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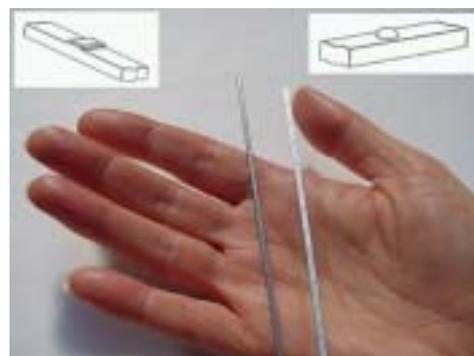
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**CROSS MANUFACTURING CO. (1938) LTD.**

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## Serendipity gets things rolling for Cross

The precision rolling of "difficult" wire alloys to the highest tolerances is one of the specialised skills offered by the Cross Manufacturing Company for the production of engineering components used by the aerospace, automotive and power generation industries.

One of the challenges of rolling to critical tolerances is the fact that any fault or imperfection on the roller surface is imprinted either as a dent or a bump on the surface of the component being rolled, effectively ruining it. However, in overcoming this particular difficulty, engineers at Cross have also used the power of serendipity to turn what was a problem into a positive benefit. They have realised that their ability to manipulate the roller surface can be used to create bumps and dents that are useful. They also found that they could do this accurately to a tolerance of 12 microns (0.0005").



The first successful use of this development was applied to the manufacture of Cross liquid filter coils, where raised rectangular ridges are rolled onto the hard rolled stainless steel wire to produce the filtration gap. This is an old technique, but previously it was used on softer materials such as bronze and mild steel, not on tough alloys like hard rolled 18/8 stainless steel.

Recently, the technique has been further developed to enable it to be applied to alloys that are more difficult to work such as the nickel and cobalt alloys. Inconel 625 and Haynes 25 (L.605) have been successfully rolled in this way. For example, in one case a circular node is rolled onto the wire in order to maximise the strength of a subsequent spot welding process. This is used in the manufacture of a critically important component used in the extreme conditions of drilling for gas and oil.

Rarely do engineers have the chance to benefit from using a principle that originally caused serious problems. A true serendipity. **END**

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