Pedax A/S, 3490 Kvistgaard, Denmark

Mobile rebar shearing machines for metal bending companies and precast component production facilities

Metal bending companies in Germany are almost all built up according to a standard model. This situation can be attributed to traditions, transport logistics and production sequences that, due to existing structures, have developed over a period of years, as well as to the multitude of concrete reinforcing steel diameters that have to be processed. Not much has changed in terms of production sequences since the time when processing reinforcement steel was transferred from building sites to efficiently structured business operations. These were able to enhance efficiency by means of improved work preparation, automated stirrup benders and automatic rod cutting machines. To all intents and purposes, the actual material flow has remained unchanged.
This is the reason why, in most companies, rod cutters can be found that travel transversely in front of a rod storage unit containing reinforcing steel sorted by diameter and length. The steel is then drawn out of this rod storage unit. Even if structures have been, and will be further, changed on account of the increase in processing round material, cutting steel from rods is an important consideration in cost effectiveness for any company handling concrete reinforcing steel. Besides this, rod material is cheaper than round material. This advantage in price can play an important role when deciding on a manufacturing system. Mobile rebar cutting machines still occupy a key position as they are the pulse generators for processing machines down line and thus of vital importance for overall operational output.

Metax rebar shearing machines

Metax rebar shearing machines can currently look back on a development history of 34 years. Metax rebar shearing machines work very effectively and rapidly. They are capable of high performance over the entire range of diameters - something made possible by a 140 mm cutting width. Exceptionally great output can be achieved even in the lower diameter range because several rods can be cut simultaneously and cleanly alongside each other.

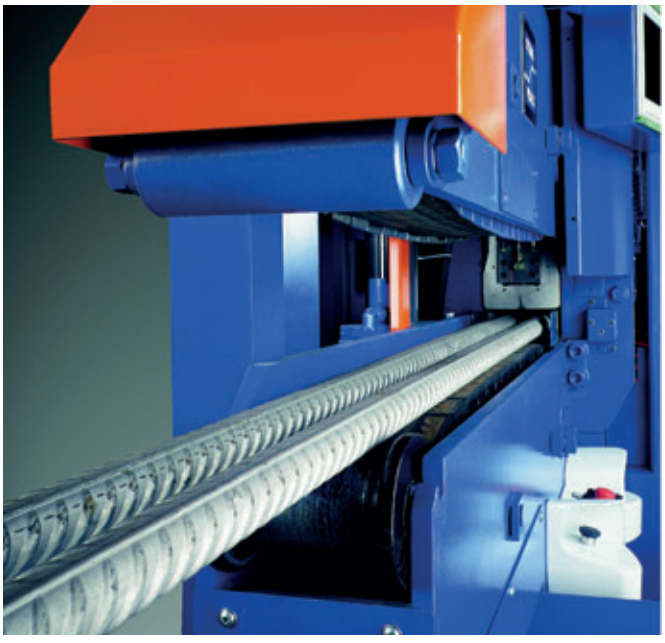
The measurement and pull-in system works safely and with great precision. Measurement is carried out without stops. The pull-in speed is about 150 m/min. The rods are held tidily and securely under tension by means of a chain system with rubber-coated studs. This means that the machine can run at high acceleration rates even with short lengths. The good cutting performance is attained by means of an especially robust hydraulic shear. Measurement sections above the nominal value can also be generated due to the stopless pull-in measurement system. This is made possible by providing support for the machine with a channel extension and, in this mode for example, it can cut lengths of more than 16 m.

Pedax has optimised this successful range. It now works more precisely, more rapidly and more quietly with appreciably lower energy consumption.

