# General Presentation

# About Us


Ravi Cam was started in 1976. Since then, it is supplying Camshafts to different leading engine manufacturers for their engine applications like small cars, tractors, SUV, MUV, LCV, HCV models.

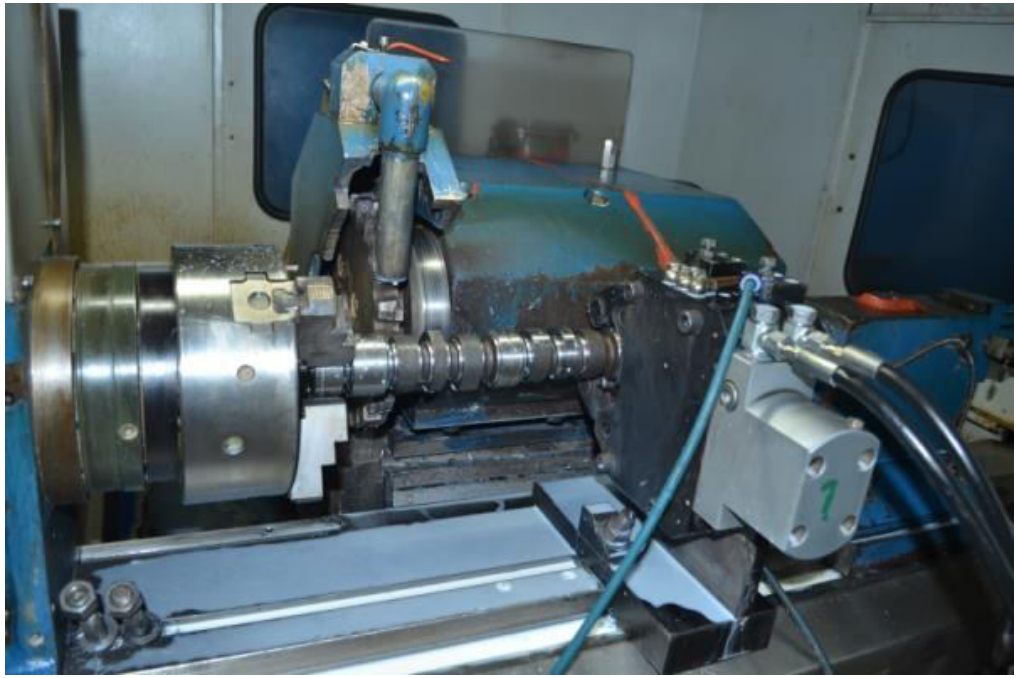
Ravi Cam is engaged in manufacturing of camshafts to Non Automotive sectors like DG sets, Earthmoving equipment's, Agriculture etc.

At present, we have workforce of in excess of 150 employees and many of them has average experience of 12 years.

# Product Range

Ravi Cam is the manufacturer of Automotive and Non Automotive engine camshafts in INDIA.

# Manufacturing Facility



## Plant 1 – Udyamnagar (Semi-finish Plant)

- 02 Kms away from City
- 450 Kms away from Port (Mumbai)
- 575 Kms away from Mumbai air port
- Direct flights available from Mumbai, Hyderabad, Bangalore & Tirupati
- Potential Manufacturing capacity 15000 Nos. per month i.e. additional capacity of 3000 per month available.

# Manufacturing Facility


## Plant 2 – Shiroli MIDC (Finished Camshaft)

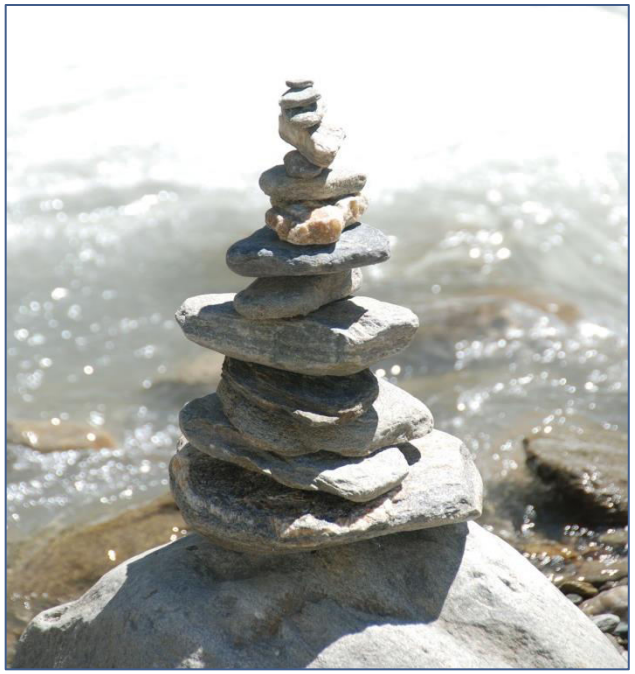
- 12 Kms away from City
- 450 Kms away from Port (Mumbai)
- 575 Kms away from Mumbai air port
- Direct flights available from Mumbai, Hyderabad, Bangalore & Tirupati
- Present capacity : 15000 pcs
- Free Capacity : 3000 pcs

