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# India's Largest Independent Powertrain Manufacturing



A CK Birla Group Company  
**AVTEC Limited**

“We are part of CK Birla Group, which is One of India’s Most respected families, Over 25,000 employees with 41 manufacturing facilities & Numerous patents and awards”



## About **Group**



The CK Birla Group is a growing US \$2 billion conglomerate that has a history of enduring relationships with renowned global companies.

With over 25,000 employees, 41 manufacturing facilities, 21 service delivery locations and numerous patents and awards, the Group's businesses are present across five continents. We operate in Six industry clusters: Automobile, Infrastructure, Home & Building, Technology, Education and Healthcare.

Our companies are strengthened by shared guiding principles that include a focus on long-term value, trust-based relationships and philanthropy. Each business is transforming to build on the collective strength and synergies of the Group's size and span.



25,000  
 Employees



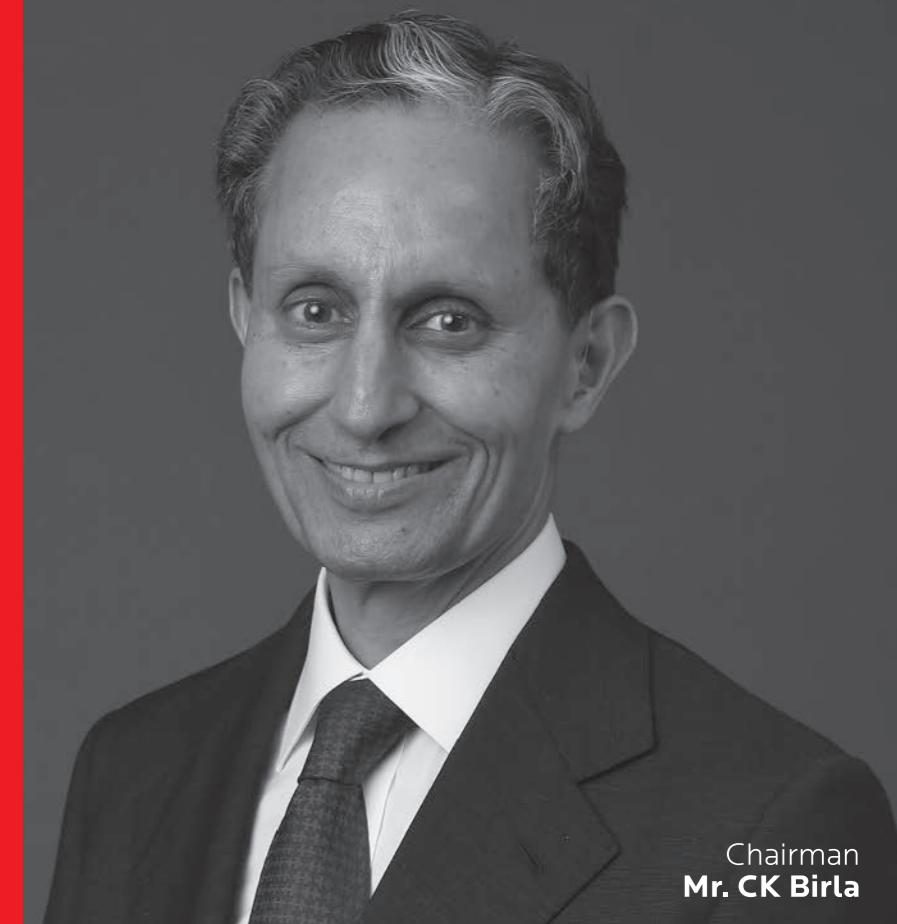
41 Manufacturing  
 Facilities



Global  
 Presence

## Overview

- Over **156 years** of strong heritage
- Emphasis on **nation building** and community development
- Fast growing **\$2 billion** conglomerate
- Long standing successful **partnerships**
- Focus on nurturing and developing **talent**
- Driven by **five** core values



Chairman  
**Mr. CK Birla**



# Business Spread

## AUTOMOBILE



## INFRASTRUCTURE



## HOME & BUILDING



## TECHNOLOGY



## EDUCATION



## HEALTHCARE



CK Birla group company



AVTEC is one of the largest independent manufacturers of powertrain and precision-engineered products in India.

