New for 2017
Stretched Reduced Pipe

ERW Pipe heated to 950C (1742F) in “normalization process”

100% of inner burr removed on all sizes

Significantly Enhanced “Thread-ability” – perfect for nipple manufacturing

Value Driven Competitive Pricing – Just slightly more than standard ERW

Available in ½” – 2” diameter x 21’ length / ASTM A53A / Schedule 40 Black Plain End

Increased Yield and Tensile strength

Increased corrosion resistance

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SRM Manufacturing Technology

Pipes manufactured with SRM (Stretch Reducing Mill) technology gone into whole body normalization process and hot stretching process to obtain its ultimate size after cold forming. Normalization process is conducted approximately (depend on steel's carbon content) at 920 ºC degree. SRM manufacturing method is one of the delivery requirements in all norms which need heat treatment, some of these norms are API 5L(oil & gas pipes),API 5CT (Casing &Tubing pipes) ,EN 10208-2 (gas pipes) ,EN 10217-2 (boiler pipes).

Pipes are exposed different stresses during ERW manufacturing method and these stresses stay within the pipe after manufacturing process. Normalization done in the SRM process makes pipe's cross section homogeneous and removes stresses by reordering steel's grains. Stress removal makes the pipe more flexible to enhance the pipe's endurance against possible forces. This reordering after normalization process, removes hardness and structure differences within the pipe's welded area. Thus, not only pipe gets more corrosion resistance, but also its mechanical properties are improved.

After the SRM process, difference between yield and tensile strength of pipe rises and thus pipe can be more easily formed before fracture.

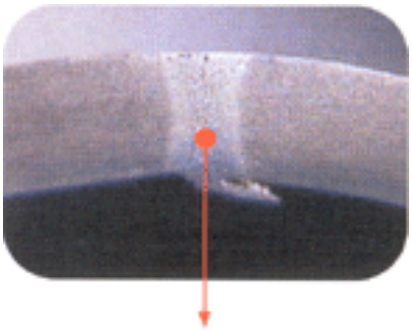


Figure 1: Welding Line
Pipe's Welding Area (HAZ)

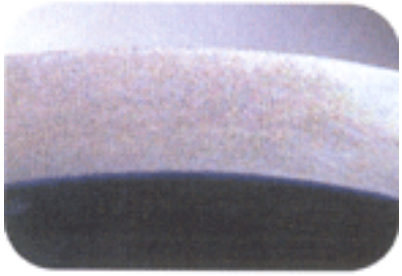


Figure 2: Borusan SRM Pipe
No visible welding Area

Manufacturing Method:

SRM machine with a different number of roller stands reduces diameter of the pipe which treated to 950 ºC, at the same time rollers can change the pipe thickness via rpm differences on rollers.

INDUCTION FURNACE:

Before forming the pipe, it is heated up to 950 ºC by induction furnace as in **Figure 3 and Figure 4** then SRM machine gives the final diameter and thickness requested by the customer.

Induction furnace's total power is 6 MW. It can treat 90 mm mother pipe at 950 ºC with a capacity of 20-25 ton/hour. Welding area after the ERW welding is not homogeneous. Stresses concentrated in the welding area are relieved after heat treatment which makes welding more solid.

