



# ESGI TOOLS PVT. LTD.

Your full line gear cutting tools source.....





# COMPANY



Located in North India, 1991, ESGI is one of the leading manufacturers of Gear Cutting Tools catering to Gear industry with all the products Gear HOBs, Shaving Cutters, Master Gears, Rotary cutters, Spline Rollers being manufactured at its fully integrated plant.





# Plant Locations



## **Main Plant**

ESGI Tools Pvt. Ltd.  
B-6, Focal Point  
Patiala – 147004  
India

## **Re-Sharpening Centre**

H B Complex,  
Village Mahalunge MIDC,  
Chakan Talegaon Road,  
Pune – 410501  
India







# Time Line



- ❖ 1991: Company founded and started manufacturing Hobs
- ❖ 1999-2001: Started manufacturing Master Gears, Shaving cutters & Shaper Cutters.
- ❖ 2003: ISO 9001:2000 certified
- ❖ 2008-2012: Installed KL-P26, CNC-Hob Profile Grinding-Hob Sharpening-Shaving Cutter Grinding
- ❖ 2013: Started manufacturing ES-Cut hobs for High Speed Hobbing
- ❖ 2014: Started Re-sharpening Centre at Pune
- ❖ 2014: Regular production of Spline Rollers & Rotary Cutters.
- ❖ 2015-2017: Major plant expansion with addition of new facilities, new layout and addition of more CNC Machines; for KL P26-CNC Hob profile-CNC Shaper Profile-CNC Sharpening-CNC Relief Turning-CNC Turning-CNC Hobbing-VMC etc.
- ❖ 2019: Installed another KL-P40 machines



# Team Members



We have around 250 people working for us at both locations with judicious mix of experience, educated and young people.

Department	Numbers
Sales cum Application	15
Inside Sales	6
Design	15
Production (Managerial)	12
Operators	135
Quality	18
Maintenance	10
HR	5
Accounts	8
Administration	22



# Highlights



- ❖ Second Largest Gear Cutting Tools Company in India from last 8 years
- ❖ Largest Indian company in India
- ❖ Only company among renowned manufacturers to have this far without any technical collaboration.
- ❖ Only among few companies in World to have CNC machine for Pinon Cutter profile grinding machine and make all types of critical Pinion cutters.
- ❖ Regular investment on state of art machines & technological development teams.
- ❖ Continues upgradation of range of tools and accuracy levels.
- ❖ Quick adaptability to learn about new technological advancement like ES-Cut Hobs
- ❖ Continuity of thought process complete awareness of strengths of own company and customers.
- ❖ Continuity of key persons in company with department heads working from last 15 to 25 years.
- ❖ Minimum attrition rate



# PRODUCTS RANGE



Hobs



Rack Milling  
Cutters



ES-H Hobs



Gear Shaper  
Cutters



Gear Shaving Cutters



Master Gears



Rotary Cutters



Spline Rollers



# Monthly Production Numbers



Tool type	Numbers
Hobs	1000
Shaving Cutters (New)	200
Shaving Cutters-Re-sharpening	500
Gear Shaper Cutters	200
Master Gears	150
Rotary Cutters	50
Spline Rollers	100





# BUSINESS SEGMENTS





# APPLICATIONS



Engine Gears



Chain Sprockets



Transmission Gears  
and Shafts



Pump Gears



Gear Boxes



Large Gears



# APPLICATIONS



Fly Wheel Ring  
Gears



Slack Adjuster



Straight Bevel Gears



Worm Gears



Timing Pulleys




Steering Racks



To whom our Customer's sell..























Commercial Vehicles	Gear Box Manufacturers		
DAIMLER	 <b>Bonfiglioli</b> power, control and green solutions		
	 <b>CARRARO</b>		
<b>IVECO</b>			
			
 <b>ASHOK LEYLAND</b>	 <b>GETRAG</b>		





To whom our Customer's sell..



