Metal Reforming Industries Pvt. Ltd. (CNC MACHINE SHOP)
JalanComplex,District -Howrah, P.S.-Jagacha,Pin Code -711109, West Bengal

OUR GLOBAL CUSTOMER-BASE



5 Manufacturing Locations in India

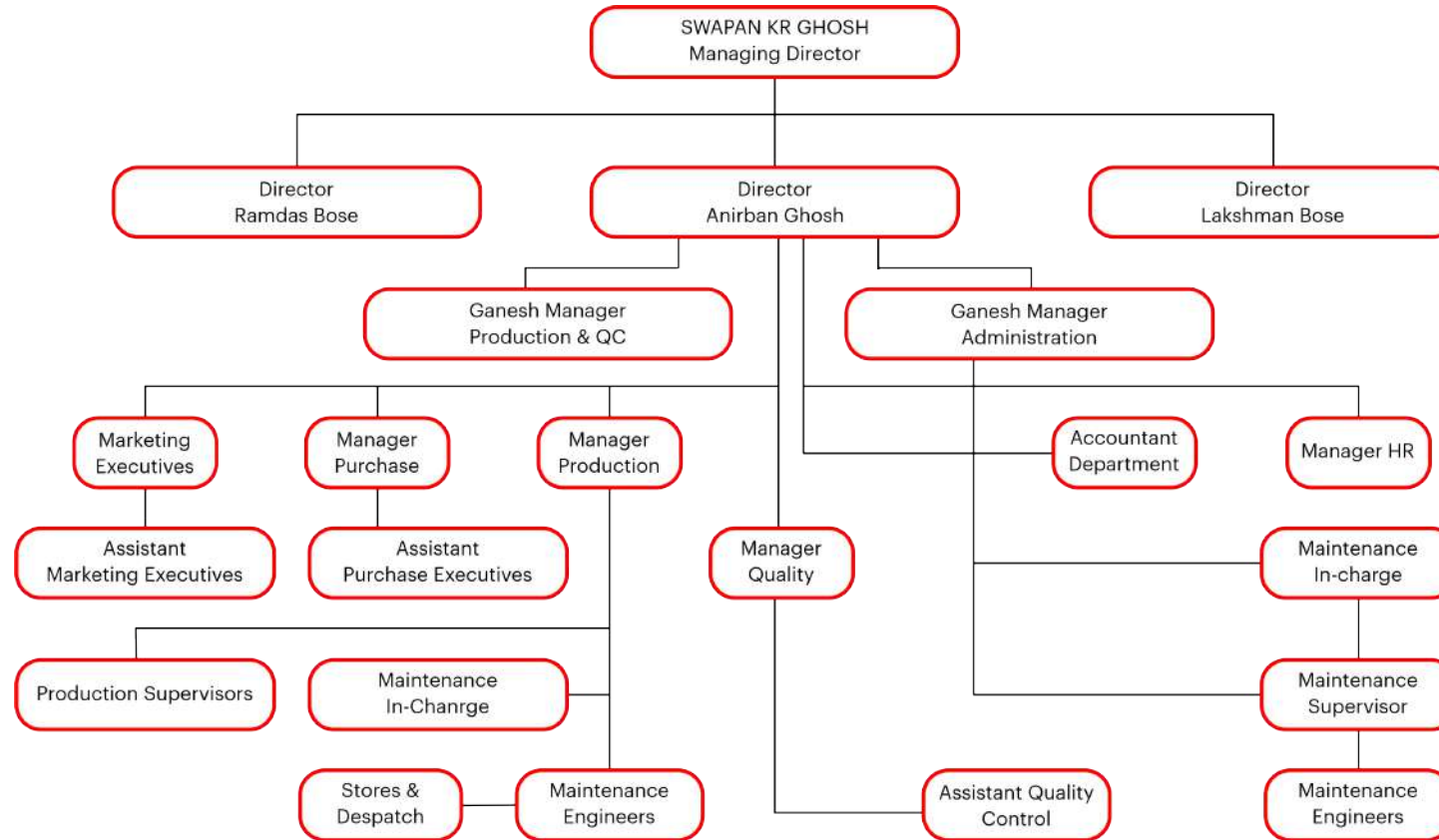


Customer

ORGANIZATION STRUCTURE

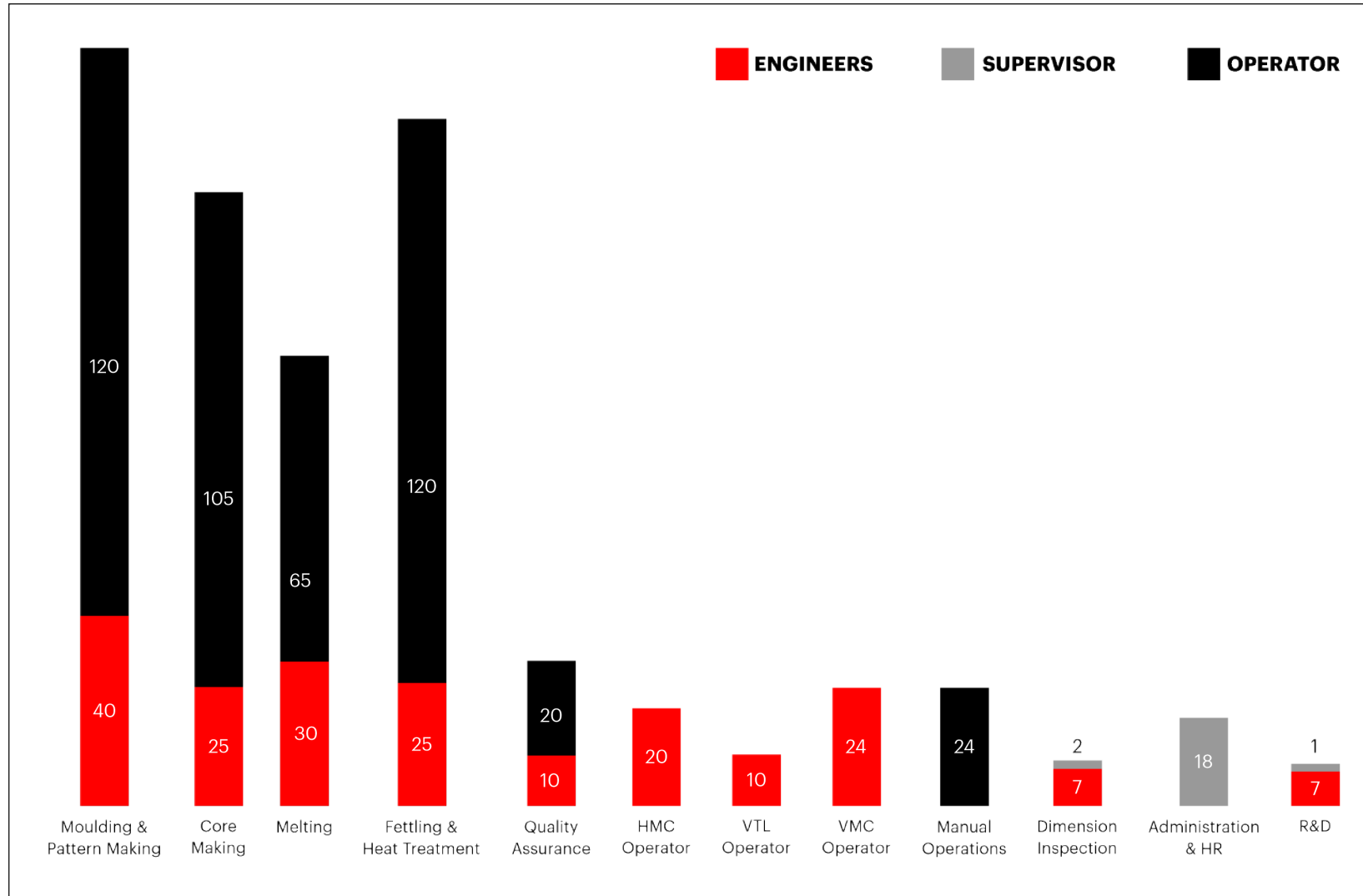
KHARAGPUR METAL REFORMING INDUSTRIES PRIVATE LIMITED ORGANIZATIONAL CHART

UNIT ADDRESS (DAG-4901, 4900, K, 740, 469, 1654, J.L20, DONJUR, KOLORAH, HOWRAH, WEST BENGAL

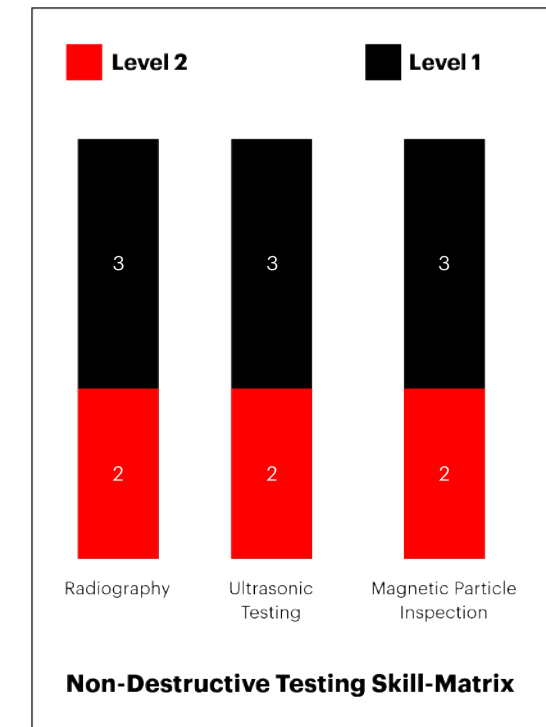


- KMRI is a professionally managed organization with firm quality policy and customer-centric approach
- Total Employees: 910
- Our organization structure focuses on driving overall process efficiency that is the hallmark of our company
- We strive to ensure full accountability and ownership