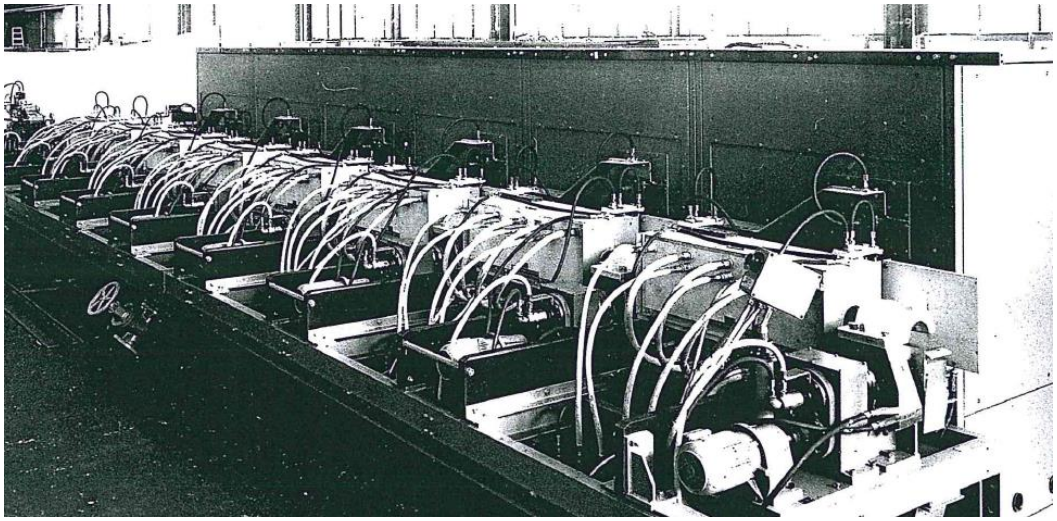


Figure 3: Induction Furnace

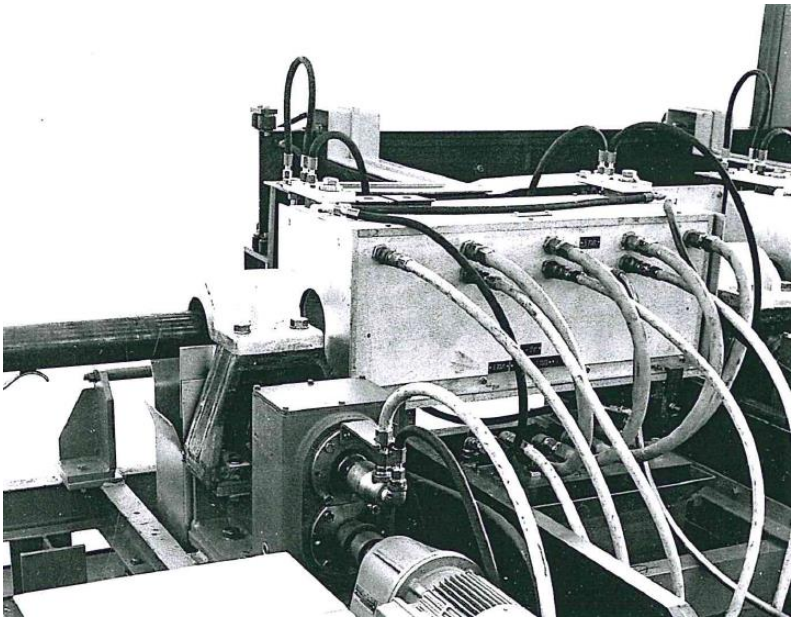
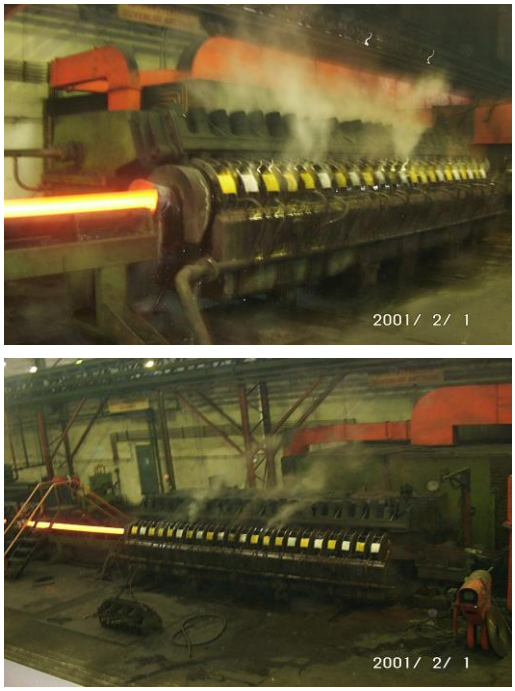


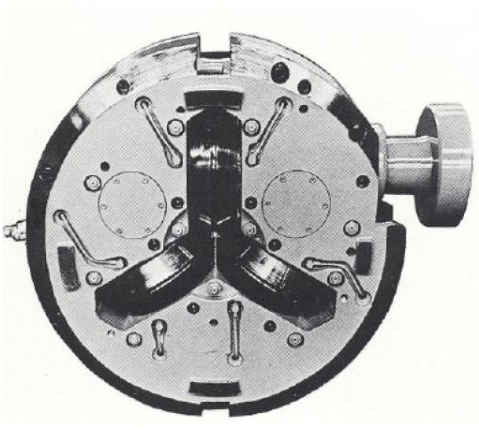
Figure 4: Induction Furnace

SRM:

SRM's initial mother pipe diameter is always 3" (88,9 mm). By changing the number of roller stands, different diameters between ½''- 3'' and different lengths can be manufactured for different customer needs.

