REM Surface Engineering

Surface Finishing Solutions for Addititve Manufacturing

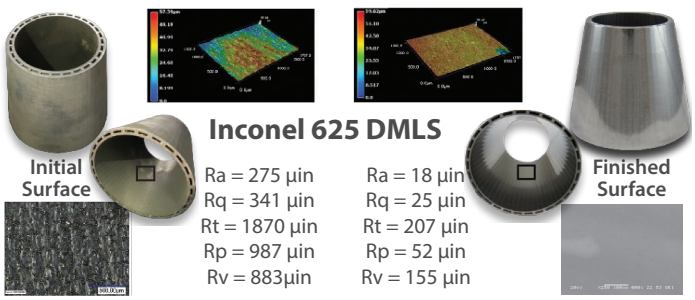
Metal Additive Manufacturing

The Additive Manufacturing (AM) Industry requires improved surface finishes to enhance component performance and improve aesthetics.

REM's Extreme ISF® Process is well suited to meet these needs due to its unique chemical/chemical-mechanical technology and its broad component geometry and alloy capabilities.

Part Complexity

AM parts often have complex geometries that require the addition of supports which must be removed and/or have surfaces that cannot be accessed by traditional finishing technologies.



NASA SBIR P1 & P2 Z3.01-5453

As a supplier to the Aerospace, Automotive, and Medical Industries for over five decades, REM Surface Engineering has the knowledge and expertise to overcome these challenges with our surface finishing technologies.

EXTREME ISF®

Process Benefits:

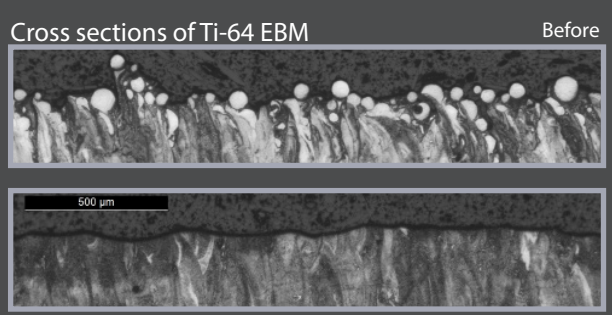
- Increased resistance to bending fatigue
- Increased tensile strength
- Increased part cleanliness
- Reduced turbulence
- Eliminated FOD risk

Part Image Courtesy of Desktop Metal

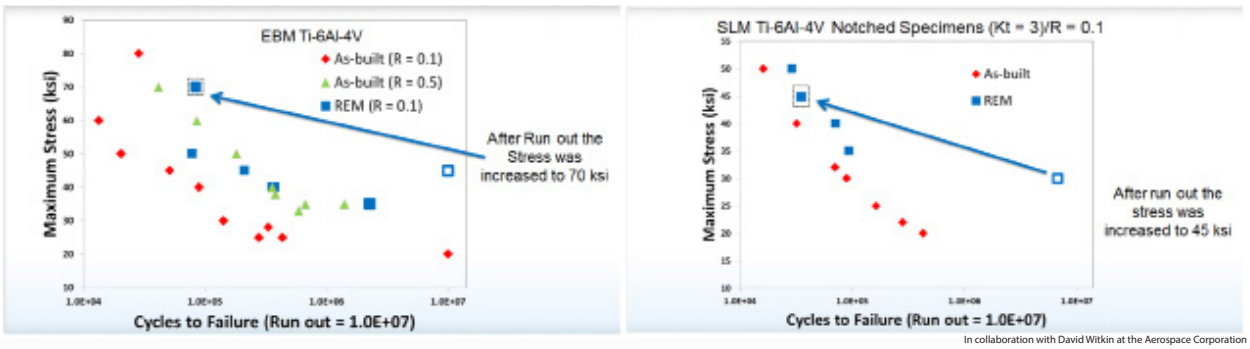
Process Results:

- Removal of surface & near surface defects:
  - *Loose & partially sintered/ melted particles*
  - *V-notch failure points*
- Removal/reduction of support structures
- Elimination of roughness and waviness
- Maintains component geometry

Cross sections of Ti-64 EBM



Extreme ISF® Process:
Uniaxial Tensile Fatigue Test Results



In collaboration with David Witkin at the Aerospace Corporation

Process Capabilities

Alloys:

- Titanium Alloys (Ti 6Al-4V, TiAl)
- Aluminum Alloys (AlSi10Mg, Al6061, A205/A20X, Scalmalloy®)
- Nickel-based Superalloys (IN-625, IN-718, HX, JBK-75, NASA HR-1)
- Copper Alloys (pure, GrCOP-84, GrCOP-42)
- Stainless Steel Alloys (17-4 PH, 15-5 PH, 316/316L)
- Maraging Steel
- Tool Steels (L40, A2, H13)
- Carbon Steels (4140, Ferrium® C64)
- Invar® 36
- Bulk Metallic Glass Alloys

Build Types:

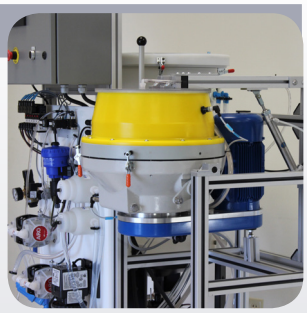
- L-PBF
- E-PBF/EBM
- Binder Jet
- Metal FDM/FFF
- DED

Component Features:

- Through-holes/Channels
- Lattice Structures
- Delicate/Small Exterior or Interior Features
- Organic/Bionic Design Features

The Extreme ISF® Process

The Extreme ISF® Process is a suite of chemical and chemical-mechanical surface finishing solutions including low and high energy isotropic superfinishing technologies. These solutions are available both as outsourced processing services at a REM facility or as technology installations at a customer's site.



Extreme ISF® Ramp System™

Contact REM today at inquiries@remchem.com

REM Surface Engineering
325 W Queen Street
Southington, CT 06489 USA
Phone: (860) 621-6755
Fax: (860) 621-8822
Email: sales@remchem.com

REM Surface Engineering
2107 Longwood Drive
Brenham, TX 77833 USA
Phone: (979) 277-9703
Fax: (979) 277-0309
Email: sales@remchem.com

REM Surface Engineering
8912 Mississippi Street
Merrillville, IN 46410 USA
Phone: (860) 736-1477
Email: sales@remchem.com

REM Surface Engineering, Ltd.
Alington Road, Little Barford
Cambridgeshire PE19 6YH UK
Phone: +44 (0) 1480 210756
Fax: +44 (0) 1480 476339
Email: sales-eu@remchem.com

www.remchem.com
All sites are ISO 9001:2015 and AS9100:2016 Rev D certified