

paper division paper



the spirit of improving

SAEL, the spirit of improving

Since 1987 SAEL is an engineering and automation devices manufacturer, integrated systems and process controls with a specific focus on Paper industry. With two sites and over 45 employees in Italy, SAEL is awarded by the most important Paper manufacturers as one of the best tailor maker for automation systems.

The Company is organized by Business Units – Paper, Steel, Industry and General Automation – each of them with specialized team customer oriented. The Operations are divided in two divisions: Electronic Equipments for machine automation – Systems Division – and Electronic Control Devices – Products Division –

The **Product Division** involves the engineering and manufacturing of the drives with own technologies. The

product range encloses AC Vectorial Inverters, DC Drives, Reborn Kits, Microprocessor-driven cards: all of them under the SAEL's ONE PLATFORM®. Beside that SAEL operates as a system integrator using any standard brand like Siemens, ABB, Allen Bradley, Parker, and many others.

According to the customer needs the **System Division** develops and implements the automation system - DCS, and so on - for brand new applications as much as revamping or upgrading of existing machines. Thanks to the experience acquired over the years our engineers are skilled and prepared to fulfil any technical issue of the customer.



Paper Business Unit

Competence, Dynamism, Flexibility and 24/24 continuous production are the musts of the Paper market.

Those requirements fit into our Company DNA. The Paper business unit is the most important division as much as the Core business of SAEL.

The current activities are focused on manufacturing new equipments and revamping the existing electronic systems - in many cases the old power section as much as the electromechanical components of the cabinet can be reused.

Our fields of application are into integrate the management of on-board wiring systems and medium-low voltage distribution systems by supplying turnkey electric cabinets, MCC and distribution panels.

Focusing areas:

- DC, AC and mixed technology sectional controls
- Addition of new motors to existing controls
- In-line and Out-line coating machines
- Revamping of drive controls from analogical into digital
- Calanders and Super-Calanders
- Stock preparations, kaolin refining using standard PLC or SAEL's supervision software



- Rewinding Machines and Rewinding Cutters
- Synchronous with register or fixed Blade Sheeters
- Winders and Unwinders
- AC motor controls, Soft-start or stand alone inverter and multi-drive cabinets
- Automation for printing and coupling line

more info and deepening are available at www.sael.it

Since the beginning SAEL had a different way to market: go for an active involvement during the engineering process with the customer, and provide training courses to teach and bridge the technical gaps with the maintenance team of the user.

Every technical manager of our customer is welcome and expressively invited to attend the training courses three to four time per year. Those periodical meetings and the continuous information exchange, these important Voice Of Customer, aim our Spirit of Improvement.

SAEL official service points



General overview

The current outlook of the Paper Industry does not encourage the European paper mill owners to invest on new machines as much as replacement of their old devices. Due to the aggressive Chinese competition the majority of the standard paper production is migrating to the Asia. In Europe still remains the special papers production with an high quality demand.

However the European entrepreneurs are still pursue to look for cost effective solutions in order to push the competition away and keep the standard production within the old continent.

Over the years SAEL has been pushed to develop any solution possible to support those customer needs: mixed of new and revamping solutions; innovative technologies for the drives; flexible DCS easy to drive; and so on.

Today the bids presented by the competitors - whoever they are - are carefully compared and analysed from the technical point of view: this is actually a key point, because for many years back only the most known international manufacturers were supposed to have the application know how. This new trend was grasped by SAEL as an opportunity to stand up among other electronic automation and control device suppliers.

Our projects have been nearly directed towards solutions aimed at upgrading electrical systems instead of replacing them. The trend to revamp old equipments re-using the existing panels and getting the most advanced solution at a competitive price, raised up dramatically. Because of its imprinting SAEL has always been involved in this activities, generating a lot of implementations in many applications. Some projects were developed on existing hardware platforms with the addition of functions and controls.



