Cutting Edge Preparation Technology

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- Brush Finish Technology
- Drag Finish Technology
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Product Strategy

In order to meet the constantly increasing requirements for higher productivity, our product strategy focuses on the following tool attributes:

- Maximum cutting performance
- Highest tool quality & precision
- Greatest cost competitiveness
- Improved machining solutions
Product Strategy

**Optimized Carbide Grades**
- Fine carbide grades (1 μm - 1.3 μm)
- Submicron carbide grades (0.5 μm - 0.9 μm)
- Ultra fine carbide grades (0.2 μm - 0.5 μm)
- Nano carbide grades (<0.2 μm)

**Highly Innovative Tool Geometries**
- Unique flute forms
- Various honed cutting edge contours
- Special grinding features
- Variable helix and variable flute offsets
- Optimized rake, clearance and helix angles

**Superior Grinding Finish & Dimensional Accuracy**
- Flute Concentricity cutting diameter range: (0.2 mm - 3.0 mm): 0.003 mm
- Flute Concentricity cutting diameter range: (4.0 mm - 6.0 mm): 0.006 mm
- Flute Concentricity cutting diameter range: (8.0 mm - 12.0 mm): 0.008 mm
- Flute Concentricity cutting diameter range: (14.0 mm - 20.0 mm): 0.010 mm
- Radius Tolerance: +/- 0.004 mm
- Shank Concentricity: 0.002 mm
- Cutting Diameter Tolerance: h5, h6 & h8
- Shank Diameter Tolerance: h5

**Advanced Tool Coating Technology**
- AlTiN coatings
- Nanocomposite coatings
- X-LC coatings
- Aluminium Chromium Nitride coatings
- Diamond coatings
Cutting Edge Preparation

**Definition:**
- Radial form along the cutting edge of each flute of a rotary cutting tool.
- Post polishing of the cutting tool flutes.

**Goals:**
- Homogenous cutting edge size.
- Minimization of grinding marks / Improvement of cutting edge finish.
- Generation of a defined cutting edge size.

**Applicable tools:**
- Solid Carbide Drills (Universal, High Performance).
- Solid Carbide End Mills (Universal, HSC, HPC, HFC).
- Solid Carbide Reamers.
- Special Carbide Cutting Tools.
Advantages of Cutting Edge Preparation

- Increased cutting tool performance / Higher speed and feed rates.
- Improved tool life and reduction of chipping (controlled cutting edge wear).
- Stronger coating adhesion & coating droplets removal with post polishing applications.
- Better surface finishes and dimensional accuracy of the work pieces.
- Decreased spindle load, vibration and chatter / Improved machining conditions.
- Reduction of manufacturing cost.
Cutting Edge Preparation Technologies

1) Brush Finish Technology

Definition:
• Engagement of rotating brushes on the cutting edge.

Advantages:
• Fast & conventional honing technology.
• Existing & fairly inexpensive technology.

Disadvantages:
• Poor surface finish / Destruction of a good grinding finish.
• Inconsistent size and shape of the cutting edge preparation.
• Limited to cutting diameters of 3 mm and larger.
• Limited in automation and mass production.
2) Drag Finish Technology

**Definition:**
- Rotating of cutting tools in abrasive media.

**Advantages:**
- Lower cost technology.
- Good surface finishes as long as abrasive media (porcelain pins / fused alumina) is controlled.

**Disadvantages:**
- Requires constant media control and management.
- Mandates high operating skills & experience.
- Time consuming.
- Inconsistent results with lacking process control.
- Limited to cutting diameters of 3 mm and larger.
Cutting Edge Preparation Technologies

3) Best Carbide’s Edge Preparation Technology

- Automated new technology / Independence of operator skill and experience.
- Consistent cutting edge preparation on each flute and along the entire cutting edge.
- Superior surface finish.
- Highly repeatable results.
- Sizes range 0.6 mm – 25.0 mm / Strong competitive advantage for Micro Tools!

8µ honed homogeneous radius
Cutting Edge Preparation Technologies

3) Best Carbide’s Edge Preparation Technology - Continued

Cutting Edge Preparation for various metal applications:

- **Fe**: Cast Iron & Ductile
- **SS**: Carbon Steels & Stainless Steels
- **Hs**: Pre-Hardened Steels & Alloy Steels
- **Ht**: Hardened Steels up to 70 HRC
- **Tt**: Titanium & Titanium Alloys
- **Nt**: High Temperature Alloys / Nickel Alloys / Monel
Cutting Edge Preparation Technologies

3) Best Carbide’s Edge Preparation Technology - Continued

Size range of cutting edge preparations:

<table>
<thead>
<tr>
<th>Cutting Diameter</th>
<th>Width of Cutting Edge Preparation</th>
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</thead>
<tbody>
<tr>
<td>0.6 mm to 6.0 mm:</td>
<td>0.005 mm</td>
</tr>
<tr>
<td>8.0 mm to 12.0 mm:</td>
<td>0.008 mm – 0.010 mm</td>
</tr>
<tr>
<td>14.0 mm to 25.0 mm:</td>
<td>0.012 mm – 0.014 mm</td>
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</tbody>
</table>
Simply the best choice for advanced carbide cutting tools

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