KMRI SKILL MATRIX



Balanced Distribution Of Manpower Between Technical And Other Functions

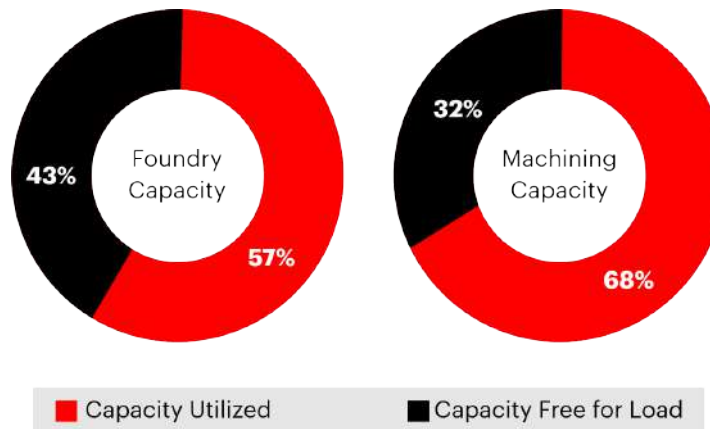




MANUFACTURING CAPABILITY HIGHLIGHTS

- **Monthly Capacity:** 2000 MT which include New No-Back Line at Existing Facility/ Addition of 2 Nos. Heat Treatment Furnace
- In-house **Captive Steel & S.G Iron Foundry:** 5kg-to-9,000kg single-piece cast component manufacturing capability
- Automated **Green Sand Moulding-Line** and **No-Bake Moulding-Line** operational
- **World-Class Heat Treatment Facility:** for annealing, tempering and hardening processes
- Fully-equipped **In-House Testing facility** inc. sand, physical, chemical, NDT, MPI, DP, Radiography
- All **CNC-Machining** done in-house with **CMM/ ZEISS Checking**
- **RDSO-Approved CLASS-A Foundry** as per IS-12117:1996 guidelines

