elav®
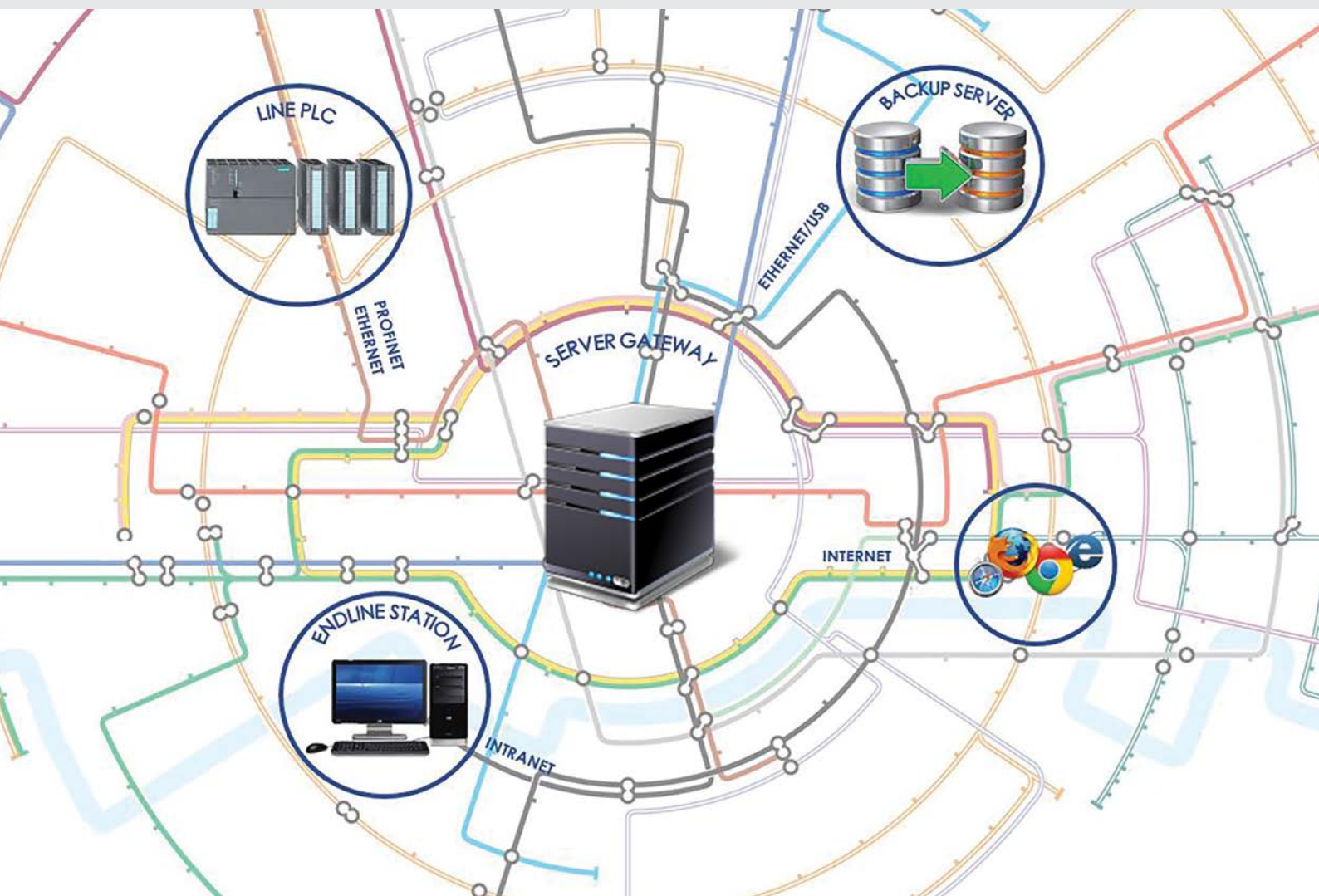
LIVECONTROL
