Newsletter # 6 - 2012

CROSS TOOLS Co. Trademark

News & Tips

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Corrosion . . . The thread killer

You've probably heard someone say a thread has "grown" in the hole. What they really meant was it's frozen in probably by corrosion and won't come out without a very good chance of bolt breakage.

The simplest corrosion is rust. All you need is air, warmth and steel . Moisture or high humidity helps a lot too. But there's another kind of corrosion that doesn't even need these "good" environmental conditions − although, once again, water and air will assist the process tremendously. The kind of corrosion we're about to talk about is called "Galvanic" corrosion or maybe "electrolysis". Most people have heard of it but it's handy to know when and where it's likely to happen and what to do about it.

To give you some idea how easily this deadly cancer can get going, here's a story about an unlikely suspect − a public address system. This audio system would go alright for a while, then it would suddenly get a dose of terrible crackling static. The aweful noise finally boiled down to a problem with the connecting plug on the main microphone. The male pins were a different metal to the female socket. Because there's a small electric current running through the circuit all the time, these two dissimilar metals kept coating themselves with a thin film of corrosion. It was the constant trickle of an electric current that was causing the trouble, even though, due to air conditioning, there was very little moisture. The pins in the plug would build up a thin film of chemical salt (created because of the small electric current) and then the terrible crackly static would start happening again.
It took quite a while to figure out what was going on. But after cleaning the pins up over and over, and finding the problem reappear very quickly, we finally diagnosed what the trouble.

So what's that got to do with your average mechanical repair?

Well, it just illustrates the point. Imagine a thread where you *have* got moisture, heat and stronger electric currents flowing. Remember the whole electrical system is earthed to the frame in most machinery and very high currents are running around at times. Add stainless steel and aluminium and wacko! . . . you've got a witches brew for the corrosion gremlins. BUT!! . . . you thought stainless was infallible. Not so! *Any* dissimilar metals in close contact create an electric current flow. Some make a great big current, some a tiny one. It depends how similar the metals are chemically. A coating such as grease can help stop the current flow and help retard the process a bit, but it won't altogether beat it.

Below is an interesting chart

This chart shows you what degree of corrosion you can expect when two metals are in contact. To use the chart, go to the "Left Hand Metal Scale" and put the end of a ruler on one of the metals you want to check. Then slide the edge of the ruler up or down the "Right Hand Metal Scale" to the other metal in the combination you want to check. The dotted lines show examples. The numbers on the middle scale indicate how big a corrosion problem you'll create. A Large number means big trouble and a small number means small corrosion problems.