

Straightening

Straight talk from Witels-Albert

Cast, camber and bow. The removal of these undesirable wire characteristics requires the corrective process that is straightening. Unfortunately, since it is a corrective process, many wire manufacturers do not make it an integral part of a production line in the same way that they do the other elements of production. However, after wire has been rolled, drawn, wound and unwound, it is likely to undergo undesirable, as well as intended, material changes.

One company that has been dedicated to eliminating these problems is Witels-Albert, a supplier of what is perhaps the industry's widest range of straightening and guide roll

Witels-Albert promises "straightening power at your command". At wire 2006, the company will present engineering solutions for straightening applications, and will demonstrate how these meet customer expectations for the automatic straightening of process materials using defined parameters. Horst Schneidereit, Marcus Peach, Ralf-Torsten Hubner and Bob Flower, all of whom will be manning stand 9E39, promise to "impart the latest clever ideas in wire, tube, rope and cable production" as well as promote the redesigned Witels-Albert site.

The spotlight, however, will be firmly focused on the company's new EASY product range that is characterised by its simple construction, low component count and user-friendly interface – features which greatly contributed to its value for money proposition. Marcus Peach describes this, as well some other new products, in this article.

systems. The range has grown because of the company's high degree of specialisation and long years of experience. It also has a strong R&D orientation that incorporates all the elements of wire manufacture, allowing the company to provide invaluable advice as to how its equipment can be seamlessly integrated into a production line.

The products in this article represent a tiny fraction of the company's supply programme. These are its latest offerings, however, and will be highlighted at wire 2006.

The NA S and NAD S series of feeding units

To feed wires, pipes, tubes, ropes or cables into a straightening unit, drive units fitted with transport rolls are needed. A range of factors and relationships determine the transport force that can be reliably achieved. The main factor is the friction between the transport rolls and the process material. Another important factor is the maximum pressure exerted by the transport material that, in turn, determines the contact pressure of the transport rolls and the drive rating.

These factors, as well as the application of the relevant laws of physics, enabled Witels-Albert to develop a series of drive units with perfectly tailored component systems. The high capacity of these component systems results in a very efficient overall construction that is capable of transmitting materials with very low slip. High transport forces can be achieved despite the fact that the NA S and NAD S series of drive units clamp the process material pneumatically.