With years of experience in manufacturing, AVTEC delivers competency across the entire value chain of design & manufacture of engines; transmissions and high precision components like cylinder heads, cylinder blocks, crank shafts, cam shafts, cam rods and transmission gears for Automotive, Off-Highway, Defence, Agriculture and Railway industry, in areas of both proprietary products and contract manufacturing. The company serves some of the best-known domestic and global Automotive and Off-Highway companies, including global OEMs such as Allison, BEML, Caterpillar, Daimler, Ford, ISUZU , PSA , Punch Powertrain, Renault-Nissan, Tata-Jaguar and several other established brands.

AVTEC's domestic units comprise of an in-house tech centre in Hosur, R&D facilities in Hosur and Pithampur, and state-of-the-art manufacturing facilities in Hosur, Chennai, and Pithampur. All its facilities are IATF 16949 and ISO 14001 certified, equipped with high-tech machinery, and manned by experienced personnel.

With its global R&D and manufacturing footprint which includes face gear and innovative drive systems through the Switzerland-based subsidiary ASSAG, AVTEC aspires to reinforce its commitment to customers as a 'one-stop-shop' for Powertrain and Precision Engineered Products, across the globe.



# Core Values

Transforming and moving forward in line with the rapidly changing needs of customers, partners and communities in the 21st century



**Integrity**  
Working with honesty and transparency



**Excellence**  
Aiming for the highest quality standards in the goods and services we produce



**Accountability**  
Showing reliability in both word and deed



**Responsibility**  
Being sensitive and responsible towards the communities and environment that we work in



**Respect**  
Showing respect and humanity towards our colleagues and customers alike

# Vision

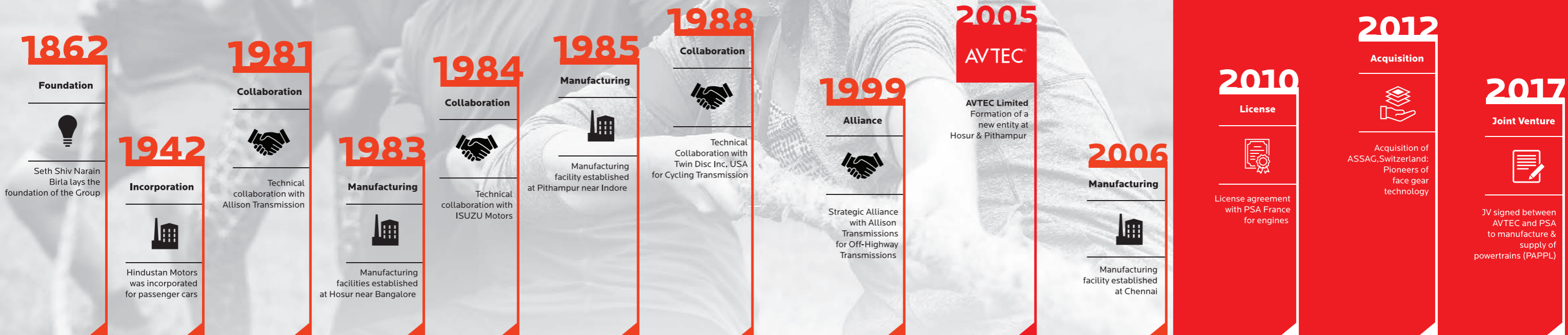
We shall create a value proposition for our customers, shareholders, business partners and employees through becoming a first choice supplier in powertrain and precision-engineered products & services.