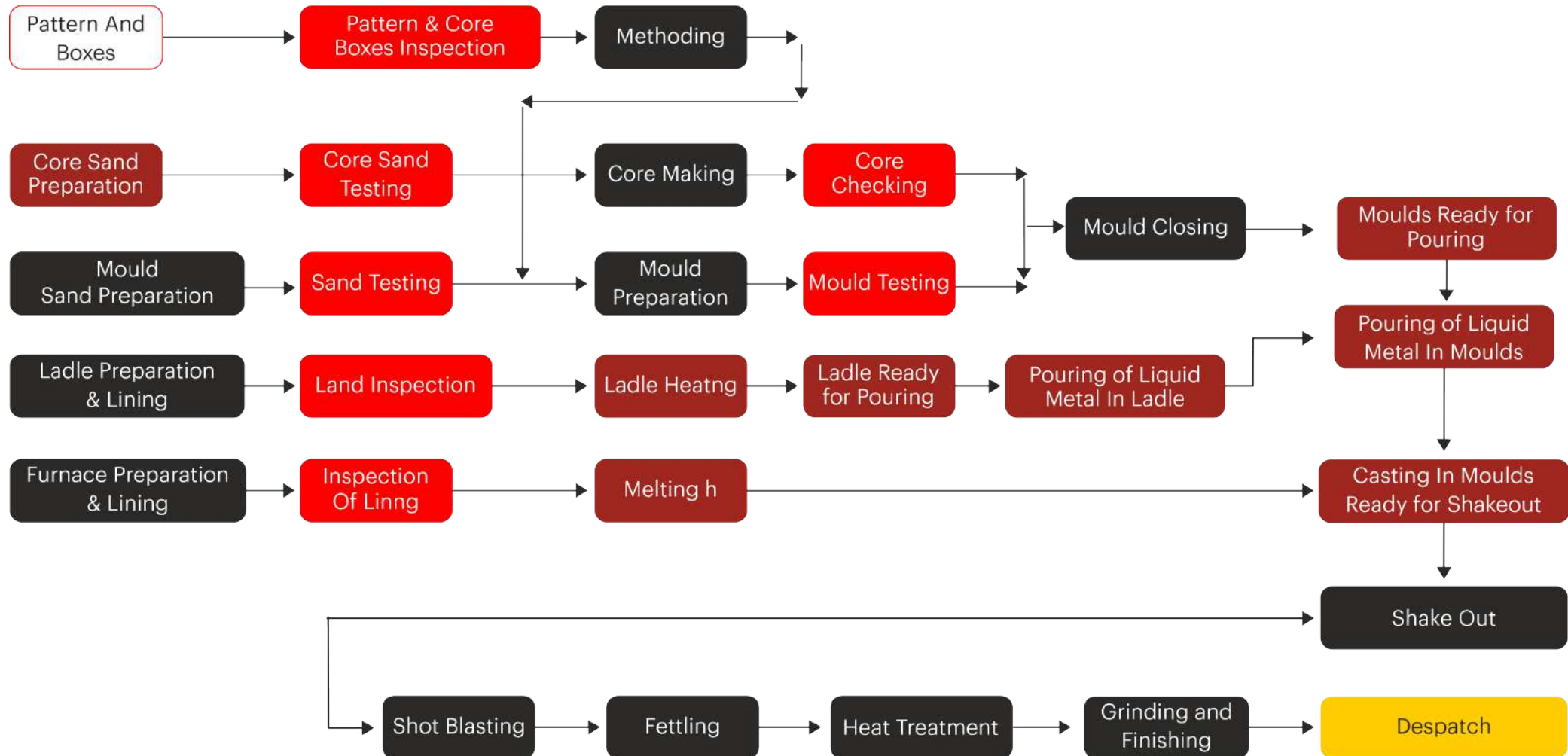
SIGNIFICANT GROWTH IN AVAILABLE FOUNDRY & MACHINING CAPACITY