IIndividual model designs

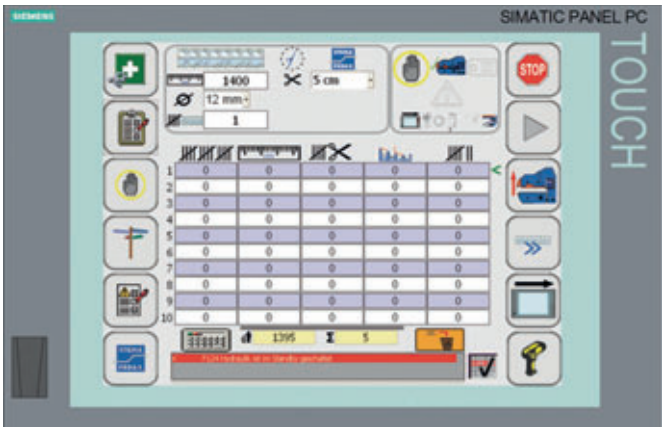
Cutting performance and pull-in speed are important for production output. Non-productive time, occasioned by transverse and distribution movements, is of particular significance. In this case, it is essen-

Pedax Metax GXE 2 rebar shearing machine with positioning channel and two collection and transport channels



The Metax rod pull-in device makes for high in-feed speeds

Simple manual operation via a Siemens touch screen with easily understood symbols



Input mask for production data

tial to make use of reserves and Pedax has developed a system design that factors in individual production requirements. A distinction is generally drawn between two model designs, which can be supplied with two, three or even six transport channels.

With the first version, the rods are rolled into their predetermined channel directly after cutting.

In the second case, the rods are collected in a separate channel after being cut and then, by means of hydraulic stops, set into a predefined channel position in which several cycles can be collected. This means that production can continue without interruption for a longer time. In addition the sheared rods are positioned nicely flush to their bending lines, just as the bending machine needs them. This does away with any laborious turning and sorting procedures. Most companies decide on this model design because the additional flexibility is quickly paid back by reduced non-productive times.

Reduced energy costs

The revamped 2012 machine generation has been equipped by a new servo-control-

Metax GXE – in the six-channel version.
Efficient on account of its great intermediate storage capacity

led hydraulic system. Hydraulics made by Hydac has been employed using variable-speed pump drives with servo technology. It is a two pump system. The hydraulics only functions when work is in progress and then only with the power needed for the job.
This measure reduces the power intake from the previous 22 KW to an average value of only approx. 4KW, resulting in savings on energy costs of approx. 80%. The altered software, Siemens PC 477 technology and the new servo-hydraulics make it possible to cut rebars in relation to their diameter. Each rod diameter is allocated a corresponding stroke travel distance, thereby increasing the cutting machine's stroke frequency and shortening its cycle times decisively.

The new hydraulics makes precise settings and adjustments possible that were formerly not available on this scale. At the current time, the Metax attains high length accuracy of +/- 0.5 cm over the overall range of measurements.
When no work is in progress, the hydraulics switches itself off. So, as opposed to previously, there are no permanent running noises. The oil reservoir holds only 200 l of hydraulic oil; whereas it held 370 l before. The hydraulics possesses a better, more modern filter system allowing the oil to be safely utilised for a longer period of time.

This new hydraulics, in conjunction with the Metax programming, enables both sequences and functions to be harmonised precisely with each other. All functions, such as counter-holding device, cutting sequence, discharge unit, positioning system and diversion gates, have been precisely matched to one another to give time-saving benefits through an overall more streamlined flow.

Pedax user interface

Its operation is simple. Data entry for the cutting cycles can be made directly by means of a touch screen with a 15"colour display. The plants boast a modern Siemens Simatic PC 477 B control unit in line with industrial standards – an especially robust version in die-cast aluminium housing for great reliability.

The Windows operating system is installed on a memory card, so that there is no need of a hard-disk drive and fan. The system provides the openness of a PC, whilst guaranteeing great robustness at the same time. The process data is safe even in case of power failure.

