This application is an example of how the Single-Pass process has been fine-tuned for a specific industry to achieve Tremendous results in production. Turbo Charger Bearings are now being finished to tighter precision requirements with greater statistical process control than ever before, while reducing overall costs at the same time. Pre-set diamond tooling in some cases exceeds 250,000 parts. The Engis system also allows for quick change-over between model types with minimal operator involvement.

**INDUSTRY:** Automotive  
**MATERIAL:** Bronze

**CHALLENGE:**  
- Inconsistent bore geometry  
- Slow change-over  
- High down-time  
- High perishable tool cost  
- Unable to achieve required surface finish

**ENGIS ADVANTAGE:**  
- Improved Bore Size  
- Achieved special surface finish with Crosshatch Pattern  
- Quick change-over between part types  
- Little to no down-time  
- Turnkey Automated System  
- Production Rate: 300 parts per hour  
- Tool cost <$0.004 per finished part

<table>
<thead>
<tr>
<th>BORE QUALITY</th>
<th>REQUIRED</th>
<th>ACHIEVED</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE</td>
<td>+/- 0.001mm</td>
<td>&lt;0.001 mm</td>
</tr>
<tr>
<td>ROUNDNESS</td>
<td>0.002mm</td>
<td>&lt;0.001 mm</td>
</tr>
<tr>
<td>STRAIGHTNESS</td>
<td>0.002mm</td>
<td>&lt;0.0005 mm</td>
</tr>
<tr>
<td>Rpk</td>
<td>&lt; 0.25</td>
<td>0.10</td>
</tr>
<tr>
<td>Rk</td>
<td>&lt; 0.70</td>
<td>0.35</td>
</tr>
<tr>
<td>Rvk</td>
<td>0.20 to 0.80</td>
<td>0.50</td>
</tr>
</tbody>
</table>
Engis® offers state-of-the-art technology in the design of flat lapping systems that meet the most demanding requirements.

Superabrasive Powders

We manufacture high-quality micron diamond & CBN with properties that ensure consistent performance in each application.

Mold & Die Polishing

Engis® long trusted brands include Five-Star® diamond compound.

Engis® offers a complete range of superabrasive electroplated products for precision applications.

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