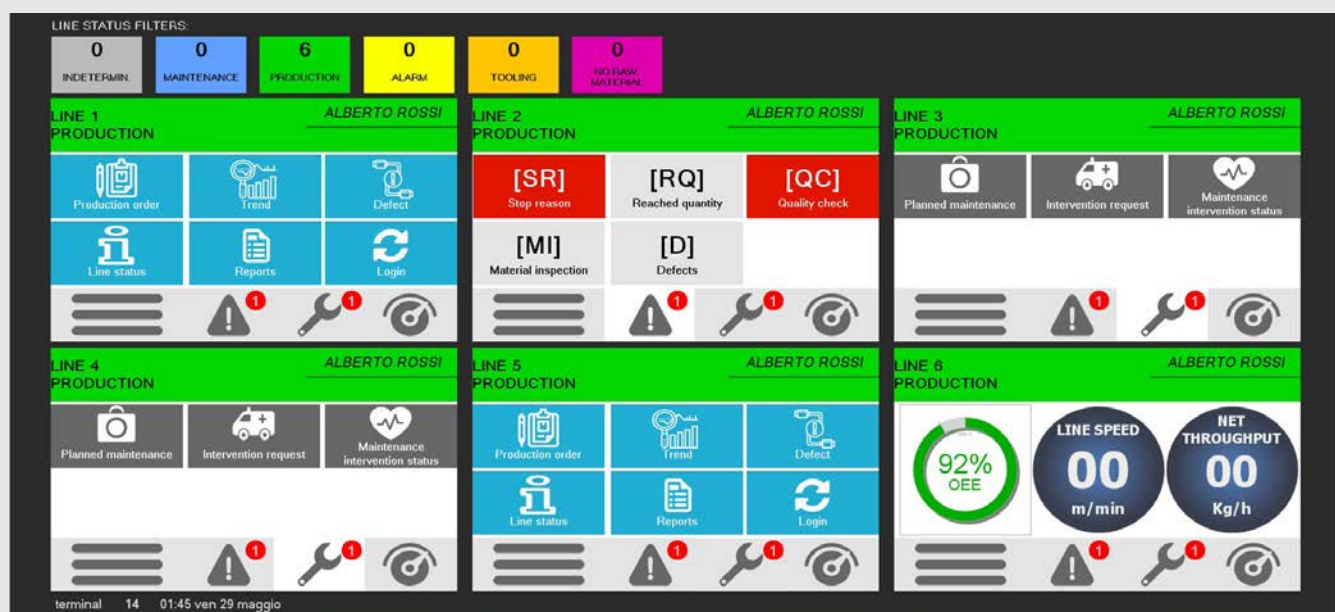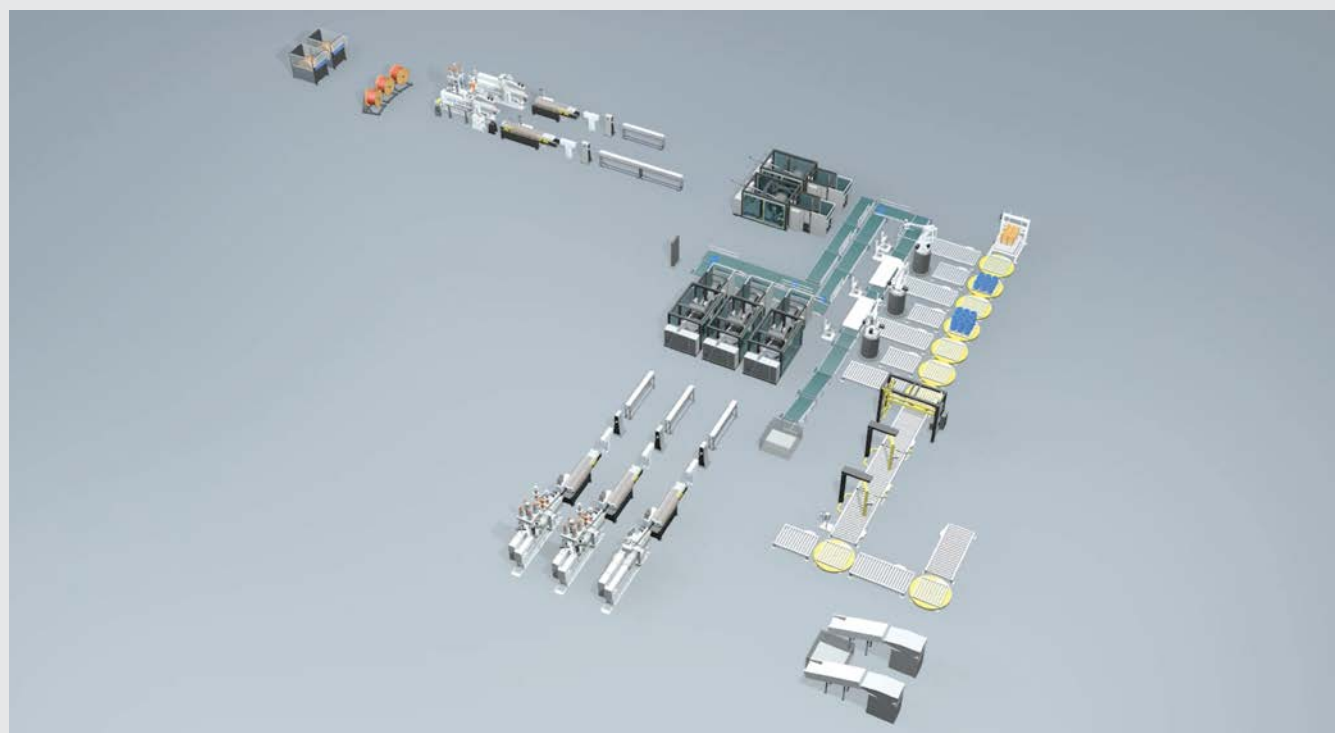
INDUSTRY 4.0

