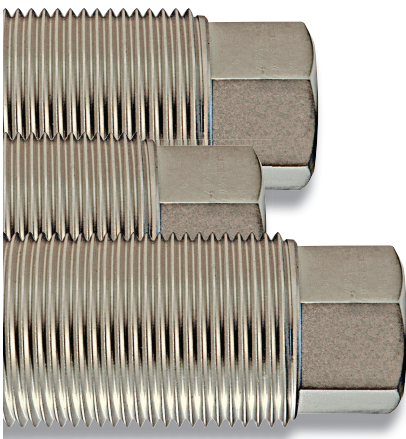


PlasmaBond® Coatings

Bolting Solutions

**CURTISS -
WRIGHT**

Nuclear Power Products and Services



PlasmaBond® Soft-Metal Engineered Surfaces

PlasmaBond coatings are highly adherent soft-metal engineered surfaces applied in a thin layer to the substrate using the PlasmaBond enhanced vacuum-coating process.

Benefits

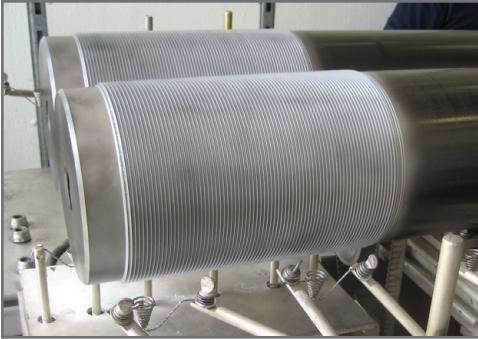
- Superior bonding – molecularly bonded to the substrate
- Stands up to high loads, elevated temperatures, and long stagnant times that benefit critical bolting applications
- Reduces wear
 - Does not migrate away from the working surface
 - Maintains constant contact with substrate during assembly and disassembly
- Reduces galling
 - Creates a metallurgical contrast on the natural surface of mating parts
 - Soft-metal surface is malleable, enabling the coating to stay attached to the surface of the substrate
- Properties of the underlying material are not affected

Realized Results

- Less part maintenance or part cleaning required
- Fewer repairs; reduced damage to parts
- Reduces the risk of stuck studs
- Extended component life
- Greater operational reliability
- Extended maintenance intervals
- Reduced time for disassembly
- Reduced personnel dose
- Reduced critical path time

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The PlasmaBond process is the application of a thin soft-metal film that, using a vacuum method, molecularly bonds the coating to the substrate. The two-part procedure results in superior bonding strength without affecting the properties of the underlying materials.

Cleaning

The part surface is thoroughly cleaned using solvent, glass-bead blasting, and backspattering in order to promote the desired adhesion of the deposited surface.

Coating

1. The engineered surfaces are deposited from a low-pressure energetic vapor flux (mixture of ions, recombined neutrals, and vapor).
2. The flux surrounds the parts, and the metal is introduced using heated filaments.
3. A negative electrical charge is applied to create the plasma and to attract the metal ions.
4. Evaporant ions are accelerated toward the substrate and impact with kinetic energy that produces a strong bond with the substrate.

Does not affect the properties of the underlying materials:

- The PlasmaBond process uses a low flux density, which limits the number of energetic impacts so that temperature increase in the substrate material is negligible.
- Deposited materials used in this process are very pure to ensure that potentially harmful trace contaminants are not present.

Applying PlasmaBond

Existing Parts: With the PlasmaBond mobile unit, we can process existing parts on site at the plant, or parts can be shipped to a decon facility and processed under that facility's license.

New Parts: We process new parts at our facility in Middleburg Heights, Ohio, and deliver to your plant ready for assembly.



PlasmaBond Applications

PlasmaBond is typically applied to the male connecting parts, such as studs, bolts, and screws. Examples include:

- Reactor Vessel Studs
- Turbine Coupling Studs
- Steam Generator Studs
- Pump Casing Studs
- Steam Generator Hand Hold Bolts
- Flange Coupling Bolts
- PORV Body Flange Bolts
- Turbine Coupling Studs



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