Utilization :
Capacity of 2,000 MT per Month

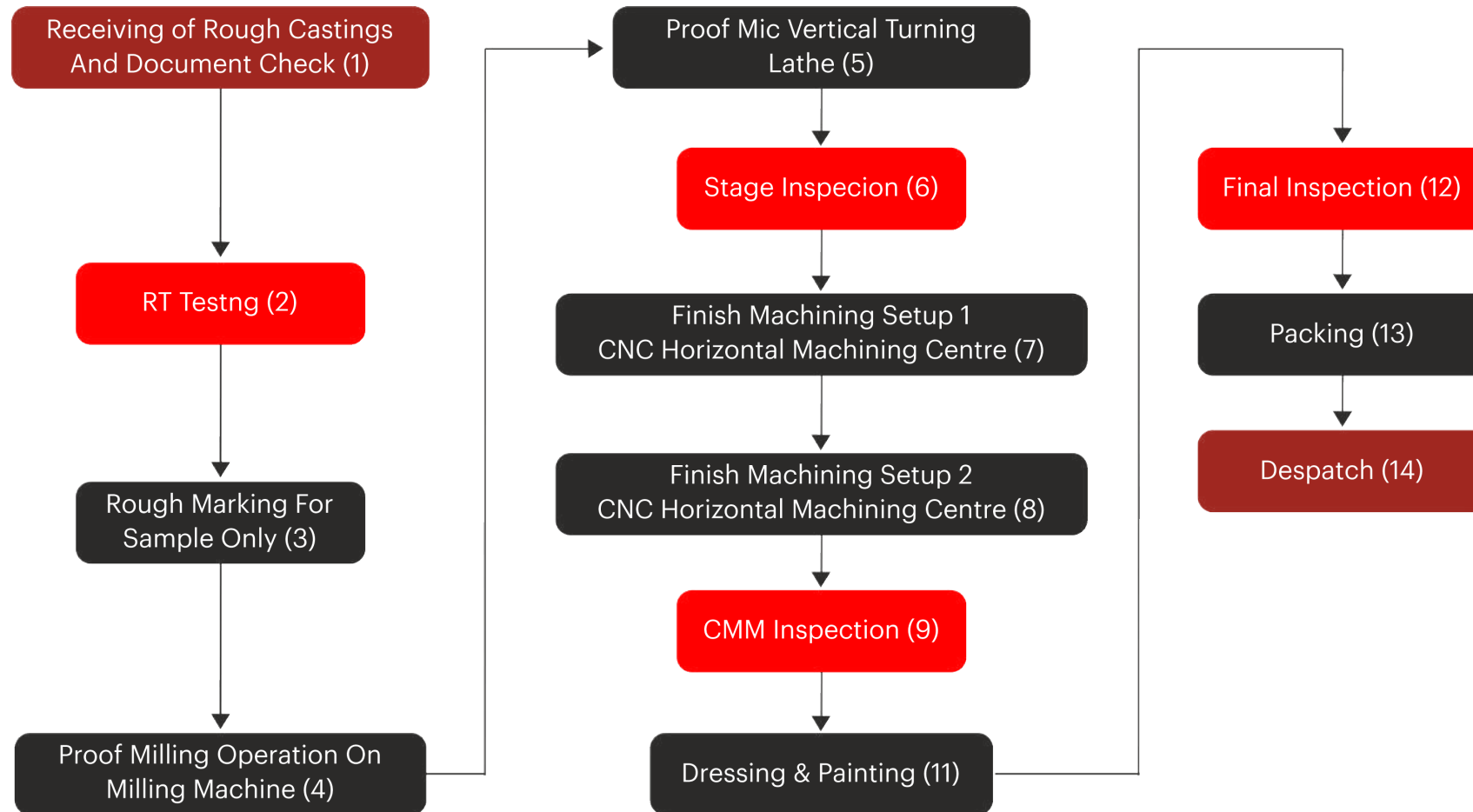
PROCESS OVERVIEW

Foundry Process Flow-Chart



PROCESS OVERVIEW

Machine-Shop Process Flow-Chart



CERTIFICATION HIGHLIGHTS

- Approved supplier for all **locomotive manufacturers** in India e.g. CLW, DLW, DMW, ALSTOM
- Approved supplier for coach factories in India e.g. ICF, RCF
- Approved supplier for **FAG, NBC, TIMKEN, SKF**
- Approved supplier for **BHEL, CG Land** other **traction motor manufacturers**
- Approved suppliers for **bogie & wagon, Couplings** components for **RDSO, Faiveley, Webtech**
- Exporting railways components to USA and Canada for General Motors, Caterpillar
- Certified as **ISO:9001:2015** from British Standard
- Certified as **ISO:14001:2015** from British Standard
- Certified as **OHSAS:18001:1997** from British Standard



QUALITY, EHS, OHS CERTIFICATES

AUDIT RESULTS

- ✓ CASTING AUDIT
- ✓ MACHINING AUDIT
- ✓ HEAT TREATMENT AUDIT
- ✓ GENERIC PROCESS AUDIT
- ✓ SUPPLY CHAIN AUDIT
- ✓ MPI AUDIT
- ✓ PAINT AUDIT

FOUNDRY WITH FULLY AUTOMATED POURING & MOULDING LINE (1/2)

Unit-IV: Green-Field No-Brake Foundry Shed & Shop-Floor



IMF Italy Fully-Automated Moulding Line at Unit-IV (Alpha Set System)



UNIT-IV GREEN-FIELD NO BRAKE FOUNDRY WITH FULLY AUTOMATED MOULDINGLINE (2/2)



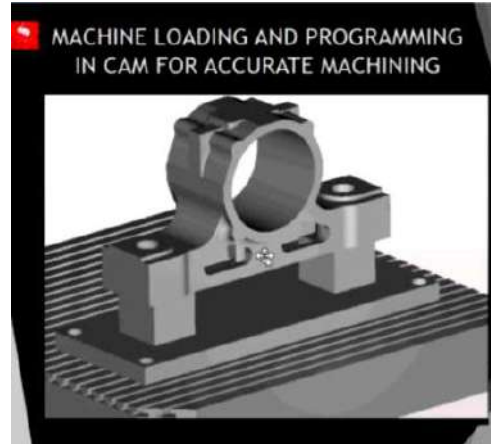
Unit-IV: Fettingling & Finishing Shed

Unit-IV Heat Treatment Facility:
Hardening, Tempering (5 MT -2Nos.),
Auto-Quenching (within 30 seconds)



WORLD-CLASS CNC MACHINING FACILITY

Horizontal Machining Centers



Measuring Machines (Zeiss)



CNC Turning Centers



Vertical Turning Centers



ROBUST QUALITY MANAGEMENT PRACTICES WITH BEST-IN-CLASS IN-HOUSE TESTING INFRASTRUCTURE



Sand Testing Laboratory



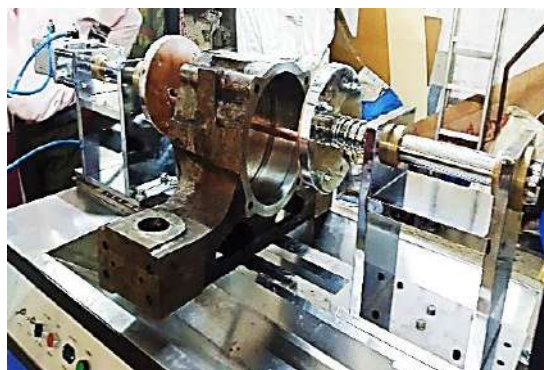
Spectro/ Chemical Testing Laboratory



Physical Testing Laboratory (Impact, Tensile)



Micro-Graphy Testing Facility



Non-Destructive Testing
(Magnetic Particle, Ultrasonic)



Radiography Testing

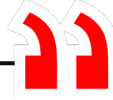


FEEDBACK FROM OUR VALUED CUSTOMERS



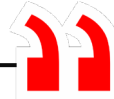
Performance of coke crushing rings found to excellent. KMRI has supplied full materials within delivery time as per our urgency

- AGM, Rourkella Steel Plant



Quality of Guides is good and delivery schedule has been maintained

- GM, Maintenance, RDCIS SAIL Ranchi.



Mud gun nozzle developed by KMRI has given life 6X more than Original Equipment Supplier

- GM, Tata Metalillics Ltd.



Bench-Mark Foundry in India for Alstom.

- M. Fuckert - Alstom



Perhaps it is one of my most productive and fruitful days, when I visited M/s KMRI & specially meeting with your people. The depth of knowledge, the zeal to produce quality product, the sincerity to give after-sale service were simply outstanding. I wish we have more firms and people like them definitely will take our country India, from under-developed to Most Developed in the world!"