# Mission

We aim to grow with profitability and continuously improve product quality and services through employee involvement, adoption of best-in-class manufacturing systems and processes. By forging mutually beneficial relationship with all stakeholders we want to achieve:

- Customer confidence
- Benchmarked level of return on investment
- Growth in revenue in line with our long-term strategy

# Milestones





Line of Business



Automotive Engines & Transmissions

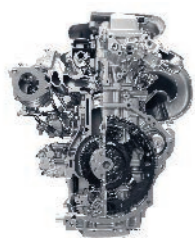
AVTEC's automotive business unit manufactures a wide range of products to suit diverse applications. It undertakes proprietary and contract manufacturing of petrol and diesel engines and transmissions for passenger cars, SUVs and light and medium commercial vehicles.

Leading supplier of Engine & Transmission for Domestic & International markets.

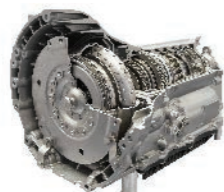
**Segments :**  
Passenger vehicle, Light & Medium Commercial Vehicles



Products



ENGINE



TRANSMISSION



AGGREGATES



COMPONENTS

Line of Business



Off Highway Transmission

AVTEC's world class facility at Hosur, Tamil Nadu manufactures Cycling and Hauling Automatic and Powershift Transmissions for Off-Highway applications. The plant follows cellular manufacturing concept, which is well suited to take care of the entire product mix and support faster response.



R & D Capabilities

- AVTEC's core strength lies in technology development and absorption Seamless integration of product design, prototype building, testing and validation
- In-house transmission testing facilities, emission test beds for pre production stage evaluation
- Output simulation for expected results
- Latest software tools like UG, ProE, Kiss-soft, AVL Boost, Romax, Nastran, Ansys

Distribution

- Our strength lies in PDC (Parts Distribution Centre) Capable of reaching our customer located in any part of the Globe through its Dealer Network and Forwarding agents
- Order Registration & acknowledgment with in 24 hours
- Follows international standards of packing
- First Pick availability is maintained at 95% at any given time which helps in fast response through its 819 sq. meters facility
- To ensure Fast Delivery to our Customer we maintain 0.82 million USD war chest of Spares at any given time
- Each part carries AVTEC laser marking for Identification & Traceability

Segments



MINING



MATERIAL HANDLING



CONSTRUCTION



OIL FIELD



RAILWAY



ENERGY



# Line of Business



## Components

Capability to manufacture High precision powertrain components for both Automotive & Off-highway segments. The business operates out of a modern manufacturing facility at Hosur and Chennai in Tamil Nadu and Pithampur in Madhya Pradesh. A dedicated component park at Hosur, Tamil Nadu. Chennai Plant is an export oriented unit catering to Global off-highway customers.

## Manufacturing Units Across India



- Products**
- SHAFTS HOLLOW SHAFTS • RING GEARS • SLEEVES • PLANETARY CARRIER • DIFFERENTIAL CASE & ASSEMBLY
  - SKID STEER AXLE • SYNCHROPACK • CLUTCH DRIVE ASSEMBLY • HOUSINGS

# Line of Business



## Defence

- AVTEC marked its entry into Defence in 2016. India's only Automatic transmission manufacture for Defence Track vehicles
- Leverages its expertise of Design & Development in heavy duty Off-Highway & On-Highway transmissions and Engines
- Only Indian company to have such capability to provide complete Indian solution in true spirit of **"Make in India"**

## Offerings

### PRECISION MACHINE



#### - Aerospace Gears

- Registered with HAL Helicopter, Engine & LCA Division under CNC Mfg., Structural Machining. Gears & Gear Assy Mfg. and Supply, category
- Currently Machining precision gears, Shafts & Other critical component's for Aerospace application for HAL H/C and Engine Division
- Facility audit & Shortlisted for major Aerospace & Defence programs such as LUH MGB & TGB, manufacturing of civil version of ALH by HAL

### AUTOMATIC TRANSMISSION



#### - Infantry Combat Vehicle

- AVTEC's in-house designed & developed Automatic transmission system, being fitted on BMPs of two out of six vendors under the Army project
- Only Indian company to have such capability to provide complete Indian solution in true spirit of "Make in India"
- A project by Indian Army (Directorate of Indigenization) open only to domestic firms
- Also working on Indian Army's other prestigious programs like FICV, FRCV, APC along with Govt. DPSU & interested Private players