Platform one and one drive

The new "PLATFORM ONE", exclusively made for paper industry, is the innovative and flexible solution ever. Since 2011, and against the market trend, SAEL uses a **single board to manage all the Drives: AC; DC; Chopper; Brushless and REBORN**. The "ONE DRIVE" actually.

The customer benefits of one board as spare part for all the system only.

The substitution can be done within 3 minutes only. ONE has a flash memory card with all the information stored inside.

In case of a Drive fault the simple replacement of the device is required. Extract the Flash memory from the broken drive, plug into the new drive, and restart: no programming, no parameters, nothing else.



we improve your life



Reborn, the revolution

Why throw your old analogical drive away?

SAEL has developed a new revolutionary system for the best cost effective solution ever. Actually REBORN allows to rebuild the old unreliable drive equipment just changing the main driving board.

Thanks to this unrivalled solution, **the customer can save 50% of the costs by re-engineering the old analogical control, getting the most high performing digital solution.**

The aging of the existing sectional controls on which we perform maintenance operations at our customers, pushed us to go for an innovative solution capable to rebuild the old drive combined with the latest control technology.

Within the target of ensuring the highest performance, fully reliable, on old DC controls revamping, SAEL has designed a control rack suitable for replacing all the existing drives– we have implemented solutions for Siemens, Abb, Allen Bradley, Parker, Ansaldo BMB, SCE drives –. The old control board is replaced by our INTELLIGENT DRIVE: This solution allows to use or re-use the old existing components at stock – SCR, Bridge, Relays, Contactors, Reactance, Fuses and so on –. All the original functional automatisms are removed from the old control panel, leaving the relay and the serial cabinets only.

The REBORN Rack is then directly applied to the SCRs of each bridge – thus transforming the drive from analogical into semi-digital or full digital – as much as to the SAEL system using a double field bus.

Some old systems are not equipped by PLC, and the system needs to be quickly wired on-site.

The REBORN system Fixes and fits this need.

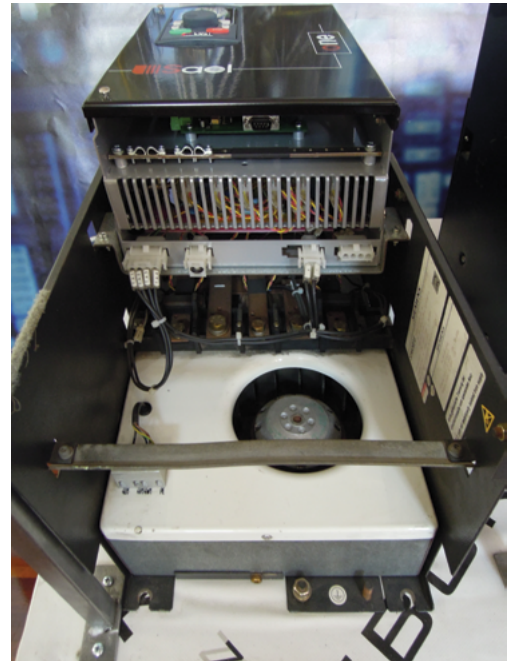
The first REBORN application was on 2000 at Marchi's group.

The system has the same main features of our next-generation drives applied to the Intelligent Drive Inverters and the DC drives as well:

- Simple
- Smart
- Reliable
- Exclusively made for papermaking industry

Over the last thirteen years we applied a lot of REBORN in the world, combining Siemens S7 PLCs with Can Bus or Profi Bus bridge boards.

Without additional costs, our inverters and DC drives can communicate with off-the-shelf PLCs exchanging words for reading or writing, as much as facilitating the wiring which must be took in place.