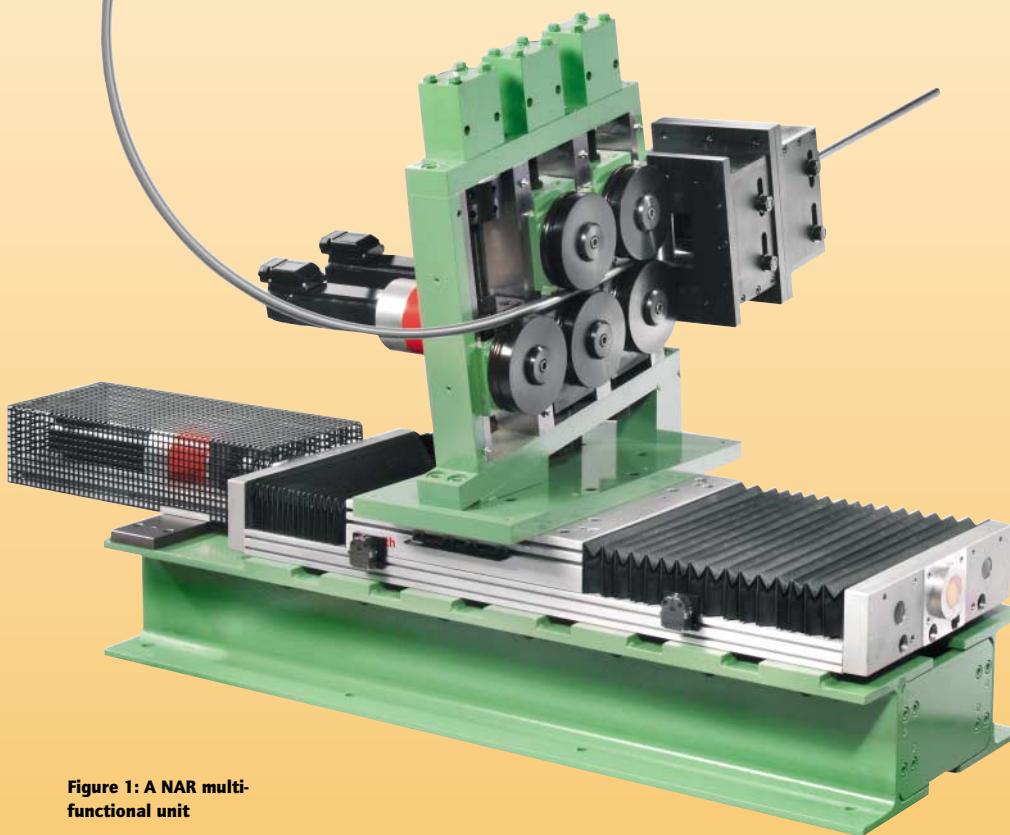


Figure 1: A NAR multi-functional unit

The NAR series of multi-functional units

The new NAR series of multi-functional units offer very high transport, straightening and bending forces. These units have been developed preferably for high strength process materials with diameters or cross-sectional heights of between 5 and 25 mm. The maximum allowed diameter or cross-sectional height can be increased to 30 mm for process material with a lower yield point.

With the NAR series, it is possible to pre-bend, straighten, transport and bend a process material with just one unit. The number of rolls and the roll alignments vary. A NAR unit is equipped with at least five rolls, although this can be increased depending on the total number of tasks it is expected to carry out.

An operator can set up the unit in such a way that process materials can be transported and straightened simultaneously. This can be done by adjusting the bending or the respective straightening rolls in between the transport roll pairs located upstream and downstream. Also, a wire can be bent to a specific curvature radius – when it needs to be coiled, for example – by aligning and adjusting the bending roll that comes after the final pair of transport rolls.

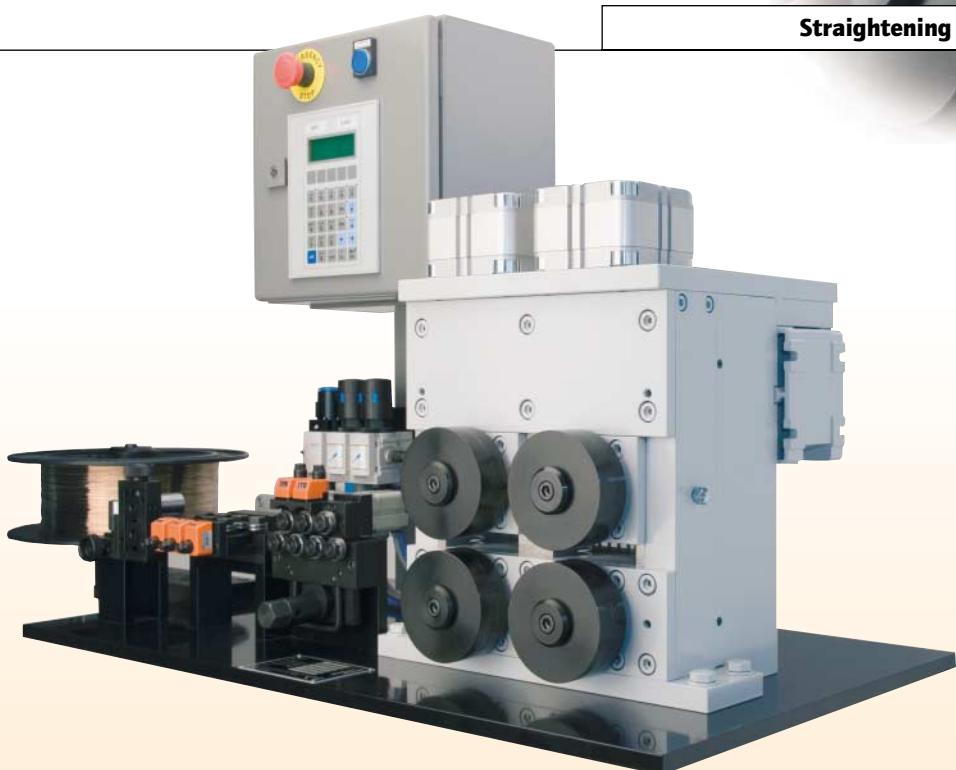


Figure 1 (page 23) shows a NAR unit mounted on a traversing unit. The NAR unit, supported by the traversing unit, transports and bends the wire during its defined travel. If the unit is equipped with an additional pre-bending mechanism and with straightening rolls in between the roll pairs that are shown, four tasks in total could be performed. A pre-bending mechanism should always be part of a NAR unit if the first section of a coil has to be straightened for easy wire threading or handling.