Expressly developed for the wire and cable manufacturing industries, LIVECONTROL allows to monitor, store and analyze all relevant production data, achieving a complete traceability of the production, increasing quality and optimizing the production processes.

LINE PLC

BACKUP SERVER

ETHERNET/USB

PROFINET ETHERNET

SERVER GATEWAY

INTERNET

ENDLINE STATION

INTRANET

REAL TIME ANALYSIS

A quick overview of the performances and productivity of the production plant. Data are divided among production phases: start-up, pre-heating, production; in this way it is possible to get a complete look on the behavior of the manufacturing lines and make promptly the correct interventions when needed.

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LOGGING OF KEY VALUES

For plant monitoring and graphic display of the relevant results. The logged data include:

- Temperatures of extruders, melt pipes, head
- Screw rpm for extruders
- Machine settings recipe, set points and relevant variations (actual values)
- Line speed
- Melt pressures, and temperatures
- Energy consumption
- Torques, speeds and temperatures of motors
- Consumption of materials per single extruder and single component
- Defects: spark, lump, neck
- Diameter of the cable (hot/cold)

KPI analysis

This page provides a graphic display of the set point and real values for the main line parameters, thus making possible checking any incorrect variation from the recipe values.
Logging the operator's identifier makes possible to understand who made a specific change to the recipe settings.
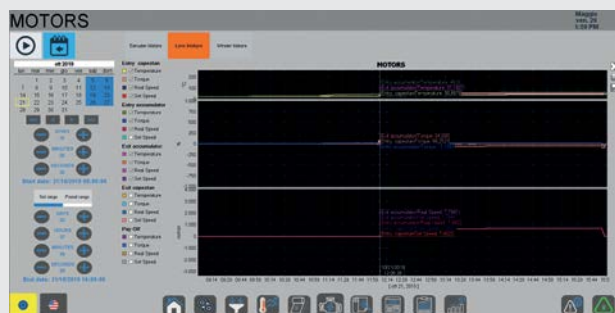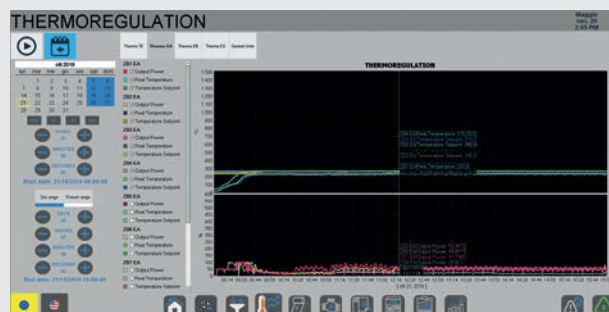

Analysis of motor operation

The function allows analyzing and graphically displaying the temperature, speed, and torque data of the machine motors. In this way the user can get an immediate picture of the overall performance of the system in order to analyze and prevent anomalies (e.g.: a motor whose working temperature constantly exceeds the threshold could be affected by mechanical problems).

