

FLEXIBLE PROCESSING

ISMR examines leveling technology from ARKU for cut-to-length lines. Cassettes with different roller diameters allow a broader range of material thicknesses to be processed on one coil line.

ARKU Maschinenbau GmbH has been working in the sheet metal field since 1928. In 2008, the company generated a turnover of €40 million – its best year ever. Since the Eighties, the focus of ARKU's production has shifted increasingly towards leveling and feed systems for coil processing as increasingly larger installations were being built, such as decoilers of over 30 tonnes. In the Nineties, the trend towards large installations continued and ARKU built more and more complete systems.

Today, ARKU is a market leader for leveling and feed systems, and provides a broad range of precision- and high-capacity levelers worldwide. The company produces parts levelers, cut-to-length lines, press-feeding lines and coil preparation lines for rollformers. From feeder-straighteners to precision levelers for parts and high capacity levelers for steel service centres, the German machine tool manufacturer has a broad portfolio for metal working companies.

In 2008, ARKU generated a turnover of €40 million. Compared with 2007 (with a turnover of €32 million), ARKU increased its turnover by 25 percent in 2008. Over the past couple of years, the company has increased its work force, especially in its technical departments, and expanded and rebuilt the technical office HQ in Baden-Baden last year, where more than half of its employees work. It has doubled the space in its technical office and improved customer facilities there. ARKU has also increased its workforce by 20% over the last two years and now has over 100 employees worldwide.

ARKU offers flexible manufacturing systems e.g. lines for producing shaped blanks or tailored blanks for small quantities, like coil-laser-lines or punching lines. In the wake of the global economic downturn,



Left: Franck Hirschmann, ARKU product manager for high capacity levelers and cut-to-length lines, says that "the one general-purpose leveler is obsolete!"

most of its customers do not need to increase their capacity at the moment - they are focusing on refurbishing existing lines so as to have more flexibility. Arku therefore helps them to modernize their existing equipment. Often, the leveler is the bottle neck of a coil line so customers can increase the productivity of a line by changing the coil-leveler.

A level playing field

Recent new product launches include the HiCap and HiCap PLUS levelers with cassette changing to increase the capacity of cut-to-length lines. Cassettes with different roller diameters allow a broader range of material thicknesses to be processed on one coil line.

The HiCap® PLUS range is ARKU's answer to decreasing tolerances and the increasing use

ISMR SAYS :

"If you are looking to improve capacity, changing the leveler can be a cost-effective alternative to investing in a complete line."

of high tensile materials, especially for broad steel strips.

"The all-round straightener is obsolete!" says Franck Hirschmann, ARKU sales engineer for cut-to-length and punching lines. "Every application requires a specific solution."

When flatness requirements are demanding, high capacity levelers are used. These machines are able to eliminate even the toughest coil defects. Small roller diameters and the narrow spacing of leveling rollers are important for constantly good leveling results. Leveling roller support has to be good or the rollers will bow under high leveling forces. For thin and surface-sensitive materials, the use of 6Hi-machines with intermediate rollers is usually inevitable. Intermediate rollers – located between the support rolls and leveling rollers – avoid marks on the surface of the material.

"For processing broad strips, high capacity levelers are equipped with an adjustable back-up which can be moved up and down vertically. Thus, over the entire width, specific areas of the leveling rollers can be slightly bent. As a result, wavy edges and central buckles in the material can be eliminated. For one-sided wavy-edges, the latest high capacity levelers are equipped with a tilting function for the upper straightening unit. With this option, even the correction of slight

camber defects in metal strips is possible," ARKU explained.

Frequently, two levelers in combination are used to enhance the thickness range of cut-to-length lines: one machine with a larger roller diameter for upper thickness ranges, another with a smaller roller diameter for lower thickness ranges.

