



INVARA
OPTIMIZED EXACTITUDE

Invara Precision Technologies Private Limited

(Formerly **Essae** Gears and Transmissions Private Limited)



Precision Forging | Machining | Sub-Assembly

www.invaraprecision.in

Automotive &
Non-Automotive
Components

Farms & Garden
Components

Assemblies &
Sub-Assemblie
s

Electric
Vehicles
Components

Earth Moving
Components

Precision
Fabrication

ROOTS:

Belongs to **Invара Precision** which started in the year 1965 with a vision to manufacture products which will help society.



REVENUE:

Invара has generated **₹ 158 Crore** revenue during the year 2024-25 and **₹ 173 Crore** revenue during the year 2025-26 serving customers across

GROWTH:

Started **Forging & Machining** operations from 1996 to cater Automotive & Non-Automotive manufacturing sector.

WORKFORCE:

More than 900 strong workforce with dedicated engineering and exports team. We serve excellence with an excellent team.

PRESENCE:

Located at **Bangalore & Hubli** in Karnataka and **Hosur** in Tamil Nadu with 5 plants to cater

different demography customers.

DEVELOPMENT:

Essae Gears has delivered more than 55 new parts in the last 5 years. We serve our customers engineering



CREDIBILITY:

- TPM Excellence Award - JIPM
- ISO 14001:2015
- IATF 16949:2016
- ISO 45001:2018

Certified

LONG-TERM PARTNERS

We seek long term partnership from our customers. Our relationship with many



• **TPM Excellence Award - JIPM**



• **ISO 45001:2018**



• **ISO 14001:2015**



• **IATF 16949:2016**



MCDH - Hosur

New Plant catering to specific customers. More than 54000 Sq.Ft. area with all the Gear manufacturing process available in-house



MCDG1 & G2 - Hubli

Machining Component Division in Hubli serves to customers in the west region

Bangalore – Corporate Office

Essae Gears and Transmissions Corporate office is at Wilson Garden, Bangalore

Machine Component Division Bommasandra in Bangalore caters precision machining components for our customers based out of Bangalore & Hosur region

MCDB - Bangalore



PFD - Bangalore

Precision Forging Division is our forging plant with facilities like Cold & Warm Forging

HDD - Bangalore

Hub Drive Division is working towards sub assemblies of automotive, non automotive and Electric Vehicle components