Analysis of temperature control

This function provides the analysis and graphical display of the temperature data of the individual temperature control zones for each element on the line. It also allows checking possible deviations from recipe and set values.
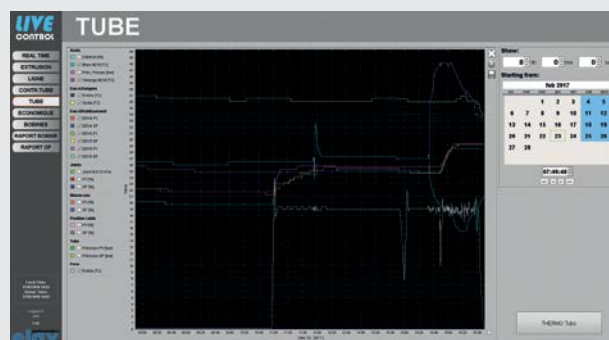
STORAGE

Storage and division of production by stages, reels, jobs and batches with **several types of possible analyses:**

Direct access to the production data of the desired **reel:** for full product traceability. Therefore, it is possible to obtain a set of records to be associated to a specific product in order to be sent to the customer to complete the supply and/or to be stored for internal quality analysis (e.g. random laboratory tests on the products) or for customer complaint management (e.g. product certificate of conformity).
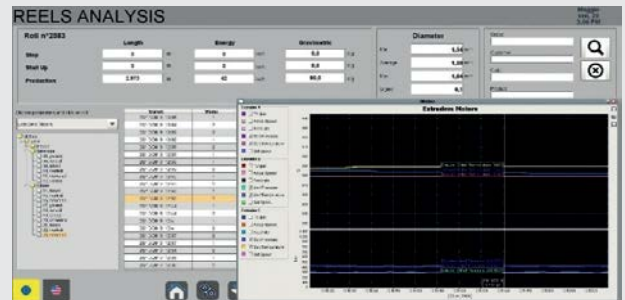
Direct access to the production data of the desired **job**. It is also possible to compare both jobs and shifts from different production lines of the same production.

