



Application Note

Metal Samples' Corrosion Resistant Cladded Access Fitting Assemblies

THE PROBLEM

Industry standard two-inch high pressure access fittings are commonly employed on pipes, vessels, tanks and various structures in the process industry to insert coupons, probes, chemical injection/sampling systems, etc. High pressure access fittings systems are designed to permit safe and easy insertion and retrieval of corrosion monitoring systems under full operating pressure.

The access fitting body materials are usually of the same or similar material as the pipeline or vessel, and also have enough thickness to allow certain corrosion, over time, for its design life. However, after years of operation, the internal threads and seal seat areas may corrode or become damaged in the presence of corrosive fluid service. If the fitting threads corrode and become unusable, the fitting is no longer usable for access and should be removed or plugged, and ultimately replaced. This can be a potentially unsafe condition which compromises the integrity of the equipment. At bottom of the line installation, such situations are common in corrosive fluid applications.

CORROSION RESISTANCE CLADDED ACCESS FITTING

One of the approaches to extend the life of access fittings exposed to extreme corrosive environments is to make the entire access fitting body out of a high corrosion resistance alloy material, such as Inconel®, Monel®, or Hastelloy®. However, this is not an economical solution.

Some manufacturers of these fittings have taken the approach of using an insert or sleeve made of a high alloy material to protect the seal seat areas and threads from corrosion damage. In this method, the sleeve or insert is itself threaded into the body with very fine threads. The seal seat side of the insert includes a corrosion resistant metal C-ring that protects the inner

portion of the threads. The outer portion of the insert projects beyond the body of the access fitting and provides a corner for fillet welds. Additionally, a high temperature, expandable sealing compound is used to protect the fine threads between body/insert.

Metal Samples has developed another industry proven method as an alternative to the sleeve method (Figure 1. Sleeved vs. Cladded Access Fitting). This method is to clad the internal surface of the access fitting with high alloy materials. Cladding high alloy materials like Inconel®, Monel®, or Hastelloy® is usually performed either only for the seal seat area, (Figure 2) or for the entire internal threads up to the seal seat area (Figure 3). The main advantage of cladding with a high alloy material on a base material is that it provides a

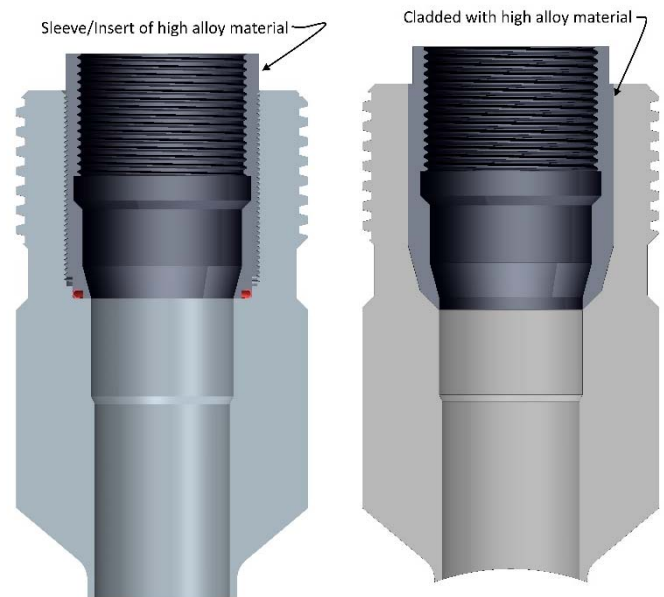


Figure 1. Sleeved vs. Cladded Access Fitting for extremely corrosive services

metallurgical bond between the two alloys that makes this area completely corrosion resistant to extreme corrosive environments. This method allows for a service life that is far beyond the life of any equipment on which they are installed.

When compared to other available methods for design and production of corrosion resistant access fittings, the cladded access fitting is the most robust and cost effective option.

METAL SAMPLES SUPPORT SERVICES

Each corrosion monitoring system’s design requirements will vary according to the application and the plant infrastructure requirements. Metal Samples’ application support team is recognized in the industry to provide plant-specific design support, subsequent implementation and maintenance of the entire system.



Figure 2: Cladding of I625 alloy only for the seal seat

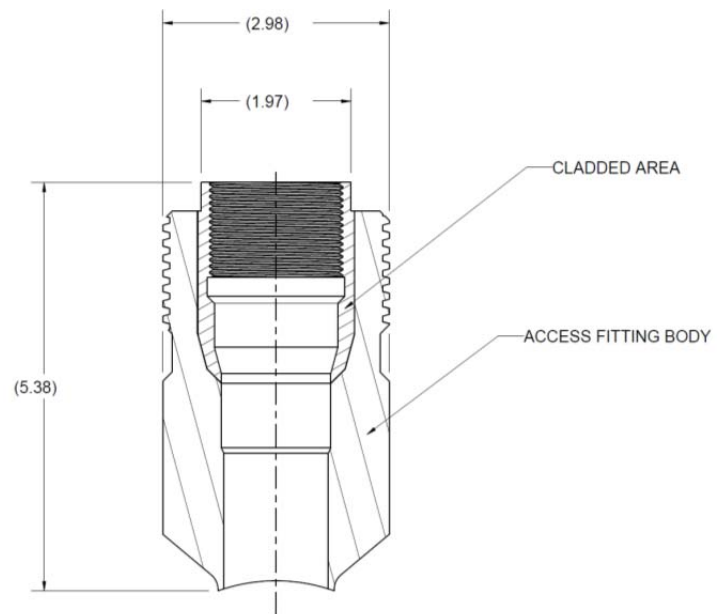


Figure 3: Cladding of internal threads up to seal seat area

This allows corrosion engineers to concentrate on the corrosion monitoring data and their analysis of that data to get the maximum benefit from the implemented system.

For further information on cladded access fittings or sleeved access fittings and their applications contact Metal Samples Co., at msc@alspi.com.