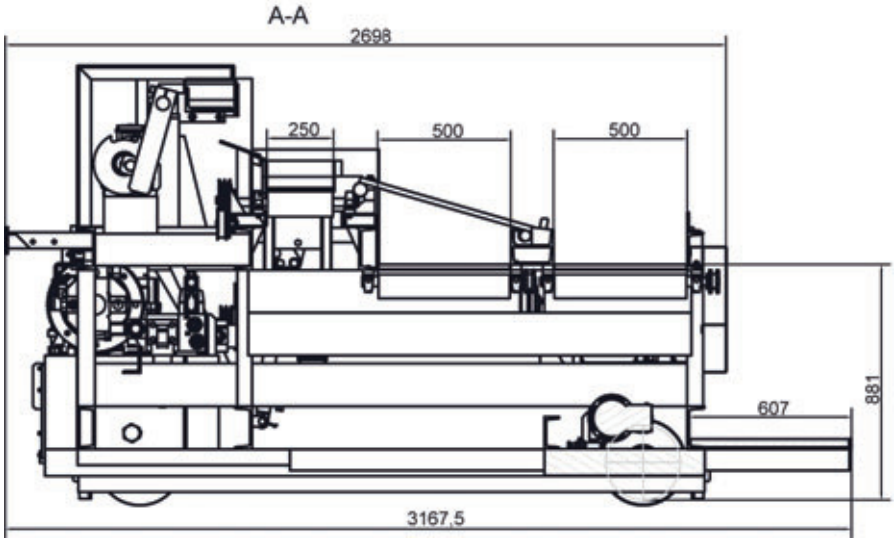
The logically, clearly arranged user interface makes it possible to define cutting lengths rapidly and to operate the system easily via the graphic keys on the touch screen. The software possesses an optimi-

Cutting performance

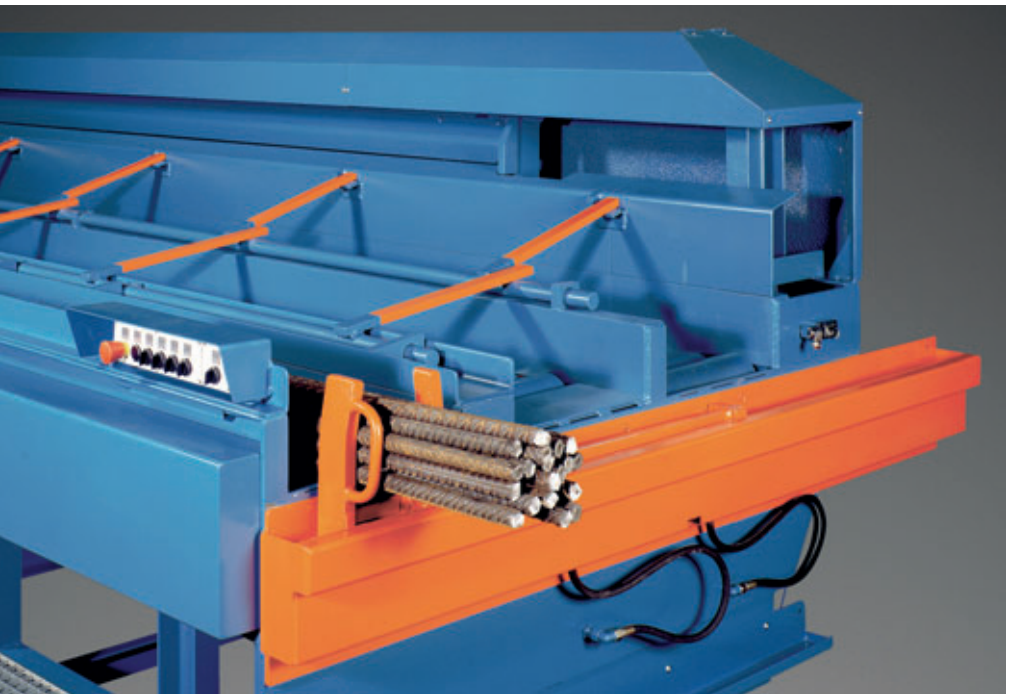
Rebar - Ø	50*	40	36	32	28	25	20	16	14	12	10	8
Number of rods/ simultaneous shearing	-	2	2	3	4	4	6	7	8	10	12	14

*There is a special fixture for cutting rods with a 50 mm diameter for delivery ex-factory.

Industrial laser scanner
for transferring data from a label



Sectional drawing - Metax GXN 2 rebar shearing machine with collecting and positioning channel and two driven transport conveyor belts



The rod bundling clamp facilitates tying the cut rebars securely

sation feature. In addition, it offers a statistics programme for evaluating production performance from differing perspectives. Production data can be directly imported from a label by means of a laser scanner or be transferred online from a master computer. A diagnosis programme is available as an option, with which sequences can be monitored via the internet and any malfunctions be remedied, should they arise.

FURTHER INFORMATION

PEDAX

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