Filters can be combined together for detailed search. Further search and filtering criteria can be implemented according to customer needs.
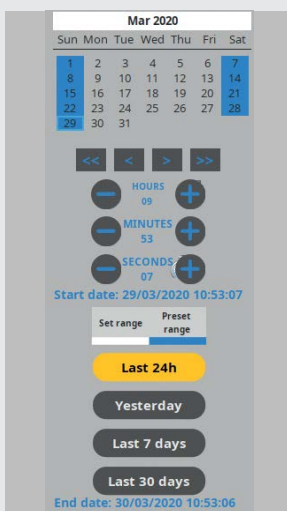
Time window filter: it is possible to set a time window for the analysis (e.g. year, month, day, time and time interval)
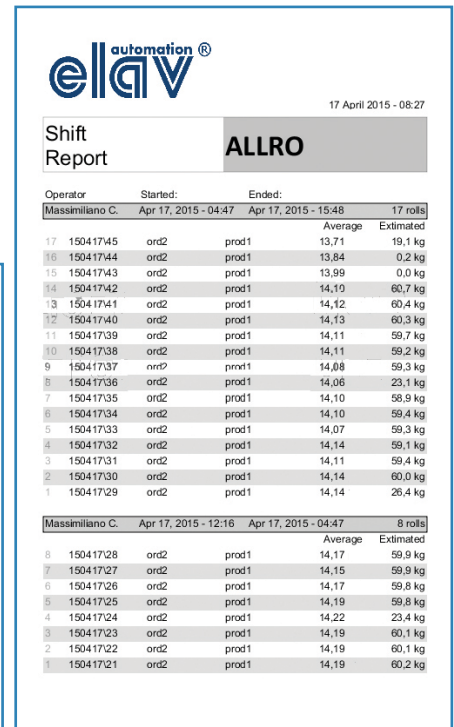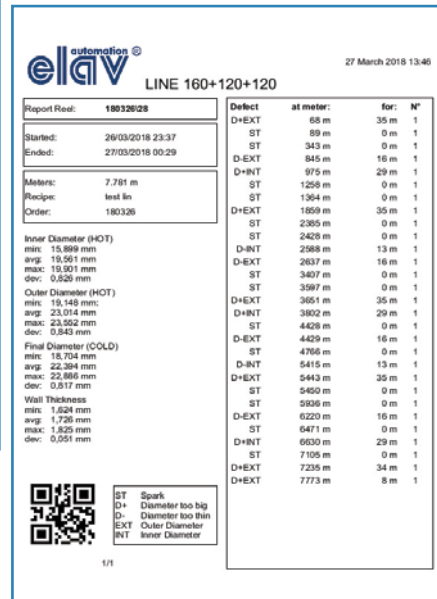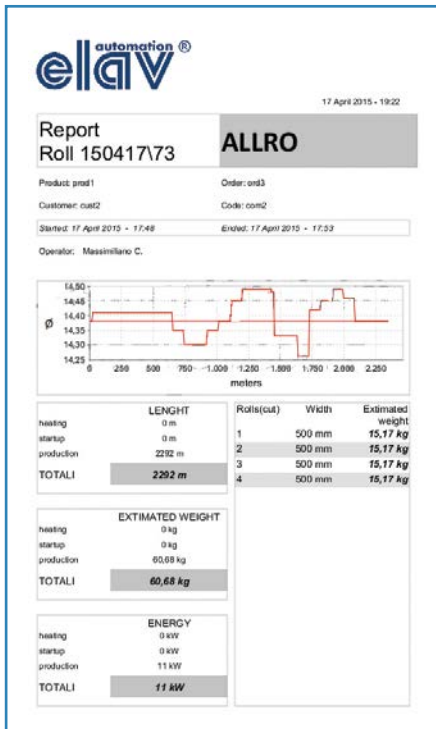
Production scope filter: customer, product type, product code, production order.

REPORT PER REEL, SHIFT OR JOB

Including trends and the above-mentioned analysis:

- Tracking of defects, non-conforming products and scrap
- Shifts of operators
- Production recipe(s) used
- Energy consumption
- Consumption of raw materials
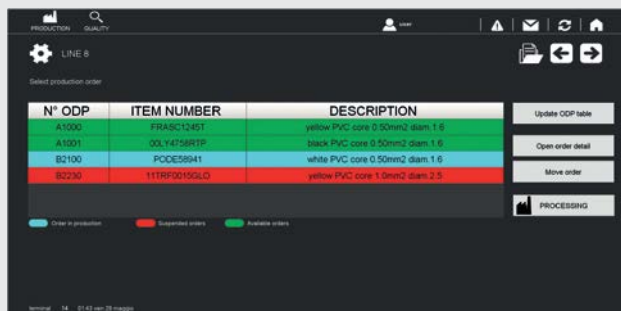- Production order reports

OPTION: Automatic Reporting module. Every report can be automatically printed or exported in multiple file formats, without the need of operators' intervention: typical example is the automatic printing of labels to be placed on every reel (or final product) that contain an unambiguous product identifier (i.e. serial number) that guarantees the complete traceability of the product even when it will be delivered to the final customer.

LIVECONTROL
OPTIONS

LIVECONTROL can be implemented with different modules that can help you improve monitoring your production line:
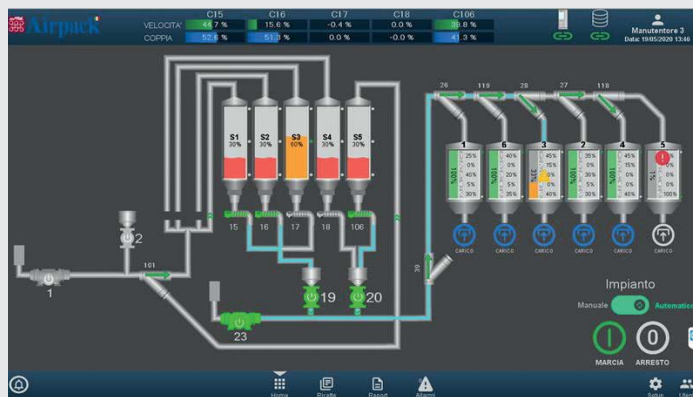

ERP interface module

Live Control can be interfaced with the most common ERP on the market like SAP®, Microsoft® Dynamics Nav, to get production order details, eventually including detailed production recipes and send back all relevant process information associated to each product coming from the shop floor.