- CEE, TM CLW CRJ

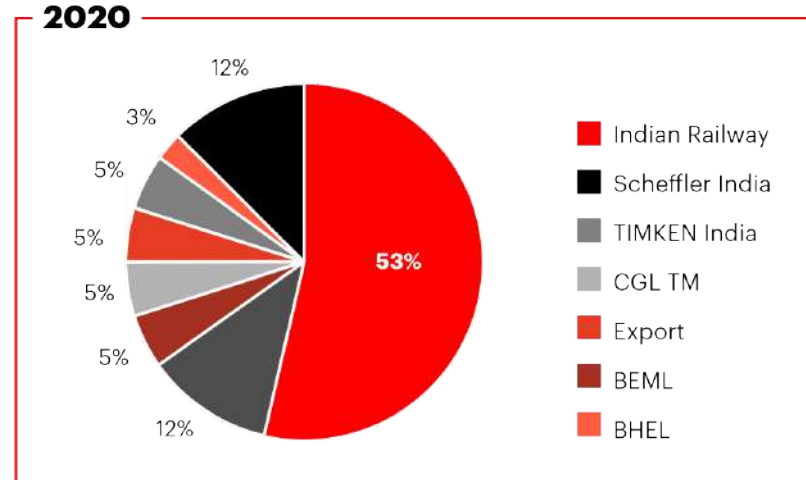
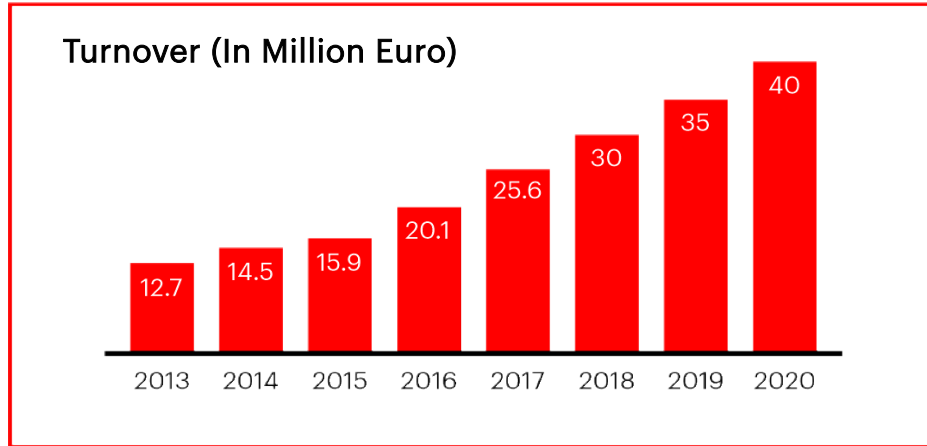


BUSINESS STRATEGY

- Growth & Customer Satisfaction Focus
- Well Defined Investment Plan to Increase Manufacturing Capacity



BE A GLOBALLY RECOGNIZED SOURCE OF CASTING PRODUCTS & LEADING SUPPLIER OF PRECISION ENGINEERING REQUIREMENTS

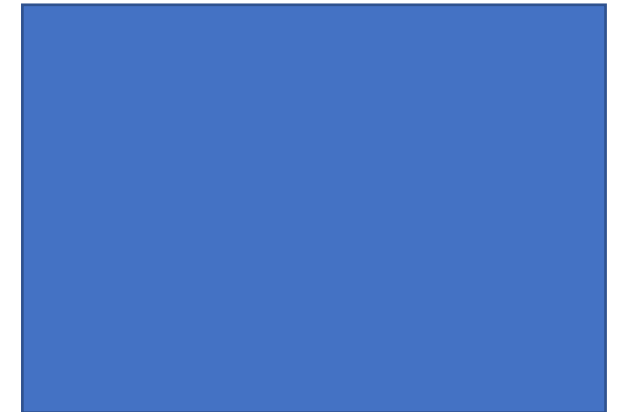
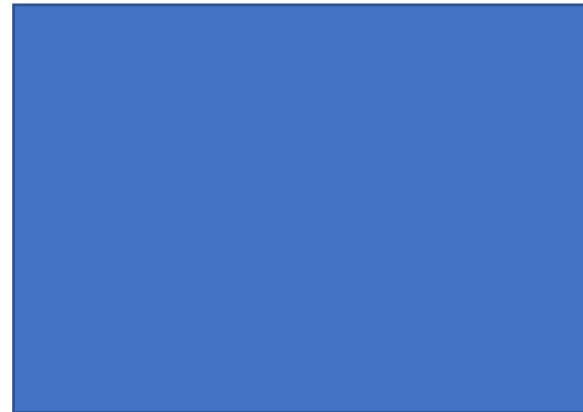


OUR STRATEGIC FOCUS AREAS

- Drive growth through consistent customer satisfaction
- Expand foundry capacity
- Focus on quality
- Invest in manpower development

OUR FUTURE INVESTMENT PLAN

- Proposed investment of €20.3 Million in 2021-22 for foundry capacity expansion
- New unit for Machining to start production by December 2020 –total investment of €6.9 Million
- New facility will have fully loaded machine-shop



MORDEN MACHINE SHOP



Horizontal Machining Center (5 Nos)



MAZAK Turning Center (2 Nos)



Vertical Turning Center VCN-700D MAZAK Japan



CNC Vertical Turning Lathe - 1200 RL - 3 Nos



CNC Coordinate Measuring Machine Accura-II
Zeiss Germany- 2 Nos



Vertical Turning Center- 10 Nos

**RELEVANT PRODUCT
PORTFOLIO &
QUALITY CERTIFICATIONS**



ONLY FOUNDRY CERTIFIED BY

INDIAN RAILWAYS (RDSO & CLW)

- India has 3rd-largest railway network in the world with 650 electric locomotives produced annually
- Only approved foundry & company for **Electric Locomotive Components** in India by Directorate of Electric Locomotive (RDSO Lucknow) and Chittaranjan Locomotive Work (CLW)

LARGE RANGE OF COMPONENTS CERTIFIED:

- Canon Box & components
- Gear Case
- Stator cum Magnet Frame & components
- Axle Boxes
- Pivot Assembly
- Motor Frame Components
- Traction Motor Holders
- Rotor End Ring
- Wheel Set Guide (Link Match)
- High Capacity Side Buffer Assembly
- Couplers (Grade – E)
- Knuckles (Grade – E) – for both Goods (WAG-9, WAG-9 H) and Passenger Locomotive (WAP-7/ WAP-5)

INDIAN RAILWAYS APPROVAL CERTIFICATES

FOR TRACTION MOTOR PARTS

टेली/Telex : 91-0522-2450189(Direct)
 : 91-0522-2451200 (PBX)
 : 91-0522-2450115(DID)
 टेली/Fax : 91-0522-2450189
 : 91-0522-2458508
 email : karech@gmail.com

भारत सरकार-रेलवे विभाग
 अनुसंधान और मानक संगठन
 लखनऊ- 226011
 Government of India-Ministry of Railways
 Research Design & Standards Organisation
 Lucknow - 226011

No. QAM/Regn./Kharagpur Metal/K Dated: 18.01.2017
 Fax: 05222-255589, 033-26887452, Email: kgmetal@vsnl.com
 M/s Kharagpur Metal Reforming Industries Pvt. Ltd.,

'FRESH REGISTRATION'

Sub: Fresh registration of firm for inclusion in the "Vendor Directory" as per Spec. IS 12117:1996.
Ref: On line application with Vendor reference ID No. QAM2016/7374 dated 09.07.2016.