Two Wheelers	Three Wheelers & Construction Equipment	Agriculture Equipment	
			
			
			
			
			



M2 - M35 - ASP2030 - ASP2052 - S390

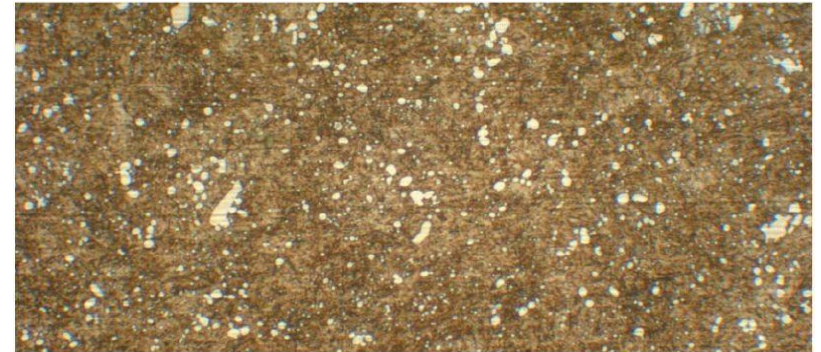
- Imported From World's Best Producers like Bohler and ERA Steel.
- Wide range of material depending upon the Component material; Gear Cutting operation & Cutting Speed.
- Material available for high speed wet & dry cutting.



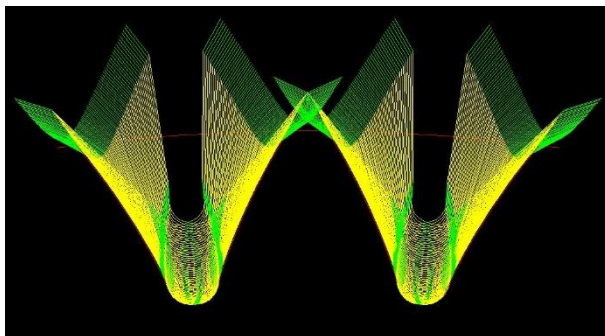
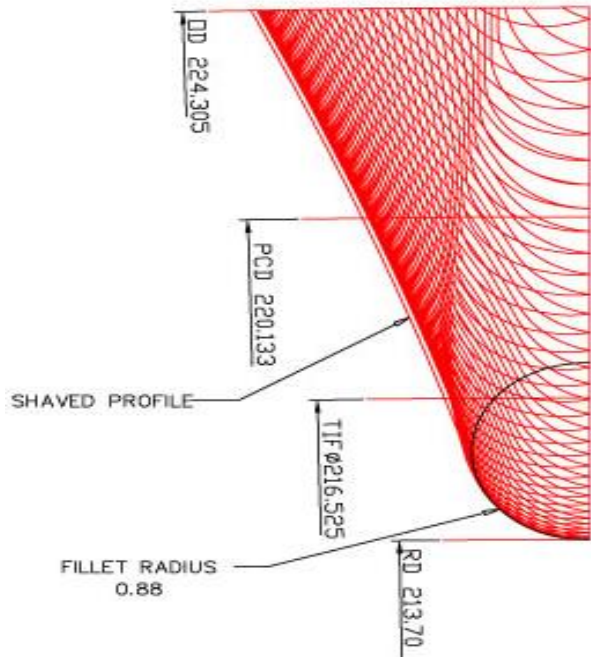
Micro Structure of PM Material

## Typical Materials used:-

- Hobs: M35, ASP2030, ASP2052, S390, S290
- Gear Shaper Cutters: M35, ASP2030, ASP2052, S390
- Shaving Cutters: M2, ASP2023
- Master Gears: M2
- Rotary Cutters: M2, ASP2023



Micro Structure of Conventional HSS



- ESGI has developed own software's for designing with their abundance of experience gathered in years of manufacturing gear cutting tools.
- Our Engineers work closely with our customers to optimize tool designs to meet the varied requirement of customers.
- After designing of the any tool profile, the gear profile is checked by generation on computer for confirmation.
- Our customers can obtain very clear and complete design of the tool.
- Reverse engineering service is available, where little or no data is available.





- In House Manufacturing Facility
- All Operations are made on Latest Model CNC Machines.
- Sufficient capacities to meet large demands and urgencies.
- Multiple machines for every process





# MANUFACTURING FACILITIES



CNC Hob Profile Grinding Machines



CNC Shaving Cutter Profile Grinding Machines



CNC Shaving Cutter Profile Grinding Machines



CNC Hob Flute Grinding Machine



CNC Hob Relief Turning Machine



# INSPECTION FACILITIES



- Tools Checked on Klingelnberg P26 & P40 machines.
- All tools supplied with control certificates.
- Line control at every process.



