



# Microrolling® Technology

Towards the end of the '70s, while considering the advantages of the rolling process when compared to stationary die wire drawing machines, Continuus-Properti decided to launch a project with the ultimate objective to have a cold rolling mill be used for the breakdown phase of wire manufacturing.

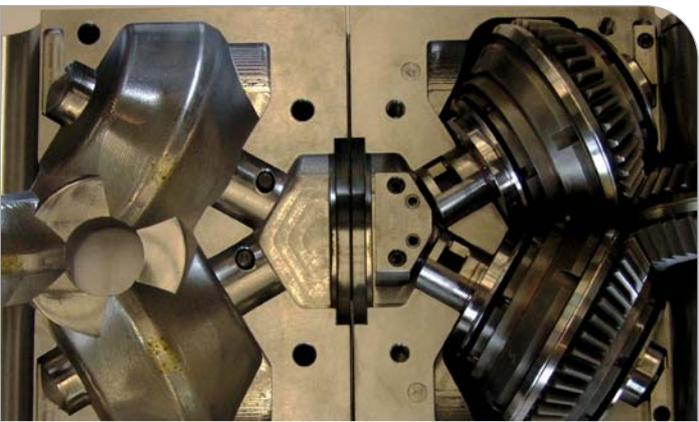
The configuration of such a rolling mill was to follow the same engineering concepts as our mills used for production of continuously cast rod but it had to be more suitable and flexible to provide those characteristics required by the new process and end user.

A prototype called Microrolling®, so as to be distinguished from its "big brothers", was designed and manufactured in a few months.

During many years of strong production, the Microrolling® mill was successfully used for different materials, especially where the work hardening of the material in the drawing machine would render the drawing process inefficient. Presently, around the world, we have Microrolling® mills processing numerous types of materials including: low, medium and high carbon steels, steel cord wires, CO<sub>2</sub> welding wire, strong mechanical Aluminum Alloys, brass and bronze Alloys (Cu base), Ni-Ti Alloys, etc. Some of these materials are heated to a specific temperature, depending upon the characteristics of the material being processed, before entering the Microrolling® mill in order to render them more easily workable.

Empty semi-shell

Complete semi-shell



## Advantages of the Microrolling® Process

The characteristics of the Microrolling® process, when compared to those of the drawing process, can be defined as:

>> **minimization of friction** between the material being reduced and the surface of the work rolls when compared to the friction between the same material and a drawing die. This difference in friction provides:

- **savings of power** required for material deformation
- **less heat generation**
- **high production speed**
- **very good surface finish** of the material

>> **absence of tension** on the material during the rolling process and the possibility of controlling tension from zero up to the value allowed by the friction coefficient between the work rolls and the material;

>> **absence of loop accumulators** during wire production. There are no capstans or loop sensors to control synchronization. Using the Microrolling® technology, the material follows a straight path from coil to the collecting device;

>> **reduced work hardening** when compared to drawn wire with the same amount of material (area) reduction. The wire is not subjected to useless stresses such as tension, bending and localized heating that often times induces supplementary work hardening above that which is due to the simple reduction in wire area;

>> **reduction of equipment downtime**

>> **"pointing"** of the material to pass through each subsequent die is no longer necessary;

>> **"threading"** of the wire through each subsequent stand is automatic. If the wire should break due to a poor weld, downtime is limited to 3 or 4 minutes;

>> **elimination of rod pickling requirement:** a standard mechanical descaling device is sufficient to prepare steel rod for rolling;

>> **possibility to hot roll** because the configuration of the rolling mill allows the introduction of pre-heated material of up to 750°C. This is a major advantage for those materials that resist deformation or have an extremely high rate of work hardening.

If you are experiencing some processing problems and /or speed limitations with new, exotic alloys and other difficult materials, the Microrolling® mill may very well be your solution. *by Michelangelo Nidasio*