Extreme ISF® Process Installations

Extreme ISF® Process

The Extreme ISF® Process is a suite of chemical and chemical-mechanical surface finishing and polishing technologies capable of removing the extreme surface roughness and surface/near-surface defects inherent to metal AM components while simultaneously improving component performance and appearance.

The Extreme ISF® Process is comprised of two primary process technologies: Chemical Polishing (CP) and Chemical-Mechanical Polishing (CMP). CP and CMP can be used individually or in combination, and are compatible with a wide range of component geometries including lattice structures and complex internal passages (ex. rocket nozzle cooling channels). REM's unique chemically assisted technology is also better able to preserve component features than abrasive or electrochemical processes.

REM'S EXTREME ISF® Benefits

- Reduce roughness/waviness
- Remove powder/eliminate FOD
- Remove oxide layers
- Remove support structures
- Increase dynamic fatigue life
- Increase corrosion resistance
- Increase tensile strength
- Increase cleanliness
- Improve flow performance
- Reduce pressure drop

REM Extreme ISF® Processes can meet specific material removal targets, with the capability to hold tolerances up to +/- 0.0001" (~2.5 µm). REM's process technology can produce surface finishes <4 µin (0.1 µm) Ra, can be used to produce commonly specified legacy component surfaces [ex. <125 µin (3.2 µm)], or can preserve roughness in the form of waviness while eliminating powder from a surface.

REM'S EXTREME ISF® Alloy Capabilities

- Titanium Alloys
- Superalloys
- Copper Alloys
- Aluminum Alloys
- Stainless Steel Alloys
- Nickel Alloys
- Nickel-Chrome Superalloys
- Refractory Alloys
- Bulk Metallic Glass Alloys

The Extreme ISF® Process is a robust process technology that is scalable and available via outsourced processing or as a technology installation.

remchem.com | Contact us at inquires@remchem.com for pricing and lead-time

REM quality management system is certied to ISO 9001:2015 and AS9100:2016 Rev D.

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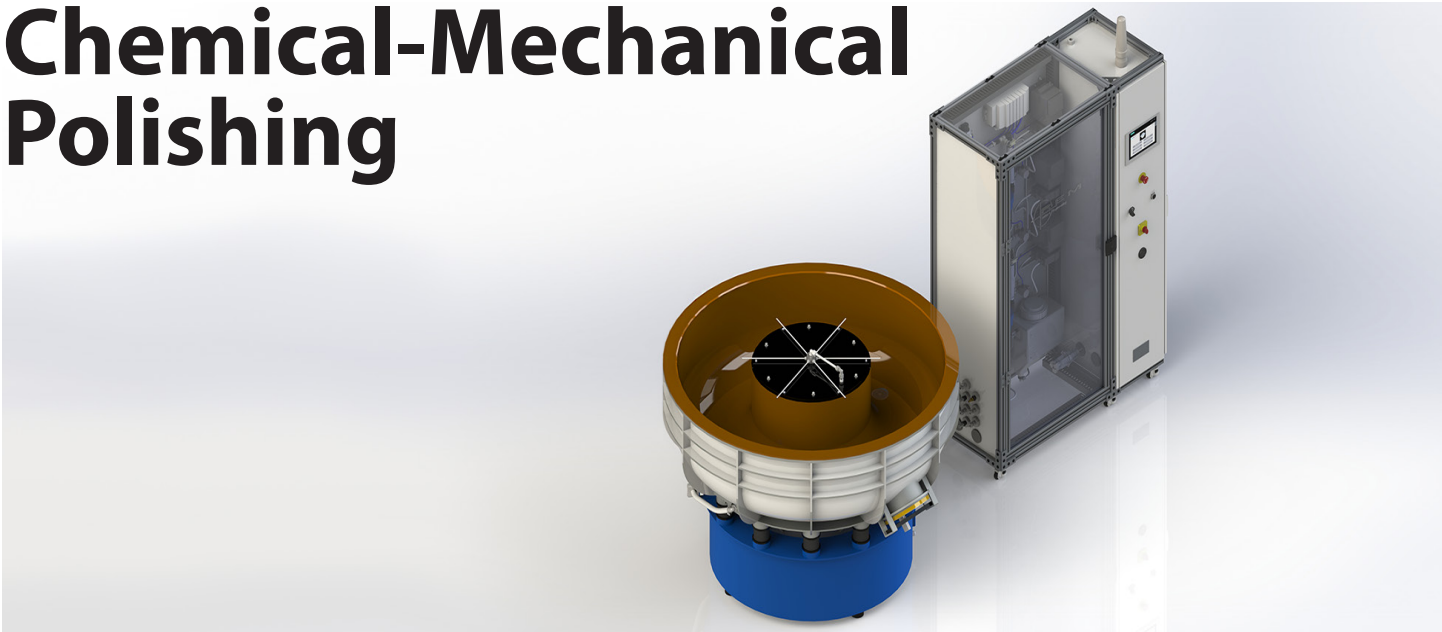
Chemical Polishing

Extreme ISF® Process Cell

REM's Chemical Polishing (CP) process can be installed via an Extreme ISF® CP Cell™. Extreme ISF® CP Cells are designed and customized to your specific processing needs. CP Cells can accommodate single or multiple metals/alloys, can offer a variety of workholding approaches, and can be upgraded for complex internal channel processing.

Chemical-Mechanical Polishing



REM's Chemical-Mechanical Polishing (CMP) process can be installed via an Extreme ISF® CMP Cell™. Extreme ISF® CMP Cells are sized and customized to your specific processing needs. CMP Cells feature a range of processing apparatus options including vibratory bowls and tubs, centrifugal disc machines, and other customized finishing equipment. As with the CP Cells, CMP Cells can accommodate single or multiple metals/alloys, and they offer fully machine controlled processing allowing for hands-off operation.

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About REM

REM Surface Engineering is a global technology leader in providing surface engineering and polishing solutions to metal components. REM is the inventor of the ISF® Process, the Rapid ISF® Process, the Extreme ISF® Process, and the REM® Process. These chemically assisted/accelerated processes are value-adding and performance-enhancing isotropic superfinishing technologies that offer unmatched benefits as compared to traditional machining, abrasive, or electrochemical processes.

REM's technologies are used on many of the most demanding applications including over 70 major aerospace platforms as well as multiple lunar and Martian rover missions. REM's technologies have been installed in hundreds of customer sites across North America, Europe, South America, Asia, Africa and Australia. REM quality management system is certified to ISO9100:2015 and AS9100:2016 Rev D, and with over 55 years in business, REM has the capabilities, expertise, and experience to meet almost any surface finishing challenge.

REM is a third-generation, family-owned business. We treat our customers as partners, and we commonly have ongoing business relationships that span multiple decades. Our focus is always to provide our customers with solutions that meet or exceed their needs and expectations.

With three US sites and global distribution capabilities, REM is ready and able to support your surface finishing installation needs

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