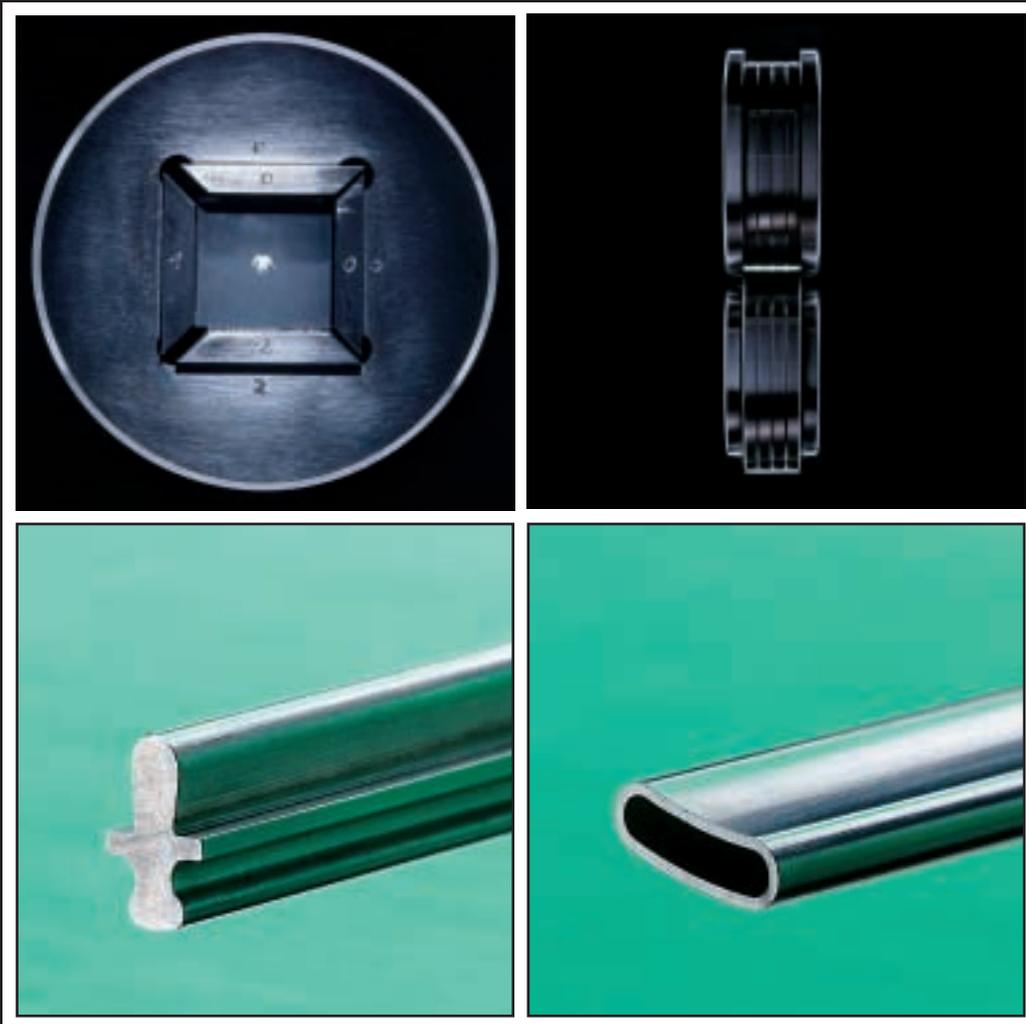
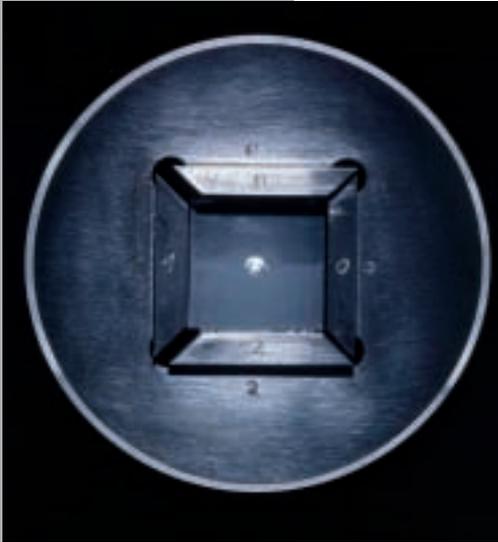




