

Kepler Cast Pvt. Ltd.



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Name of Company	Process	Page	Location	Establishment
1 . <u>Kepler Cast</u>	Investment casting	3 - 12	Rajkot	2019
2 . <u>Fortune Precision</u>	Machining unit	13 - 15	Rajkot	2018
3 . UFOS Metal Treatment	Heat treatment unit	16 - 20	Rajkot	2016

About us

Production Plant at Rajkot, Gujarat (India) :

Area	: 25000 Square Feet
Total Employees	: 34
Working shifts	: 2
Production capacity (year)	: 600 tons
Establishment	: 2019

19 Years of Fetting and Machining experience



Vision:

We at Kepler, foster our values and leverage the engineering capabilities for the benefit of our customers, partners and society at a large.

We are equipped with the modern state of the art facility and managed by experienced and highly skilled personals from various engineering segments.

Industry we serve



Automotive



Agriculture



**Pump and
valves**



Oil and gas



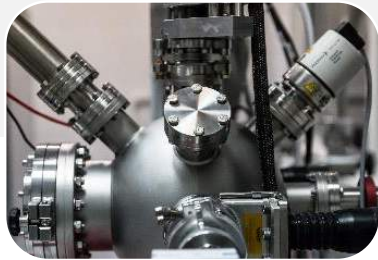
Food Processing



**Material
Handling**



**Defense
Equipment**



**General
Engineering**



Aerospace Parts



**Fire fighting
components**

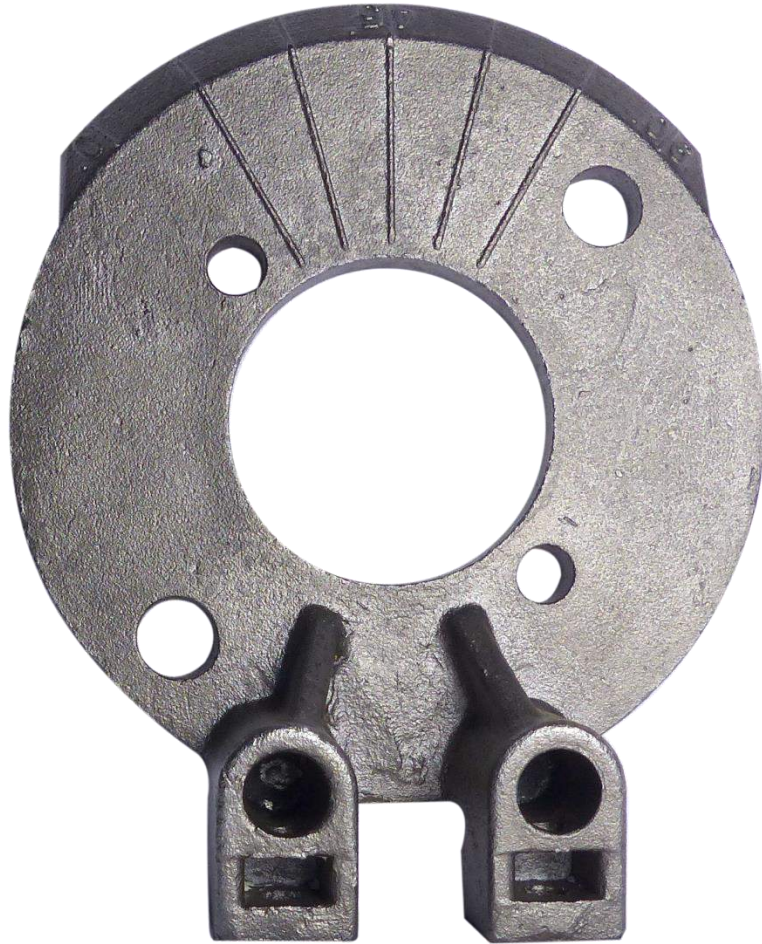


**Medical
Industry**



**Textile
Machinery**

Examples



Part Name : Angular Disc
Application : General Engineering

Material : CF8M
Weight : 0.230 kg

Examples



Part Name : Wedge
Application : Valve

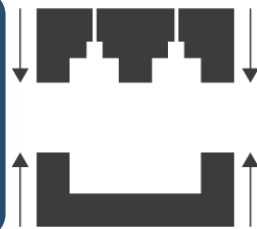


Material : CA15
Weight : 0.920 kg

Lost wax process

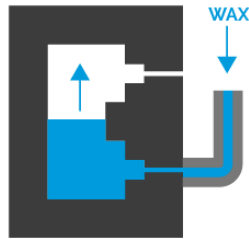
Mould design

- Mould design by VMC Machine
- 100% Die inspection



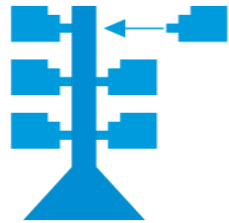
Wax injection

- Automatic wax injection with accurate pressure and temp.