# Organization Structure

# Manpower Strength

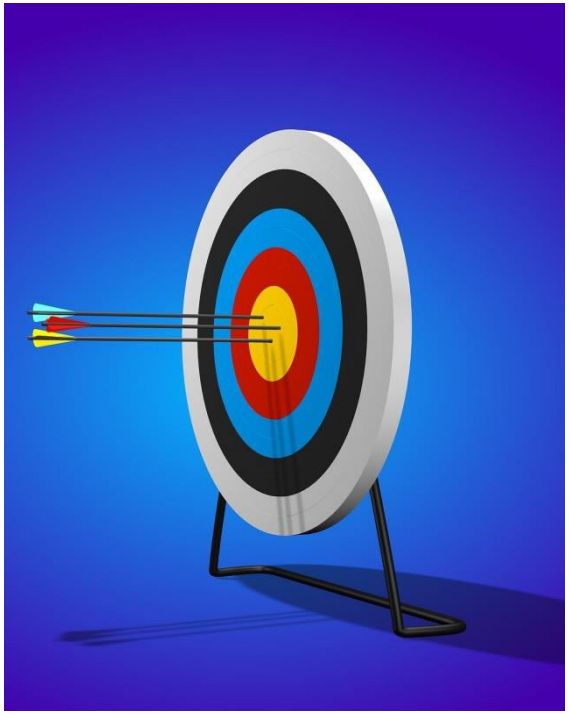
# Significant Achievements - Milestones

Ravi Cam is the manufacturer engine camshafts in India and having significant market share across all segments of Automotive & Non-Automotive market.



| | |
|---|---|
| 1976 | • Single cylinder 'Petter Type Camshaft' for 5 BHP vertical diesel engine |
| 1985 | • Received purchase order from Kirloskar Oil Engines Ltd, Pune |
| 1990 | • Development of multi cylinder camshafts |
| 1995 | • Development of Mastercam manufacturing technologies |
| 2006 | • Developed plant 2 in MIDC Area |
| Up to 2020 | • We have started all plants with full strength. We have expanded OEM domestic & OEM export business & export after business. |

# Significant Achievement



- Prototype 3 Cyl. Camshafts for Hindustan Motors Ltd., Pitthampur for their new petrol engine, which was tried successfully in their engine.
- 4 Cyl. Camshafts for Hindustan Motors Ltd, Calcutta for their new Ricardo engine diesel and petrol both also developed by us.
- Camshafts for Lombardini engine of Greaves Ltd, Aurangabad and development of various cam profiles for them to achieve fuel efficiency for their Tech Centre.
  - LDA80 and LDA 450,
  - 520 Series and GL400
- Kirloskar Cummins Ltd., Kothrud also entrusted development of their 6 Cyl. Camshafts to us. Besides we have also developed two types of fuel pump camshafts for them B4 and B6.
- Development of prototype for Automotive Research Association of India (ARAI-Pune)) done at our shop, and the results were established.

# Significant Achievement

- Development of 3 Cyl. camshaft of Same Deutz Fahr (I) Pvt. Ltd., Ranipet is also completed and routine production established. We have also developed their camshaft for EURO-I Engine.
- Inlet and Exhaust cams for HATZ engine we have developed successfully.
- 15LD400 Camshaft of Lombardini India Pvt.Ltd. We have developed profile of these camshafts in tolerance band of 40 microns. We have also developed FOCs Series Camshafts for Lombardini.
- Alpha Series and T Range Camshafts of Lister Petter Ltd, UK. Total 13 different varieties of camshafts developed for them. PPAP batches approved in Lister Petter Ltd. UK after 600 Hr trial run of camshafts.
- We have developed camshafts for Cooper Energy Services, OHIO through a company in Mumbai for their 'V' engine
- We have developed 'Fuel Pump Cam' for test rig of Kirloskar Oil Engine Ltd, heavy engines Nashik.
- We have developed camshafts for heavy engines and racing cars in U.S.A. and U. K.