### LAND SYSTEM



#### - Splitter Gear Box For Advanced Towed Artillery Gun System

- Transfer case of Shilka tank
- Contract Manufacturing
- A project by DRDO to develop new artillery gun system
- AVTEC designed , developed & is supplying splitter gear box to one of the consortium partners (total 6 Sets as on date)
- Currently Guns are under trials & evaluation by Indian Army
- Actively contributing towards "Make in India" defence projects

## Major Customers



BHARAT FORGE





## Line of Business



## ASSAG

ASSAG is a subsidiary of AVTEC Ltd. Which is a leading for drive systems and world market leader in face gear technology. The company was established in 1979 and specializes in designing customer specific drive solutions with over 40 years of success.

ASSAG is known for its innovative solutions in the field of face gear differential drives, high precision gears and is pioneer in face gear technology with several patents to its credit.



### Cylkro® Face Gear Technology

ASSAG as a pioneer in the face gear technology holds a number of important patents for design and production of the face gear technology. Cylkro® face gears offer unlimited transmission solutions. Its features enable easy assembly, space savings & free combination for multiple outputs and differentials.

## EVOLVERE®

### Evolvere® - More than the standard

Evolvere® is a proven concept for design and the key to success of ASSAG. "Evolvere" in Latin stands for "to evolve" with the Quality guarantee of Swiss technology. Our engineers will support you in evaluating the best solution, considering cost effective components for easier assembly and maintenance free in the long run.



## Field of Application



AUTOMOTIVE



MACHINE TOOLS



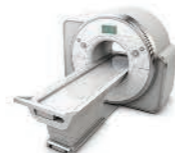
OFF- HIGHWAY



TRANSPORT



ENERGY



MED TECH

## Line of Business



## PSA- AVTEC

PSA AVTEC Powertrain Pvt. Ltd. is a 50:50 Joint Venture between the Groupe PSA, France and AVTEC Limited, the leading manufacturer of powertrain and precision engineered products in India and part of a reputed Indian Business House-the CK Birla Group. The joint venture agreement that brought Groupe PSA's state-of-the-art technology and the CK Birla Group's manufacturing excellence, was announced in January 2017.

The green field plant being set-up at Hosur, close to Bangalore, will be engaged in the manufacturing of next generation technologically advanced gearboxes and eco-friendly engines, in line with future industry norms and customers' expectations. The manufacturing capacity for powertrain (engines and gearboxes) will cater to the domestic market needs and global automotive OEMs.

With an initial manufacturing capacity at about 300,000 gearboxes and 200,000 engines per year, the plant will further receive incremental investment to support a progressive ramp-up going forward. The performance of the industrial set-up will be supported by a significant level of localization, in order to reach the necessary cost competitiveness.



## Our Strength, **Our People**

People are AVTEC's greatest value and asset. Our major concern is our customers' and our employees' growth. At AVTEC we put a strong emphasis on personal and professional progress. Our employees are provided with top quality work environment, challenging yet amicable and encouraging atmosphere and the best opportunities to advance in theoretical knowledge and hands-on experience.

Training sessions for new employees, regular refresher programs for the experienced personnel and seminars on market innovations help in creating never ending learning curve.

AVTEC has healthy mix of gender ratio with Global employee base varying from India to America. With offices in more than 6 countries, we ensure all have equal opportunities to grow and benefits without any differentiation. We welcome and strongly support the desire of our selected experts to learn and grow both personally and professionally.



### CEO Message

## Diversity and Inclusion

“Diversity at work brings a unique quality to the organisation’s core values and its cultural fabric. We at AVTEC respect unique talents, experiences and viewpoints of employees and encourage different perspectives to achieve excellence. I am personally committed to making AVTEC an inclusive workplace and an employer of choice for all by focusing on exclusive hiring interventions for AVTEC to achieve the mark of 20% by 2020.”