Drawing, Rolling, Straightening



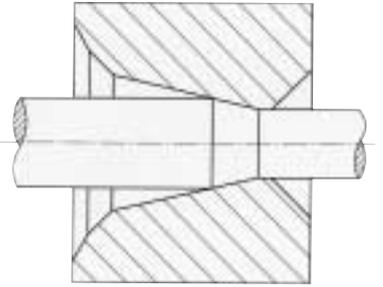
Net Shape Forming



Drawing

HMP manufactures drawing machines for forming of wires and tubes. The workpiece is pulled through a die with the aid of a clamping jaw and thereby reduced in its cross-section.

Instead of an enclosed and stationary die, there can continuously adjustable dies be used with rotating rollers. These dies are called roll frames or turks heads. HMP manufactures roll frames mainly for profiling of the cross-sections of wires and tubes.

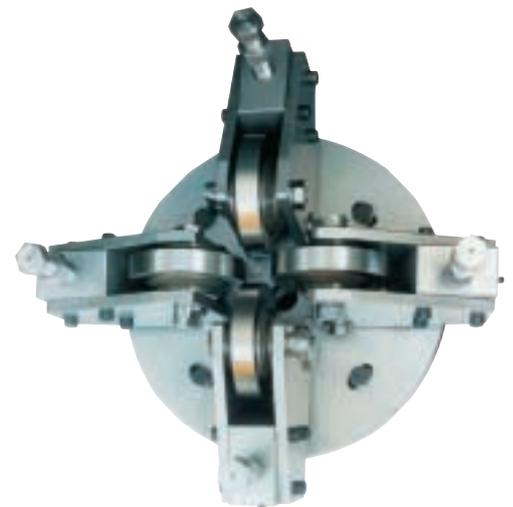


Drawing: operation principle



Roll frame

HMP roll frames are high precision tools with high loading capacity. The special design of a closed frame achieves the greatest stiffness technically possible. Depending upon the application, steel (for precious metals) or tungsten carbide rollers are used. The roll pass is permanently closed. The devices are supplied with bushing type bearings or with roller bearings. The rollers of roll frames can easily be changed. Slight adjustments



