NEW SANTA LIDA PAPER MILL OPENING "EX GERMAGNO"

TO ELIMINATE DEFECTS DUE TO LOW FLEXIBILITY OF THE PREVIOUS CONTROL SYSTEM, SAEL REMADE PAPER MILL VARIDUR JAGEMBERG WINDER CONTROL WITH ITS OWN REBORN SYSTEM. A NEW MILLTEX SYNCHRO-ELECTRONIC CUTTING MACHINE WAS ALSO STARTED IN A DIFFERENT SIDE OF THE PLANT. NEW PROPERTIES INVESTMENTS INCREASED YEAR PLANT PRODUCTIVITY BY 30%.

SAEL VARIDUR Jagenberg

by: **Paolo Andrighetti SAEL s.r.l.**

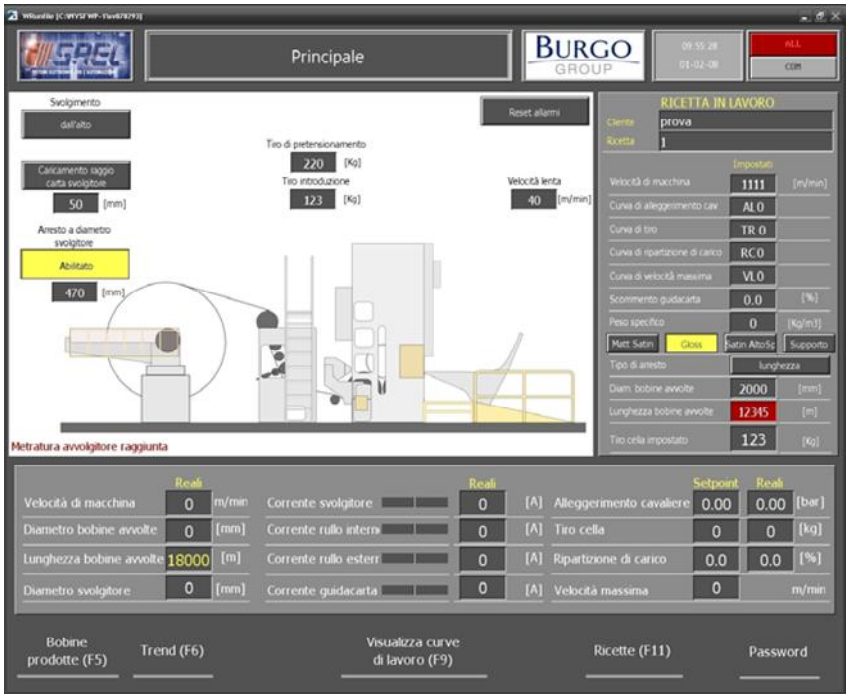
Past November 2007 saw the restart of a historic factory located in the valley of Lanzo; the new paper mill SANTA LIDA in a short time since its creation, has invested in renewing and new supplies have always chosen **SAEL** as a supplier of electric controls. We just ended the remaking of the rewinding VARIDUR control, which covered the management of three DC Siemens drives with our REBORN system, the recovery of an existing electric cabinet that controlled the Siemens AC motor cylinder and manage a number of mechanical changes made by the company MAULE from Turin to help in improving finished product quality. The job in paper mill, coordinated and managed by Eng. Mina Della Maule, was spread throughout the winder in which changes were made to eliminate some major technological problems which penalized production speed as well as product quality and introduced "RIBO-SAEL" system supervisor, managing curves, pressures and recipes with revolutionary flexibility. Other work carried out in the paper mill, along with the winder, was starting a new generation longitudinal and transverse MILLTEX cutting machine, also equipped with SAEL cabinets which carried same standards and products used

