

Software for production control and management



Tube Mill Management Modules

Fives OTO Systems Division proposes specialized software for the production, the management of stops, the management of mills and the maintenance of entire plants.

Take control of your Business.

Production management and traceability of materials

It is a highly flexible and modular production management software specifically dedicated to the steel industry. It manages all processes which are typical of the steel industry, by highlighting all aspects of the production that are often hidden. It contains all the necessary tools to manage production and production plants by means of formidable customizable control instruments and a panel of performance indicators (KPI).

The control of the production process allows you to rapidly react to the fluctuation of the production and of the market



Real-time display and record of the historical data

ADVANTAGES

- **Sure data**
Record of the production efficiency by calculating production, scrap and performances of the plants
- **Stress on the hidden costs**
Analysis of production times and stops, necks, redundant flows, etc
- **Higher quality standards**
Control of traceability, production parameters and procedures
- **Monitor in real time**
Display of the progress of production orders and of the machine status
- **Higher efficiency of the production cycle**
Production control which allows you to optimize the setting times and the production speed
- **Detailed records in each production phase**
All production data, even those coming from the plants, are analysed and shown in practical reports
- **Less stocks in the warehouses**
The control of the flow of materials allows you to optimize the warehouse stocks



GENERAL FEATURES

It is a software completely developed in .NET, which manages the data with the most widespread databases: MS SQL Server, Oracle, Mysql and other. The application alone can manage: the whole production process, the complete traceability of products, the identification of materials, as well as show the stocks in real time and the progress of batches.

Easy

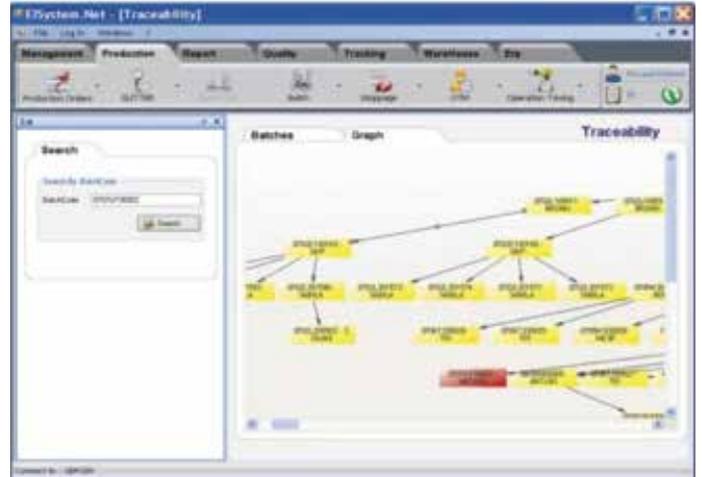
It was created for easy use through an interface which is intuitive, but at the same time powerful and precise.

The study on its use has enabled the development of 2 environments, for 2 different contexts, which manage the same data: the first one, designed for the people in charge and for production management, contains the management and control tools; the second one, designed for the factory and the operators, manages the production progress by a few easy operations.

Powerful

The system is directly connected with the machine automation and the record of the values happens in real time; the management of consents stops the lines if the pre-set conditions are not satisfied (wrong material in the machine, no input of the data required, etc.); the receipts and setting values of the machine are directly sent with the production order.

- All data and information is centralized in the database and usable for the analysis of the processes
- Connection with local ERP or the present departmental systems, such as supervisors, Business Intelligence and automatic synchronization of data



Production is kept under control

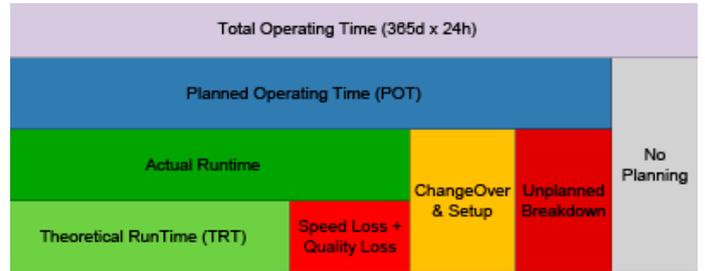


Production efficiency management system

Software integrated with the automation of the production lines for the management of plant stops and efficiency control.

$$\text{Efficiency} = \text{TRT} / \text{POT}$$

The efficiency of a factory arises from the efficiency of each line.