Vide online application under reference above, firm had applied for FRESH REGISTRATION.

After satisfactory processing, Competent Authority has approved the inclusion of the below mentioned firm in the "Vendor Directory" for the items given below:-

1. Firm Name & Address:	Name of the firm	Office Address	Works Address
M/s Kharagpur Metal Reforming Industries Pvt. Limited	Andul Road, Thanamakua, PO-D S Lane, Howrah-711 109.	Vill & PO-Khatranga, PS-Khagapur Local, Distt- West Midnapore-721 149.	


2. Items for which approved:

SN	Item Description	Drawing	Specification
1.	RDSO approved firm for Class 'A' Foundry		IS 12117:1996

3. Capacity: 18000.00 MTPA
 4. Date/Dates of visit: 12.11.2016 & 21.11.2016.
 5. Approval Details:

Firm RDSO Approved Initials: KM
Allied Sister NIL
Concern/concerns

Next Quality Audit due on: **31.01.2018.**
 (1 year from date of this audit)

Signature: 

Name of Officer: **H R Khan**
 Designation: **A/E/I&L/RDSO**

Copy to:
 Director/I&L, RDSO,
 3, Kailaghat Street,
 Kolkata-700 001.

RESEARCH DESIGN & STANDARD ORGANISATION
 MINISTRY OF RAILWAYS

File no- EL/1.3.10/3/KMRI / 5 Date: 14.03.2012

CERIFICATE OF APPROVAL OF REGISTRATION IN PART-I CATEGORY


Your request for up gradation from Part-II to Part-I source for manufacture & supply of Assembly Components of Traction motor (Stator Chamber, End Frames, Labyrinths) type 6FRA 6068 for Electric Locomotives has been considered and approved as per the following details:

SN	Particulars	Details
1	Name of the Firm	M/s Kharagpur Metal reforming Industries Pvt. Ltd., Howrah
2	Name of the Item registered	Assembly Components of Traction motor (Stator Chamber, End Frames, Labyrinths) type 6FRA 6068 for Electric Locomotives.
3	Category of registration	Part-I (Regular)
4	Firm's Registered office address	M/s Kharagpur Metal reforming Industries Pvt. Ltd., Andul Road, Thanamakua, Howrah-711 109
5	Phone no	033-2688-5084,2688-6283
6	Fax no	033-2688-7452
7	Firm's Works address	16, Badal Bose Sarani (Chandman Road), PO, D. S. Lane, Howrah-711 109
8	Governing specification no	CLW Specn. No. 4TMS 095.059 & 68
9	Governing Drawing no	Drawings as per vendor list
10	Governing STR no	RDSO STRs Nos.RDSO/2007/EL/STR/021 Rev '1'
11	Validity of registration	10.03.2015

1. The validity as above shall be subject to the following conditions:

- No design change or change in Bill of Material shall be made without the prior approval of RDSO.
- The supply, will meet the requirement of the specification.
- Notwithstanding this approval, vendor is wholly and completely responsible for quality, on line performance, reliability and life of the item/items supplied by him and supply within the deliver period.
- Complete compliance to the conditions given in purchase order of Railway Board/Railways/Production units.
- All future changes in location of firm, equipment, facilities and establishment at your works should be promptly communicated to Electrical Directorate of RDSO.

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RESEARCH DESIGN & STANDARD ORGANISATION
 MINISTRY OF RAILWAYS
 ELECTRICAL DIRECTORATE

File no- EL/1.3.10/3/KMRI / 6 Date:14.03.2012

CERIFICATE OF APPROVAL OF RENEWAL OF REGISTRATION IN PART-II CATEGORY


1. Your request for renewal of registration in Part-II category for manufacture & supply of Assembly components of Traction motor (Stator chamber, End frame, Labyrinths) type 6FXA 7059 for Electric Locomotives has been considered and approved as per the following details:

SN	Particulars	Details
1	Name of the Firm	M/s Kharagpur Metal Reforming Industries Pvt. Ltd., Howrah
2	Name of the Item registered	Assembly components of Traction motor (Stator chamber, End frame, Labyrinths) type 6FXA 7059
3	Category of registration	Part-II (Developmental)
4	Firm's Registered office address	Andul Road, Thanamakua, Howrah-711 109
5	Phone no	033-2688-5084,2688-6283
6	Fax no	033-2688-7452
7	Firm's Works address	16, Badal Bose Sarani (Chandman Road), P.O. DS Lane, Howrah-71 109
8	Governing specification no	CLW Specn. No. 4TMS 095.059 & 68
9	Governing Drawing no	As per latest vendor list
10	Governing STR no	RDSO STRs No RDSO/2007/EL/STR/021 Rev '1'
11	Validity of registration	10.03.2015

2. The validity as above shall be subject to the following conditions:

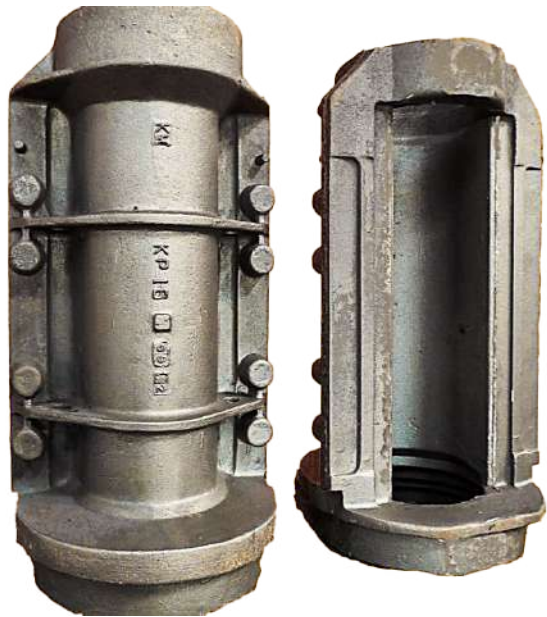
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- The supply, will meet the requirement of the specification.
- Notwithstanding this approval, vendor is wholly and completely responsible for quality, on line performance, reliability and life of the item/items supplied by him and supply within the delivery period.
- Complete compliance to the conditions given in purchase order of Railway Board/Railways/Production units.
- All future changes in location of firm, equipment, facilities and establishment at your works should be promptly communicated to Electrical Directorate of RDSO.
- RDSO shall have the liberty to carry out the fresh prototype/routine inspection at any time, if the condition so warrants, checking the consistency of the product.