One board

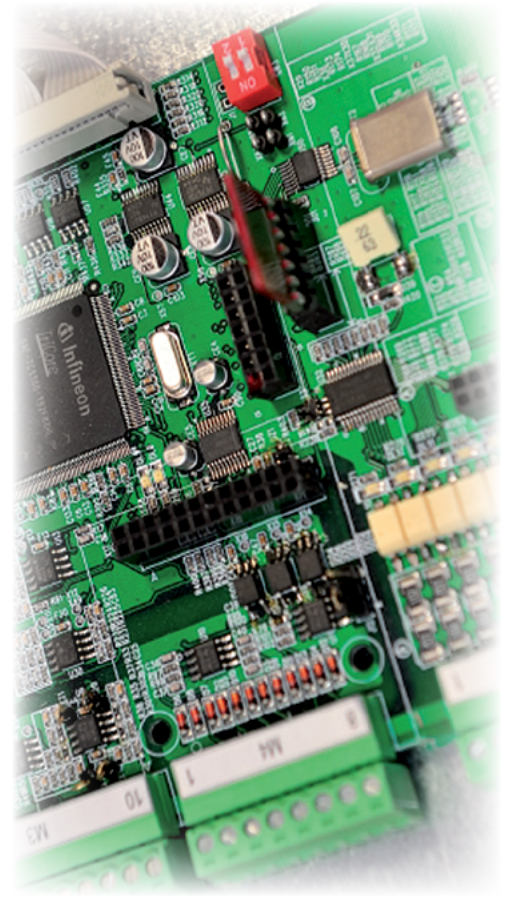
"ONE" is the newest, latest and universal board for any type of existing Drive on the market and the AC, DC, REBORN, BLDC made by SAEL as well.

ONE is a multifunctional solution who dramatically reduces the maintenance spare parts cost. A single Board will be the unique component for all the Drives in your plant.

Main features:

RISC 32 bit Processor with Flash-EEPROM software inside "ONE PLATFORM®"

- I/O Communication set up
- 8 Settable DGT Input and 6 Settable DGT Output
- 4 Settable Analogical Input and 2 Settable Analogical Output
- 2 Settable Encoder Input (the 2nd as option)
- 2 Settable SErial Interfaces RS232 or RS485
- 2 CAN Bus for refs. and enablement w/o additional external board
- 1 ANYBUS to additional field bus (e.g.: Profibus, Ethercat, Others)



One inverter

The Platform One is now completed by the new **long life inverter series: ONE INVERTER**. A Product designed to meet the mission of "last over time" as much as "repairable in every part": a huge gap from any Competitor else. Over 15 years availability. 400-500-690Vac / from 15 to 450kW (nominal power)

Main features:

- Film capacitors vs. traditional electrolytic – virtually infinite lifetime component – Just "ONE" control board for any power rating
- Faster replacement of the control board in case of failure – due to the removable EEPROM – no parameters are required
- Performances improved by the newest Tri-Core processor
- AC motor parameters detection by the accurate identification algorithm
- Smart auto tuning: faster inverter set-up in three steps
- Maximum 3 minutes for a replacement in case of failure. No skilled operators are required; and no programming steps as well.



Internet Worldwide Sael Assistance - I.W.S.A.

Every day with you

To support and perform activities on site, SAEL has designed and implemented an innovative remote web-based assistance.

The distance between the installations and our service centre is cancelled now. Each installation can be controlled and served from the SAELs operation control room. The "Internet Worldwide Sael Assistance" system - IWSA basically - does not require special hardware and it is not a standard limiting remote service offered by the competition.

Today our technicians can control all our equipments, electronic boards, edit firmware, drive parameters and, last but not least, edit any PLC program on real time, directly from the head quarter.

To access the IWSA service the customer simply needs:

- an Internet connection
- log onto our web site at www.sael.it, clicking the IWSA link
- select the confirmation key and enter the password + ID user



That's all ! The log-in operation has to be repeated at any logging out. Our Technicians can control the station from their desktop, setting up a two-way communication with the customer's site, use either chat or voice functions to suggest the changings and so on.

IWSA does not require added software installation for the customer.