ADVANTAGES

— Sure data

Direct record of the times by the automation without human intervention

— Stops identified

Identification of each stop, with the possibility of defining an unlimited number of cause levels

— Speed control

Control of the difference between the maximum speed and the real speed for the calculation of the Speed Loss

— Efficiency calculation

Efficiency indicator with algorithm based on the data collected

— Real time monitor

Real-time display of the status of lines, via WEB and on smart phone too

— ROA maximization

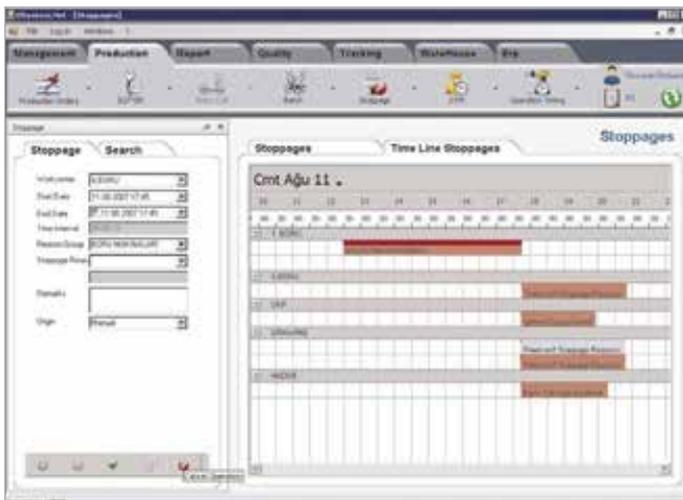
Higher efficiency and reliability of the production lines

— Information archiving

All stops are analysed in reports and assessed by process indicators

— Automatic call to the Maintenance Department

Direct sending of messages to the maintenance department, so as to reduce the down time



TECHNICAL FEATURES

For each production line it is possible to define an unlimited number of stoppage causes, which can be organized at several levels based on the category and type.

Management of stoppage causes

For each production line, you can define a set of causes hierarchically subdivided into sublevels. For each stoppage cause, you can set events such as sending of emails, SMS, calls or the modification of the machine parameters (consents, modifications of receipts, etc.).

Efficiency management

Speed Loss: for each line/product you can define the ideal speeds of continuous production. The difference between the real speed and the ideal one is stored for the calculation of OEE.

Emails/SMS/voice messages can be sent if the real speed is lower than the ideal one, as defined.

Collection of information from the field

The software collects the times directly from the production lines, even without the operator's intervention.

When the plant stops, it shows the page with the causes and the operator records the reason for the stoppage.

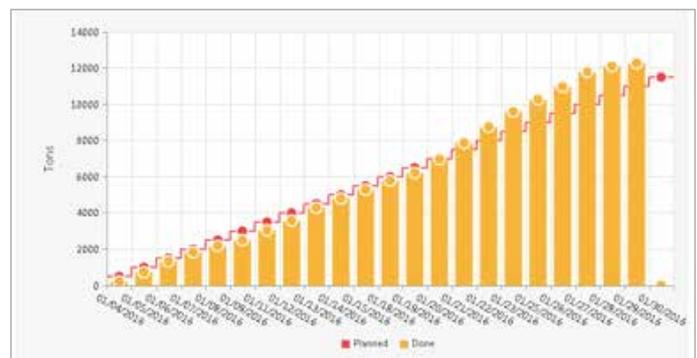
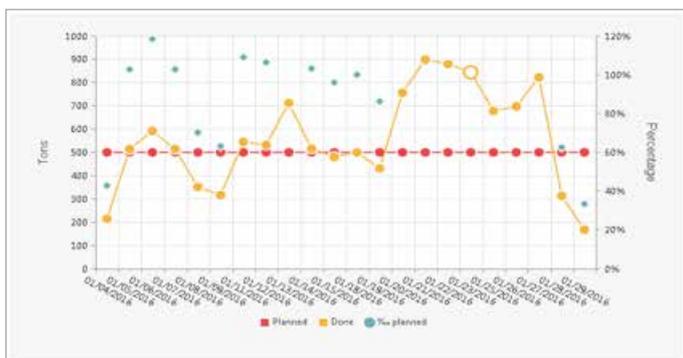
Report & BI

The data collected is presented by means of reports, graphics and KPI, which can be customized.