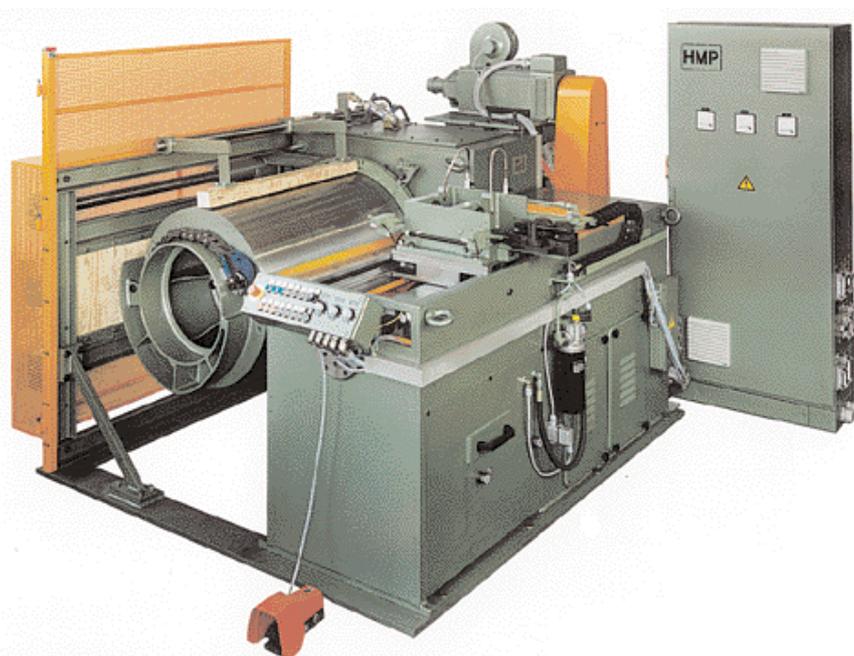
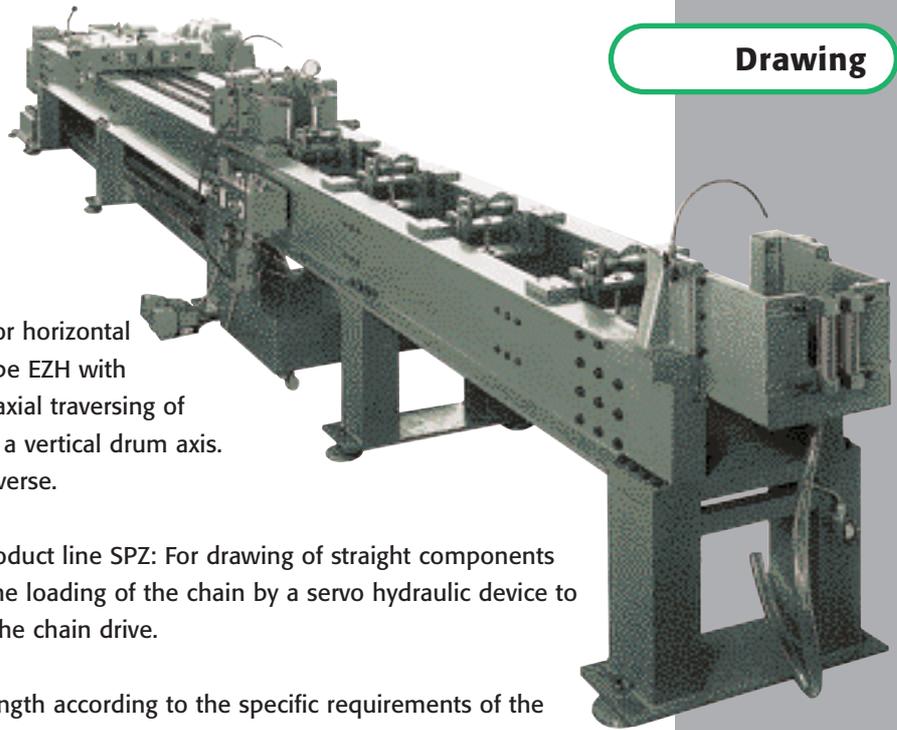
Type	Opening [mm]	Recommended Diameter Range [mm]
RZ0	0 - 4	2,0
RZ1	0 - 6	3,0
RZ2	0 - 10	5,0
RZ3	0 - 15	7,5
RZ4	5 - 20	10,0
RZ5	10 - 25	15,0

HMP supplies different types of drawing machines:

- **Drum drawing machines** with vertical or horizontal drum, product line EZ. The machines type EZH with horizontal drum axis coil the wire with axial traversing of the die holder. Machines type EZC have a vertical drum axis. The material is coiled without active traverse.
- **Caterpillar type drawing machines**, product line SPZ: For drawing of straight components of unlimited length. A sensor controls the loading of the chain by a servo hydraulic device to prevent slipping of the components in the chain drive.
- **Drawing benches**, product line ZPR: Length according to the specific requirements of the customer, between 2 and 25 meters. The carriage is moved by chains, by spindle drives, or hydraulically. The drawing bench can be equipped with mandrel device.

All machines may be equipped with drives with continuously variable drawing speeds. Depending upon the maximum drawing force there are different machine types realized. The maximum drawing force is 250 kN. HMP produces machines with one, two, or three parallel drawings.

The dies may be equipped with cooling or heating devices to ensure that the process is always carried out under optimum forming conditions.