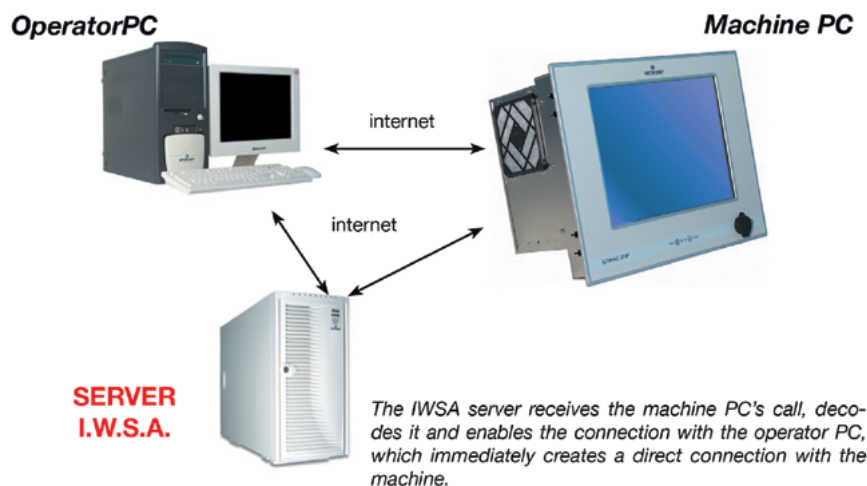
In case the engineers at the customer do not have any software to program the PLC, or Drives or whatever else, we can install the tool from our head quarter control room simply using the remote PC as a serial interface with the SAEL hardware.

The web-based architecture of the system allows to be in constant connection, if required.

In this case we can manage all the assistance steps either from our head quarter on on-site at any time.

This solution is useful to remote testing sessions of the system as much other important functions. In case the connection is through the machine supervisor station, all the faults can be displayed and monitored.

The application achieved awesome results during the commissioning and the after sales steps.



Sectional Controls for Paper Machine drives

The Paper Machine is the core of the production for any paper mill manufacturer. Around this core there is the whole organization: production as much as technical engineering process. The 24/24 continuous productivity is a must. SAEL made a lot of those machines: from the overall application up to the single specific parts of the machine based on customer needs and investments.



The SAELs **"SECTIONAL CONTROL"** is the first automation & drive system without cascade MASTER CONTROL DRIVE, whose the intelligence is inside the AC or DC drive. This solution is awarded as the most complete system ever by a huge group of technicians and professionals. Actually it fulfils any modern paper mill need as much as winder or calander as well. The reference control is managed by an AC or DC converter and supported by a 1 Mbit/sec CAN bus MULTI-MASTER network. This is miles away from the other systems based on PROFIBUS MASTER-SLAVE networks, allowing a faster data computing: 6 Mses for 60 AC or DC motors.

Calanders

Within the same philosophy used for Paper machine drive and winders, SAEL made several Calander applications: revamping or new one. The core of all those paper mill applications is the **SAEL INTELLIGENT DRIVE** linked to the integrated SUPERVISOR system and a PLC logical last generation.

Partial electrical revamps are possible for the Calanders as well: Old DC to brand new AC motors conversion; SAEL **"REBORN"** application – using the existing Drives on new electrical cabinets – and so on. For all the upgrading, rebuilding or restructurings, the system architecture is defined according to the customer needs. This involves the operational and take in place scheduling.

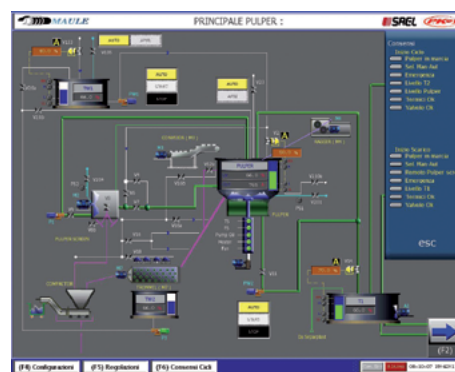


Stock Preparation

Thanks to the knowledge acquired on specific Stock Preparation, SAEL is a benchmark for that application. Since the first touch with the paper mill operators it is possible to dive into the system with a clear whole picture of it: each system is a powerful management tool who allows a quick and friendly approach to all the cycles. Moreover it facilitates the direct changings to the process. Behind this easy management there are powerful algorithms within our owns software tools. Based on customer needs there are a bunch of architectures used. From the PLC with MMI/scada up to the most complex DCS systems that we normally supply to our customers.

