



(SPIRALLY) CORRUGATED COAXIAL CABLES PROCESSED AUTOMATICALLY AND WOUND INTO CABLE BUNDLES

One of the leading manufacturers of communication cables in the USA, which is globally active, employs - amongst other things - corrugated and spiral-corrugated cables for mobile communication applications. Previously, these cables were processed by hand with relatively simple tools and then wound into large bundles – a time-consuming and costly operation. To find a more precise and efficient way of producing these cables, the company contacted Metzner Maschinenbau GmbH, whose development team designed a customer-specific production line which now performs all the required process stages fully automatically.

The cable manufacturer had several special requirements for the new production line. Because the quality of the antenna cables has a direct influence on the transmission capacity, it was very important to ensure that, during the removal of the outer jacket, the knife does not contact - and thereby damage - the inner conductor. To avoid this, the Metzner development team came up with a cutting process with no mechanical knife, which guarantees the safe removal of the outer isolation. In addition, it was important to ensure that, when cutting the spirally corrugated cables to length, the cut is made at the start of a corrugation. In order to be able to determine exactly this position, the line is equipped with high-powered sensors, specially configured for this application, which detect the profile of the

corrugation through the outer jacket of the cable. These values are then used to calculate the correct position for the cut. Depending on the type of cable being processed, the production line carries out the following process steps: Cut-to-length, removal of the outer jacket, removal of the insulation and chamfering the inner conductor. Furthermore, the cable manufacturer placed great value on a particular coiling pattern of the cable coils at the end of the production process, this being necessary for the subsequent conductivity testing of the cable. For this, too, Metzner Maschinenbau found a customer-specific solution.



Different Cable Diameters



Processing Steps of the Coaxial Cable

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CUSTOMER-SPECIFIC COILING SYSTEM

The processing line consists of an automatic unwinder from Ramatech, which ensures tension-free feeding of cables with a length of up to 40 meters. The unwound cable then passes through a straightening unit before it enters an integrated printer, where information and markings that are necessary for the further processing are added. Next, the machine carries out the working stages cut-to-length, removal of the outer jacket, removal of the insulation and chamfering the inner conductor – according to which process is required for the particular cable. Metal swarfs generated during processing are safely removed with the aid of a brush and an extraction unit. Cables up to 3 meters in length are then removed by a material push-off unit. Cables over 3 meters long are transported by an „intelligent“ conveyor on a moving platform to a special fully automatic winder system, developed for the customer, which works on two levels simultaneously. Using a complex algorithm and different mechanical processes, the cable is wound in a particular form, as required by the customer. The cycle time for 3 meter cables is only one minute and for 10 meter cables it is 2.5 minutes.

Thanks to the machine developed by Metzner Maschinenbau, the cable manufacturer profits from personnel savings, a higher throughput and a uniform high quality of the processed cables, this was not the case with the previous operator-orientated manufacturing process. Space is also made available for the use of the company,

„The company now processes its cables significantly faster and to a much higher quality than before.“

Gerhard Rauch, CEO of Metzner



Cable Coil after Winding Process

because the new production line takes up less floor space than the previous manual production method.



Processing Line

For the cable manufacturer, the change from exclusively manual processing and winding of the cables to the installation of an automated production line represents a milestone. Metzner Maschinenbau GmbH is proud to have made this step into the future possible for the customer. „The company now processes its cables significantly faster and to a much higher quality than before. In the end, this benefits the whole production, including further processing and of course the end customers. In addition, the cable manufacturer needs significantly fewer personnel for a much better result“, summarizes Gerhard Rauch, CEO of Metzner Maschinenbau.

SIGNIFICANT IMPROVEMENTS

- Constant production quality and productivity increase by automation
- Reduced personnel costs by automatic processing
- Space savings by installation of a single production line to replace several manual work stations
- Cables come ready-printed from the line
- Cable coils with special winding profile are perfectly prepared for subsequent conductivity testing