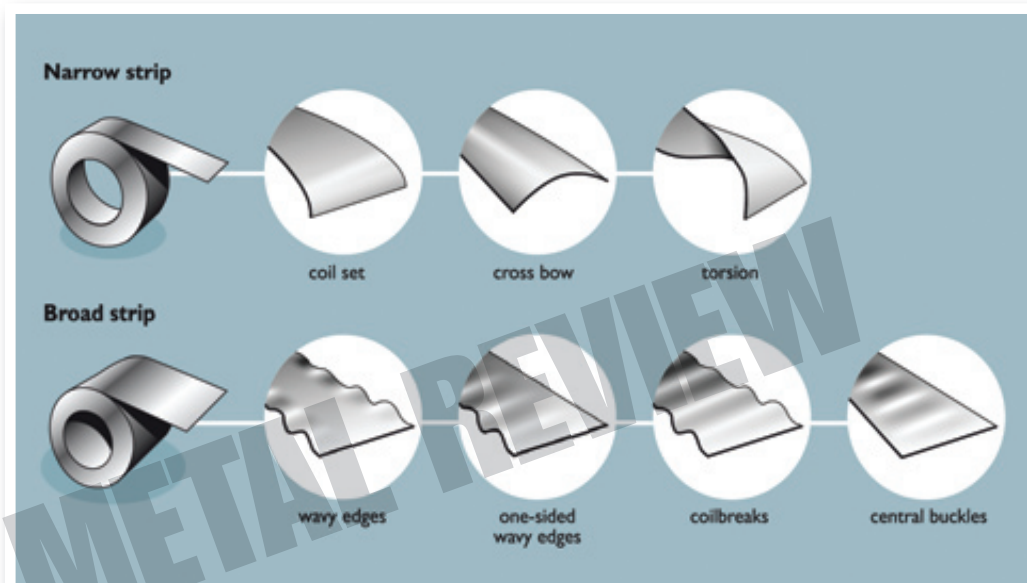
The HiCap® PLUS series is equipped with a cassette change system so that cassettes with different roller diameters can be used in one machine. As a result, the high capacity levelers can cover the thickness range of two machines. Cassette changes can be done in a few minutes.

"By using a HiCap® PLUS leveler, our customers can gain significant production space," notes Franck Hirschmann. "Originally equipped with two levelers in a row, modern coil-lines can cover the same thickness range with just one machine. As material residues and dirt accumulate, the lower leveling cassette can be removed separately. As a result, downtimes due to cleaning are minimized."

High tensile steels

"The leveler is the core of each cut-to-length line," says Ewald Hund, technical director of ARKU Maschinenbau GmbH. "The leveler's capacity determines the boundaries in thickness range and types of material for the whole production line.

"To improve capacity, changing the leveler is a cost-effective alternative to investing in a complete



line. We often integrate our high capacity levelers in existing cut-to-length lines – independent of the original manufacturer of the line."

ARKU has completed numerous equipment integrations in different business sectors. ARKU high capacity levelers are used in the production of automotive body shells, doors and gates, and in steel service centres.

"Recently, the new HiCap® PLUS high capacity leveler was purchased by a steel service centre to enhance the product range of the existing cut-to-length line – especially for high tensile steels. The thickness range that can be processed therefore depends on the design of the

machine. The more high tensile the material, the smaller is the workable thickness range of the machine. The use of changeable roller cassettes is especially suited to working with high-tensile steels. Using the HiCap® PLUS, the customer significantly improved capacity of his existing cut-to-length line," ARKU explained.

ARKU's precision and high capacity levelers are equipped with the EcoPlan® patented drive concept. The drive concept of levelers is critical to processing high-tensile steels. The levelers can provide 30% more power for the same energy requirement and EcoPlan® helps to avoid any slipping of the leveling rollers.

Some leveling rollers have to deal with higher loads during the leveling process. At contact points, these rollers move faster than the material and positive slippage can occur. Conversely, negative slippage occurs for rollers with lower loads. At these contact points, the material moves faster than the leveling rollers. Slippage not only causes twisting of any machine components but also elevates the required torque. EcoPlan® was developed to avoid these effects and prevents slippage in the leveling unit. The torque requirement decreases and machine efficiency is increased.

"EcoPlan® ensures higher quality of the material surface," adds Franck Hirschmann. "This is important for the production of visible parts or processing sheets with sensitive surfaces."

ARKU sees more demand in the future for specialised, customised and more flexible lines. 35% of its customers are from the automotive industry or are parts suppliers (Tier 1 and Tier 2). The rest are from different industries such as coil service centres, laser- and flame-cutting jobshops, roll formers and different branches where sheet metal is used.



The leveling cassette can be changed in minutes.