CARTIERA SANTA LIDA, VARIROLL winder, SAEL Intelligent Drive

in the remaking of the winder. The General-director Eng. OTTAVIO ZUCCA who oversaw all the structural changes, mechanical and electrical configuration for the reorganization and work to which the mill is now spent, commented: The new paper mill Lida St., built over the old mill establishments Germagnano and stopped for over a year after its failure, was restarted and returned to continuous production from the new corporate structure 100% made of Eurofin SPA (wholly owned by Grazzini Family). Grazzini family for over thirty years has been active in the field of cellulose fiber and specialized in eucalyptus fiber.in the late about 15 years however, continues to invest in the field of graphic papers with growing commitment. A bet that the new assessed property and sought (and which has equipped the company with suitable financial instruments), to enter more effectively in a strategic sector for the commercial realities of the Group which is the publishing industry. The production facility of Germagnano was structured for the production of uncoated papers with and without wood, and standard thickness (up by hand 2) and has a production arrangement with the current net production of about 70,000 ton/year. In a very short time from the decision to carry out its restart, important and significant changes have been made in all the plant machinery to be able to achieve the type of excellent quality paper required by the new property. Immediately was crucial choice of the partners join in the new production restart and obviously the choice on automation and new electronic realizations fell on SAEL, highly structured company in the service in which flexibility, applied technology and assistance on plants not is only done on proprietary systems, but also on existing and not personally designed equipment. All the staff that previously worked in the mill was re-recruit and integrated with new employees. Good news for the citizens of Germagnano, a charming village of 1,100 souls in the valley of Lanzo, who have seen the mill restarting as a work opportunity.

The interventions made in the paper mill for its conversion were as follows:

- Changes on the paper machine mainly to fulfill new safety standards
- Jagemberg winder modify
- installation of new 2.10m cutting machine with a production power over 35.000 tons.
- new safety standard compliance for all the machinery



Home page for VARIDUR winder management system

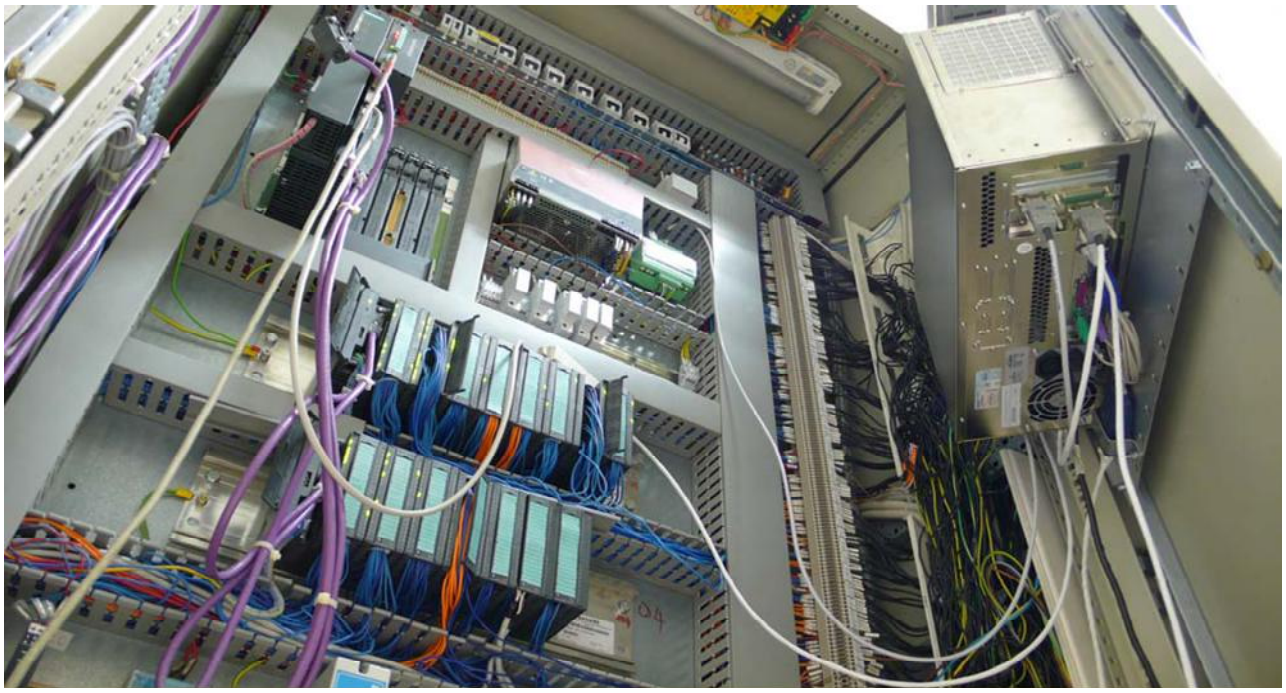
"REBORN" electric wiring

The Jagenberg winder VARI DUR job immediately showed as a typical SAEL task, strong in recent past retrofitting experiences, has developed several PLC software, supervisor and hardware packages for this kind of machines The main objective of this job was the most reuse of what existed in the present electric cabinets that were previously modernized by Siemens; The maximum time from order confirmation to the machine start up, could not be over one month and a half. The modification was therefore based on the redesign of the electrical cabinet that had to incorporate all of the MCC and other loads that were scattered throughout the facility, as well as the implementation of the mechanical changes adding electric motors and sensors which couldn't be started immediately on the machine since the time of technical achievement exceeded two and a half months.