The CK Birla Group has always been known for its vision and progressive ideas. We as a Group embrace diversity and inclusion at all levels as a strategy to move forward. We realise the need to have women in key positions in order to affect change in the way we work and to leverage the talent they bring in. Diversity and inclusion is key to our talent strategy.

## Our Pride, **Our R&D**

- A centralized R&D center at Hosur and Design & Development facility at both Hosur and Pithampur
- Core Strength: Technology development, application engineering & seamless integration of product design
- Prototype building, testing & validation to produce products that perform in the harshest and most demanding mining and construction sites.
- Acquisition of ASSAG, pioneer in face gear technology, has significantly enhanced R&D capabilities
- Electronics control “HATS” for the existing transmission in Hauling application like 5/6000 series, allowing us to offer completely automatic transmissions
- DSIR approved R&D centres

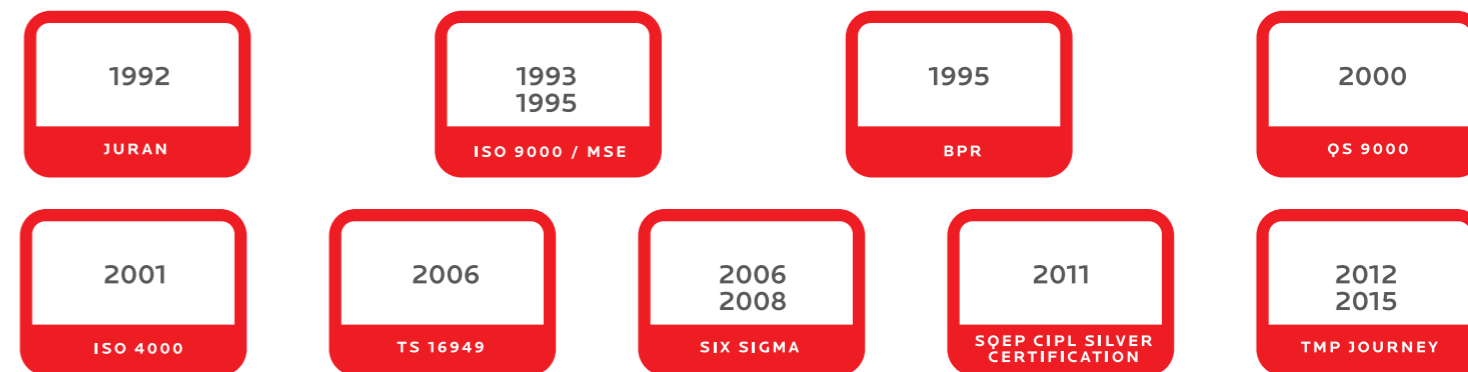
## Design & Engineering, **Expertise**

- AVTEC’s success is attributable to a strong focus on in-house research and product development capabilities
- AVTEC has a centralized tech center at Hosur; development facilities at both Hosur and Pithampur along with a design house in Switzerland
- Both Indian centers were built to upgrade the current product range and design new products for a growing range of applications
- AVTEC’s core strength lies in technology absorption, seamless integration of product design, prototype building, testing and validation. The company offers a full range of solutions for Powertrains ( i.e., engine and transmission systems) and components – from product concept, design , prototyping , testing , validation and manufacturing. AVTEC’s Swiss subsidiary ASSAG, is a leading enterprise in drive system and face gear technology. ASSAG is known for its innovative solution in the field of face gear differential drives, high precision gears and is pioneer in face gear technology with several patents to its credit

### Specialised Applications & Expertise

<b>Design &amp; Application Engineering</b>	PRODUCT DESIGN & ANALYSIS   SYSTEM ANALYSIS   VALUE ENGINEERING (VA/VE)
<b>Product Localization</b>	DESIGN OPTIMIZATION   COST OPTIMIZATION THROUGH ALTERNATE MATERIAL
<b>Best Cost Mfg. Processes</b>	FLEXIBLE MANUFACTURING SYSTEMS   LEAN   LOW COST AUTOMATION
<b>Product Testing &amp; Validation</b>	COMPONENT & AGGREGATE LEVEL TESTING   COORDINATION WITH CERTIFYING AGENCIES