By those systems it is possible to manage all the menu variables – for water, pulp, additives, market paper – as much as the active power for each refiner group; the kwh/Ton set- point; the levels of every colour; the regulators flow; all the power-pressure-positioning-consistency transducers; cooking coatings. From the system it is possible to enable / unable all the functions on the monitor. Every data is stored into the DCS Scalink second by second: the system can be upgraded and enlarged in a second time without limits. As soon as there is a second PC driving station the systems gets the redundancy function. Each PC can run up to 4 monitor at the same time.

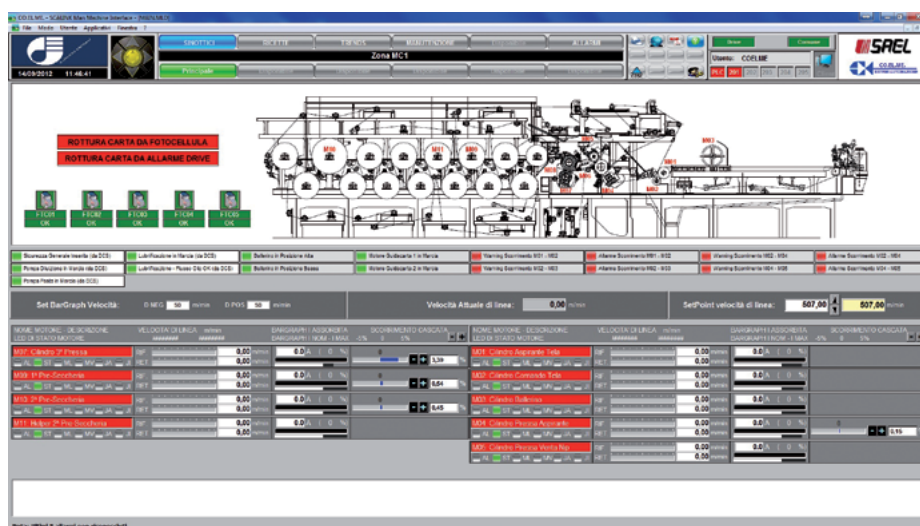
The PC stations can be replaced without any software installation: a simple Scalink directory hard copy and the transferring to an USB key is required.



DCS

The Supervisor in combination with the Engineering Station is a powerful control device. It allows a quick and easy management of each single working process by a

direct operator engagement. The architecture is based on WINDOWS with driving programs on SCALINK and MMI-SCADA platforms: fully available to whom has the programming key. The complete package is completed by the remote assistance IWSA – Internet World Sael Assistance – installed on every drive and 6 month free of charge after the take in place.



Winders

Sael made several **WINDER** application solving different issues in term of demands, performances, manufacturing types across many different papers. We basically revamped many Jagemberg, Beloit, Over, and all the most important Winder brands. Especially made for Winders, the “**WINDER Sael**” supervisor is a great tool for winder drives management, so far. This core product has been perfected over the years and hundreds of applications on paper mill industry. The base of this system got inspired by the “**JAGAMATIK**” model – for basic functions mainly – and built on new solutions by the new open software solutions.

Our system involves a PC – Windows inside – who runs the supervisor by a Scalink program. It is extremely flexible and modular; Windows fully integrated and high performing. To the best MMI-SCADA system optimization all the pages, the custom functions, protocol, graphic interfaces have been implemented by Sael.



Supervisor Winder-SAEL

The programming system is a powerful tool WIN OS based. The programs are fully open, running with SKALINK, MMI-SCADA. IWSA (Internet World SAEL Assistance) is included six months longer.