EZH-300: Horizontal drum drawing machine with axial traverse



EZC

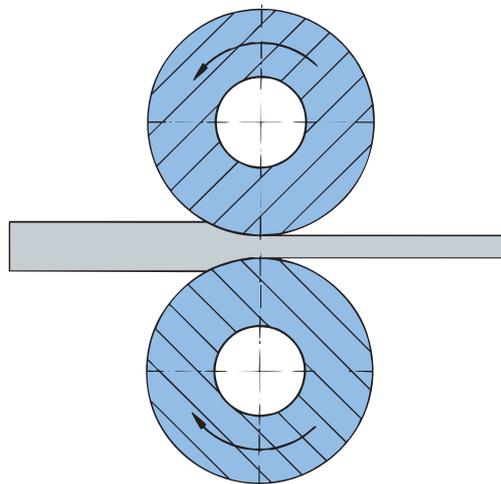
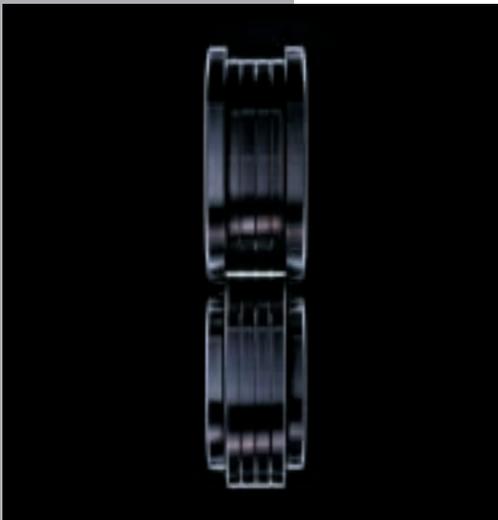
Net Shape Forming

Rolling (product line DW)

Longitudinal Rolling

Rolling machines of HMP have the following characteristics:

- **High precision**, the achievable tolerances are typically within ± 0.001 to ± 0.005 mm
- **Short change-over times** (3 to 5 minutes per stand)



Operation principle: Rolling



HMP manufactures precision rolling machines for flat rolling and profile rolling. The machines may be equipped with one, two, or more stands.

The rolling speed is continuously adjustable. Start-up and deceleration ramps prevent fracturing or deformation of sensitive workpieces.

The control system connection between the individual stations is executed via dancers or torque distribution.

In case of use of continuous measuring devices there is usually an automatic feed control employed, which is servo-driven and absolutely free from reversion clearance.

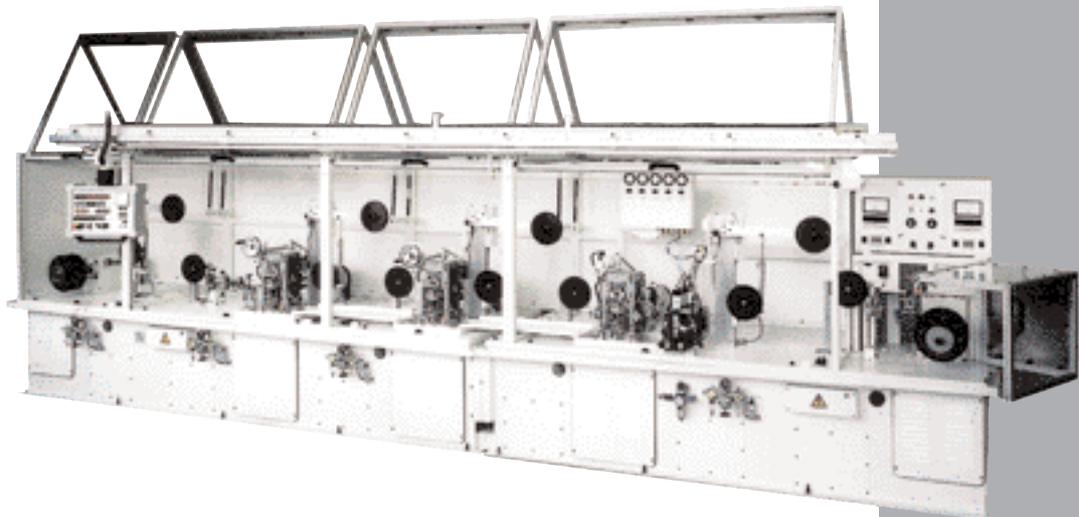
By use of intermediate roll frames or drawing dies the sides of the workpiece can be calibrated or formed.