# Important Machines



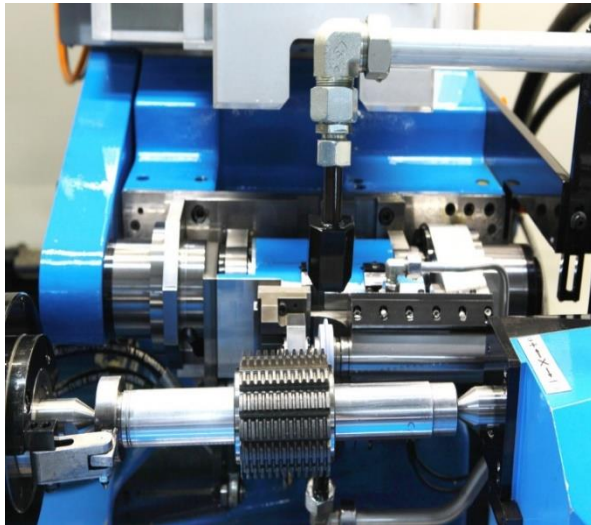
<b>Quality</b>	
P26-P40	3 Nos.
<b>Hob Section</b>	
CNC HOB PROFILE GRINDING	3 Nos.
CNC HOB SHARPENING	3 Nos.
CNC RELIEF TURNING	No.
RELIEF TURNING	6 Nos.
HOB PROFILE GRINDING	10 Nos.
<b>Shaving Cutter Section</b>	
CNC GEAR SHAVING CUTTER GRINDING	3 Nos.
CNC Serrating	2 No.
VMC	1 No.
GEAR SHAVING	1 No.
<b>Shaper Cutter Section</b>	
CNC SHAPER CUTTER PROFILE GRINDING	1 No.
CNC HOBBING	1 No.
INTERNAL GRINDING	5 Nos.
WIRE CUT	2 Nos.



- ❖ Standard Gear Hobs
- ❖ Pre-Shaving Hob
- ❖ Pre-Grinding Hob
- ❖ Pre-Skiving Hobs
- ❖ Shank Type hobs
- ❖ Stub and Fellow Stub Hobs
- ❖ Involute Spline Hobs
- ❖ Parallel or Straight spline Hobs
- ❖ Chain Sprocket Hobs
- ❖ Serration Hobs
- ❖ Timing Pulley Hobs
- ❖ Worm Hobs
- ❖ Chamfer Hobs and Cutters
- ❖ Special Hobs







- Range from **0.3 to 33 Module**
- Max Diameter: 330mm
- Max Length for Bore type hob: 380mm
- Accuracy **up to Class AAA** as per DIN 3968
- Available in Conventional M35 & latest PM materials ASP2030, ASP2052, S390
- For Wet & Dry cutting Applications
- Bore & Shank Type
- Multi Gashes
- Multi Starts
- All types of latest PVD Coatings



# HOBs



## Module Range



Minimum **0.3** Module



Maximum: **27** Module



# HOBs



Gear Hobs



Involute Spline Hobs



Shank Type Hobs



Chain Sprocket Hobs



Timing Pulley Hobs



Straight Spline Hobs



## Worm Wheel Hobs & Milling Cutters

### Range

- Types of profiles: ZI, ZE, ZK, ZN, ZA
- Helix Angle: Up to 35°
- Bore & Shank Type

### Important information for ordering

- Contact Ratio
- Whether the contact pattern is required at entry or leaving side.







# HOBs



Hobs for Slack Adjuster



Blocked Start Hobs



Chamfer Hobs



# ES-Cut HOBs for High Speed Cutting



We are making ES-Cut series of hob in special materials to be used on CNC Hobbing machines for higher productivity and our customers have achieved multiple benefits by changing to these tools.

Mat	Mod	Recommended CS
ES-40	1.75	140-160 m/min
ES-65	1.75	175-200 m/min
ES-90	1.75	300-350 m/min

## Area of application:

- For Wet & Dry Cutting
- In Bore & Shank type
- Multi-start & Multi-gashes
- Can be used up to 7 Module

## Benefits:

- Reduces cycle time
- Increases plant capacity at no additional investment
- Increase in parts per sharpening.
- Lesser Inventories.





# ES-H Hobs for High Speed Cutting



Hobs are specially designed for reducing cutting times on Modules higher than 5.5 by increasing the cutting edges.

