MTC develops and customizes Thermal Spray Coatings for the maintenance, repair, overhaul and enhancement of mechanical components and assemblies. The coatings are applied during an environmentally-friendly process performed by a multi-functional, computer-controlled robot. The result of the application is a guaranteed strong bond and highly resistant coating.

**Key Points**
- Coating Technologies include **HVOF** (High Velocity Oxygen Fuel), **Plasma, Arc-Spray** and **Flame-Spray**.
- Complementary Technologies include **Shot Peening, Abrasive Blasting, Welding** and **Finishing**.
- Coating Thickness ranges between 10µm and 5mm.
- Final Dimensions and Surface Quality is obtained by machining which includes turning, grinding and lapping.
- Coating Materials include a range of **Metals, Alloys, Ceramics and Carbides**.
- The coating materials have a hardness range of between 30HRB and 72HRC.
- Metallurgical and Dimensional Control Laboratories in-house.
- Environmentally friendly.

**Features**
- Dimensional Restoration.
- Enhanced Surface Characteristics to significantly extend the useful life of the product.
- Thermal Insulation.
- Electrical Insulation or Conductivity.
- Resistance from Abrasion, Corrosion, Erosion, Fretting, Galling and Chemical Attack.
- Sealant.
- Replaces obsolete processes such as Hard Chrome Plating.

### Examples of Coating Types

<table>
<thead>
<tr>
<th>Coating Materials</th>
<th>Hardness Range</th>
<th>Bond Strength (PSI)</th>
<th>Working Temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pure Metals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Al, Cu, Mo, Ni, Ti</td>
<td>30 HRB - 40 HRC</td>
<td>4,000 - 7,000</td>
<td>Up to 750</td>
</tr>
<tr>
<td><strong>Alloys</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Ni, Co, Fe, Bronze, CuAl base, e.g., Stainless Steel, Cobalt and Self Fused</td>
<td>35 HRB - 65 HRC</td>
<td>4,000 - 7,000</td>
<td>Up to 1,000</td>
</tr>
<tr>
<td><strong>Ceramics</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Al₂O₃, Cr₂O₃, ZrO₂, TiO₂, Fe₂O₃</td>
<td>45 HRC - 72 HRC</td>
<td>4,000 - 10,000</td>
<td>Up to 2,000</td>
</tr>
<tr>
<td><strong>Carbides</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WC, Cr₃C₂, TiC</td>
<td>45 HRC - 72 HRC</td>
<td>5,000 - 10,000</td>
<td>Up to 815</td>
</tr>
</tbody>
</table>

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Examples of Thermal Spray Coatings

The following examples are a few Thermal Spray Coating projects undertaken by MTC for a range of Civilian, Aerospace and Defense Industries.

Gas Turbine Engine Compressor House Contour Restoration - Using a Metal Alloy, MTC restores the OEM dimensions.

Combustion Chamber Liner - Yttria-stabilized Zirconia, a Thermal Barrier Coating (TBC) for protection against excessive heat.

Helicopter Hub Sub-Assembly - Abradable Coating performed by Plasma technology using a Copper Aluminum Polyester.

End Plate of a UAV Engine - A pure Molybdenum Coating performed by Arc-Spray for protection from Galling.

Thermopile Disk - An Unreflective Chrome Oxide Coating is used to protect Aluminum or Copper from Laser damage.

Thermopile Disk - Alumina creates an Electrical Insulation Coating to prevent a short circuit.

Hydraulic Piston Rods from a Military Aircraft - Coated with Tungsten Carbide (by HVOF) to protect from Scratching and Erosion.

Damper System from a Helicopter - Coated with Tungsten Carbide to protect from Scratching and Erosion.

Pressure Rods from a Chemical Reactor - A neutral Chrome Oxide Coating protects from Chemical Attack.

Sub-Sea Ball Valve - A multi-layer Titanium Oxide, Chrome Oxide & Tungsten Carbide Coating results in a Hermetic Seal and protection from Erosion.

Commercial Printer Paper Feed Roller - An Alumina Coating is used to increase Friction for feeding paper through the printer.

Landing Gear Fork - Coated with Tungsten Carbide to protect from Scratching and Erosion.

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