Super Precision Surface Finishing
From controlled roughness to mirror-like brilliance
MMP TECHNOLOGY® (Micro Machining Process) invented by BinC Industries makes it possible to obtain super-finished surfaces by selectively removing specific ranges of roughness. Unlike traditional polishing, MMP TECHNOLOGY® differentiates itself by its ability to finely control the material removal process. MMP TECHNOLOGY® can deliver finely controlled surfaces ranging from matte to brilliant mirror-like finishes. MMP TECHNOLOGY®'s advantages include reproducibility, homogeneity, precise preservation of the exact form of the part, and predictable costs.

MMP TECHNOLOGY® consists of a combination of a proprietary mechanical and physical process aided by a catalyst that activates the engineered microtool technology. The mechanical part of the process is provided by a machine whose very high energy movement creates a flux. This flux is composed of aggregated particles of microtools created “in situ” by means of the catalyst. These aggregated microtools are specifically engineered to replicate the micro-roughness of the surface that is to be removed, thus forming a cutting tool that is “keyed” to the roughness being targeted. BinC Industries builds its own machines and microtools, and formulates its own catalysts.

The different components of roughness

<table>
<thead>
<tr>
<th>Component</th>
<th>Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waviness</td>
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<tr>
<td>Primary micro-roughness</td>
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<tr>
<td>Secondary micro-roughness</td>
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<tr>
<td>Raw surface</td>
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</table>

Examples of SELECTIVITY OF ROUGHNESS LEVEL

- Roughness profile on raw surface
- ELIMINATION OF THE SECONDARY MICRO-ROUGHNESS
- PARTIAL ELIMINATION OF THE PRIMARY MICRO-ROUGHNESS
- TOTAL ELIMINATION OF THE PRIMARY MICRO-ROUGHNESS
- ELIMINATION OF ALL THE MICRO-ROUGHNESS
Impact on treated surfaces

- Mechanical properties are not altered
- Hardness is not changed
- Material does not undergo creep during process
- No material contamination on medical parts: instrumentation or implants.

Material compatibility

- Carbon, stainless, and high speed steels
- Copper, nickel, and titanium alloys
- Carbides
- Ceramics
- Precious metals (Gold, Platinum, etc)
- CVD, PVD, etc. coatings
- Parts made with CIM, MIM, DMLS additive technologies.
- Many, many more

Material removal

- Technical finishes: 1 to 10 µm
- Mirror polish: 5 to 20 µm
- MIM, CIM, Casting, DMLS: >50 µm.

The solution to controlling your surface roughness in 3 steps

Technical Validation

- Analysis of the part’s surface state through the measurement of its roughness
- The specific characteristics of the material are considered
- The customer’s objectives and constraints are defined
- Three different MMP TECHNOLOGY® treatments are applied. The customer chooses the most appropriate one.

Industrial Validation

- Customer’s desired daily/weekly production volume is used to optimize the process batch size
- Custom fixtures are designed and built to support this optimal batch size
- The selected MMP TECHNOLOGY® is applied to a production batch sized group of parts.

Industrial Production

- The results from the Industrial Validation are confirmed by the customer
- A production schedule is established with the customer
- Ongoing customer satisfaction evaluations drive a Continuous Improvement process.

A global expansion strategy

The MMP TECHNOLOGY® process is available exclusively through 7 companies located in Europe, the United States, India, China and Japan, as follows:

1. BinC Industries SA
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   CH-1272 GENOLIER
   ☏: +41 (0) 22 740 00 49
   E-mail: info@bincindustries.com
   www.MMPTechnology.com

2. MicroTek Finishing
   5579 Spellmire Drive
   Cincinnati, Ohio 45246, USA
   ☏: (513) 766-5600
   Fax: (513) 766-4999
   E-mail: info@MicroTekFinishing.com
   www.MMPTechnology.com

3. BinC Industries France SAS
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   F - 69800 St Priest, France
   ☏: +33 (0) 472 79 39 40
   Fax: +33 (0) 478 90 24 88
   E-mail: info@bincindustries.com
   www.MMPTechnology.com

4. First Surface Oberflächenotechnik GmbH
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   Fax: +49 89 89336 2285
   E-mail: info@firstsurface.de
   www.MMPTechnology.com

5. BRIDGE FINE WORKS LIMITED
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   Fax: +86512-57818812
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   Fax: +91 1792 232898
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7. INFINI Japan
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   www.MMPTechnology.com
MMP TECHNOLOGY®: a revolutionary deburring and polishing process bringing value to these 7 key markets:

<table>
<thead>
<tr>
<th>APPLICATIONS</th>
<th>BENEFITS</th>
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<tbody>
<tr>
<td>AEROSPACE</td>
<td>• Blades • Blisks/IBRs • Stators • Guide Vanes • Bearings and gear boxes</td>
</tr>
<tr>
<td>FORGE, STAMPING AND DIE</td>
<td>• Screw Head punches • Carbide punches • Cutting and stamping dies</td>
</tr>
<tr>
<td>ADDITIVE MANUFACTURING</td>
<td>• Aerospace • Medical</td>
</tr>
<tr>
<td>MEDICAL</td>
<td>• Implants (knee, hip, spine, etc.) • Instrumentation • Prosthetic</td>
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<tr>
<td></td>
<td>components • Pump components</td>
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<tr>
<td>PLASTIC INJECTION MOLDS</td>
<td>• Threaded caps • Pre-forms • Consumer goods packaging (bottles,</td>
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<tr>
<td></td>
<td>applicators, etc.) • Automotive lighting systems • Medical components</td>
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<tr>
<td>CUTTING TOOLS</td>
<td>• Deep hole drills • Forming taps • High performance inserts • Milking</td>
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<td></td>
<td>cutters for nickel and titanium alloys</td>
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<tr>
<td>TRANSMISSIONS</td>
<td>• Gear boxes (Formula 1, helicopters...) • High performance bearings</td>
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