

ROLL FORMING

Stainless Steel Cold Roll Forming

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In the eleventh series of articles on Rollforming we will discuss about rollforming of Stainless steel sections which is increasingly going to be the future trend. In the advanced countries more and more bus bodies are being built using stainless steel and railway coach materials are being switched over to using stainless steel instead of the earlier used carbon steel and thereby achieving a minimum maintenance free life of 50 years.

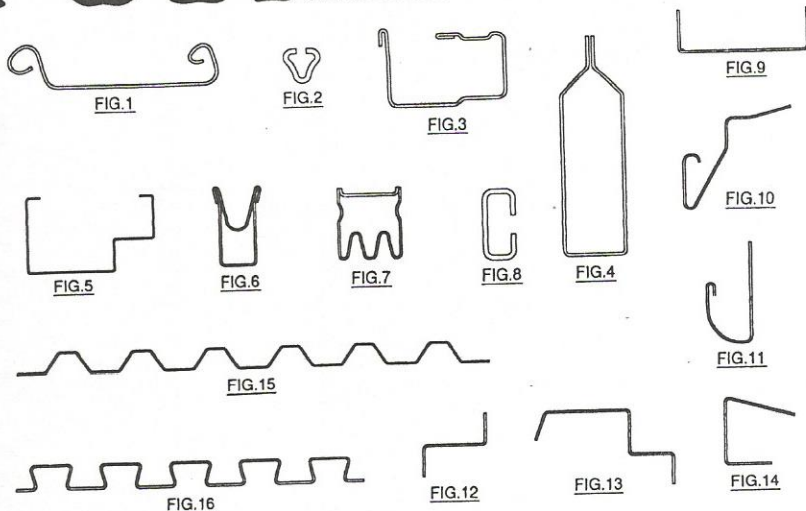
Stainless steel is an alloy of iron with a minimum of 10.5% Chromium content. Out of the different types of stainless steel mostly the Austenetic type (SS304 and Ss316) are rollformed. It has excellent ductility and work hardening property. Ferritic stainless steel (SS 410S, 430, 434 & 446) also could be rollformed. It is lower cost, has moderate corrosion resistance and good formability.

Stainless steel can be rollformed using the same techniques as those used for carbon steel. Certain modification are, however required to Tool sections, tool material and lubricant in order to exploit the full potential of stainless steel forming properties. Because of the work hardening effect of stainless steel power requirement would be higher than carbon steel. In addition, Stainless steel has greater springback than carbon steel and must be overbent to the desired angle. Also the bend radii should be more.

Maintenance and inspection costs are significantly reduced when you use stainless steel. The need to reapply protective coatings, maintain galvanic protection, or closely monitor corrosion related to structural deterioration would be drastically reduced. When these factors are taken into consideration Stainless steel is often the most cost effective choice for long term applications in corrosive exterior and interior environments. Stainless steel is 100% recyclable and has higher scrap value.

In addition, there is no need for coatings, which can contaminate the environment or production lines as they deteriorate, and make recycling more difficult and expensive. There are also no corrosion products to contaminate the environment. These characteristics make Stainless steel an environmental friendly material. Section shown in Fig.1 to Fig.9 have been developed by Sedvik Industries.

Fig.1 is Flat Type shutter lathe which is mostly used in



merchant navy ships. Fig.2 is K-Nail Section of different size which are used by orthopaedic surgeons for fixing bones inside human body. Fig.3 are side rail sections which come in Maruthi Omni vans. Fig.4 and Fig.5 are used mostly for bathroom doors as shutter and door frames. Fig.6 (two sections pressed into each other) and Fig.7 (two section joined by TIG welding) are used in textile machinery for yarn cooling and heating systems. Fig.8 and Fig.9 are used in paper making and textile machinery. Fig.10 to 16 are typical sections used in modern railway coaches. In them Fig.10&11 (rain gutter sections) Fig.12 cant rail section. Fig.15&16 are keystone plate sections. The above mentioned sections are only a few of the examples where stainless steel rollformed sections are used. There are several more areas and examples and their requirements are steadily increasing year by year.

For further details you can send the email at sedvik@vsnl.com or call at 080-25452669. For the old issues containing previous articles you can write to us at info@haritha.org.

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