

Rollforming Vs. Pressbraking

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In this Thirtysecond series of articles on **Rollforming** we will discuss about the advantages and disadvantages of rollforming as compared to the traditional method of bending using the press-braking method. So far, apart from the introductory article we had discussed about the various areas where rollformed sections are being used in India. There is still a tremendous scope for this technology to be used in many other areas in the coming years.

There is a debate/confusion which method of forming is to be adopted for a particular component to be manufactured. Both the forming methods have their advantages as well as disadvantages depending upon the quantity, accuracy, uniformity, surface finish, cost of equipments, cost of labour, production speed, length and section-intricacy requirements. Pressbraking is one of the oldest method of forming/bending of sheets. Rollforming technology is relatively new technology, especially in India. The initial impetus for growth came for this technology in the advanced countries after the first world war and the real growth started only after the fulfilment of mass production requirements in the automobile industries.

In the figure given below it is shown how a simple angle section is progressively formed in four forming stages in a rollforming machine. It is also shown how in a press-brake the angle section is finish formed at different ram positions of the press-brake. Say, an intricate section with six bends could be rollformed in eight forming stations. The sheet or the slitted coil is fed into the rollforming machine to get the finished section after the eight forming station and the production speed could go from 5 meter/minute upto 30 meter/minute. Whereas in the case of press-braking each bend will have to be press-braked one bend after another and hence it is time consuming. Further, in press-braking once the component is produced fresh machine settings will have to be made for the next component. Whereas in rollforming once the production setting is made in the same roll setting further production could be continued without change in the setting. Hence here the tolerances and accuracies are repeatable.

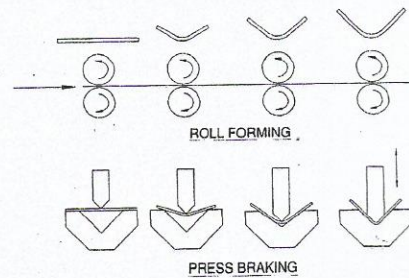
Rollforming can be done on most flat rolled material without injury to the finish. Painted, electroplated and other precoated materials can be formed without damage to the coating. In pressbraking only simple shaped sections could be produced whereas in rollforming there is nearly no limit to the shape of the sections. Normal length of sections that could be produced in press-braking is 3 meters. For producing longer sections one requires

special purpose long press brakes whereas in rollforming the length limitation is limited by only the trasportability of sections.

In rollforming due to the strain hardening at the bends the strength of the sections is increased. Also sharper bending radii than press braking could be achieved in rollforming. In the case of press-braking plate thicknesses upto 25 mm could be bent whereas in the case of rollforming the thickness could go upto 8 mm usually although there are cases where it has gone upto 19mm. In the case of pressbraking the height of the section that could be formed is unlimited but in the case of rollforming it is usually upto 150mm. Cases have been reported of rollforming section heights upto 250mm.

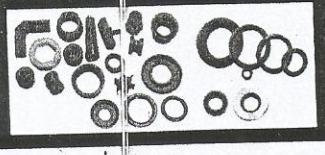
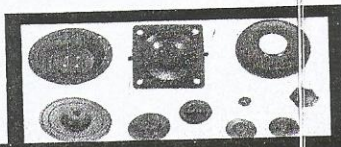
From the economic point of view rollforming is a capital intensive mass production technology as compared to press braking. For short runs of production press braking is economical. Here the tooling cost is very less. Tooling change over time in press braking is very less. Because of the complex stresses produced in rollforming a slight flare comes at the ends of the sections. This could also be minimised by proper roll design, precautions and forming method.

The fast growth of automotive industries in recent times has given the much needed impetus to the rapid growth of rollforming technology. The latest trend is to integrate the prepunching/piercing and post cutting systems into rollforming so that a very high production coupled with accuracy could be achieved.



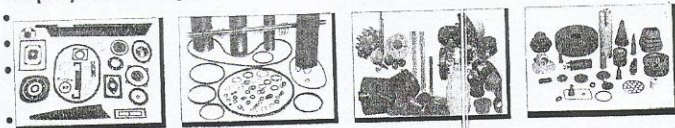
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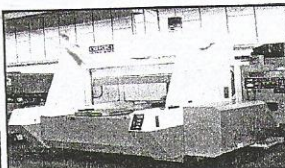
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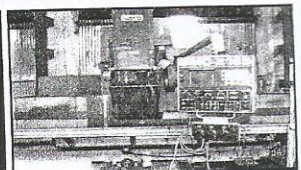
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Horizontal Machining Centre



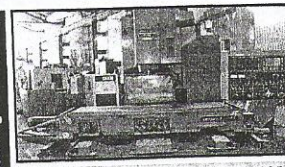
1510 OKK JAPAN 1994
PCH500, 670 x 560 x 560mm, 2 x 500mm
Pallets, 6000 RPM, FANUC OM, YOM 1994

Vertical Machining centre (3 Axis)



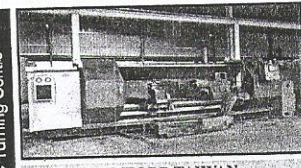
1487 KAFO TAIWAN 2000
VMC - 2185, 2150 x 850 x 750mm, 4500
RPM, BT - 50, FANUC 18M, YOM 2000

Vertical Machining centre (3 Axis)



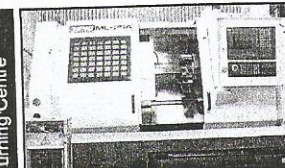
1426 OKUMA HOWA JAPAN 1995
8V - NC, 1500 x 820 x 600mm, 3600
RPM, BT - 50, FANUC OMC, YOM - 1995

CNC Turning Centre



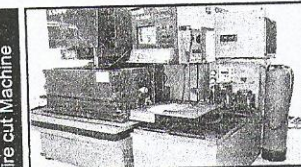
1511 JOHNFOR TAIWAN
LC-41120, CHUCK - 27", ABC 3300mm,
1600 RPM, FANUC OT, YOM 1998

CNC Turning Centre



1508 YANG TAIWAN
ML - 25A, CHUCK - 10", ABC 800mm,
4500 RPM, SEIMENS 840D, YOM 1998

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