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LOCOMOTIVE BOGIE COMPONENTS

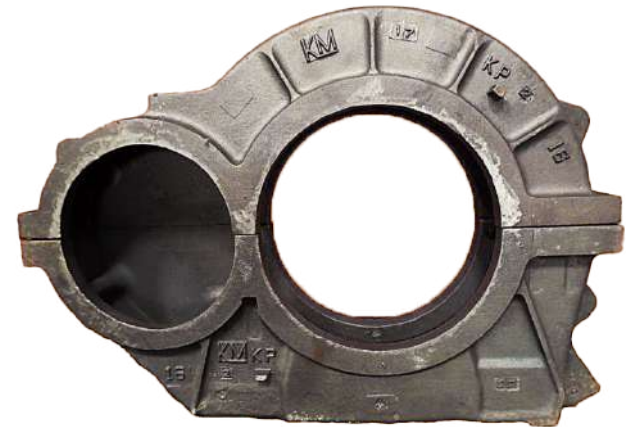
Casting: Canon Box ABB LOCO



Casting: Axle-Box Housing ABB LOCO

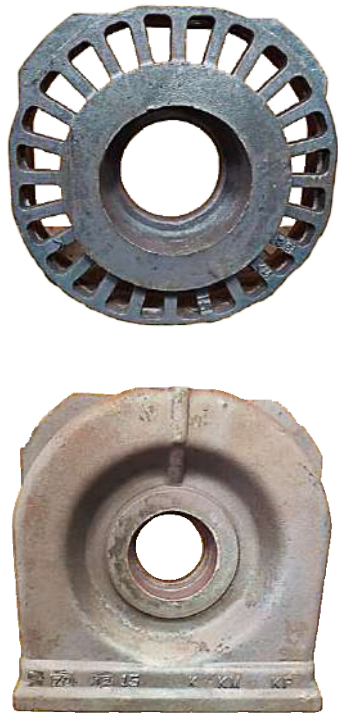


Casting: Gear Casing Assembly ABB LOCO



TRACTION MOTOR COMPONENTS

Casting: End Shield (Driving End & Non-Driving End) ABB MOTOR



Casting: Stator Frame FUJI MOTOR



Casting: Gear Casing WAP-5 Loco



OTHER LOCOMOTIVE COMPONENTS

Casting: Pivot ABB LOCO



Casting: LOCO SIDE BUFFER ASSLY

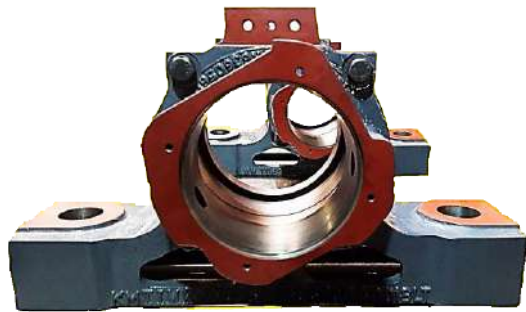


Casting: Canon Box GM Loco



COMPONENTS FOR ALSTOM TRANSPORT METRO AND LOCOMOTIVE

Finished Product: Axle Box Metro Application
(Lucknow, Kochi, Sydney, Sao Paulo)



Finished Product: Gear Casing Fuji Motor



Finished Product: Gear Case Alstom

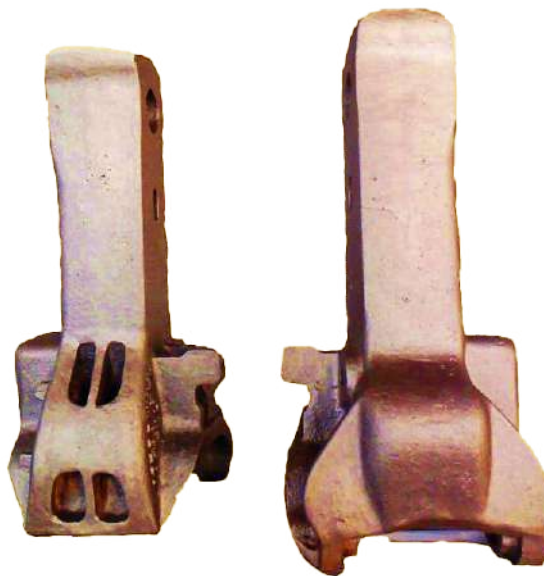


COMPONENTS FOR COUPLER ARRANGEMENT

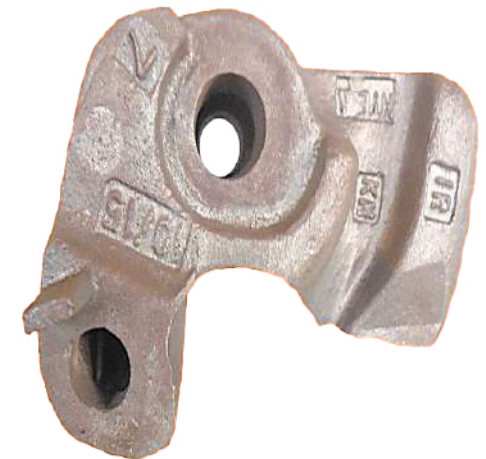
Finished Product: IR Coupler for Freight Wagons