In general the line efficiency, the stops for line, shift, cause etc. are shown.



Unplanned Breakdown



Roll Manager

It integrates the previous package, and accurately manages the rolls. An univocal (self-explicative and/or progressive) identification code can be assigned to each roll.

Rolls register

While selecting diameter/thickness/quality, the theoretical recipe, or one of the optimum recipes suitable for that product, can be sent straight to the machine. The theoretical recipe is a detailed register of the set of tools to be used by the machine.

Machining centres register

Register of all machining centres, including their features and rolls positioning calculation formula.

Rolls condition check

Real-time check of the condition of all rolls: rolls being ground, in line rolls, etc.

Easy to use

Intuitive interface heading the technicians in the execution of the different operations

Grinding automatic request

Calculation of metres produced for each roll, with alert on exceeding the set limit length.

Grinding management

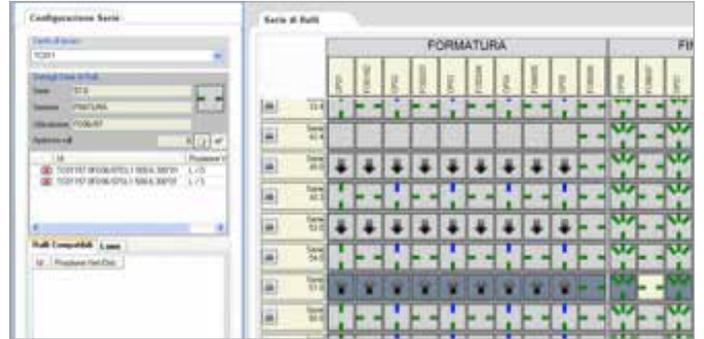
Creation of an excel file with the roll dimensions, to be sent to the grinder, automatic or by Internet import of the excel file with the dimensions after grinding, automatic update of all the recipes with the new dimensions of the roll.

Recipes sending to the plant

The software is equipped with utilities for the management in the plant. The recipes are sent from the office straight to the line control console.

Report & Plant Intelligence

Roll Manager is equipped with a set of reports and standard graphs, which can be customized.



Cut Off Manager

Cut Off Manager has the aim to help the operator to enter the optimum cutting parameter in terms of blade load, in order to achieve the highest line speed for the tube being produced. The cutting recipe starts from tube's characteristic data: blade's usable minimum diameter and the number of indicated teeth is indicated according to the type of blade to be used. Once blade data have been inserted, the system

automatically calculates the remaining parameters. The software has been conceived both for the inexperienced operator, with the creation of ready for use recipes, and for the experienced operator who wants to improve cutting performances respecting at the same time the limits of machine's design.

ADVANTAGES

— Automatic management of parameters

By default, once tube and blade data have been entered, the System creates a basic recipe which can be immediately used.

— Cut-off graphs display

The system displays through graphs the most important parameters of the recipe being created, such as: contact arc, chip's thickness, tooth filling, speed of the different movements (blade translation, blade rotation, fifth wheel). Each graph shows the limit value of the specific size, so that any problem related to the entered parameter is immediately detectable to the expert eye of the operator.

— Single software for all Fives OTO cutting lines

This means that, even if the operators have to deal with the different types of cut-off employed by the company, they will always have to use the same interface on all the machines.