In every roller stands pass, pipe's diameter can be reduced 5% – 7% (Figure 5). In the process, no mandrel is used. Thickness adjustment can be achieved by twenty-two differential and eighty-nine helical gears which have different gear ratios to make difference in stretching speed.





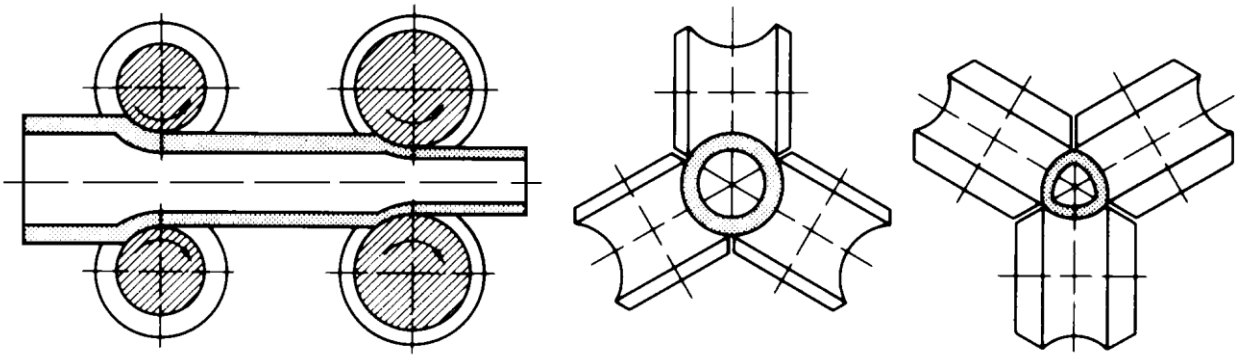


Figure 5

SRM SAW:

Pipes that come out from SRM machine is cut by hot saw in the requested length. While saw is spinning over its axis, saw blade always keep its perpendicular position to the pipe axis through conical gears in the saw's body.

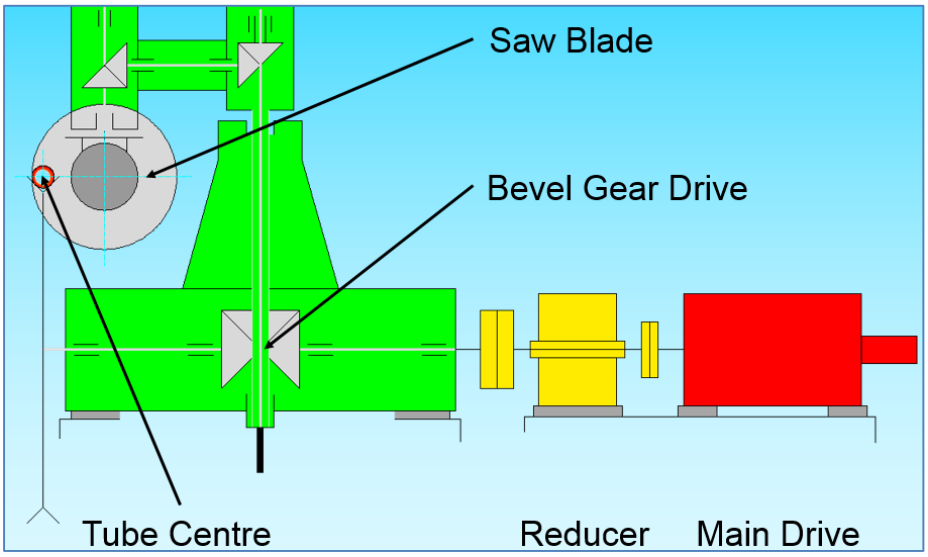


Figure 6

In SRM line 100% of the pipes are produced with inner burr removed. Inner burr is removed while pipe is at 3" size, so that SRM can manufacture with smooth and flawless inner pipe quality even in 21,3 x 5,5 mm pipes. Manufacturing such small diameter pipe in conventional methods and removing inner burr smoothly is quite difficult.

SRM machine has a capacity of 100.000 tons of pipe per year. With its speed and efficiency, it has capacity to manufacture 110 tons of pipe per one shift.