- Substantial cycle time reduction
- Easy Implementation
- Reduction of Hob wear
- Does not necessarily require CNC Hobbing machines



# FEW TRIAL REPORTS



<b>Comp. No.</b>	2408		2410		TD-741-10		Output shaft	
<b>Module</b>	1.25		2.25		3		3.17	
<b>PA</b>	20°		20°		20°		30°	
<b>Z</b>	26		32		45		16	
<b>Hob Material</b>	Speed core	ES90	Speed core	ES90	PM35	ES65	PM14	ES65
<b>Coating</b>	Al Pro	Al Pro	Al Pro	Al Pro	Al Pro	Al Pro	Al Pro	Al Pro
<b>Hob Size</b>	60X160X27		60X160X27		90X180X40		Ø55X210X305	
<b>Cutting Speed</b>	280	320	150	225	100/140	160	1041/1380	1070/1475
<b>Axial Feed</b>	1.8	2.1	0.5	0.8	1.2/1.4	1.6	3.0/1.0	3.2/1.1
<b>Cutting time (Sec)</b>	21	18	56	33	210	85	62	56
<b>Life/ sharp.</b>	9000	15000	6000	8100	1200	2000	4000	5000
<b>Time Reduction</b>	-14%		-41%		-60%		-10%	
<b>Life Increase</b>	67%		35%		67%		25%	



# FEW TRIAL REPORTS



Comp. No.	5629		For 47T		For 111T	
Module	4		4.9		5.75	
PA	20		22.5°		20°	
Z	47		47		111	
Hob Material	ASP2052	ES65	ASP2030	ES40	speed core	ES65
Coating	Al Pro	Al Pro	Al Pro	Al Pro	Al Pro	Al Pro
Hob Size	100X150X32	90X180X32	90X130X32		110X150X40	110X200X40
Cutting Speed	90/120	140/180	380/420	380/420	80	80
Axial Feed	2.8/2.5	1.8/2.5	2.2/2.5	1.5/1.8	0.6	0.6
Cutting time (Sec)	183	141	653	475	3600	3600
Life/ sharp.	-	-	450	600	8	20
Time Reduction	-23%		-27%		0%	
Life Increase	30%		33%		150%	



# MILLING CUTTERS



## Rack Milling Cutters

Used for cutting Steering Racks and similar components. The cutters are produced in very close tolerances.



- Range from 1.5 to 25 Module
- Accuracy Class from B to AAA
- Diameter from 50mm to 290mm
- Length from 20mm to 300mm
- Made in latest PM and conventional materials
- All types of latest PVD Coatings



# MILLING CUTTERS



Form Milling Cutters



Band Saw Cutters



Serration Milling Cutters



Hurth Milling Cutters



# SHAPER CUTTERS



## Disc – Hub – Shank



- One of the few manufacturers in World having CNC profile grinding machine.
- Range from 0.5 to 12 Module.
- PCD from 40mm to 275mm for Disc & Hub.
- Root Diameter starts from 8mm for Shank.
- For Internal & External gears.
- Spur & Helical Type.
- Profiles like Semi-topping, Pre-shaving, Topping.
- Accuracy class 'AA' & 'A' as per DIN1829.
- Materials M35, ASP2030, ASP2052, S390.





# SHAVING CUTTERS



Plunge – Underpass – Diagonal - Conventional



- Range from 1.5 to 8 Module
- PCD from 150 to 300mm
- Thickness up to 65mm
- Available in material M2 & ASP2023
- Facilities to make all types of profiles like TIP relief, Root relief or both, 'K' profile, Lead crowning or any customized profile



# MASTER GEARS



- Range from 1.5 to 8 Module
- PCD from 75 to 200mm
- Thickness up to 80mm
- Accuracy class 4 as per DIN 3962
- Material M2



# ROTARY CUTTERS



- Made for G104 and G102 types.
- Material M2 & ASP2023
- Also supplied with PVD coatings





- Used for producing Splines or Serrations on Shafts on specialized rolling machines.
- Made in special material
- Used in Pairs.







# PVD COATINGS



Tools are coated with latest PVD Coatings for enhanced life.

- TiN
- AlTiN (Futura)
- Alcrona
- Alcrona Pro
- Altensa





Thank you