



# Surface Finishing for Electrical Vehicle Performance

## ISF® Technology for the Automotive Industry

REM's ISF® Technology produces an isotropic superfinish that provides a vast array of performance benefits for power transfer components such as gears and bearings. REM's isotropic superfinishing processes, the ISF® Process and the Rapid ISF® Process, are precision surface finishing processes that produce an ultra-low roughness surface with a unique micro-texture, free from manufacturing asperities.

This ISF® Surface is proven to drastically reduce friction, improve efficiency, reduce structure-borne noise, improve lambda ratio, and increase component life. Additionally, the unique nature of REM's ISF Surface has been shown to improve lubricant retention across a wide range of operating regimes.

Both the ISF Process and the Rapid ISF Process maintain critical component geometries such as gear tooth profile, and these processes can be effectively applied to fine pitch gearing, with successful applications to diametral pitch gears of 64 and greater.

REM's ISF Process and Rapid ISF Process are ideal process upgrades to your automotive and electric vehicle power transfer component manufacturing.



## ISF® Technology Automotive Applications

- EV Sun Shafts, Rings & Planets
- Spiral Bevel Differential Gears
- Vehicular Transmission Gears
- Spider Gears
- Axles & Vehicular Driveshafts
- Trunnions, Cranks & Camshafts
- Bearings (any type including Rod Ends)

## ISF® Performance

- Increase EV driving range per charge
- Eliminate break-in & asperity debris
- Reduce applied torque requirements
- Increase load carrying capacity/power density
- Increase gear & bearing durability
- Reduce operating temp & friction
- Reduce structure-borne noise



[www.remchem.com](http://www.remchem.com)

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

## Rapid ISF® creates an ISF Surface in Minutes

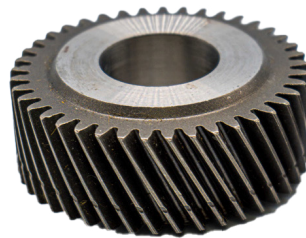
REM's ISF® Process is the precision chemically accelerated surface finishing process for gear and bearing applications. Cycle times are typically in the 1 – 4 hour range and large part volumes can be processed efficiently.

But, if you need shorter cycle times, REM's Rapid ISF® Process can generate an ISF surface finish in as little as 60 seconds.

Rapid ISF Equipment can be operated manually or it can be robotically integrated into manufacturing production lines.



Both the ISF® and Rapid ISF® Processes can be engineered to produce a surface finish of Ra 2 – 10 µm (0.5 – 0.25 µm) with drastically higher planarization than gear grinding or polish grinding processes.



Ground Surface



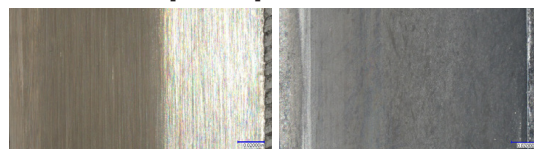
ISF® Surface

## This is what increased range per battery charge looks like on Electric Vehicles

### Isotropic Superfinish (ISF®)



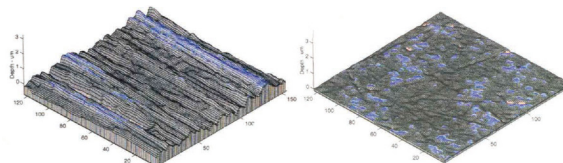
Before the ISF® Process



Surface Images

Before

After



Ground Surface

ISF® Surface



After the ISF® Process



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Please contact us for more information.

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