Wax pattern cluster

- Assemble pattern onto sprue
- Accurate gate for metal flow



Stuccoing

- Spray of fine graded sand
- Formation of sand layers



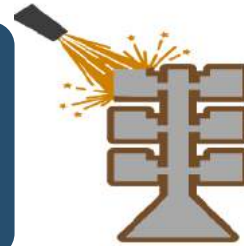
Heat treatment

- Achieve the desired material properties



Knock out and Cutting

- Removal of sand and cluster
- Dismantle the wax pattern



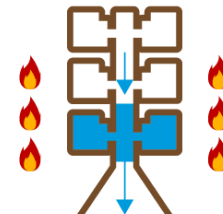
Metal pouring

- Element analysis of metal
- Pouring of molten metal



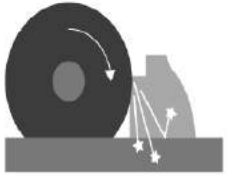
Dewaxing and Backing

- Removal of the wax
- Shell heating



Fettling

- Clean the cast component
- Grind the sharpen forms



Surface machining

- Surface finish process
- Accurate tolerances



Inspection

- Quality control
- Validation of tolerances



Dispatch

- Part marking
- Packaging of finished goods



Quality Control

Casting control :

- Chemical Composition
- Mechanical Testing
- Non Destructive Testing
- Corrosion Test
- Microscopic Examination
- Bore scope Inspection
- Surface Roughness
- Leak Test

Machining control :

- CMM
- Contour cord
- Surface roughness
- Manual calibration

Certification under Progress:

ISO 9001:2015 , TÜV Nord

In-Process Control At :

Wax :

- Drop Melting Point
- Hardness
- Ash Content

Shelling :

- Viscosity of slurry
- Sand granularity test
- Element Analysis

Melting :

- Chemical Analysis
- Gas Content
- (Density Index) for Al
- Temperature of Melt
- Temperature of Shell

Machining :

- Dimensional Inspection
- Custom Gauging & Inspection
- Surface Inspection

Quality Assurance

Mould design control	Nx and Design team
Chemical testing	Spectrometer, Bruker OES, Germany
Tensile testing	FIE Make Digital Type Universal Testing Machine Model – UTE-20 200 (200 KN) 20 T
Impact testing	FIE Make Dial Type ASTM Impact Testing Machine Model: IT 30 ASTM, Cap – 300 J
Hardness testing	Dial Type Rockwell Hardness testing machine Model – RAB1 Load 60,100,150 & 187.5 Kgf
Micro structure analysis	DP-Manual or QC Team
Corrosion test	QC Team
Surface treatment	Ultrasonic testing, Radiography, Zinc phosphating, Gauzing, Pickling, Electro polishing, Blackening, Balancing
Stringent monitoring of internal rejection and any customer complaint	
Maintenance of records for back tracking via ERP system	



Material

Ferrous and Non Ferrous Materials :

Carbon steel

- A216 - WCB , A216 – WCC
- A352 - LCC , A352 - LCB

Low alloy steel

- A217 – WC1 / WC4 / WC5 / WC6 / WC9 / WC11
- A217 – C5 / C12 / C12A

Martensitic steel

- A743 – CA15 / CA40
- A743 CA - 6NM

Heat resisting steel

- A297 – HF / HH / HI / HK / HD

Austenitic stainless steel

- A351 – CF8 / CF8M / CF3 / CF3M / CF8C / CF10
- A351 – CK20 / CH20 / CN7M / CG8M / CG3M

Duplex steel

- A351- CF3MN / CD4MCu
- A351- CG6MMN / CK3MCuN

Nickel based super alloys

- A494-M-35-1 / M-35-2 / M-30-C / N-12MV / N-7M
- A560 – 50Cr50Ni / 50 Cr50Ni-Nb / 60Cr40Ni

Capabilities

Engineering :

Geometry : Intricate
Sampling Process : 10 days
Die approval process : 10 days
Design : Creo, Solid works, NX
E-Data Exchange model : xml file
Product marking : Manual/laser

Surface treatment :

Hardening
Normalizing process
Nitriding process
Special Machining operations
Threading
Powder coating

Commercial :

Customer based incoterms : Flexible
Logistics : Air, Ship, Road

Production :

Production Capacity : 600 Tons
Part Size : 450 mm (L) X 450 mm (W) X 350 mm (H)
Tolerances : VDG-P690
Raw casting surface roughness : 3 to 6 micron Ra
Range of raw casting weight : 0.05 kg to 90 kg per piece.

Material :

Base : Fe, Ni, Co, Cu
Standards : IS, AISI, DIN, ASTM, VDG
Library : Total Materia

Communication :

English , German, Hindi
European time support
Skype Meetings

Value stream

Time :

On time Delivery – Delivery Reliability
In-House test capabilities to eliminate Quality control time at customer site
Customer solution from a single source

Cost :

Reduction of cost by enabling reduction of surface finish process
Market price with accurate quality standards

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Quality :

Regressive focus on Design and sampling
Inhouse testing facility leads to fast production time

Value :

Customer focused approach
Reliability and Sustainable solution partner
Generating value by long term relationship work

Fortune Precision

Quality and precision machined cast

What we do :

❖ We are a machining shop where we prioritise our business on two parameters :

- (1) Quality
- (2) Commitment to delivery schedule.