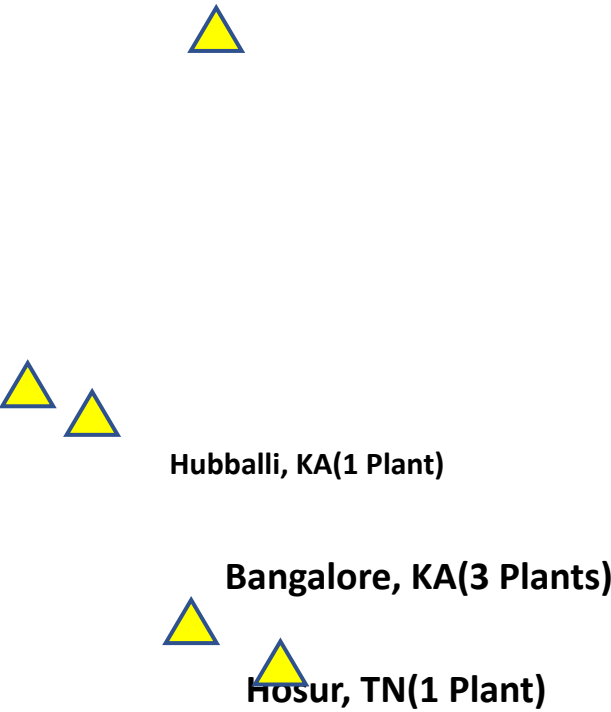




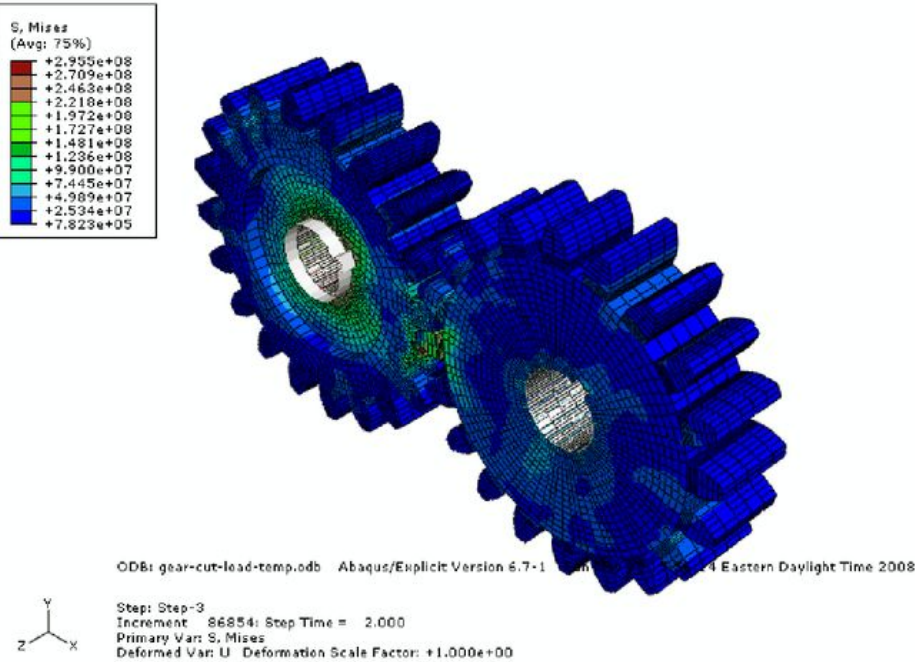
Customer Locations:
Domestic



Exports: The USA, The UK, Italy, Brazil, Turkey



OEM				
TIER-1				
Exports				



Process Design & Simulation



Tool Design & Manufacture



Cold & Warm Forging



Machining



Gear Hobbing & Shaving



Induction Hardening



Hass 5-axis VMC



Turning Centre



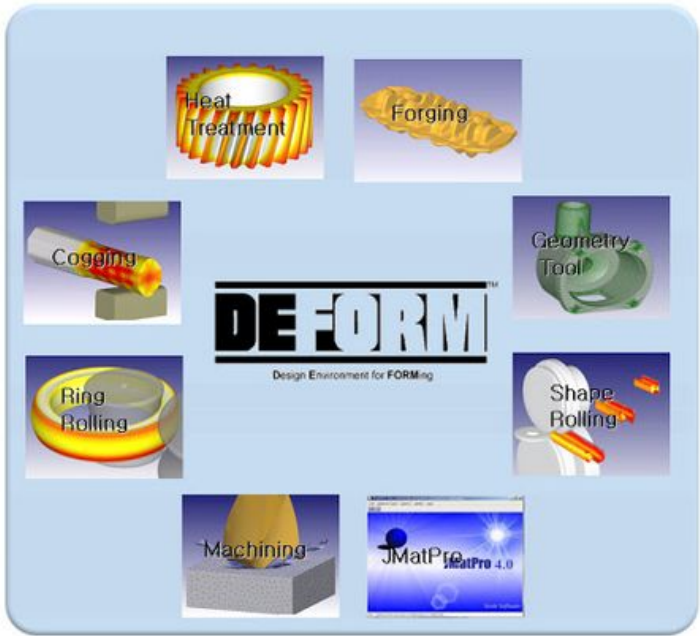
Universal Milling Machine



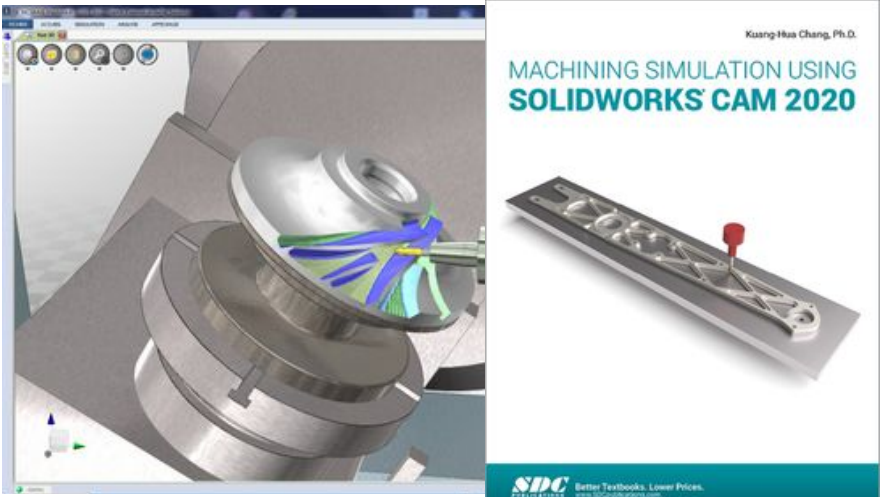
Surface Grinder



Cylindrical Grinder



Deform Forging Simulation



Machining Simulation S/W



Dedicated Engineering Team



TURNING CENTER MACHINES
(104)



VERTICAL MILLING MACHINES
(15)



GEAR HOBGING MACHINES
(21)



AUGULAR GRINDING
MACHINES (3)



SHAVING MACHINES
(13)



VERTICAL ID BROACHING
MACHINE (3)



SPLINE ROLLING MACHINES
(4)



INDUCTION HARDENING MACHINES
(100Kw & 60Kw) (4)



CENTERLESS GRINDING
MACHINES (3)



CYLINDRICAL GRINDING
MACHINES (9)



HONING MACHINES (3)



POLYGON MILLING
MACHINES (3)



Mechanical Press(300 Ton)



Mechanical Press(250 Ton)



