esbelt

metal

Sheet metal manufacturing process.

March 2000

www.esbelt.com

Rolling

Sheet metal production is a continuous uninterrupted process, 24 hours a day, every day of the year. The sheet is rolled up in a coil in order to facilitate its storage, sale, and distribution.

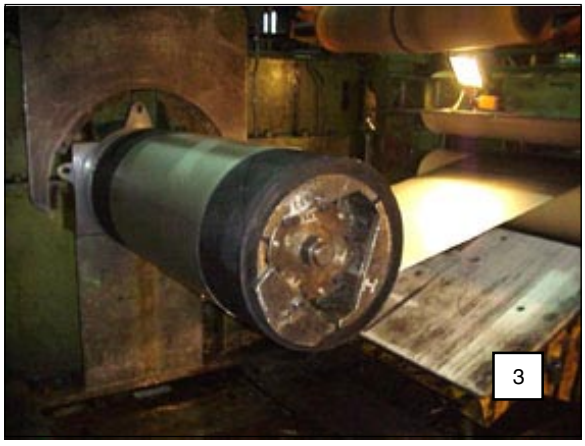
The rolling process uses a conveyor belt in a simple, yet extremely important application. The process may be more easily explained through the accompanying photographs.

Photos 1 and 2 show the sheet metal outlet on the right, which, as it nears the winder, goes between the belt and the drum, or coil nucleus. This starts bending the sheet and thus begins the rolling process.

Once the rolling process has begun, the belt has now completed its work; **photo 3** shows the nucleus turning by itself, without the help of the belt. Once the process has finished the coil is unloaded **(photo 4).** The small size of the coil shown in the picture is deceptive; they can easily weigh up to 30 tonnes.


1


2


3


4

The model described above is a traditional one; it uses just one belt which, as can be seen, is made of rubber. The problem with rubber belts is that the oil with which the sheet is impregnated has an adverse effect on them. The belt starts to curl up on the sides which leads to rolling not being straight. **Photo 5** shows the machine with the belt ready to work. Despite the (variable) tension, one can see that it is curved inwards. A detail in **photo 6** shows the same effect from a different position.

Keram 40UF belts have proved to be an effective and lasting solution, more readily appreciated in modern double rolling machines. **Photos 7 and 8** show one of these machines (fitted with the **Keram 40UF**) ready to work. **Photo 8** shows the front of the machine (where the rolling takes place), and **photo 7** shows the workings of the retractile strut.

Customers that have substituted rubber belts for our **Keram 40UF** claim a dramatic improvement in the homogeneity of the rolls. Improvements against other type of belts are also significant. When considering durability and the costs of low quality finished rolls, the **Keram 40UF** is an economical belt.


5


6


7


8

Cutting the sheet

For those clients or applications which require the product to be cut into individual sheets, a slitter with continual feed on one side (the coil) is used. The cut sheets are removed from the other side by means of various conveyors (see **photo 9**). This application uses more economical belts than Keram, although we still recommend the abrasion and cutting resistance that only the Breda series can provide. **Breda 20CF, Breda 22CF or Breda 20UF** are the alternatives to consider.

A number of installations have several additional conveyors which are used to transport the finished sheets to other cutting areas. **Photo 10** shows a **Clina 20UF** with a width of nearly 2 meters carrying out its task. The sharpness of the conveyed product can be noticed even though the process is carried out with precision, and in few weeks the belt shows marks and cuts on its surface.
This effect is “normal” and should not be considered a weakness of the **Clina 20UF**, a belt which is highly valued by users.

9


10

When the edges of the sheets are filed down a chute forcefully removes the off-cuts towards a number of smaller and narrower conveyors. This material is extremely sharp, which means that it can cause a great deal of damage as it lands on the belt. We recommend the **Keram 40UF** for this. It differs from the **Clina 20UF** (both have a 1.0 mm top cover) in that it offers greater resistance in strong impact applications. The fabric used acts to absorb the impact, in contrast to our competitors' belts with thicker top covers. See **photos 11 and 12.**
A close look at **photo 11** shows that the conveyor being used has rollers which form a slight trough. As can be seen, this poses absolutely no problem at all, even though these belts are normally recommended for flat bed conveyors. This is due in part to the flexible weft upper fabric being used, which easily adapts to these types of conveyors.


11

Magnetic conveyors

Horizontal magnetic conveyors are also used in this industry. These convey small pieces of the same material, half finished depending on the needs of the end customer (car factories, machinery, etc.). One unusual characteristic of this application is that the belt (**Keram 40RF**) transports the product on the return side of the conveyor. The metal is held in place by magnetism until it reaches the unloading area, where the magnetism stops and gravity takes over. Unfortunately no photos are available of this application. However, the German company Thyssen (where the previous photos were taken) satisfactorily uses the **Keram 40RF** (a dark grey belt). This belt is more economical than the **Keram 40UF** and the **Clina 20UF,** but it provides high resistance to cutting.


12

Car factories

The **Keram 40RF** is also frequently used in press outlets and car factories (Seat, Volkswagen, Renault, Citroen...) as well as in industries which cut and supply sheet metal to this sector (ESSA group).