



Experience, tradition and advanced technology join together in MTC tissue converting machinery. Located in the Lucca paper district, the Italian machine builder MTC relies on Rockwell Automation® to provide converters the best-performing integrated motion and logic control platform.

Automation advancement and state-of-the-art technology have helped to improve machine productivity and speed for years. In the 1800's producing 1 ton of paper required a process taking approximately 4000 hours. Today the same amount of paper can be processed in about 1-2 hours, according to the quality needed. The first machines on the market produced few meters of paper per minute, while present paper machines can work at a speed of 1.500-2.000 m/minute. The paper industry which has been in existence since the 13th century in the city of Lucca, Northern Italy's Tuscany region, is one of the most important, largest paper production and tissue converting industrial districts in Europe. These days, ancient tradition, experience, specialisation and advanced technology meet in the district, where many paper, tissue paper manufacturers, converters and machine builders are headquartered.

TASK

MTC customers require configuration flexibility, higher efficiency, best quality output and ease-of-use from their machines.

CHALLENGES

SOLUTION

MTC used Integrated Architecture solutions in conjunction with Kinetix 6000 and RSLogix 5000 software in both their Matrix log saw and ITF interfolder producing machines with greater speed, efficiency and product quality.

RESULTS

The Matrix log saw reaches a working speed of 120 cycles per minute processing logs with a maximum diameter of 420mm and an above average density. The ITF interfolder has a running speed of 250 m/minute coupled with greater efficiency and quality finished products.

The MTC company designs and manufactures a wide range of tissue converting machines: log saws, start-stop automated rewinders and automatic rewinders for continuous production of industrial rolls, automatic and semi-automatic lines of interfolders for V, W and Z folded products (facial tissue, hand towels, bulk pack).. “We provide our customers with the most advanced mechanical, electric and electronic technology, the greatest flexibility and the most skilled customer service team”, Daniele Damiani, Head of MTC R&D Software Department, states. “We usually select the latest technologies available on the market to meet our customers’ needs regarding machine configuration flexibility, higher efficiency, best quality output and ease-of-use”, Mr. Damiani goes on. “As far as automation is concerned, the best technology available on the market, mostly required by US and Australian customers, means one brand: Rockwell Automation and its Allen-Bradley® components. We have trusted Rockwell Automation for years. For example we achieved, for our 2 channel Matrix

log saw located in USA, the best performing and flexible automation platform for our machinery processing tissue paper rolls with blade diameter of up to 1.000/1.200 mm. In general Our Matrix log saw in KC Marinette and our ITF interfolder line in GP Muskogee are two of the best examples of the excellence of our relationship”.

A reliable automation platform for revolutionary machines

One of the most innovative solutions of MTC production, the Matrix log saw, is designed to cut high density rolls minimising blade heat and bias cuts. “This revolutionary log saw for industrial rolls fully combines state-of-the-art technology with the highest flexibility and the best performance outputs”, Mr. Damiani says. The Matrix machine - also available in the 2 channel version - beats the limits of the traditional log saws by reaching a working speed of up to 120 cycles per minute and processing logs with a maximum diameter of 420 mm and density above average: such performances have never been reached with the old generation machinery.

Another example of know-how and latest technology is given by the ITF 5000/7000/9000 series interfolders, available also with Rockwell Automation and Allen-Bradley products, which “combine running speed - up to 250 m/minute - with modular design and product quality performances providing the converters with a more efficient and more reliable system for quality finished products”.

Both the Matrix log saw and the ITF interfolder lines can also be supplied fully equipped with Allen-Bradley components from Rockwell Automation. The Matrix configuration - in its Kimberly-Clark Marinette plant version - includes ControlLogix® 5550 controllers provided with Sercos, ControlNet™ and Ethernet modules. The 11-axes control of the Matrix log saw is fully managed by Kinetix® 6000 servo drives connected to B330P, B540K and A230P motors through Sercos interface. The machine is equipped with one Allen-Bradley PowerFlex® 70 and two PowerFlex 700S inverters including ControlNet communication modules. PanelView™ Plus 1000 - connected to the other devices via Ethernet protocol - and Rades9300 Ethernet/RTG modem converter suitable for teleservice function complete the Matrix log saw’s automation platform.



With the ITF5000W interfolder, the SPB100 paper bander and the TLS 120/2 electronic log saw working on the ITF line, located in GP Muskogee, all machines feature one CompactLogix Cpu L35E controller provided with Modbus for peripheral axes control, Ethernet and DeviceNet modules, and connected to PowerFlex inverters and PanelView operator panels. The ITF5000W interfolder is equipped with seven 1794 Flex I/O with DeviceNet™ interface, seven PowerFlex 70 and six PowerFlex 700 inverters with DeviceNet module, while the SPB100 paper bander includes one PowerFlex 70 and two PowerFlex 700 inverters with DeviceNet module, and the TLS 120/2 electronic log saw mounts one PowerFlex 70 and one PowerFlex 700 with DeviceNet module too. Both the ITF5000W interfolder and the SPB100 paper bander feature also PanelView Plus 1000 operator panels; the TLS 120/2 electronic log saw mounts PanelView 700 operator panel. "We decided also to add a Rades9300 Ethernet/RTG modem converter in the ITF5000W interfolder machine, as we previously did in the Matrix machine, in order to achieve a complete teleservice system connecting all three machines", Mr. Damiani explains. "Thanks to Ethernet network and the integrated Rades9300 modem converter, the teleservice function allows the machines CPUs to be fully connected. Our customer is now able to rely on a complete line monitoring functionality and on easier and faster machine troubleshooting operations".

Motion and machine logic combined into a single program

As MTC follows the whole machinery designing and production process, including mechanical, electric, electronic and software development, the most valuable benefit this Italian machine builder received through its relationship with Rockwell Automation stands in the integrated software development platform, in particular for the American and the Australian markets.

"In MTC there is a team of five software engineers taking care of the entire machinery software platform development, supporting customers in any after-sales required machine software modifications", Mr. Damiani states. "In the past, we always developed separately axes, motion, logic control and visualisation, relying on different programming software platforms. Afterwards we had to create several software interfaces to connect each program to the others. Software development time and operations were long and complex: we wasted a lot of time; our efforts were indeed not paid back. Rockwell Automation delivered us RSLogix™ 5000, the only software program required for both sequential and motion control. RSLogix 5000 programming software provides flexibility in setting up the control hardware, as well as programming, diagnostics and motion configuration. The controllers automatically configure the drives at power-up. The overall programming and the complex multi-axis motion profiles configuration are highly simplified". RSLogix 5000 allows easier interlocking

of the motion and overall machine code through combination of motion and machine logic into a single program. No secondary software packages for machine or drive set-up are needed by MTC engineers. It created an excellent integrated, modular programming framework to organise and develop machine control functional requirements.

Thanks to Rockwell Automation, MTC also minimised wirings and overall cabling both on the Matrix log saw and on the ITF line: "We reduced wirings and obtained a more plain and trouble-free machine cabling, yet with the highest data communication performance and with the plus of full teleservice system via integrated modem converter", Mr. Damiani says.

Last but not least, MTC found in Rockwell Automation a reliable partner to satisfy most of its needs during its automation platform development. "We found a high availability of components and a skilled support team: we can trust them not only to solve most hardware or software problems in our Matrix log saw or ITF interfolder lines, but also to obtain a regular technical updating about new Allen-Bradley components' functionalities or even any software code bugs detection".