Finished Product: IR Coupler for Locomotive



Finished Product: IR Knuckle



COMPONENTS FOR COUPLER ARRANGEMENT

Finished Product: Wabtec/ Voith Coupler



Finished Product: Wabtec/ Voith KNUCKLE



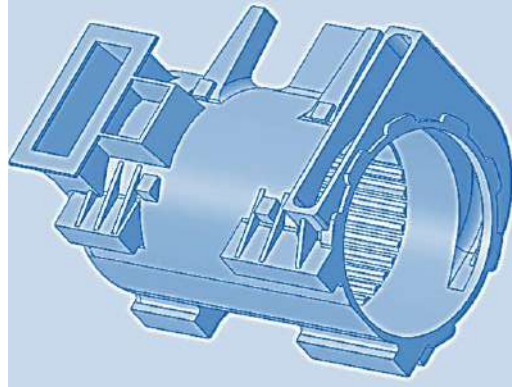
Finished Product: Wabtec/Voith LOCK



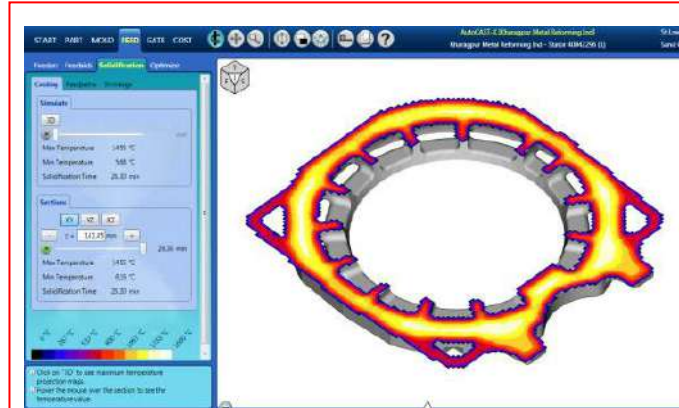
PRODUCT DEVELOPMENT & QUALITY METRICS



PART DEVELOPMENT: STATISTICS & PROCESS BEST PRACTICES



Cast 3D Modeling

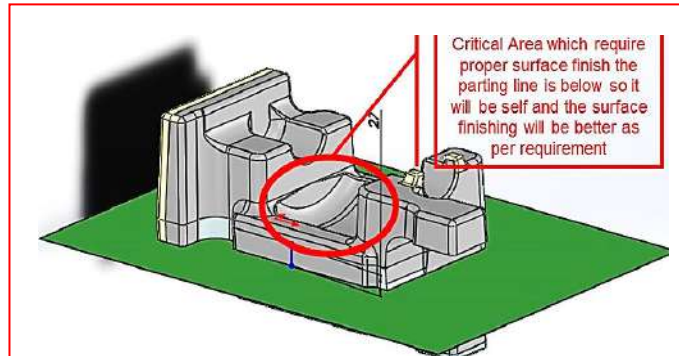


Part Development: Simulation

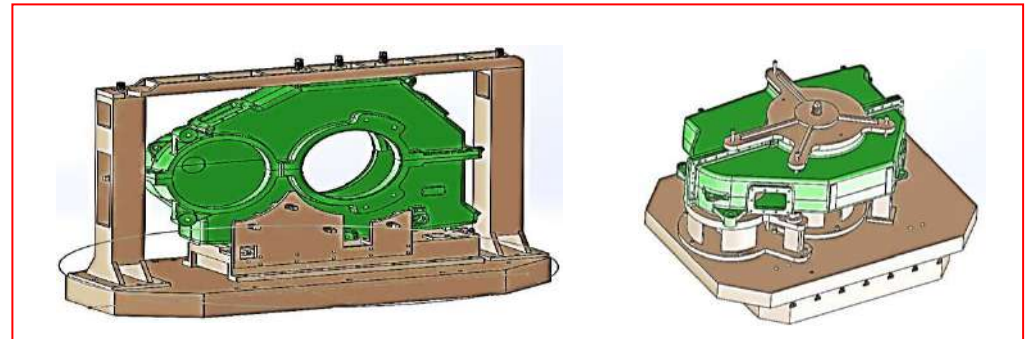
COMPONENT	DEVELOPMENT CYCLE-TIME
Bogie Component	3 months
Canon Box & Suspension Tube	4 months
Gear Case	5 months
End Shields	5 months
Stator Frame	6 months



Metal Tooling



Computerized Methoding

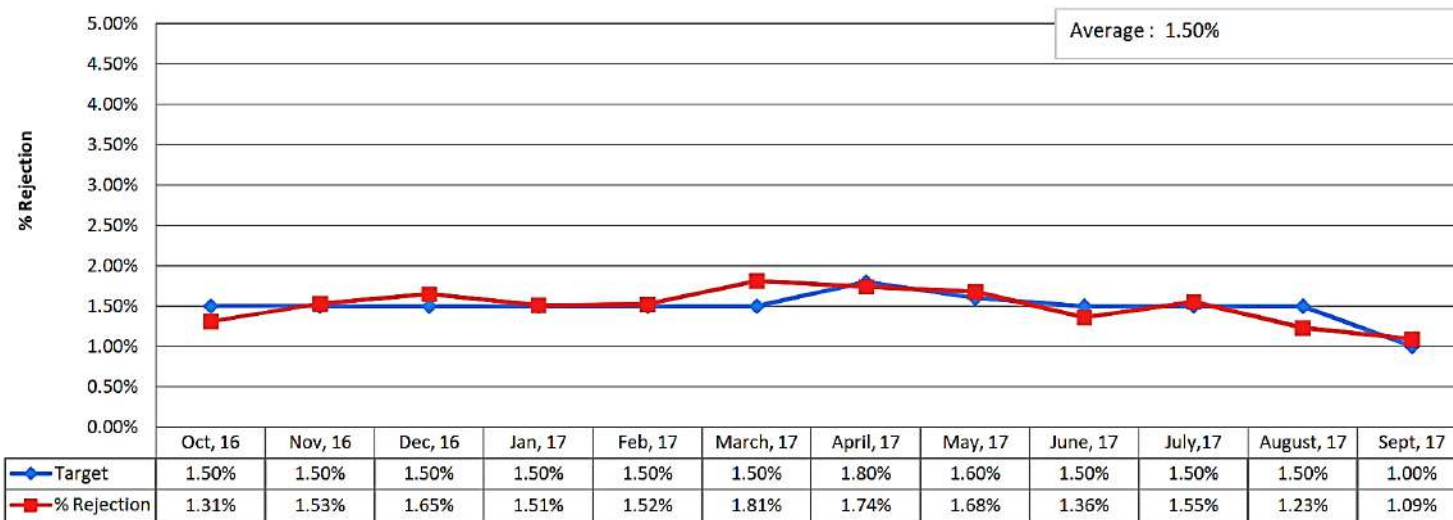


Machining Fixture Development

PART QUALITY: STATISTICS & BEST PRACTICES

- Stringent Process Control practices adopted at all levels of manufacturing
- Quality control practices are supported by well equipped laboratory
- Prime Quality of Scrap used: absolutely free from rust, very-low in C, S, P content
- Zircon-based paint used for cores – water-based zircon flood-coat paints applied
- Mold Management: proper drying, faster and perfect curing
- De-gassing Liquid Metal: de-gassing agents added, argon-gas purging in ladle
- Shot-blasting casting before and after heat-treatment to ensure smooth finish

Foundry Rejection Trends (in last 12 months)



Flood Coating



Skin Drying



Argon Purging



Double Shot Blasting





THANK YOU

WE PROVIDE TOTAL SOLUTIONS UNDER ONE-ROOF