

**PASABAN KDD - 2500**

RELIABILITY SPARE PARTS PRODUCTIVITY

The three key words who pushed PIRINOLI Papermill to rebuild the automation drive of their PASABAN KDD-2500 Sheeter: core production of the Roccavione plant in Roccavione-Cuneo.

SAELsrl.

Pirinoli Papermill

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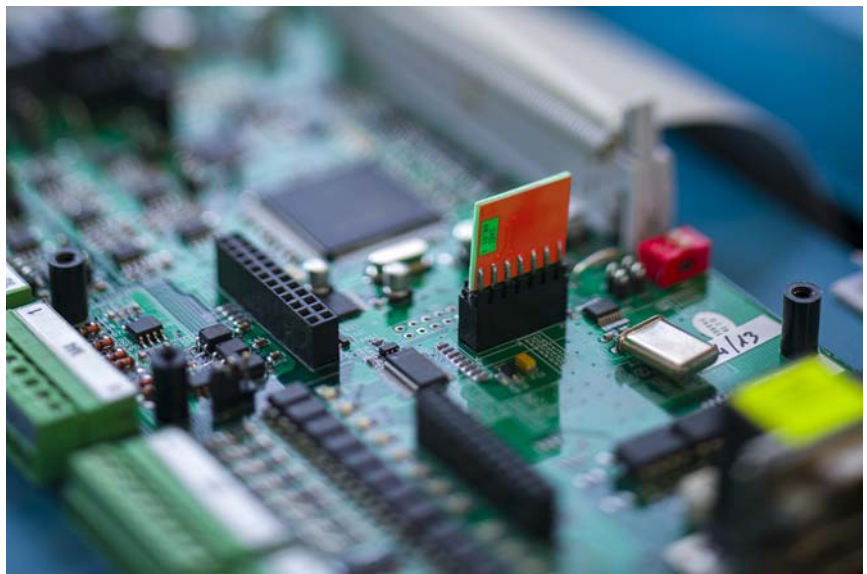
The present needs of higher performances, productivity, flexibility, integration to the networking system, and the components procurement uncertainties, pushed **Pirinoli papermill** to rebuild the automation of their **KDD-2500 PASABAN Sheeter**.

Formerly the Sheeter was equipped by the intrinsic Pasaban know-how system: PLC, Drive, knives, and forks control board. This system was no longer appreciated by the customer, more oriented to other open-sourcesolutions in terms of application, products, and multiple equivalent suppliers.

To maintain the existing mechanical sheeter—still reliable—and combining the new advanced technologies, with longer spare parts availability and cost savings, SAEL offered its smart solution, customer oriented, suitable for the actual structure and links. The renewing operation started by

changing the DC motors of the sheeter block – core of the machine – with equivalent AC vectorial control motors. Everything controlled by our SAEL inverters on “Standard Electronic Synchro” mode. The existing equipment of two motors driven by a DC PASABAN CHOPPER

has been replaced by two SAEL inverters on “Master-Slave” configuration (actually, every motor has its drive). This offered higher performances as well as undoubted flexibility to the system: in case of single inverter, or motor fault, the machine can run 30% downgraded



The extractable memory that equips each of our electronic boards, allows quick replacements without any programming.

vs. the maximum rate. The “ONE Platform Drive” architecture allowed the complete machine management, no longer using electrical equipments and board custom made for the application. Every single regulation, sequence, algorithm, counting, braking control is managed by the ONE DRIVES and the PLC.

The inverters, the sensors and the 1500 PLC Fail Safe, have integrated all the Safety functions, aligning the system to the regulation compliances.

Regulations implemented:

- Pulling AC main motor, and machine regulation;
- Cutting AC motors with profile optimization upon the size;
- Belt for sheet extraction AC new motor;
- Overlapping blanket AC existing motor;
- Stack hydraulic moving;



The new series of SAEL LONG LIFE inverters, created and studied for the paper mill.

- Cut sizing settings;
- Speed and alarms visualization;
- Existing Network interfacing;
- Paper Stack counting;
- Automatic Bobbins worked counting;
- Brake-Friction management of the slow blanket;
- Emptying band management;
- Synchronized sweep sheet control and management;
- Manual operator command;
- Joints or defects detection with scrapping length setup (before and after the scrap);



Electrical cabinets, automation, and sheeter control after the modification; electrical cabinets renewing with mirroring mounting execution (providing all the electrical connection as it was).



FINAL SECTION OF AUTOMATIC PALLETIZATION WITH AUTOMATIC FORK CHANGE

- Synchronization of the Existing AC motor for Overlapping cam, and automatic compensation functions based on different variables: size, speed, synchronization photocell, mechanical dead time;
- Changing stack sheet pre-selection counting;
- Stack changing automatic sequences management at preset limit, with “Stand/NO-STOP” and “With/Without forks”;
- Moving and blowing auxiliary management;
- Supervisor implemented into the operator panel with standard protocol and 1500 S7 PLC integration;
- Rectifier, hydraulic and blowing pumps AC auxiliary motors management;
- Hydraulic and pneumatic valves;
- Automatic size changing for: Slitter, Layering vanes, Overlapping and Layboy carriage, Empty pallets positioning.



All the RIO boxes and desk on the machine have been recovered and reconverted with PLC S7 1500 - ET200SP



The DC drives and the Pasaban cutting control system have been completely replaced by our commercial AC inverters and motors, co-controlled by an S7 1500 File Safe PLC and Siemens Touch-Screen video keyboards.

Thanks to the new software and hardware solutions we increased the machine performances in terms of accuracy and scraps reduction (n.d.r. **“never seen before”** ... voice of operator).

Our system complies all the safety functions required, like the speed limitation based on the sizing, as much as the maximum blade turns control. Avoid mechanical injuries the maximum speed was limited to the values fixed by the manufacturer (300m/min). Same to the admitted sizes.

Before the stop, a careful investigation of any device, actuator or connection was made. During the engineering phase we paid attention on maintain the same position of the links and clamps as it was.

Like every job, beside the machine rebuilding, we try to empower as much as we can all the single parts. A careful machine study allowed us to provide welcomed solutions. A

special attention was paid to the safety implementations.

The new sophisticated sequences applied to the machine and the automatic pallet changing, allowed a dramatic scrap reduction, as much as a quality implementation within the easiest machine driving.

The nice human machine interface based on a touch-screen panel offers a quick and intuitive data exchange. Thanks to the several helpers, it is possible to set the production changing and the machine settings in few moments. The custom-made software prevents anomalies by the users

**VW WATER COOLED SERIES
with
Safety Torque Off**



Gli inverters della serie “PLATFORM ONE DRIVE WATER”, equipaggiati con ONE card (unica scheda per tutte le tipologie di azionamento DC-AC e REBORN) e condensatori a Film, garantiscono una vita infinita dell’inverter.



automatic management. This facilitates the machine operators who can focus their attention to the quality control. To optimize the performances, every synchronized function related to the sheet flux is settled via hardware: this let the operation free to the PLC computing time-cycle.

The production managers, together with the machine operators were happy of the goals achieved: speed and production increase; wasting time reduction caused by automatic production changings; jam lowered by the new specific functions; machine flexibility; less scraps by a sophisticated diagnostic system; simplified hardware machine architecture – all documented -; programs and software available at every operator level.

View of the new electrical cabinets with ONE inverter inside who replaced the existing DC; the blade electronic management is made by the ONE board within the inverter. Apert our “PLATFORM ONE” Drives, no-other hardware or electronic boards have been used



Despite initial concerns for the short terms, the technical manager – eng.Carletto and Rossi – were totally satisfied of the achievements.