If Live Control is not interfaced with an ERP system is possible to take advantage of the **Production order module**. All critical information related to a production order can be displayed on Live Control, to get a real time updated to the order status: order completion percentage, product good/scrap percentage, energy consumption, line status, etc.

Process alarm module

Live Control helps shift manager and line operators to keep under control the key performance variables that defines the quality of the final product; if a process parameter goes out from a defined interval, the system will promptly inform the operators by mean of multiple alarm signaling (e.g. screen alarm, acoustic alarm, email, etc.)

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Raw material module

Materials used are a key factor for the final product quality. Live Control helps operators to check if the material being used are quality checked (i.e. acceptance test), if they are set up according to the recipe coming from the production order and to trace the lot of material being used. The material consumption can be shared in real time with an ERP, to get an efficient management of the raw material stock.

The raw material module can be applied to any kind of material involved in the production process: plastic granules, paper reels, aluminum reels, etc.
Raw material module can also interface **Silos** or batch management system to collect all information related to materials as well as to system status.

On-Line and Off-Line Quality Check

On-line quality check by mean of control devices (e.g. Spark, Lump&Neck, Diameter gauges) combined with visual inspection performed by operators allows a real time quality inspection on each reel.
On every production batch, several reels are always sent to Labs for quality check.

The report from the Lab is sent through Live and associated to the production order/batch to create a complete Quality Report for the whole production.
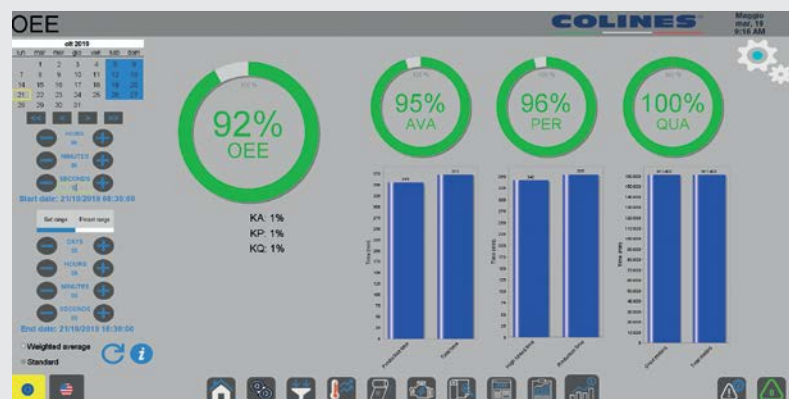
Overall equipment effectiveness module

Live Control enables manager to track the variables responsible for the OEE of the line:

• **Availability of the line:** the system automatically detects and record any stop of the line. The maintenance/shift manager is forced to select the cause of the stop of the line among previously defined items (e.g. planned maintenance, electrical fault, mechanical problem, no raw material, etc.) to let the system elaborate the availability performance indicator.

• **Performance:** the system lets managers define a defined target throughput of the line (expressed in various format like line speed, material throughput, etc.); working cycles below the defined threshold as well as small stops will be automatically recorded from the system to obtain a performance indicator.

• **Quality:** the system can detect scrap material automatically (e.g. material being consumed during tooling or production changeover) or manually (e.g. users can input the weight of scrap material related to non-compliant products); these values define the process quality indicator.

The combination of the previous values, gives the OEE of the line.

Call for Maintenance module

Planned and unplanned maintenance activities are an integral part of the production, influencing significantly the productivity of the line, by consuming time for diagnosis and organization. Live Control helps maintenance manager and operators to quick address unexpected maintenance needs, to the right department to get a prompt intervention.

Average time between maintenance call and intervention, most frequent cause of intervention, average time to solve troubles are just some example of metrics.