The **WINDER-SAEL** engineering station, expressively made for winders controlling, and equivalent of the JAGMATIC system – exclusive property of Jagemberg – is used to manage the whole machine, the PLC program as well as drives and transducers. Having a simple standard SCADA, the architecture is Windows based. The main functions are:

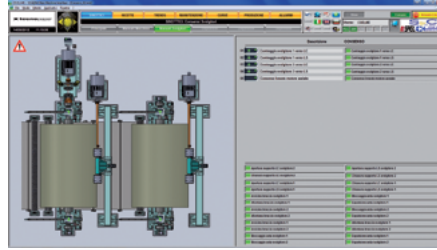
- System Synoptic displaying of all main AC or DC motors
- Electrical Variables displayed on a bar graph and numeric size
- Continuous Alarm diagnostic with hard disk and hard drive storage
- Machine Operation Set Points display
- Real and Historical Trends stored on one file for each reel produced saving relevant main values
- Main values trends stored for ever
- Menu generation for tailstock and rider roll pressure regulation, maximum machine speed, pull and main-rolls load sharing according to the wound diameter
- Records for all the machine stored set points, selected curves, production data, transferred on the machine at the touch of a function key



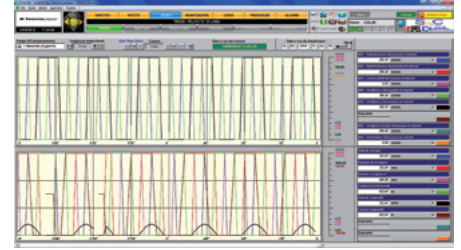
Some of the Graphic interfaces:



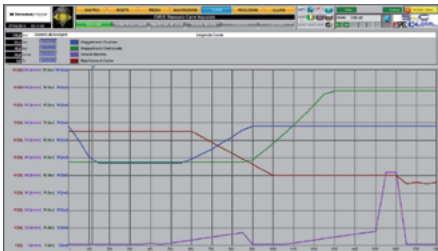
Machine Main Synoptic



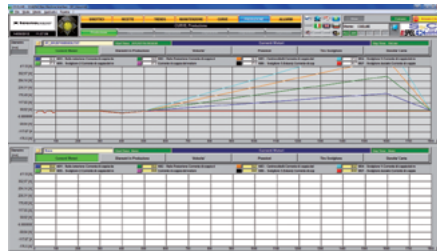
Winders Group Synoptic Drive



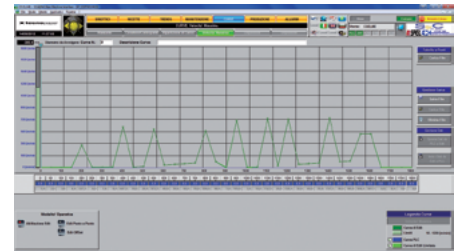
Trends



Working Curves Display



Production Report



Curves

The overall Graphic Interface encloses:

Machine **Main Synoptic** • Machine Manual **Synoptic Drive** • Winders Group Manual **Synoptic Drive** • Menu Generation/Management • **Real Trends** and Coil Ready • **Historical Trends** • **Maintenance** • **Working Curves Display** • **Reel Curves Display** • **Production Report** • **Current/Historical Alarms** • **System Alarms** • **Safety Alarms**

Sheeters

A long experience matured with direct customers, over twenty years of technologic partnership with MILLTEX, and several SHEETER lines built in the world, are the best business card for this application. From the traditional cut lines up to the most recent digital size lines. More than hundred of machines have been built around the world: from the simple fix knife up to the most sophisticated electro synchro-flex with twin motor on the knives, or the digital sizes with automatic packing systems – wrapping machines –.

Together with Milltex we made several sheeter revamping – partial or complete – for the main brands like Jagemberg, Bielomatik, etc.





we improve your life



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Aug 2014