Make-Break Testing of Gall Resistant Face Seal Fittings

Gall-resistant stainless steel offers greater protection to stress and galling compared to standard alloys. As an added bonus, gall-resistant stainless connections possess superior self-mating, and do not require conventional plated or coated wetted finishes that could possibly contaminate processes.

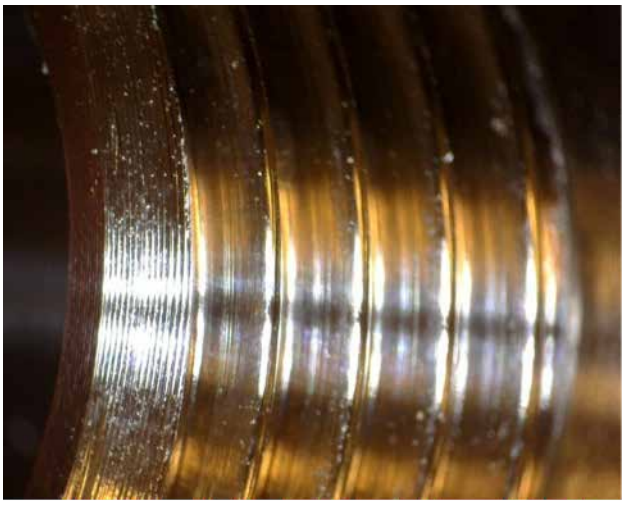
For the purpose of validating a material change from silver plated 316SS to a gall resistant 316SS for face seal fittings, a make-break test was conducted to determine the cumulative wear of repeated simulated gauge installations.

Using male and female face seal fittings made with gall resistant 316SS, the face seal connection between the two fittings was made and broken repeatedly to induce wear and galling on the mating thread surfaces. After twenty make-break cycles, the thread surfaces were compared under magnification to thread surfaces on a new, unused nut (Figure 1).

Under magnification, the tested sample (Figure 2) shows no sign of widespread galling that would be expected with a standard 316SS material. During the test there were no signs of seizing between the two fittings. The test was repeated using dissimilar materials, this time mating a non-gall resistant male face seal fitting with a gall resistant female face seal fitting. The results of the second test yielded similar results to that of the first test. Both tests show nothing that would indicate any issue with repeated installation using gall resistant face seal fittings.

Material comparison

	Silver Plated	Gall-Resistant
Base Material	UNS S31600	Nitronic 60
Electropolished	Yes	Yes
Thread Plating	Yes, silver	No
Corrosion Resistance	Excellent	Excellent



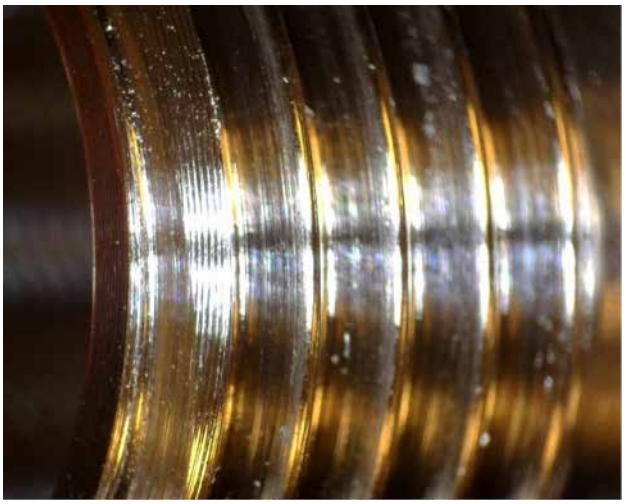


Figure 1. New sample (top)
Figure 2. Tested sample (bottom)

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