Rolling



Type	Max. rolling force
DW 1A	15 kN
DW 2A	30 kN
DW 3A	60 kN
DW 4A	120 kN
DW 6A	200 kN
DW 8A	360 kN

DW 2A-D



Three-stand rolling machine with integrated uncoiler and traversing coiler with measuring device for height and width of the workpieces as well as servo-driven control of the rolling thickness.
Accuracy: $\pm 0.25 \mu\text{m}$.



DW 6-O-G

Net Shape Forming



HVS

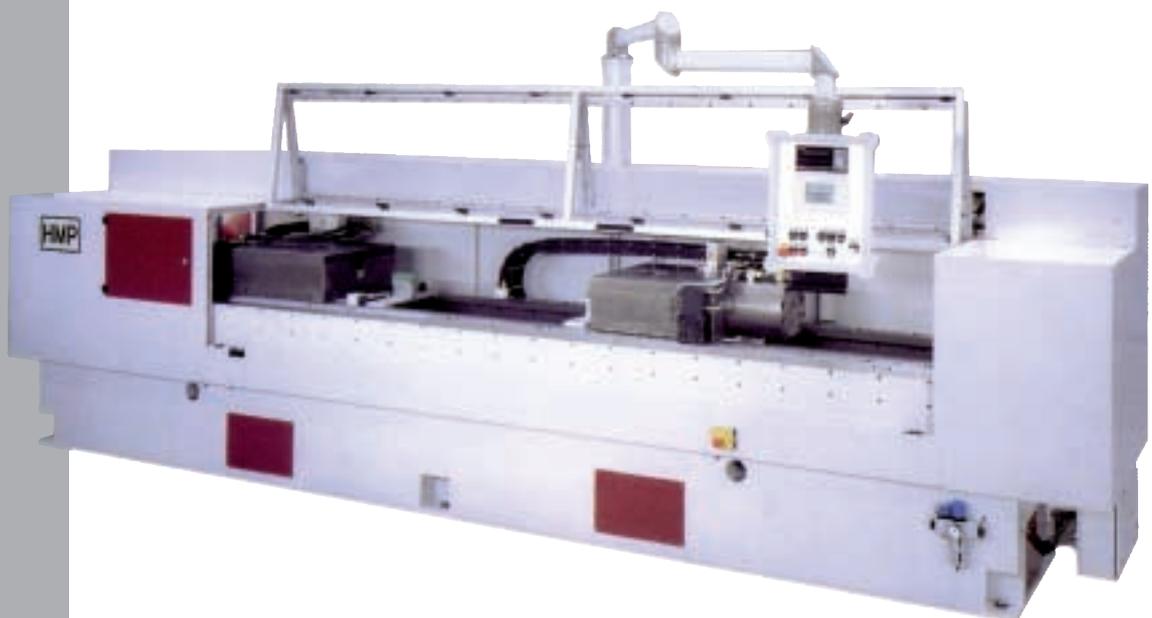
Uncoiling and coiling with and without traverse

As supplementary equipment HMP manufactures machines for uncoiling and coiling. The coiling machines usually have traversing spools. The wire input is constant and without bend. The traversing width is continuously adjustable and independent of the coiling speed.

Speeds, coiling forces, and traverse are automatically or manually adjustable and have electronic control.

The tensions are ranging from 2.5 N to 500 N, the speeds depend on the process. The weight of the spools for standard machines is about 100 kg.

HMP produces stretch forming machines in combination with straight drawing machines or as special machines. These machines are used for straightening of profiles, strips, or tubes. Stretch forming machines may be force, displacement or combined force/displacement controlled.



