New time record for the revamping of the Kleinwerfer Super Calander at Villorba

During the Christmas holidays the old existing cabinets of the CK1 super calander were modernized in only 36 working hours including testing. Thanks to the radical modification of the cabinets with reborn drives, the super calander started in three working shifts with an increase in production speed of 30%, without changing the existing motors.

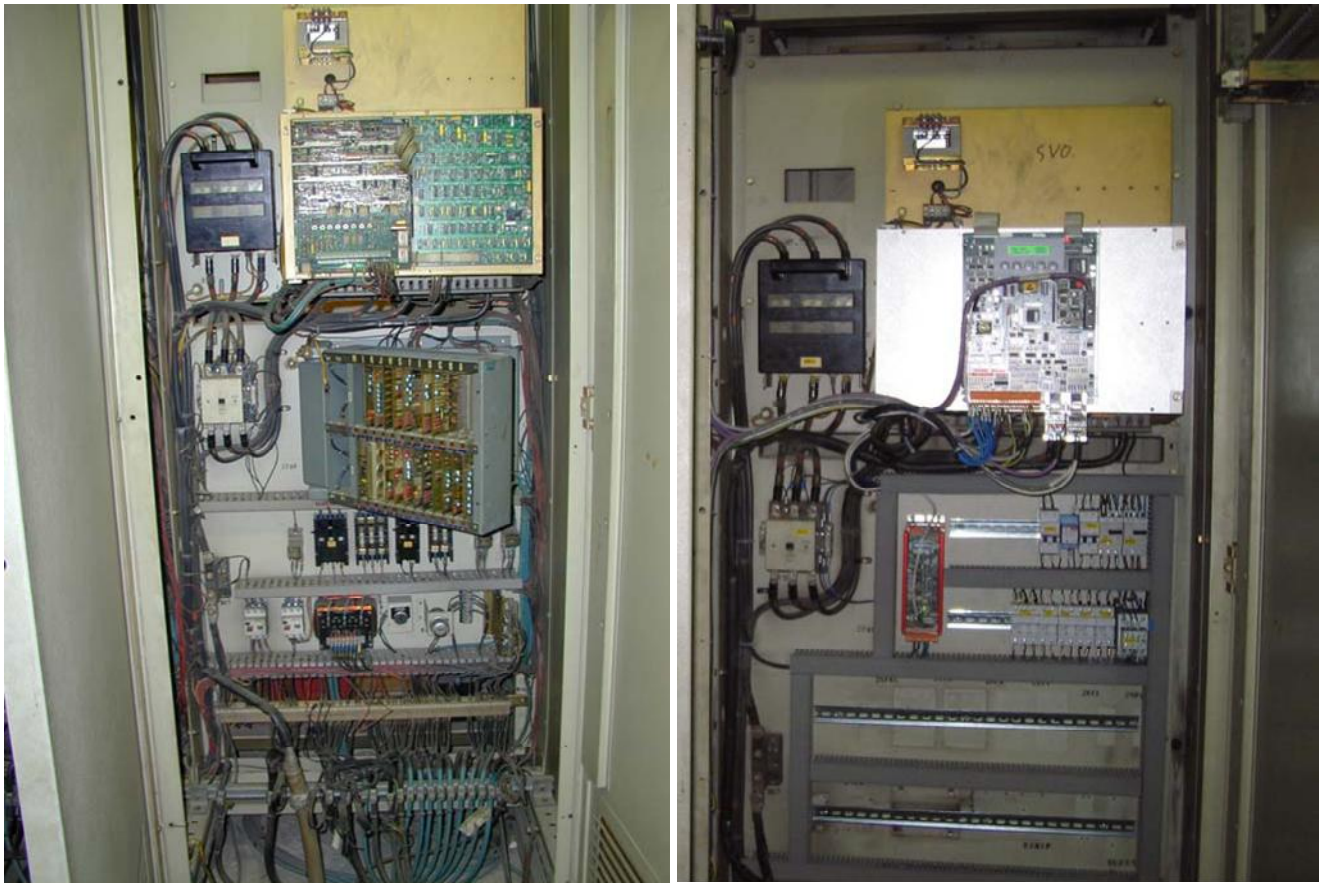
SAEL s.r.l.... Burgo Villorba

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

On the 28th of December the reconstruction of the control cabinet of the super calander Kleinwerfer was completed at the Burgo Villorba plant, where the old electric cabinets were modernized. The purpose of this operation was not only to bring the system up to date, but also to increase production speed to the maximum value possible given the existing DC motors. The result obtained was an increase from 900 meters per minute to **1100 Meters per minute** without any changes of electrical parts. This was possible only due to the precision of the control-systems of our drives which calculate a mathematical model of the mechanics in order to control the web tension on the material. (We guarantee a +/-3% precision on the tension even without a load cell or transducer). Because of the rapidity of the substitution, which was possible thanks to the flexibility of our REBORN system, the initial specification evolved by the wish of the paper mill management. In fact it mutated from only modernizing the old drives maintaining the existing electromechanical sequencing, to redesigning the machine architecture with remote I/O commands from the pulpit and factory floor, also eliminating the old and obsolete electro mechanics. In order to guarantee the restarting date, imposed by the paper mill, the job was handled directly with the mill's personnel who accepted responsibility and work for the rewiring of the cabinet and the machine wiring, with the aid of our service point of Lucca **SIMI&C** just for support. The break in production for maintenance was programmed from the 24th of December and on that day the relays and electromechanical parts were taken out of the cabinets leaving just the old thyristor bridges of the existing drives, which were modernized with our REBORN system. Once again SAEL's REBORN system proved to be the simplest and most flexible one for the reconstruction in paper mill plants. In order to guarantee maximum reliability when revamping old DC controllers, the REBORN control rack, substitutes the old regulation boards of any other make of drive, with our "intelligent drive" reusing all the existing power components (thyristor bridge, fuses, and contactors). Examples of this operation have already successfully been performed on BMB, SIEMENS, ABB, ANSALDO and SCE power converters). The REBORN system has been adopted in almost all plants of the Burgo Group for all types of machines, and thus is known by Burgo technicians. This fact helped us in

Rewiring of the old cabinet in the paper mill

