

HYDRO FORMING AND AUTOMATIC LONG SEAM WELD TECHNOLOGY OF EXPANSION JOINTS

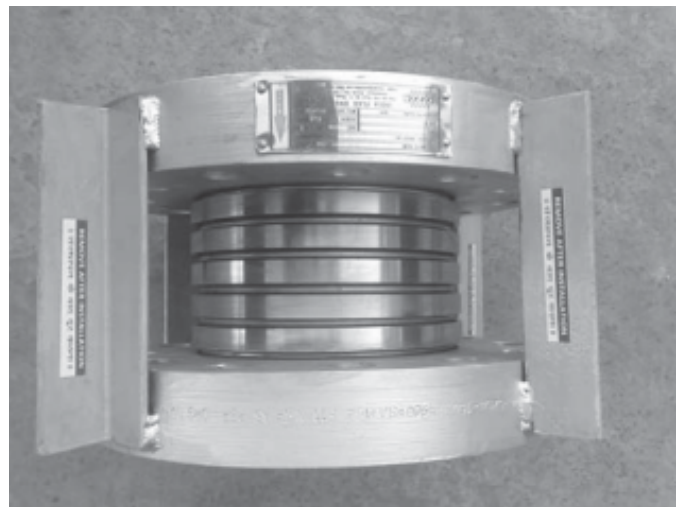
(By Kalpesh Patel – Designer of Expansion Joints)

The latest technology for manufacturing of Expansion Joints (Bellows) is Hydro Forming the Metallic Bellows Element and Automatic Long Seam Welding for Bellows Element.

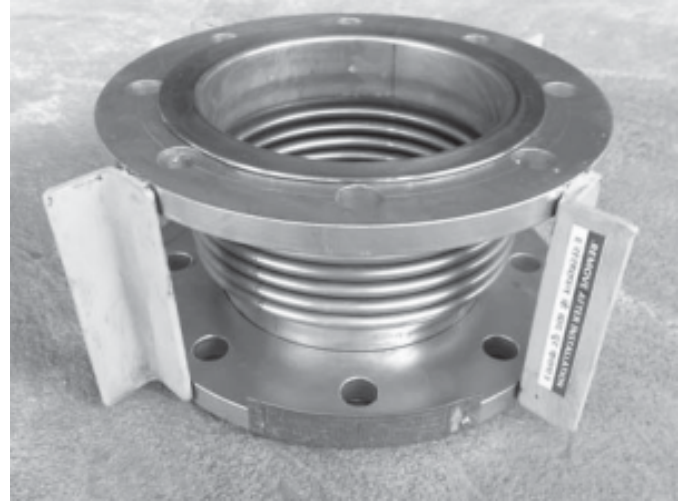
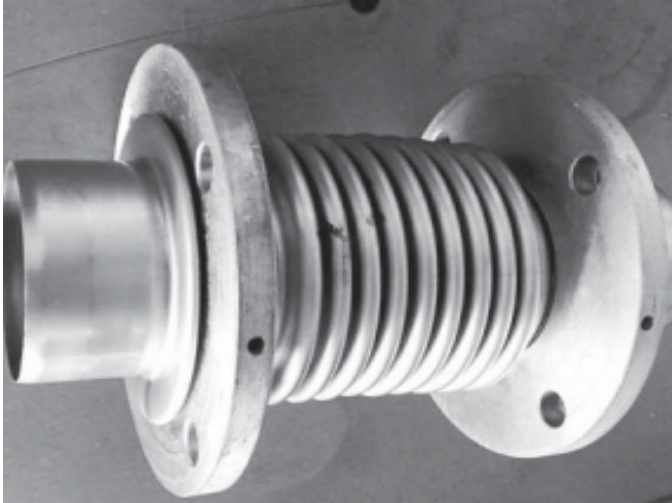
The advantages of Hydro Forming Process are many for producing good quality. These advantages include no scratches, dent or mark on the bellows element, also since this is cold forming process that use the high pressure fluid to form the bellows element, there is absolutely no thinning of material compare to Mechanical Forming Process such as Punch Forming. Also the thickness remains uniform throughout The convolution. This is full proof method of checking the integrity of longitudinal seam weld as the processes require high fluid pressure while forming the bellows element.

The other advantage is one can use this process for mass production because with ONE setup time of the tooling one can manufacture the bellows element without the need for any re rolling unlike the mechanical forming process where rerolling is used for sizing the pitch and height of convolution.

This Hydro Forming process enables the use of Reinforced Ring in single piece and it therefore eliminates the need of fasteners for joining if bellows element needs to designed for high pressure application. The bellows element can be Formed in single piece as per below photos,



Hydro Forming process also helps one to form Vanstone ends directly on the machine while forming bellows convolution. This allows one to employ swivel MS flanges against SS. This is especially advantageous where application needs all wetted parts to be in S.S. The attached photos clearly depicts how easy it is to manufacture a Vanstone end without any weld,



The only disadvantage of the Hydro Forming process is that only standard pipe size bellows can be manufacture due to fixed tooling size and this is an expensive machine compare to mechanical forming machine.

The advantage of Automatic Long Seam Welding is longitudinal seam welding of bellows is uniform throughout its length and is of 100% RT quality, it eliminates the need of skilled welder to obtain uniform long seam weld.

In India most bellows manufacturers employ manual longitudinal seam weld using filler wire where our automatic process uses fusion of the parent material to form a weld joint. This results in a very uniform weld that blends into the parent metal.