# Our Esteemed Customers - Domestic

SAME Deutz Fahr India Ltd.,
Ranipeth, Tamilnadu

Cooper Corp.,
Satara, Maharashtra

TMTL,
Alwar, Rajasthan

Kirloskar Oil Engines Ltd.,
Nasik, Pune, Kolhapur

Ashok Leyland,
Hosur, Tamilnadu

Delphi – TVS,
Chennai

Kerala Agro Machinery Corporation Ltd.
(A Government of Kerala Undertaking)

# Our Esteemed Customers - International

SAME Deutz Fahr, ITALY

PAI Industries, USA

Arrow Engines, USA

Lister Petter Ltd, UK

# Manufacturing Capacity

## Plant Capacity :

- Present Capacity : 15000 Nos per month
- Present Requirement : 9000 Nos per month
- Spare capacity can be increased up to 3000 Nos with the lead time of 3 months and an additional investment of machinery.
- There is no investment is required on Land as land is already developed for additional capacity.

## Turnover :

- Year 2017-2018 : INR. 13.58 Crore
- Year 2018-2019 : INR. 14.55 Crore
- Year 2019-2020 : INR. 11.20 Crore

# Manufacturing Capacity

Cam Lobe Grinding Machine


Cam Lobe Grinding Machine JUNKAR make

CNC Lathe Machine

Cam Lobe Grinding Machine SCHAUDT make

# Manufacturing Capacity


CNC – HiLife


Grinding Machine

Machine


HMC

# Manufacturing Capacity

Counter Grinding Machine


VMC Machine


Keyway Milling Machine


Keyway Cutting

# Quality Assurance

## Quality Policy

"Quality policy of
Ravi Cam Manufacturing Pvt. Ltd.
is to become
camshaft manufacturer of international repute
by establishing mistake proof process to
manufacture camshafts
to drawing specifications on all parameters
&
to the entire satisfaction of our customers."

## ISO 9001 : 2015 Certification

# In-house Inspection Facility


## Magnetic Crack Detector

- ABC- 2.5 meter

## Andrews EZ Cam Profile Tester

- Fully Computerized linear
- L/C 0.001 mm
- Angular 0.30’.00”
- ABC- 2.5 meter

## Mitoya Profile Projector

- Screen size Dia. 500 mm
- Resolution : 10X
- Table size :
  500 mm X 300 mm
  travel with ABC- 1500 mm
- Geometric DRO


## Digimar Squareness Tester

- CX1 Measuring
- Range 600 mm
- L/C 0.01 mm

# In-house Inspection Equipment

| Instruments | Make | Purpose |
|---|---|---|
| Profile Checking Instrument | EZ CAM, USA | For Checking Cam Profile |
| Electronic height gauge capacity 1000mm with L/C 0.01 mm. | Electronica, Pune | For Measuring Linear Dimensions |
| DIGIMAR model CX1 Measuring Range 600 mm with L/C 0.01 mm | MAHR, Germany | Squarness, Co-ordinates of drilling |
| Camshafts Tester | Task, Pune | For inspection of cam profile(per degree rise) and cam angular position |
| Cam Angle measuring unit | Self made | For inspection and setting cam angular position. |
| Surface Finish Tester Model SJ201P | Mitutoyo | For inspection of surface finish value |
| Crack Detection Machine | Magnafield Controls | For detection of grinding cracks. |

# Why RAVI Cam : Our Strength

### Accuracy of Counters of both side :

We maintain counter depths of camshaft with in 0.1 mm so that linear dimensions are least affected when it is held between center.

We have introduced counter depth gauges with 0.01 mm least count dial for controlling this parameter. Taper grinding of journal at front end is also controlled for 'cone length' because of counter depth consistency.

### Form of Grooves and Radii :

For generating small Radii and grooves we use form tool at CNC Turning stage, to ensure correct form.

### Sharp Datam for angles :

We do rough grinding of diameters before heat treatment and keyway cutting to ensure run out of job below 0.02 at these stages. Because resting diameters are ground our keyway parameters are generated in close tolerance.

For dowel hole drilling on face we hold job between center or in 'V' block fixture so the parameters of dowel hole are directly related to axis of job.

### Minimum Allowance at H. T. Stage :

Since we are doing cam rough grinding we keep very less allowance (Normally 0.25/0.35 on $\phi$) on cams and diameters at roughing stage so after heat treatment material removal is very less and it is removed, evenly from all sides.

# Why RAVI Cam : Our Strength

**Base circle run out of cams :**
Because we develop our own master cams, we can maintain cam base circle run out below 0.02 consistently.

**Consistency of relative angles :**
Our Master are made up of one single piece (Not by joining wafers of cam in a keyway) so angular relationship of cams once generated is very consistent.

**Tolerance on angles :**
We can maintain relative angular position of cams within ± 0° 10'. Because our master cam is made from solid block and not by adding lobes on shaft.