A careful and thorough analysis of the plant, begun about 6 months before in the paper mill, allowed us to understand the machine limits due to the old control system and what architecture to propose for giving the paper machine a last generation control system. It was soon very clear that the

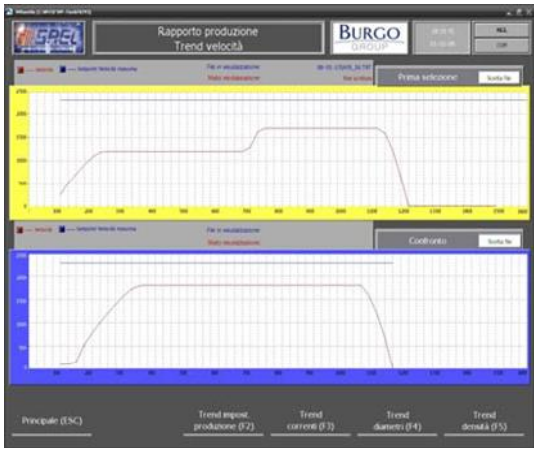
control room of Santa Lida mill

architecture to be used should be structured in a number of remote PLC I/O devices. Each of these is independent PLC managed. Through a single engineering stations it is possible to supervise the plant, program PLC, Drives, and connect via the remote assistance "IWSA" to all the hardware control structure. The electronic system architecture, followed the same schematic pattern of our standard implementations using PROFIBUS on drives (a feature not essential to our systems as a result of our Mastercan making a bridge between the drive and PLC). This choice was required to implement the architecture of the previous control of the two AC motors moving roller rider, an electric cabinet recently purchased by the previous management with Siemens inverter which has been completely re-used and completed integrated in the new machine control. The production record achieved, with the speed of 1700 meters per minute, soon rewarded for relevant staff and means resources used during the start-up, mainly due to the tight deadlines of realization timing; production prevision in terms of speed and efficiency have been widely observed and the improved quality of the finished product, for which the investment was mainly been approved, has now met the paper property who defined "excellent" the objective evidence on produced material. Again, if needed, SAEL REBORN, proved the system simpler and more flexible solution for applications in paper mills reconstruction, it is also now the only intelligent drive SAEL based system and therefore does not use a cascade manager. A direct dialogue between the drive (without distinction between them, though of different origins AC-DC) performed via a CAN-BUS communication equipping each drive, ensuring a high cascade refresh rate between the net components. CAN-Bus is in fact a Multimaster system, not master/slave the one used by most of our business competitors; this protocol allows us to fully manage every single communication. In our programming and supervision tools, we are in fact able to control how many packets are transmitted by each drive, storing them in historical trends up to 7 days for each communication occurred and for all participants in the network. Any anomaly or defect in the drive network transmission is stored and logged in order to give the possibility to verify, at a distance in time, what happened with the certainty to always understand if the problem was due to the Drive system failure or malfunction. Again the application of Reborn, which was made

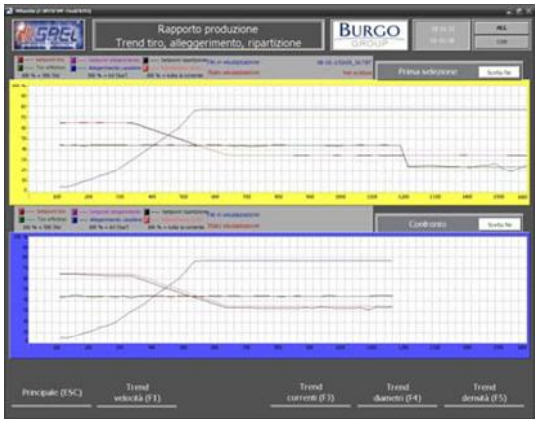


PLC and control board wiring IWSA supervisor, Santa Lida mill

trend real time



Stock Trend coil produced



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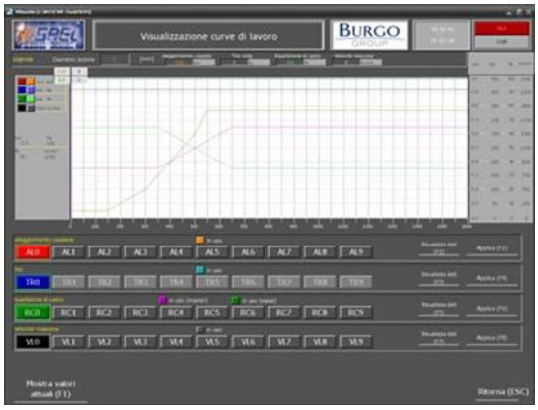