substituting also all the old electromechanical sequencing, without delaying the restarting date after the renovation process. Making the paper mill personnel able to get actively involved, through training courses and by giving them up to date programming tools lead to a synergy that got stronger time after time making the mill personnel more independent. The architecture used "sectional drive", is by now an established standard. This consists of a classical PLC S7 and a machine supervisor with I.W.S.A. (Internet World Sael Assistance) on site, which enables the machine operators to manage the production in a direct and easy way. The command pulpits, with a keyboard monitor and mouse, have been radically transformed, by integrating a lot of functions directly on the monitor, thus eliminating the need for various push buttons, the system of supervision by video, can visualize the process, trends and variables. It is also possible to select work processes, helped by synoptic that guarantee easy understanding and management of all the functions that the calander can have. In order to create this strong interaction between PLC and Supervisor various management utilities have been created like PID controllers or screens for the configuration of the analogue inputs and more. In fact all PLC parameters are memorized and managed as configuration files inside the machine supervisor, which has guides that lead to a rapid solution of problems in case of breakdowns. Plant stoppage times are minimized also thanks to the implementation of **IWSA,** (a standard which has been implemented in all new and reconstructed plants since January 2005). This permits our technicians to check and control all the systems (Supervisor PC, PLC and drives) directly from our offices or from any location in the world at which our technician is in that moment. In these years of growth SAEL has always been able to hold pace with numerous applications always finding the right solutions to value the high technology content of these plants. Our investment in research and the combination of standard PLC's with our "Intelligent Drive", has enabled us to keep pace with the more famous electronic companies whose components had historically been standard equipment for designers of European machines. All the work done during the plant stoppage from the 24th till the 28th of December, was a cooperation between the paper mill technicians and our service points SIMI&C - P.KEY directly in the mill. Training of our clients electrical personnel before, during and after the commissioning provides us with a high degree of tranquillity. The technicians of the mill know the system and the drives as well as SAEL technicians and interact with the machine autonomously. In these days, after several weeks of continuous production, the paper mill management is independently modifying the system by integrating external control systems to the drives. Because of the particular system architecture PLC-Reborn-Supervisor, which leaves ample space for system upgrading, today the paper mill technicians make changes in collaboration with the production integrating requests of the latter in the machine control, in order meet ever more stringent demands of increased productivity and quality.



DC-Drives in the paper mill before and after the REBORN transformation