Growth Through Customer Satisfaction

Perfect Engine Components P. Ltd (PEC) has been manufacturing Engine Valves, Valve Seat Inserts & Valve Guides for all types of Automotive engines, Captive Power, Transport Industry, Locomotive and Marine Engine. Ranging from Motor Cycles, Three Wheelers, LCV, HCV, Power Generation, Locomotive and Marine Engines etc. The Valve plant (erstwhile Auto field Engineering) was established in 1983, as a Joint Venture Company with Atlas Inc., Ohio, USA, a subsidiary of Cummins Engine Company, USA. We are led by a new group of professionals with significant experience in Automotive Industry and Diesel Engines. We also have a dedicated team of young and energetic technocrats to ensure the delivery of right products by making sure the application of latest techniques and cent percent quality control.

We have 2 different units for our products, one for Engine Valves and the other for Valve Seat Inserts and Valve Guides. All units are individually well equipped with special purpose machines and latest advanced technology, testing, R&D and inspection department. We have Cutting-edge Technology for Extrusion Forging, Forging and Casting, Induction Hardening and annealing Plants. We use material to match customer’s specification and requirement / application.

We are catering OE domestic as well as International market with supplies to various countries like USA, Germany, Turkey, Middle East etc.

Vision
To be the most admirable and preferred supplier to all our customers.

Mission
To provide unique solutions to our customers by anticipating and understanding their business objectives and aligning them with ours.

Policy
We, at PEC shall consistently achieve & exceed Customers' expectations through quality of our Products & Services.

Values
- Customer first
- Quality in everything we do
- Ethical and transparent Business practices
- Continuous development of our Human Resources
- People making the difference
- Treat all stake holders as partners
- Environment, Health & Safety
- Respect for Human dignity and relationships
Perfect Group has world class manufacturing facility, one for engine valve which located in Sahajpur, about 40 kms east of Pune and the second plant is for Valve guides and Valve Seat Inserts which is located in Lonavala, about 60 kms west of Pune.

Both facilities are having latest technology in all aspects of manufacturing such as casting, machining, grinding, lapping, surface treatment and testing, as enabled the company to meet all required standard. The company firmly believes in manufactured quality through stringent process control. Our facilities are spread over a built-up area close to 350,000 Sq. Ft.

**Manufacturing Prowess**

**Machining Facility**
- CNC turning machines with good stability & accuracy
- **Grinding Machines:**
  - Face grinding, Duplex grinding & Centerless grinding machines to meet dimensional accuracies and consentient
  - Cp / Cpk values > 1.67

**Material Quality Control**
- Quality Check and acceptance of Material at Incoming stage
- Verification of Chemistry of each batch stage
- Material movement in bins during processing along with a Route Card
- Batch code Etched on each product for positive traceability

**Metrological & NDT Capabilities**
- Checking on highly precise instruments like Coordinate Measuring Machine, Roundness Tester, Surface Finish Tester, Contracer, Profile projector etc.
- 100% inspection for crack detection of valve seat insert, through magnetic particle inspection for magnetic parts & Zyglo inspection for non-magnetic parts

**Additional Facilities**
- Induction Hardening
- Stellite Welding by Plasma Arc deposition
- CNC Friction Welding
- Projection Welding
- Metco Coating
Friction Welded
Stellite Tip & Seat
With Scrapper
Reduced Stem
Chrome Plated
Shrouded
Nitrided

Valve Seat Inserts
Valve Guides
Engine Overhead Parts

- Valve Types
- Engine Valves
- Versatile Product Range

Engine Valves Product Specification

Manufacturing Technology
Extrusion Forging & Upset Forging

<table>
<thead>
<tr>
<th>Size Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem Diameter</td>
</tr>
<tr>
<td>Head Diameter</td>
</tr>
<tr>
<td>Total Length</td>
</tr>
</tbody>
</table>

Material Grades
- Austenitic Steel: En52, SUH3, SUH11
- Martensitic Steel: 21-2N, 21-4N, 23-8N, 21-12N
- Super Alloys: Nimonic, Inconel
- Plasma Deposit Hard facing using PTA technology: Ni60, Stellite 6 & 12, F, Etonite, Triballoy - 400 & 800, Colmonoy 56

Bi-metallic Valves
Using Friction welding technique, variety of above mentioned materials combinations can be produced.