Sealed Quenched Furnace(2) | Aichelin
Unitherm



ROUNDNESS TESTER



CONTOUR TESTER



CMM



GEAR TESTER



PROFILE PROJECTOR



SURFACE FINISH TESTER



Fig. 1



Fig. 2



Fig. 3

Machine	Specification	Weight Capacity	Rate of Production	MOQ
Fig1. Cold Forging Press Line	Schuler: 630 Ton Multi Station, Vertical 4 station Press	0.3Kg - 2.0Kg	25-50 Strokes/Minute	10,000 Numbers/Batch
Fig2. Warm Forging Press Line	Kurimoto: 1500 Ton Capacity, Vertical 5 Station	0.5Kg - 3Kg	21-42 Strokes/Minute	10,000 Nos/Batch
Fig3. Hydraulic Press	800 Ton Hydraulic Press, Vertical Station Press	0.5Kg - 8Kg	06-12 Strokes/Minute	5,000 Numbers/Batch

OTHER FORGING FACILITIES:

Phosphating Line for Cold Forging

Atmosphere Controlled Annealing for Cold Forging

Shot Blasting

Circular Sawing

Normalizing Furnace

AUTOMOTIVE COMPONENTS

GEAR: PRIMARY
DRIVEN & DRIVE

Process:
Warm forged &
Machined with CNC ID
Grinding

Application:
Two-Wheeler Engine
Gear

Dimensions:
Weight: 1.2 Kg & 0.4 Kg
Diameter(Major):
125mm

**Annual Quantity
Produced:**
300,000 Sets

Special Process:
Gear Hobbed & Gear
Shaved to achieve
DIN8 after HT.



INTERNAL
SPLINE
SHAFT

Dimensions:
Weight: 1.2 Kg

Process:
Cold Forged &
Machined

Application:
Automotive & Hydraulic
Steering

**Annual Quantity
Produced:**
500,000 Numbers

Special Process:
Internal Spline formed
in Cold Forging

REAR SPINDLE

Process:

Hot forged &
Machined

Application:

Passenger Car
Transmission

Dimensions:

1.146 Kgs

Annual Quantity
Produced:

120,000 Numbers

Special Process:

Hot Forging, VMC
Operation & Heat
treatment



AXLE FRONT &
REAR

Process:

Hot forged & Machined

Application:

Passenger Three
Wheeler Transmission

Dimensions:

1.2Kgs

Annual Quantity
Produced:

150,000 Numbers &
300,000 Numbers

Special Process:

Hot Forging, Spline
Rolling, Thread Rolling
& Induction Hardening

SHAFTS	Process: Cold Forged & Machined	Application: 2-W & 4-W Axles	
	Dimensions: Weight: 0.3 Kg-3.5 Kg	Annual Quantity Produced: 300,000 Numbers	

	WHEEL BEARING SPINDLE	Process: Hot forged & Machined with CNC Grinding	Application: Passenger Cars Axles(4-W)
	Dimensions: Weight: 2.8 Kg	Annual Quantity Produced: 150,000 Numbers	Special Process: CNC Angular Grinding

SPINDLES

Process:

Hot forged &
Machined with CNC
Grinding

Application:

Passenger Car/LCV
Transmission

Dimensions:

Weight: 2.6 Kg

Annual Quantity

Produced:

120,000 Numbers

Special Process:

Induction Hardening &
CNC Angular Grinding



COMPANION
FLANGE

Process:

Hot forged & Machined
with CNC Grinding

Application:

Passenger Car
Transmission

Dimensions:

Weight: 3.2 Kg

Annual Quantity

Produced:

50,000 Numbers

Special Process:

Powder Coating and
Mass Balancing

TONER RING
FOR ABS

Process:

Cold forged &
Machined with CNC
Gear Hobbing

Application:

Passenger Car for
ABS sensing

Dimensions:

Weight: 0.8 Kgs

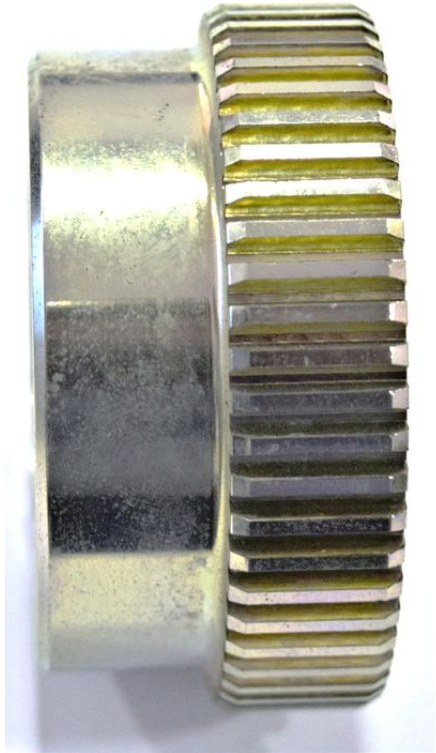
Annual Quantity

Produced:

200,000 Numbers

Special Process:

Value engineered cold
forging



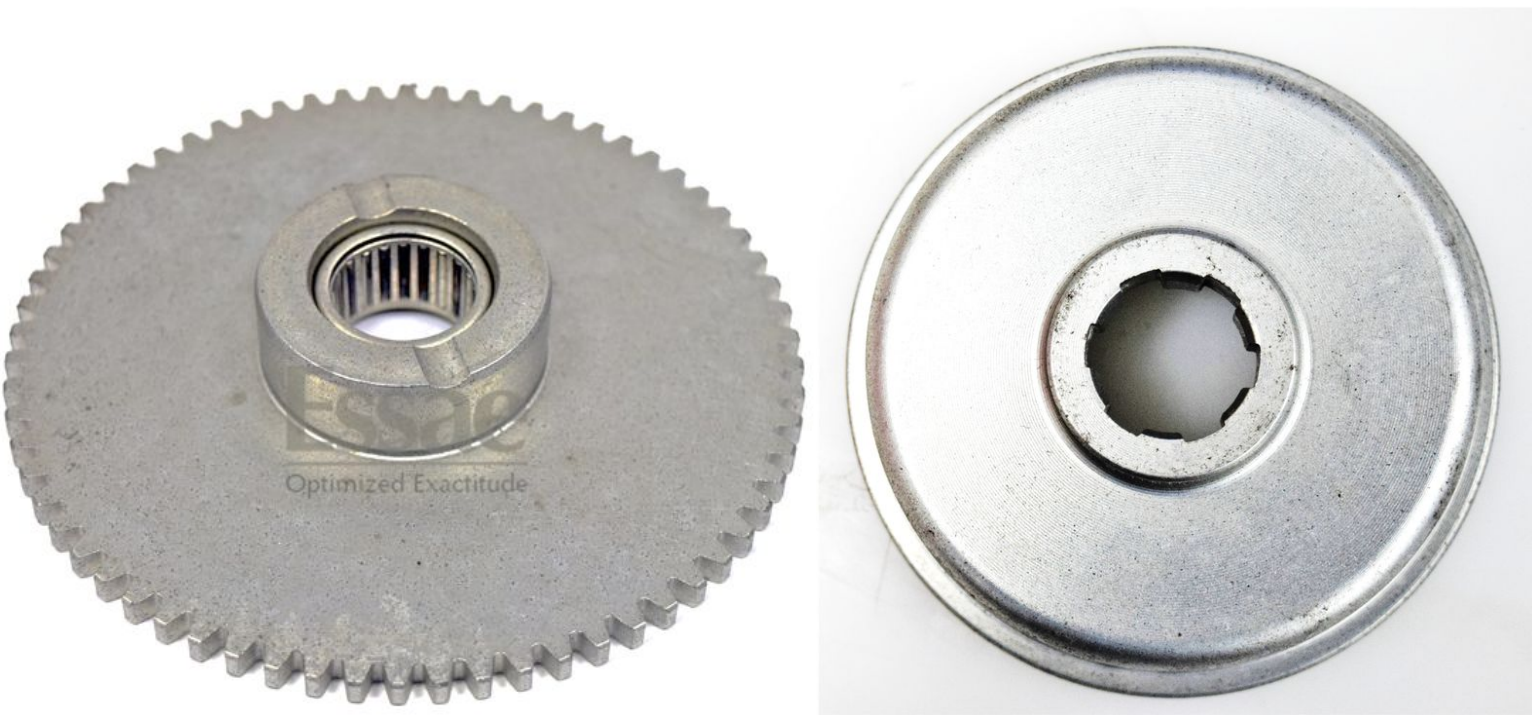
RING
GEAR/STARTER
CLUTCH

Process:

Warm forged &
Machined

Application:

Two-Wheeler Engine
Starter Gears



Dimensions:

1.2 Kgs

Annual Quantity

Produced:

300,000 Sets

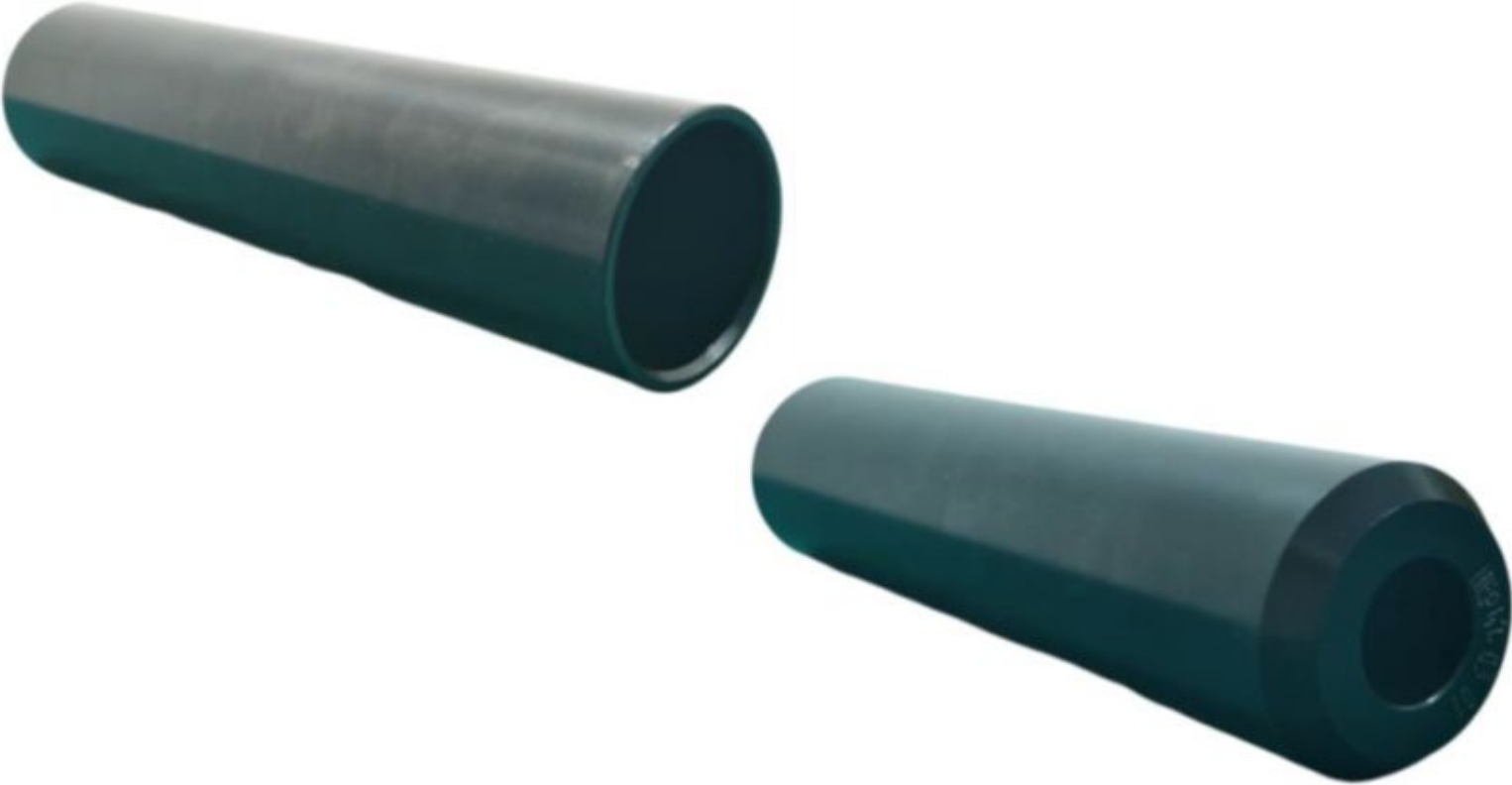
Special Process:

Gear Shaving to
achieve DIN8 after
Heat Treatment

LOCK NUT	Process: Cold Forged & Machined	Application: Passenger Car for Rear Axle locking	
	Dimensions: 0.25 Kgs	Annual Quantity Produced: 300,000 Sets	

	PULLEYS	Process: Cold/Warm forged & Machined	Application: Passenger car HVAC system
		Dimensions: 1.0Kgs-2.2Kgs	Annual Quantity Produced: 100,000 Sets

REVERSE IDLER SHAFT	Process: Hot Forged, Machined, Heat Treatment & Grinding	Application: To engage and disengage the reverse gear	
	Dimensions: Outer Diameter : 151.2mm Length : 24.6mm Weight : 1.0Kgs	Annual Quantity Produced: 80,000 Numbers	

	POST MOUNT 8IN BEVELED-BAS E	Process: Cold forged, Machined & ED Coating	Application: Truck Axle Component
	Dimensions: Outer Diameter : 47.6mm Length : 203.2mm Weight : 1.0Kgs	Annual Quantity Produced: 80,000 Numbers	Special Process: Cold Forging & ED Coating

TRACTOR & FARM COMPONENTS

KINGPIN SHAFT	Process: Sawing, Annealing, Cold Forging, CNC Machining, VMC Machining (Drilling & Taping), Phosphating & Moly Coating	Application: Used in Tractor steering mechanism	
Dimensions: Length : 66.5 Outer Dia. 73 Weight : 0.950 Kg	Annual Quantity Produced: 48,000 Numbers	Special Process: Phosphating & Moly coating	

	NUT SPECIAL	Process: Cold Forging, Drilling, CNC Machining, Polygon Milling, Plating	Application: Locking mechanism in Tractors
	Dimensions: Length : 42.05 mm Outer Dia. 54 mm Weight : 0.320 Kg	Annual Quantity Produced: 48,000 Numbers	Special Process: Plating: Trivalent blue with top coat passivation.

GEAR DRIVEN

Process:

Hot Forging, CNC
Machining, Piercing &
shaving, Hobbing, Shaving,
Heat Treatment, Hard Part
Turning etc

Application:

Tractor Engine



Dimensions:

Outer Diameter : 151.2
Length : 24.6
Weight : 1.002kg
Hardness : 80-84 HRA

Annual Quantity

Produced:

144,000 Numbers

Special Process:

Hot Forging
Heat treatment
Gear Hobbing
Gear Shaving



Idler Gear Shaft

Process:

Hot Forging, CNC
Machining, Drilling, Heat
Treatment, Grinding

Application:

To change the rotational direction of
the output shaft without affecting the
speed ratio.