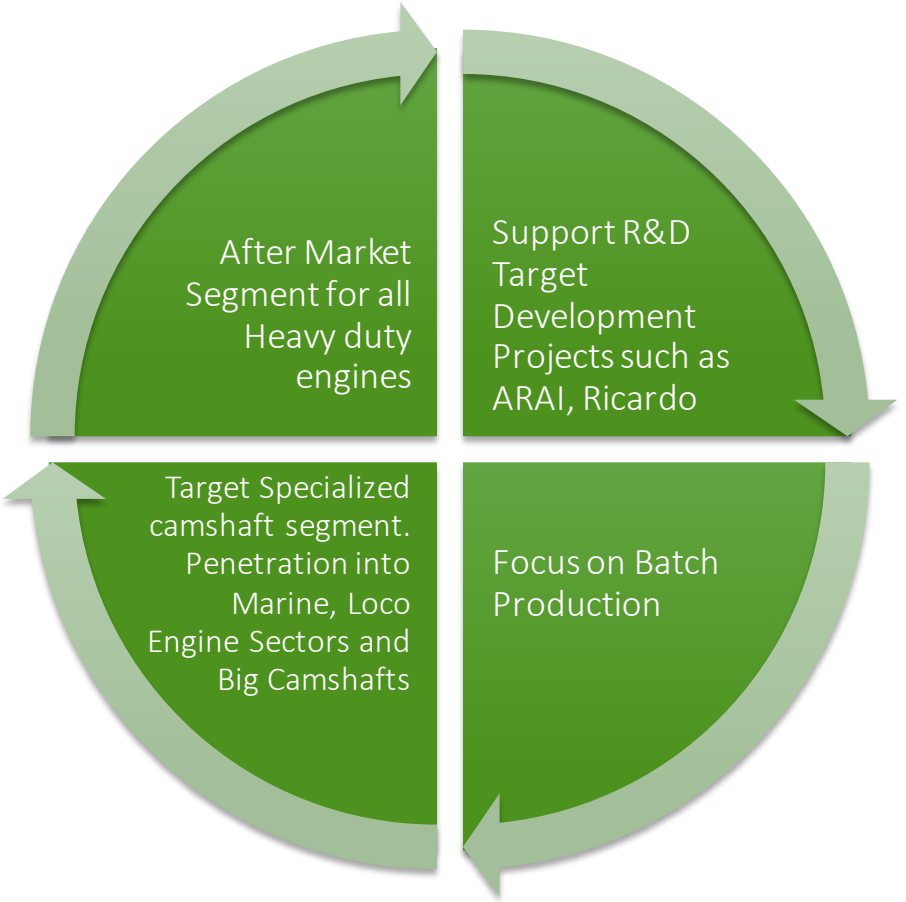
**Master Cam Development :**
We develop master cam on same machine on which we produce camshaft. So number of inaccuracies which creep in because of machine parameters are totally eliminated.

- Any production batch ranging from 10 pcs to 3000 pcs per type per month each customer can be accommodated in current supply chain management with following 5M.
  - Man
  - Machine.
  - Method
  - Money
  - Material

# Why RAVI Cam : Our Strength

- Development lead time – 8 weeks maximum from date of receipt of all technical data at RAVI CAM.
- Current set up is designed and developed to support for development and manufacturing of following range.
  - Length : From 100 mm to 2 meter
  - Diameter : 36 mm to 100 mm
- Prototype submission : 6/ 8 weeks.
- New prototype validation and approval within 20 weeks.
- Supply chain management of 66 types of camshafts of one customer alone.
- Customer satisfaction Index more than 95%
- Capable processes and procedure for Value engineering and Value addition projects
- Warranty failure reported & it has been given satisfactory solutions for all issues.

# Business Plan - Strategy for Business

# Future Plan


- Bharat Cam Industries will be transformed into Pvt. Limited Company and will have existence in Name **Ravi Cam Manufacturing Pvt. Ltd**. In near future. Bharat Cam will continue as brand name of company.
- One CNC cam lobe grinding machine is on order with Junker, Germany which will be installed in October 2015 having admit between centre 1700 mm to manufacture camshafts for HCV, HHP.
- Two cam milling machines will be added in Oct 2015 to increase the capacity.
- Bharat Machine Tools - We are introducing activities of Bharat Machine Tools and will start manufacturing FLYWHEEL with ring gear fitment.

An ISO 9001 : 2015 Company

RAVI CAM


**Office :**
66, 'E' Shivaji Udyamnagar, Kolhapur - 416 008,
Maharashtra, India.
Tel : +91 – 0231 – 2655372

**Works :**
F10/3, HMT Road, MIDC, Shiroli (Pulachi),
Kolhapur - 416 122,
Maharashtra, India.
Tel : +91 - 0230 - 2468772
Cell : +91 - 9922942140 / 9922942247

**E-mail :**
Sagar.mulik@ravicam.in

**Web :**
www.bharatcam.in

Thank you !