Valve Types

- Friction Welded
- Stellite Tip & Seat
- With Scrapper
- Reduced Stem
- Chrome Plated
- Shrouded
- Nitrided
- Tip End Hardened
- Tip End Thru Hardened
- Tip & Groove Pattern Hardened
- Wafer Welded
- Stellite Tip (Flat)
- Stellite Tip (Cavity)
### Valve Seat Insert Product Specification

**Manufacturing Technology**: Shell Molding

<table>
<thead>
<tr>
<th>Size Range</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Outer Diameter</td>
<td>25 to 120 mm</td>
</tr>
<tr>
<td>Inner Diameter</td>
<td>20 to 120 mm</td>
</tr>
<tr>
<td>Total Length</td>
<td>5 to 30 mm</td>
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</tbody>
</table>

**Manufacturing Technology**: Centrifugal

<table>
<thead>
<tr>
<th>Size Range</th>
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<tbody>
<tr>
<td>Outer Diameter</td>
<td>122 to 300 mm</td>
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<tr>
<td>Inner Diameter</td>
<td>100 to 280 mm</td>
</tr>
<tr>
<td>Length</td>
<td>up to 450 mm</td>
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</table>

**Heat Treatment Technology**
- Annealing, Normalizing, Hardening and Tempering,
- Carburizing, Gas Nitriding, Induction Hardening

**Machining Technology**
- Duplex Grinding, Surface Grinding, Centreless Grinding,
- CNC Turning, VMC, HMC, Laser Marking.

### Valve Guide Product Specification

**Manufacturing Technology**

<table>
<thead>
<tr>
<th>Size Range</th>
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</thead>
<tbody>
<tr>
<td>Outer Diameter</td>
<td>10 to 100 mm</td>
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<tr>
<td>Total Length</td>
<td>20 to 250 mm</td>
</tr>
<tr>
<td>Inner Diameter</td>
<td>5 to 50 mm</td>
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</table>

**ID Machining Technology**
- Gun drilling, Reaming, Oil groove, honned, Nitride,
- Hardened Lubrited

**ID Machining Technology**
- Cast Iron with Cr, Cu, P, Ni, Mo
- Plain Cast Iron
- Sintered

### Material Grades

<table>
<thead>
<tr>
<th>%Mo</th>
<th>%Cr</th>
<th>%Ni</th>
<th>%Ph</th>
<th>%W</th>
<th>%V</th>
<th>Hardness-Hrc</th>
<th>Application</th>
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<td>40 - 50</td>
<td>Inlet vsi small/medium engines</td>
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<td>29 - 34</td>
<td>Inlet / Exh medium engines</td>
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<td>29 - 48</td>
<td>Inlet medium engines</td>
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<td>42 - 48</td>
<td>Inlet / Exh medium engines</td>
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<td>37 - 43</td>
<td>Inlet / Exh medium duty engines</td>
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<td>38 - 48</td>
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<td>40 - 44</td>
<td>Inlet of heavy duty engines</td>
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<td>42 - 48</td>
<td>Inlet/Exh heavy duty/ marine engines</td>
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<td>45 - 55</td>
<td>Exh of heavy duty engines</td>
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<td>50 min</td>
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<td>50 - 55</td>
<td>Inlet/Exh heavy duty/ marine engines</td>
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</tbody>
</table>
Design Material Science

Testing Capabilities for material properties essentials for optimal performance of Valves & Seat Inserts:
- Compressive yield strength
- Elevated temperature stability
- Corrosion resistance
- Hot hardness
- Thermal conductivity
- Wear resistance
- Thermal expansion
- Machinability

CAD / Product Design

Software Capabilities
- Pro/Engineer
  - Wildfire 2.0, 3.0, & 4.0
- CATIA V5 R18
- UGNX3 & UGNX5
- IDEAS NX5
- AutoCAD 2004
- Pro/Intralink 3.0
- PDM Link

Awards & Recognition

Key Customers

Perfect Engine Components Pvt. Ltd.

Corp. Off. & Plant 1
Plot No. 172, Tungarli, Lonavla - 410403.
Dist. Pune, Maharashtra, India
Tel : +91 2114 272996 / +91 96198 88310
Fax : +91 2114 273566
Email : info@peclindia.com Web : www.peclindia.com

Plant 2
Gat No. 768, Sahajpur, Taluka Daund,
Dist. Pune - 412 202 Maharashtra, India
Tel : +91 2119 242161, 242162
Fax : +91 2119 242161, 242160

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Automotive Quality Management |  |  |  |