Dimensions:

Outer Diameter : 88.90
Length : 34
Weight : 0.777kg
Hardness : 120-180 BHN

Annual Quantity

Produced:

204,000 Numbers

Special Process:

Hot Forging,
Heat treatment

Coupling One
Way-PTO
Side & Drive Side

Process:

Hot Forging, CNC
Machining, Broaching,
Heat Treatment, Shot
Blasting

Application:

Used in Tractor steering
mechanism

Dimensions:

Outer Diameter : Dia. 51mm
Length : 18
Weight : 0.158 Kg
Hardness : 57-63 HRC

Annual Quantity:

36,000 Numbers

Special Process:

Hot forging
Heat Treatment
ID Spline



Socket

Process:

CNC, Blasting, Cold
Forging, CNC, Heat
Treatment, Plating

Application:

Used in Tractor engine

Dimensions:

Dia. 52mm
Weight: 0.426Kg

Annual Quantity
Produced:

10,000 Numbers

Special Process:

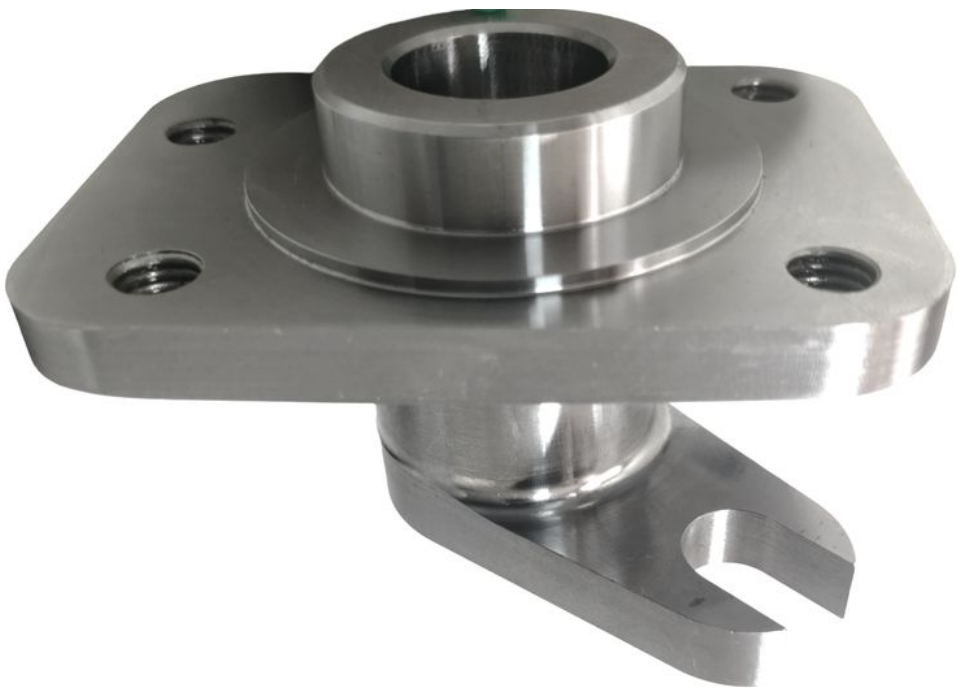
Plating & Heat Treatment

ELECTRIC VEHICLES COMPONENTS

Front Flange
Plate

Process:
Hot Forging, Heat
Treatment & Machining

Application:
Twin Fork Assembly for
Three Wheeler EV



Dimensions:
0.86 Kgs

**Annual Quantity
Produced:**
130,000 Numbers

Special Process:
Hot Forging, VMC
Machining & Heat
Treatment



Bracket FRT
Caliper MTG

Process:
Hot Forging, Heat
Treatment & Machining

Application:
Twin Fork Assembly for
Three Wheeler EV

Dimensions:
1.15 Kgs

**Annual Quantity
Produced:**
130,000 Numbers

Special Process:
Hot Forging, VMC
Machining & Heat
Treatment

Shaft – Axle
Front

Process:

Bar Route, Induction
Hardening, Machined

Application:

Twin Fork Assembly for
Three Wheeler EV

Dimensions:

Dia 36.4x268mm

Annual Quantity
Produced:

114,000 Numbers

Special Process:

Induction Hardening



Front Spacer

Process:

Cold Forging, Heat
treatment, Machining

Application:

Twin Fork Assembly for
Three Wheeler EV

Annual Quantity
Produced:

114,000 Numbers

Special Process:

Cold Forging

Axle Swing Arm
LH & RH

Process:

Hot Forging, Heat Treatment, Machining, Electroless Nickel Plating

Application:

Wheel Hub Assembly



Dimensions:

0.380 & 0.400 Kgs

Annual Quantity

Produced:

12,000 Numbers

Special Process:

Hot Forging, Heat Treatment, Electroless Nickel Plating



Shaft – Wheel
Axle Front

Process:

Bar Route, Hardening & Tempering, Machined

Application:

Twin Fork Assembly for Three Wheeler EV

Dimensions:

Dia. 36.4x268mm

Annual Quantity

Produced:

24,000 Numbers

Special Process:

Hardening & Tempering

**Driven Shaft
with
Integrated
Pillion
Gear**

Process:

Cold Forging, Machining,
Gear Hobbing, Gear
Shaving, Heat Treatment,
Gear Honing & Cylindrical
Grinding

Application:

Two Wheeler Engine
Assembly



Dimensions:

Dia 29.5x109 mm

**Annual Quantity
Produced:**

75,000 Numbers

Special Process:

Heat Treatment



Rear wheel axle

Process:

Bar Route, Machining,
Spline Hobbing, Heat
Treatment & Cylindrical
Grinding

Application:

Transmitting power to
the driving wheels

**Annual Quantity
Produced:**

75,000 Numbers

Dimensions:

Dia 30x221 mm

Special Process:

Heat Treatment

Wheel Gear RR

Process:

Cold Forging,
Machining, Gear
Hobbing, Gear Shaving,
Heat Treatment & Gear
Honing

Application:

Two Wheeler Engine
Assembly

Dimensions:

Dia 78.5x20 mm

Annual Quantity
Produced:

75,000 Numbers

Special Process:

Heat Treatment



SUB-ASSEMBLIES

Gear Assembly

Process:

Casting, Heat Treatment,
Shot Pinning, Grinding,
Machining, Hydraulic
Pressing

Application:

Transmitting torque from
engine to drive train

Dimensions:

Axial Float: 0.20 Min
Push Of Load: 1200 Kg
Rivet Height:20.10±0.50
mm

Annual Quantity
Produced:

40,000 Numbers

Special Process:

Shot Pinning, Casting



Roller-Carrying
Assembly

Process:

Forging, Machining, Grinding,
Welding, Laser Cutting, Laser
Marking, Hydraulic Pressing,

Application:

Concrete mixer drum
rotation & carrying the drum
load.

Dimensions:

Locknut torque: 40±2 Nm.
OD: 75.005/75.020
Weight: 55Kg

Annual Quantity
Produced:

12,000 Numbers

Special Process:

Hot Forging

Mower, Deck
Spindle
Assembly

Process:

Casting, Machining,
Assembly

Application:

Deck Bearing Assembly for
Tractor MK5



Dimensions:

Dia. 140 x 174 mm length

Annual Quantity
Produced:

8,000 Numbers

Special Process:

Casting & Assembly



Hub-Drive
Assembly

Process:

Injection Molding, Plating,
Pressing, Heat Treatment,
Trepanning, Crimping,
Gear Hobbing, Auto
Deburring, Phosphating

Application:

Assembled in front wheel of
vehicle indicating analog
speedometer of the vehicle
based on gear ratio.

Dimensions:

Crimping ID:2.66/2.72 mm
ID:12.10/12.30 mm
Torque for Brass: 2Nm Min
Pull Off Strength: 25Kgf Min.

Annual Quantity
Produced:

1,500,000 Numbers

Special Process:

Trepanning, Crimping, Auto
Deburring, Hobbing, Injection
Molding, Horizontal Cold
forging.

ALUMINIUM FORGINGS

VESA Plate	Process: Cold Forging, Machined & Anodized	Application: Monitor/Display Mountings	
	Dimensions: Dia. 125 x 14 mm length	Annual Quantity Produced: 10,000 Numbers	
		Special Process: Cold Forging & Anodizing	

	Round Plate	Process: Cold Forging, Machined & Anodized	Application: Monitor/ Display Mountings
	Dimensions: Dia. 60 x 14 mm Length	Annual Quantity Produced: 15,000 Numbers	Special Process: Cold Forging & Anodizing

PRECISION FABRICATION



Roller-Carrying Assembly and Fabrication



Roller-Carrying Assembly

Process:

Forging, Machining, Grinding, CO2 Welding, Laser Cutting, Laser Marking, Hydraulic Pressing.

Application:

Concrete mixer drum rotation & carrying the drum load.

Dimensions:

Locknut torque: 40 ± 2 Nm.
OD: 75.005/75.020
Weight: 55Kg

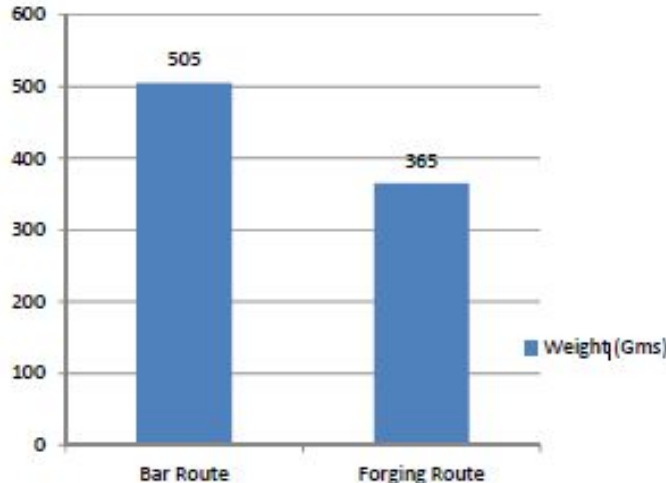
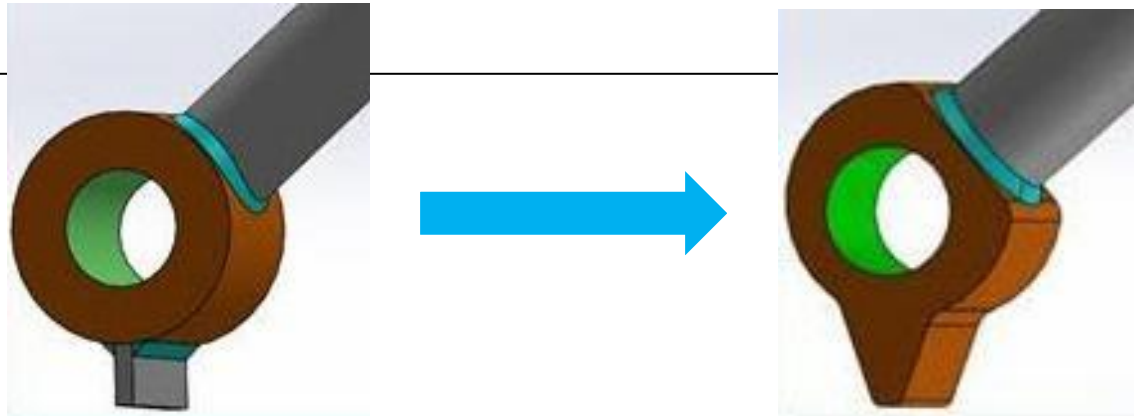
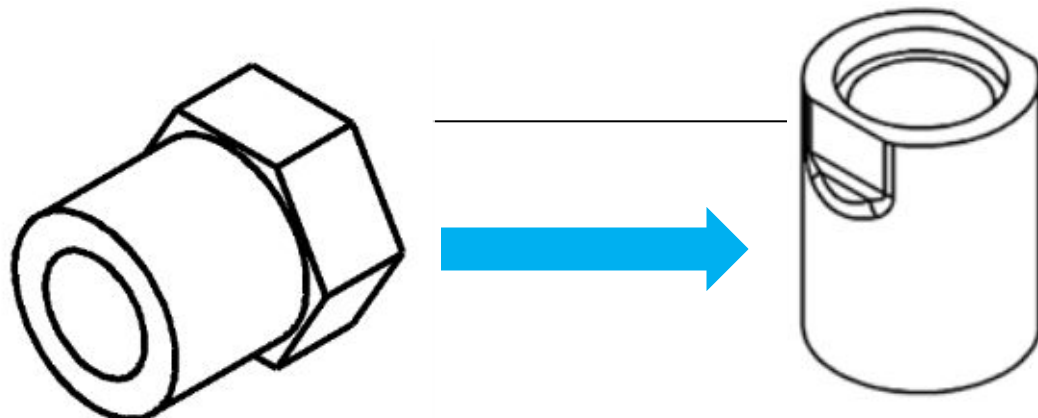
Annual Quantity Produced:

12,000 Numbers

Special Process:

Hot Forging



Part Name	VAVE Details	Part Picture						
Gear Blank	• Moved from round bar machining to cold forging process. Eliminating expensive face groove machining process. • Material saved up to 140 grams of material.	 <table><tr><th>Route</th><th>Weight (Gms)</th></tr><tr><td>Bar Route</td><td>505</td></tr><tr><td>Forging Route</td><td>365</td></tr></table>	Route	Weight (Gms)	Bar Route	505	Forging Route	365
Route	Weight (Gms)							
Bar Route	505							
Forging Route	365							
Pivot, Steering Arm	• Converted 2 piece construction to 1 piece construction. • Eliminated mating tube machining. • Designed forging to produce 3 parts from single forging.							
Hex Hub	• Moved from Hex. Bar stock machining to cold forging. • Improved part design to reduce input weight. • Designed part with only 2 flats instead							

Invara Precision Technologies Private Limited

(Formerly **Essae** Gears and Transmissions Private Limited)

Corporate Office: Plot No.-13, 13th Cross, Wilson Garden, Bangalore, Karnataka 560 027

Machining Component Division(MCD-H)

Plot No. E15, Sipcot-II, Moranapalli, Hosur-635 109

Machining Component Division(MCD-B)

Unit-I 195-B, Bommasandra Industrial Area, Anekal Taluk, Bangalore-560 099

Precision Forging Division(PFD)

No-43, Bommasandra Industrial Area, Anekal Taluk, Bangalore-560 099

Hub Drive Division(HDD)

Plot No. 675, Survey No. 88/2, 7th Mile, Hosur Road, Singasandra Post, Bangalore- 560 068

Gururaj

VP-Business Development

E: gururaj@mail.essae.in

P: +91 9686 454960

Machining Component Division(MCD-G)

Unit-B, KIADB, Gaamanagatti Industrial Estate, Gaamanagatti, Karnataka

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OPTIMIZED EXACTITUDE

For Enquiries:

E: mktg@essaegears.in

W: www.invaraprecision.in