

## *CASE STUDY:*

# STAINLESS STEEL INSERT SWIVEL JOINTS

January 13, 2009  
Monmouth Junction, NJ

There is little doubt to the success of the OILCO Stainless Steel Insert (SSI) swivel joints. The broad range success of the unit around the world supports the credibility of the hybrid process. In recent months, a valued customer asked OILCO to evaluate some units that were placed in the field and extensively used. A long time user of the hybrid SSI swivel joint, we were pleased to have the opportunity to see what condition the units were in, and how they had fared versus the traditional carbon steel units that were previously in place.

The analysis of the units uncovered three issues. Two of which are exclusive to the SSI series swivel joints.

*Item No. 1:* The stainless steel packing chamber held a positive seal. And it did so long after a standard carbon steel unit would have. This is evident from the minor wear to the walls of the packing chamber in comparison to the remainder of the swivel joint cavity. The introduction of the non-corrosive component allowed the unit to operate effectively in its otherwise demanding environment.

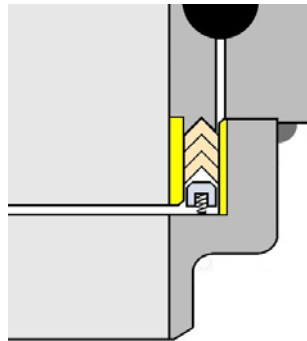
*Item No. 2:* The effectiveness of the chamber, given considerably hard product conditions still had a flaw. After examination of the packing chamber shelf area (lip where the compression springs establish force to push the adapter into the chevron seals), it was noted that, given a high corrosive material, the shelf will be effected and suffer deterioration. This will in turn affect the ability of the spring adapter to consistently maintain positive pressure. As a result, under certain operations circumstances, it would be possible to create a condition where the spring adapter fails, thus creating an uneven surface tension of the seals, and therefore interrupting the uniformity of the seal. This would naturally allow contaminants to pass the flared edges of the chevron seals and enter the remainder of the mechanical cavity of the swivel joint.

*Item No. 3:* As with most swivels, regular maintenance still remains a concern. Under heavy operation, the

ball races require scheduled greasing. Without this preventative measure, the tolerances of the ball grooves could become compromised, and rotational problems can occur.

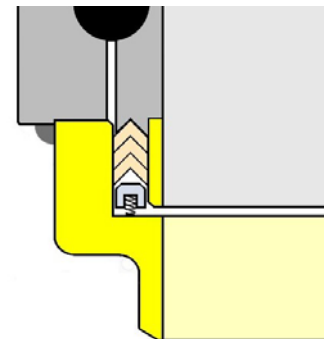
*Conclusion:* Although the SSI swivel joint line does increase the length of service of the unit, given the chemical conditions that many industries are faced with, a new step must be taken to insure that there can be no secondary causes of failure due to corrosion. This translates into increasing the stainless steel chamber to include any portion that could come in contact with that environment. Further, scheduled maintenance must be performed in order to maintain mechanical tolerances so that the unit will afford the highest level of performance and have the greatest chance at continued product containment.

Although no system can guarantee an infinite level of performance, but by further developing an already established practice, the SSI series will offer an even better opportunity for consumers in both price and efficiency.



The current SSI series has a stainless steel packing chamber, but only on the seal contact walls. This provides protection in only the soft seal contact area.

The new SSI series will have a complete chamber of stainless steel. This includes the operational shelf of the spring adapter, which will prevent unit failure due to a secondary corrosion source.



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