— Recipes

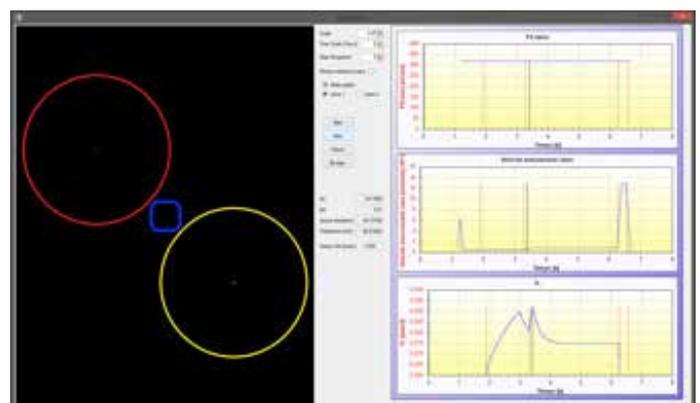
The data used for a production order can be stored and then employed again afterwards, they can also be exported and used on a different production line with an equal type of cut-off.

— Simulator

Before sending cut-off parameters to the machine, the data can be tested straight by the system in the simulator, where the theoretical data can be examined, with automatic or step by step progress.



Tubo	Ritaglio	Velocità	Tempo
100 000 110 00	1	100	10.00
100 000 110 00	2	100	10.00
100 000 110 00	3	100	10.00
100 000 110 00	4	100	10.00
100 000 110 00	5	100	10.00
100 000 110 00	6	100	10.00
100 000 110 00	7	100	10.00
100 000 110 00	8	100	10.00
100 000 110 00	9	100	10.00
100 000 110 00	10	100	10.00
100 000 110 00	11	100	10.00
100 000 110 00	12	100	10.00
100 000 110 00	13	100	10.00
100 000 110 00	14	100	10.00
100 000 110 00	15	100	10.00
100 000 110 00	16	100	10.00
100 000 110 00	17	100	10.00
100 000 110 00	18	100	10.00
100 000 110 00	19	100	10.00
100 000 110 00	20	100	10.00
100 000 110 00	21	100	10.00
100 000 110 00	22	100	10.00
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100 000 110 00	28	100	10.00
100 000 110 00	29	100	10.00
100 000 110 00	30	100	10.00
100 000 110 00	31	100	10.00
100 000 110 00	32	100	10.00
100 000 110 00	33	100	10.00
100 000 110 00	34	100	10.00
100 000 110 00	35	100	10.00
100 000 110 00	36	100	10.00
100 000 110 00	37	100	10.00
100 000 110 00	38	100	10.00
100 000 110 00	39	100	10.00
100 000 110 00	40	100	10.00



Blade Manager

A tube manufacturing company must know exactly the best type of blade for a certain product, or the highest blade performances, both in terms of duration and efficiency. This product has the function to collect the data of each single

cut and to store it in its inner database, in order to make it possible to share the information afterwards and to make it always available.

ADVANTAGES

— Blades and blades supplier register

The system manages the complete and detailed register related to the blades used in the plant and to the supplier by which they have been purchased.

— Cut-off data record

At each performed cut-off, the system records all the parameters, number of cuts, square metres of cut material, blades incidence, etc. All data are associated to the characteristics of the material being Machined in order to make it possible to analyse the data for each characteristic, such as thickness, material, diameter, etc.