### Lean & Quality Certification Milestones





## Manufacturing Quality

AVTEC firmly believes in a culture of continuous improvement & evolution as it's prime growth drivers. With an aim to do the things right, "first time-every time" and keeping pace with the rising & shifting Customer requirement, Company has swiftly adapted to Lean Manufacturing, TPM, MOST tools to enhance it's Manufacturing capabilities. Quality of design and Quality of Conformance being the fundamental principles driving manufacturing

processes to deliver reliable products. With a strong emphasis on employee involvement to sustain Quality, company engages renowned world-class consultants to train it's human resources to enhance their skills and focus on in Process validations / controls for Quality outputs. All manufacturing facilities are TS 16949 certified for Quality Management Systems by Underwater Laboratories. The company

has also received a Quality Excellence Status award from Caterpillar, and the Q1 Quality Status award from Ford India. AVTEC also has a product validation facility, and a National Accreditation Board for Testing and Calibration Laboratories (NABL)-accredited laboratory for calibration. Our quality agenda is bolstered by global technical partnerships and business collaborations forged with OEMs such as Peugeot Citroen Moteurs, Caterpillar and Daimler.

## Design & Analysis Softwares

CAD	UG NX Mach1, Mach3 Industrial design, AutoCad/ Catia/ ProE	Design Automation
	2D drafting & drawing and 3D Modeling	Reducing design cycle time
FEA	Mach3 Advanced Simulation NASTRAN/ Ansys	Static & dynamic analyses Linear/ Non linear analysis
	KISSsoft	Gear Design
Gear Train	Romax	System Analysis, micro geometry gear contact analysis optimization of transmission

## Heat Treatment Processes

- Sealed Quench furnace with CQI 9 for Case carburizing & carbo-nitriding
- Gas Nitriding Furnace – Horizontal & Pit type
- Induction Hardening M/C & Plug Quench

**Allied Equipment:** Shot blasting, shot peening, tumbling

## Key Processes

- Normalizing • Stress Relieving • Hardening & Tempering
- Case Hardening- Case Depth: 0.5-2mm • Carbo -Nitriding- 0.4mm-0.7mm • Carbo-Annealing-1mm-2mm • Gas Nitriding-Case Depth: 0.2-0.45mm • Induction Hardening-Shafts Case Depth: up to 4mm • Plug Quench of slender components (Hardening) • De-Scaling (Tumbling) & De-Burring of clutch plates & Pump Gears



# WORLD CLASS MACHINERY AND CAPABILITIES

- CNC - Turning Broaching
- Hobbing
- Shaping
- Tooth Chamfering
- CNC - Broaching
- ID & OD Grinding
- Spline Rolling
- Shaving
- Gun Drilling
- OD Grinding
- Super Finishing
- Gear Grinding
- Turning
- CNC Turning
- Taper Forming
- Precision Turning
- Internal Broaching
- Surface Broaching Of Pockets
- Precision Fine Boring
- Milling
- Precision Fine Boring
- Grinding
- Planetary Gear Seating Pocket Finishing
- Nitriding
- Hard Part Finishing
- Balancing
- Mounting Holes Drilling & Tapping
- Precision Milling
- Precision Grinding
- Drilling & Tapping
- Induction Hardening
- Painting
- Precision Gear Grinding
- Precision Bore & OD
- Bush Pressing & Assembly
- Grinding
- Wire-cutting
- Rollers Assy



# Our Customers Worldwide

## AMERICA



## UK



## JAPAN



## EUROPE



## INDIA



## CHINA



\*Locations are as per customer HQ.

# Rewards & Recognitions



# Awards





## CORPORATE OFFICE

**New Delhi****AVTEC Limited**

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## MANUFACTURING UNITS

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