❖ Our Services :

1. Machining Services and ready to fit machined parts supply
2. New Product Development
3. Prototyping and Custom parts manufacturing

Product Portfolio:

- ❖ Stock Machined Components
- ❖ Forged and machined components (Group owned Forging and Casting unit)
- ❖ Cast and Machined Components (Casting procurement through network industries)
- ❖ On demand auxiliary process such as grinding, finishing etc. through our trusted vendors.

Fortune Precision overview

Ace Micromatic CNC :

X : 510 mm
Y : 510 mm
Z : 625 mm
Pallet changer

Ace Micromatic CNC:

X : 510 mm
Y : 510 mm
Z : 700 mm

Infrastructure

- ❖ CNC Turning centres
- ❖ CNC Vertical Machining centres
- ❖ Manual Lathes and Mills
- ❖ CAD/CAM Software
- ❖ Standard Quality Control and Testing Equipment
- ❖ 4 axis Milling Machine

Total Overview of CNC : 17 Machines

- 8 CNC with a maximum diameter of 300 mm
- 9 CNC with a maximum diameter of 150 mm

TOLERANCES AND Gauze :

Tolerance of 0.015 micron has been achieved
0 - 300 mm micrometre available
0 - 600 mm height
0 - 150 mm Bore Gauze
And other gauzes are custom sized

Fortune Precision Shop floor



UFOS METAL TREATMENT

An ISO 9001: 2015 CERTIFIED PLANT

Infrastructure

❖ UFOS means Ultimate Formation Of Strength, our aim in heat treatment processes. Processes carried out at our HT Plants .

- | | |
|-----------------------|---|
| 1) Case Hardening | - Good wear resistance. |
| 2) Carburising | - Good wear resistance. |
| 3) Through Hardening | - Improve mechanical properties. |
| 4) Solution Annealing | - Machinability /corrosion resistance. |
| 5) Normalising | - Machinability and Microstructure. |
| 6) Annealing | - Softness and ready for cold work operation. |
| 7) Stress Relieving | - Remove internal stress. |
| 8) Tempering | - Hardness control & Mechanical Properties. |

Our uniqueness

- Practical experience of heat treatment by more than 15 years.
- Consisted result by electrically heated furnace.
- Experienced staff on shop floor for 24 hours.
- 24 hours process monitoring system.
- Accurate inspection method as per customer requirement.
- Process reports and inspection reports facility.
- Extra technical support for critical parts.

UFOS METAL TREATMENT

Gas Carburising furnace

Type of heating : Electric

Max. temp: 1000 °c

Capacity : 1 ton Gross

Fixture Size (in mm): 900 Dia x 1250 ht.

Carbon atmosphere controlled by CP controller

Tempering Furnace

Electric heating

Max. temp: 800 °c

Capacity : 1 ton Gross

Fixture Size (in mm): 900 Dia x 1250 ht.

Atmosphere uniformity by fan assembly and specially designed retort.

Oil Quenching Tank

Temp range : 40-100 °c

Capacity : 11000 liters

Cooling by : Heat Exchanger

Oil Agitation system by 2 high speed motors

Washing Tank

Temp range: 25-50 °c

Capacity : 5000 liters

Water spray system for uniform washing

UFOS METAL TREATMENT

High temperature furnace

Electric heating

Max. temp: 1200 °c

Capacity : 1 ton Gross

Fixture Size (in mm): 900 Dia x 1250 ht.

High temperature furnace 3

Electric heating

Max. temp: 1200 °c

Capacity : 1.3 ton Gross

Fixture Size (in mm): 1100 * 1050 * 1000

Water Quenching Tank

Temp range : 25-45 °c

Capacity : 11000 liters

Cooling by : 50TR cooling tower

Water Agitation system by 2 high speed motors

Water Quenching Tank

Temp range : 28-45 °c

Capacity : 14000 liters

Cooling by : 50TR cooling tower

Water Agitation system by pump inside

UFOS METAL TREATMENT

Testing facilities:

- 1) Total Case Depth
- 2) Micro Structure Analysis
- 3) Rockwell - Surface Hardness and Core hardness(HRA,HRC scale)
- 4) Brinell - Surface Hardness and Core hardness(BHN scale)
- 5) Decarburization Layer

Laboratory Instruments :

- 1) Rockwell Hardness Tester
- 2) Brinell Hardness Tester
- 3) Micro Scope
- 4) Cutting Machine
- 5) Polishing machine
- 6) Poldi Hardness tester
- 7) Digital Hardness Tester

UFOS METAL TREATMENT

Testing Process control system and Equipment :

- 1) Programmable PID Temperature controllers
- 2) Calibrated Temperature Sensors
- 3) CP controller.
- 4) Flow meters.
- 5) Safety Controllers.
- 6) High Speed Crane.
- 7) Full Agitation system in Oil / water Quenching
- 8) Cooling tower to maintain water temperature
- 9) Data Logger

Technical Consultation to our clients on :

- Raw material selection
- Jominy selection
- Optimum selection of heat treatment
- Proper microstructure for machining
- CQI 9 requirements and its importance
- Importance parameters for Metallurgical testing

Our Precision