— Multiple blades management

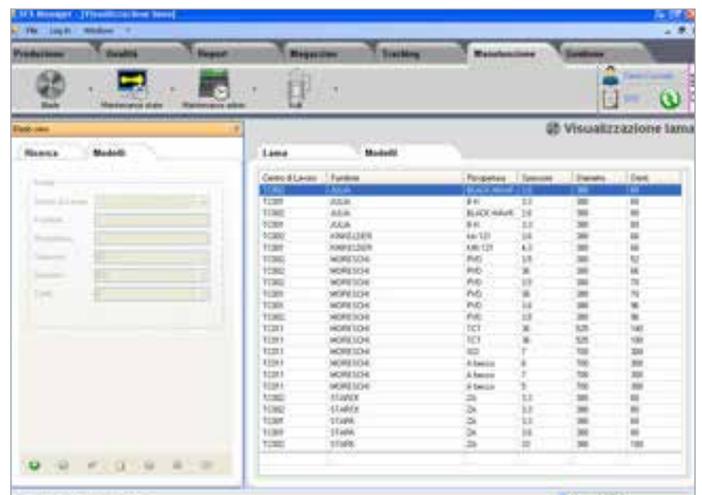
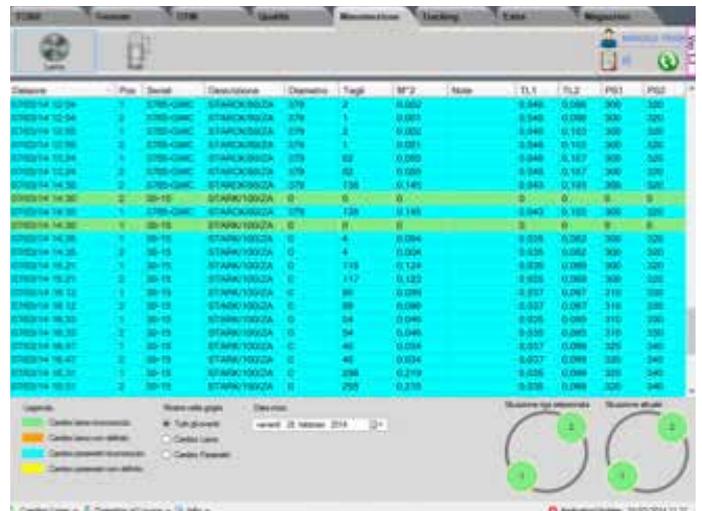
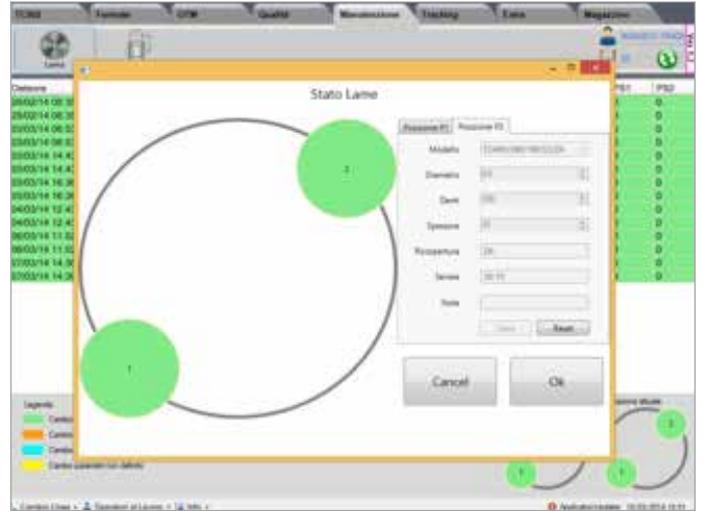
The system is suitable for the management of cut-off using more blades, all recorded parameters are therefore divided for each type of blade. In case of breakage or of greater wear of a blade, the event will be detected and stored.

— Blades history data

If it's necessary to analyse the stored data, their corresponding history archive can be consulted at any time; the data are divided by main characteristics, but it's always possible to filter them more in detail or to export them with Excel, in order to process them off-line.

— Integration with CutOff Manager

The two software are completely integrated with each other and if they are both active when a new recipe is created in CutOff Manager, the system will propose the best blades available between those present in the store, following its own inner algorithm.



Maintenance management

The management and control keeping of the company represents an aspect from which a successful company cannot take into consideration.

Knowing the value, knowing how it is used, ensuring the safety levels required by the law, knowing their state of

preservation as well as the critical aspects are all necessary and indispensable elements which subtend any decision.

Knowledge means being able to decide.

ADVANTAGES

The software allows you to effectively manage and plan the maintenance and therefore reduce the machine stops, increase productivity, the service level (inside and outside) and the safety level in the firm.