**Figure 2(above):
The ABR Easy
straightening
station**

Witels-Albert says that, because the NAR series' modular design is based on a unique concept for aligning, driving and adjusting rolls in a defined manner, it can offer maximum performance despite taking up very little space. The NAR series is also very competitively priced.

The ABR EASY and ABR EASY POS series of transport and straightening machines

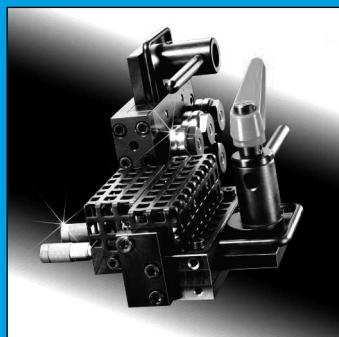
Harmonised engineering solutions, which make processes simpler and more efficient, can counteract the disadvantages that users face such as a large component mix, small lot sizes, tight deadlines and low staffing levels. This philosophy guided the development of the ABR EASY and the ABR EASY POS series of feed and straightening machines. Witels-Albert made sure that the design was uncompromisingly modular as well as optimised to handle an essentially endless stream of process materials that need transporting and straightening. To do so, user-friendly elements like the straighteners, drive units and sub-systems were built into both series.

The controller, for example, is used for both series. It identifies the elements in a machine as functional modules and uses standard interfaces to communicate with the units.



**Figure 3 (below):
The CS EASY I
straightener**

What else is available from Witels-Albert?



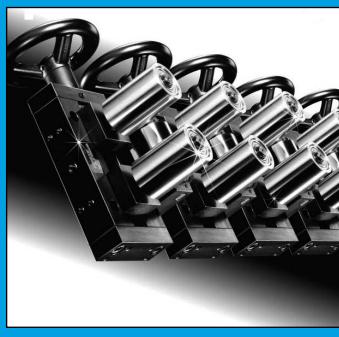
Conventional straightening units
Semi-automatic straightening units
Automatic straightening units



Computerised tools
Straightening machines
Systems for wire diagnosis
Straightening rolls
De-coil straightening units



Guiding units
Guide rolls
Feeding units
Length meters
Cable strippers
Pre-forming heads



This makes it very easy and cost effective to implement operations such as continuous, discontinuous or intermittent material transport. Users can also link ABR EASY and ABR EASY POS series machines to upstream and downstream equipment and processes. Figure 2 shows a feed and straightening station from the ABR EASY series that is used to straighten round wire of up to 1.5 mm diameter.

The ZR PG series of guiding units

The rolls on the integrated roll guides have to be specifically set on many machines and systems which are used to process wire and multi-wire shaped process materials. A large variety of parts and flexible production programmes often lead to situations at the process interfaces that make it necessary to use rolls which can be positioned centrically and non-centrally. The new ZR PG series guide units give users the flexibility they need to react easily and effectively to these varying production conditions. Conical clamping elements ensure the proper positioning and firm seating of the guide rolls and no tools are needed to adjust the rolls.

The CS EASY series of semi-automatic straighteners

The traditional strategies for differentiating one's products are no longer adequate in the competitive environment that exists in many industries today. To successfully sell a product made through a mechanical engineering process, for example, it is no longer sufficient to promote the product itself. Increasingly, manufacturers are being asked to cite the features of their production process that create their product's superior or unique selling proposition.

For example, the strict product specifications imposed on a wire supplier require him, in turn, to demand the ability to input defined settings into processing equipment. Witels-Albert has been supplying semi-automatic straightening systems for 10 years. These systems are widely used and have a proven track

record in the field. In 2004, the company also introduced its SimDATA software which enables the operator of a straightener to determine the positions of the adjustable straightening rolls and translate these into defined settings.

Based on its long experience in semi-automatic straightening technology and the expertise it has accumulated in precisely positioning straightening rolls and the prior calculation of roll positions, Witels-Albert is introducing the next generation of semi-automated CS EASY straighteners. As can be seen

Figure 4: The CS EASY II straightener



from Figures 3 and 4, the new series is simply constructed and has a low component count as well as a user-friendly interface. CS EASY series devices do not need a PLC nor an IPC and initiators. The software has been designed so that any user can generate defined settings at the press of a key as well as save parameters and settings.

From the engineering standpoint, the strategies which are used for zero-backlash positioning of the straightening rolls is the most outstanding feature of the CS EASY series of semi-automated straightening units. The unprecedented price/performance ratio of the semi-automatic straightening systems will be good news to business management.