Many corrosion simulations use a potential model employing polarization data acquired in bulk electrolyte conditions. However, corrosion rate is impacted by the oxygen reduction reaction on the cathodic member of the couple, which is affected by oxygen diffusion. Thin electrolyte layers create higher corrosion risk. We deconvolute the polarization data, on-the-fly, in a multiphase CFD simulation (Siemens CCM+). Thus, the appropriate polarization data is calculated in accordance with the locally predicted electrolyte thickness, leading to more realistic corrosion rates.

We have developed a tool called Corrosion Djinn™, based on Mixed Potential Theory for Corrosion Risk Analysis. Designed to be used by M&P engineers and designers for:

- Easy, rapid calculation of galvanic and self-corrosion rates
- Identifying high corrosion risk interfaces
- Choosing optimum coatings, finishes
- Analyzing interfaces throughout system

We follow updated MIL-STD-889 and has now been used on:

- H-60 (Lockheed-Sikorsky)
- F/A-18 landing gear (NAVAIR)

Provides:

- OCPs, mixed potentials
- Self-corrosion rates
- Galvanic corrosion rate
- Galvanic acceleration

Follows single database of electrochemical data for Corrosion Djinn

- Data acquired using NAVAIR Best Practices

Follows updated MIL-STD-889

Electrochemical Database Development

- Single database of electrochemical data for Corrosion Djinn
- Data acquired using NAVAIR Best Practices

Corrosion Profile

www.corrosiondjinn.com