- Reduction of maintenance costs
- Reduction of breakages and extraordinary and emergency maintenance
- Optimization of investments
- Safety and legislation management
- Staff and warehouse optimization
- Improvement and increase of the life cycle of assets
- Better reliability of the maintenance service
- Higher efficiency and effectiveness of maintenance actions
- Higher reliability of machines



MANAGEMENT

- The extraordinary interventions and the preventive and predictive maintenance
- The resources in a hierarchical way
- The rational planning of the maintenance system
- The maintenance teams
- Predictive maintenances based on counters and/or deadlines
- Schedule (Gantt) for the planning of resources
- Alerts and alarms
- Pre-set or cyclical programming
- List of activities to be carried out in diversifiable times
- Safety notes
- The spare parts warehouse
- Assignment of tasks to the staff, departments or external companies
- Assignment of equipment to the staff, departments or external companies



OTO view - Immediate troubleshooting

SUPERVISION AND TROUBLESHOOTING SOFTWARE

OTOview is an innovative software that integrates plant supervision with a guided troubleshooting function. With simple operations and ad hoc suggestions, it enables a detailed analysis of the faults linking directly on-line the electric diagrams and user manuals, which considerably reduces machine down time.

Problem Solving

Guided direction to the active failure solution tips Data-Base.

Notes recording

Insertion of failure linked notes and/or tip texts by Operators or Maintenance Technicians

Guided troubleshooting (electrical)

Progressive zooming towards the main cause of failure / stoppage.

Detection of the components responsible of failure in the drawings

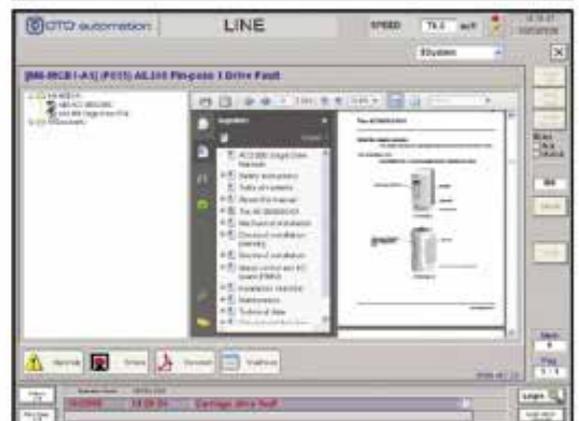
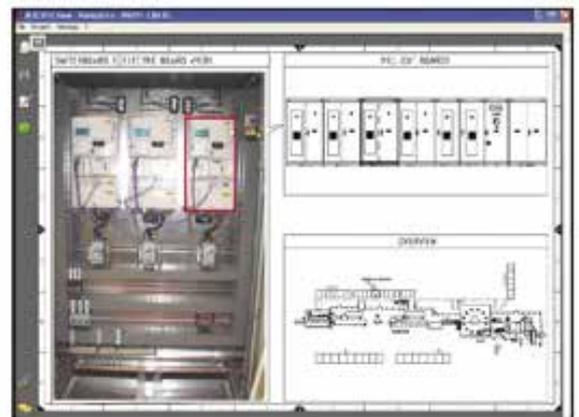
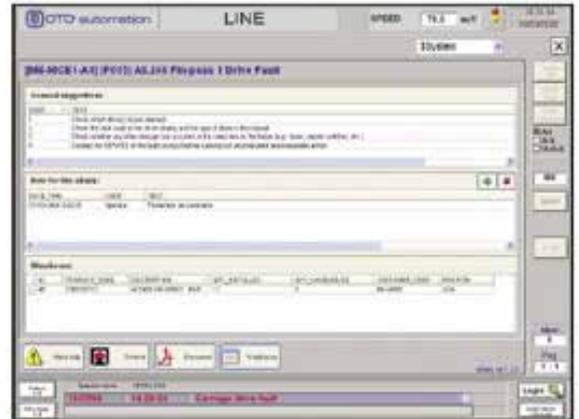
Automatic finding of the faulty components or those responsible of failure.

Localization of the components responsible of failure

Components automatic search in the electrical drawings, plant lay-out and in switchboards, control desk, etc.

On-line documentation

Automatic selection and monitoring of component linked documents.





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