Stretch forming machine RBH:

Force: 50 - 200 kN
Workpiece length: 500 - 3000 mm
Drive system: servo-hydraulic
Controls: PC for all applications

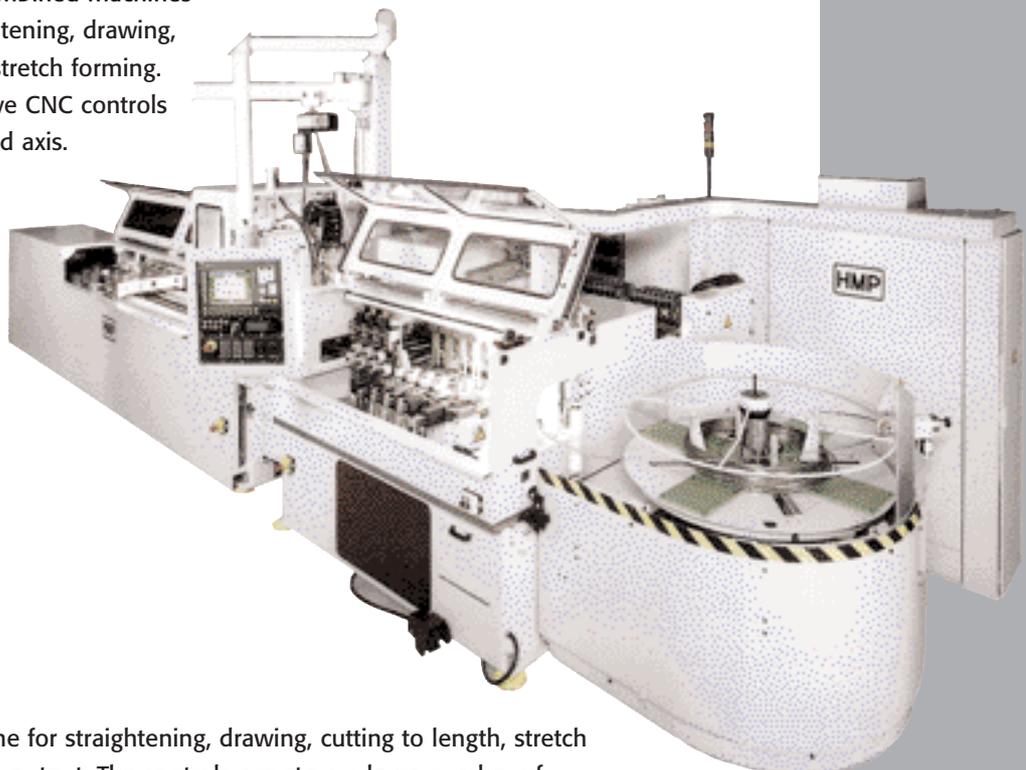
Straightening and Cutting (product line DRA)

HMP's machinery program covers straightening and cutting machines for wires and profiles of 0.2 to max. 12 mm diameter and a maximum cutting length of 6000 mm. Straightening is carried out by different methods:

- **Rolling:** The wire is moved through a series of rollers, each roller is individually radially adjustable. Typically one set of rollers is installed horizontally and one set vertically.
- **Rotary straightening device:** Rotating device with straightening elements. The elements rotate on the workpiece to prevent the creation of surface defects.
- **Rotary swaging:** Besides the characteristic features of a rotary swaging machine for straightening, the machine also calibrates the diameter, improves the surface quality, and increases the material strength.

The through-feed speed of the machines is continuously variable. The cut initiation may be mechanical or via electronic sensors. The machines can be equipped with moving cutting devices.

HMP manufactures combined machines for example for straightening, drawing, cutting to length and stretch forming. The machines may have CNC controls and up to 30 controlled axis.



CNC controlled machine for straightening, drawing, cutting to length, stretch forming and automatic output. The controls can store a large number of programs.

Your Way To Us

By car: Take highway A 8, exit Pforzheim West/Zentrum, exit No. 43. Turn right at the first traffic light, turn next left (not into parking lot) after 200 meters, and then again next left. Parking is possible directly in front of the building.

By plane: The nearest airport is Stuttgart, from there take highway A 8 to Pforzheim. From Frankfurt (Main) Airport take highway A 5 (direction Basel), at junction Karlsruhe change to highway A 8 to Pforzheim.

By train: Pforzheim main station, from there approximately 10 minutes by taxi.



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