curves generation page

in paper mills directly from our service point SIMI of Lucca, has reused the power SCR of existing drives, the power contactors, transformers and what else was recoverable. A team of electricians has made all the changes on the mill existing drive installing Reborn Kit and all CAN-BUS communications networks. Modifications to upgrade the control system to the new safety regulations were also made. The supervision and programming system "REBO-SAEL", now equipping the plant, provides a powerful work tool and a flexible control system, allowing easy and immediate management of all work phases, offering an opportunity for machine operators to intervene in the process in a simple and immediate way. Over time and thanks to the various jobs that we completed we gained a high management UPGRADE, today it also incorporates the functions of Engineering Station being able to manage the PLC program and the Drive system. IWSA "Internet World SAEL Assistance" also allows you to remotely manage the system in real time and in all its parts directly from anywhere in the world our technician should intervene. In practice this station supervision and control, can parameterize drives and SAEL digital cards, develop or modify PLC SW and remote control the entire plant. The "REBO-SAEL" engineering station is nothing else than the JAGMATIK controller, the system that controls and manages all the Drive which is only Jagenberg property and that in our product hosts many functional upgrades that we will further describe.

The product was designed and practically rebuilt with a simple graphical navigation supported by many drawings and tables that allow use even to less skilled operators. The system (we underline) allows, in addition to machine management, to program and parameterize all system drives as well as the control of PLC program. IWSA, Internet World SAEL assistance, completes the product allowing to make any software changes necessary directly through the internet (in some cases we even test the drives directly from our offices and therefore its activity is necessary to have it working before plant start up).

Unlike the Jagmatic system, SAEL implemented in the Rebo-SAEL, features historical trends of each coil produced, a function that our customers have always hoped to have available in our previous machines.

The function allows it to track even after years the coil made on a specific date and time of day and whether during working there were particular work problems, the file containing all the necessary variables; a valuable aid for quality certification. Another important function is real-time trends that store the state of the machine in a circular buffer to be set from 7 days up to 1 month, in addition to the request. Unparalleled flexibility and logic intuition are the production recipes that allow machine operators to call a job performed previous years and transfer it to the machine without need for all typical adjustments to set type of production, weight and material properties.

In mouse click you can call back a previously made order and stick it in production with the security to set up the same machine parameters as for the sample job.

The alarm management, is also feature of most interest, because each one can be stored on hard disk file from which you can

extrapolate the date and time of happening, the total scores of hours of intervention, minimum timing, duration masses and other important information that help performing preventive maintenance and directly lead to correct problem solving.

The architecture runs over Windows XP using a commercial SCADA to make the system completely open and accessible to everyone. In particular, the main functions of the supervisor are:

- system synoptic with display of all motors on the field for divided by zone;
- display of all electrical variables on bar graph and numeric format;
- Continuous alarm diagnostic with hard disk storage and hard drive storage;
- display of machine operation set points allowing content modify;
- real and historical trends stored on one file for each reel produced saving relevant main values;
- Key values trends stored for 1 week period;
- curves generation for tailstock pressure reduction, rider, speed, pull and carrier-rollers load sharing;
- recipes for all the machine stored set points, selected curves, production data, transferred on the machine by just pressing a function key.

work recipe and next recipe generation page

In these years of growth, SAEL was able to withstand the increased number of applications, structuring itself and always finding the right technologic solutions in order to fulfill the high technology level of these plants. Research in this case, led us to get even with the emblazoned electronics companies that historically were standard equipment manufacturers and designers of machinery in Europe, mainly using marketplace PLC combined with proprietary "Intelligent Drive" technology. A very simple architecture that makes large use of open source hardware, ensuring system simplicity and easy to find spare parts since, apart from the drive, made on common marketplace components.

CARTIERA SANTA LIDA, WINDING SPOOLS, SAEL Intelligent Drive