



Clamp it or lose it!



GEOFF COX, GENERAL MANAGER AT ERIKS HOSE TECHNOLOGY, UNDERLINES THE IMPORTANCE OF CHOOSING THE CORRECT METHODS OF HOSE CONNECTION.



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Unless they have a perverse interest, few engineers spend a lot of time thinking about hoses and fittings. Indeed, beyond the time at which hoses are specified and installed as part of original machine build they largely tend to be forgotten... Until they fail.

The reasons that problems occur can be many and varied but are often associated with either an incorrect selection of materials or the wrong choice of hose fittings or clamps. The former normally leads to gradual deterioration over time, while the latter usually produces a sudden and often catastrophic failure. This can be a major safety risk to employees and, to a lesser degree, operating equipment; note that this comment applies both to high pressure hoses – typically above 25 bar – and to hoses and fittings used in lower pressure applications, especially if they are carrying steam or hazardous chemicals.

There is a wide choice of fittings and clamps that engineers can choose from.

In general, however, they include simple O-clips and worm drive clips, specialised reusable clamping mechanisms and permanently crimped or swaged fittings.

Anybody who has carried out maintenance on an older car engine will be familiar with O-clips and worm drives, frequently referred to by the generic name of 'Jubilee clips'; also in this category are buckling assemblies with stainless steel bands and clips. These types of stainless or mild steel clips are suitable for low pressure, aspiration and suction type hoses – typically below 4 bar – and are easy to fit and remove. To be effective they need to be used with relatively soft walled hoses, to enable the clip to apply sufficient pressure on the inner wall of the hose to form an effective seal; even then, these clips can be prone to leaks, especially if they are slightly misaligned or, in the case of worm drives, have been over tightened and cut into the hose wall.

By comparison, swaged or crimped connections offer an excellent degree

of security, giving leak-free connections, especially in higher pressure applications. These fittings have to be formed using a special machine, requiring a qualified operator, and work by deforming a metal ferrule and hose tail permanently into place around the end of each hose. In many instances, the ferrule is designed to cut through the outer hose wall to interlock with the internal layers of wire hose reinforcement.

Although this system produces extremely reliable connections, hoses have to be produced to order off-site, which can make it difficult to carry out urgent on-site repairs or replacement. Similarly, if a hose is damaged then it is impossible to cut away the unwanted area and refit the connector.

Crimped connectors are especially suitable for use in the process sectors, including CIP and SIP applications where it is important to ensure the integrity of closed circuits. They can, however, be susceptible to problems of differential expansion and contraction

between the connector and hose, particularly if used with high pressure steam systems.

The third method of hose fitting is to use safety clamps such as **ERIKS' LMC** range, which is available in aluminium, brass and stainless steel. These clamps are far more reliable than worm drives yet provide a high degree of security and seal integrity, comparable with that of crimped fittings. They are approximately the same cost as crimped connectors, yet can easily be fitted on-site using standard tools, whilst also allowing damaged hoses to be shortened and reused quickly and simply.

In essence, LMC clamps comprise two interlocking hemispherical shells, bolted around the hose end using a locking collar, with an inner safety rim that fits over the hose shank collar. Once the bolts are

correctly tightened the fitting cannot be pulled from the hose, providing an effective, leak-free seal, for hose pressures up to 25 bar. They can be used with both thin and thick walled hoses produced in a wide variety of materials including PVC, rubber and silicone. Hygienic fittings are also available with a smooth internal bore that is free of bug-traps, making the clamps suitable for use in the food sector. Similarly, the outer clamp faces are free from protrusions or parts that can snag, so are ideal for use with hoses on moving equipment or that are frequently dragged across work areas.

Regardless of which method of fitting is chosen it is essential that consideration be given to the media being handled, and its possible incompatibility with both hose and fitting materials.

It is also important to ensure that the hose and fittings are matched correctly, as not all hoses are designed for use with safety clamps.

Perhaps most importantly it is essential that complete hose assemblies are checked regularly for damage and wear. To help customers, ERIKS offers a cost effective on- and off-site hose testing service, with hose assemblies being visually inspected, pressure tested and checked internally with a fibre-optic camera before being issued with an appropriate certificate of conformance.

Hoses and fittings may not be at the cutting edge of technology. They do, however, perform vital functions in machinery of all types. As such, their correct installation and maintenance should not be overlooked; and with such a wide range of connectors and fittings, backed by the technical knowledge and services from ERIKS, it's easier than ever before to ensure the safety, security and reliability of hose assemblies.

