Sistrade Software

Manufacturing Execution System for Industry 4.0

Get to know SISTRADE

SISTRADE – Software Consulting, S.A. is an information systems company with know-how in software development and consulting services for different areas, including industrial companies. SISTRADE main goal is to offer the market the best information systems tools, in order to help its customers to improve their performance in all the critical business processes.

Sistrade software is a configurable solution and the modules can be adapted to specific needs of each company, avoiding the implementation of a package which is too generic and will not be used at 100% of its capacity.

We focus all our activity on quality and improvement, cultivating research and innovation in every action and we are committed to the best information security practices. Our Management System demonstrates our involvement and commitment, in addition to being certified by the normative references NP EN ISO 9001:2015, NP4457:2007 and ISO 27001.

Thousands of Users

+ 15 Languages

Industry 5.0

Paperless

Total Integration

Process Automation

Complete Traceability

Continuous Improvement

Productivity Improvement

Cost Reduction

Waste Reduction

Artificial Intelligence

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Sistrade MES for Industry 4.0

Sistrade solution to embrace Industry 4.0

Sistrade software provides the right tool to push your company towards to Industry 4.0, optimizing, automating, and controlling your production line. One of Sistrade's key applications is Manufacturing Execution System (MES), which delivers solutions to plan, collect data, monitor and control the industrial process, with the direction of a high level of sustainability. Sistrade software's MES has a macro objective of supporting users in getting the most out of their resources, ensuring a more viable and sustainable future.

SISTRADE offers solutions allowing to generate appropriate information to quickly support decisions, incrementing productivity, aligned with the foundations of Industry 4.0

Sistrade MES for Industry 4.0

Product Lifecycle Management (PLM)

As a starting point of Manufacturing 4.0 implementation, it is important to define a set of processes related to Product Lifecycle Management.
In this regard, SISTRADE offers features which contribute in a significant way to an efficient PLM. It is important to highlight that production management is mainly supported by the management of job orders, which have direct readings of all elements and processes defined by PLM.

Main Features

- Product technical sheet
- Bill of materials
- Bill of processes (routing)
- Version control
- Data repository
- Electronic work instructions
- Serial number management
- Simulation and cost estimation
- Product development
- Rules of storage
- Output priorities
- Tests and trials
- Control operation range
- Equipment settings

Often these elements are stored in the actual Enterprise Resource Planning (ERP) software, which allows the integration with other software, through data import

Job Order (JO)

A job instruction sent to the shop floor is designated by Job Order and can be issued manually or automatically through a registration of a client order or through the MRP (Material Requirements Planning).

Main Features

- Automatic generation through MRP
- Series and versions management
- Approval workflow
- Attach documents to support productive process
- Machine parameters
- Direct association with Technical Sheet
- Grouped JO
- List of materials to consume
- Production lot definition

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Productions Record

Sistrade software is prepared to register products manually by the operator through the console, or automatically via PLC, by placing sensors on the machinery.

Main Features

- Registration of produced quantity in the industrial console
- Registration of produced quantity via industrial automation
- Calculation of production using a function of production time or speed
- Connecting weighing equipment to determine actual weights
- Productions in two measuring units (e.g. meters and kilograms)
- Traceability of the production process

Sistrade software also allows connection to measuring equipment for measuring the recorded values, for example, the output of a machine or section may be placed on the scales for the system to record automatically the actual weight of a product

Raw Materials Management

Sistrade software offers a complementary module to manage raw materials. This module consists of the definition of product trees, formulation, manual and automatic consumption, according to incorporation factors.

Main Features

- Multi-level definition of product trees
- Manual consumption with barcode reading
- Automatic consumption based on the quantity produced
- Pre-confirmation of the outputs of stock
- Definition of the formulation with the start of the JO
- Instantaneous consumption per machine and per shift
- Various alerts for placement of raw materials per JO and per machine

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Industrial Costs

A production process can be very expensive, that is why managing industrial costs is a key activity for every manufacturing company. Summing up direct materials costs, direct labour costs and manufacturing overhead in production gives us the industrial cost of manufacturing.
Sistrade software offers a solution to register every cost of materials, including indirect costs in order to calculate cost estimation closest to real.

Main Features

- Job order real cost
- Work in progress cost
- Estimated/real cost comparison
- Order profitability
- Automatic update of default costs
- Distribution of indirect costs by manufacturing phase
- Distribution of indirect costs by cost centres

Managing industrial costs helps to support the decision to internalize or outsource certain value chain activities

Production Reports

Managing production requires a further analysis through interactive reports, in order to get insightful information to support managers' decisions.
Sistrade Production Management brings Shop Floor Control to another level by providing detailed reports regarding production, employees and resources productivity.

Main Reports

- Current machine operation status
- Real-time machines speed
- Speed history chart
- Automatic downtime record and cause
- Occupancy rates
- Consult job orders
- Machine and production time and its deviations
- Setup analysis
- Tracking of production process
- Job order waiting times per section and operating summary
- Production data collection detailed registration
- Report employee productivity, presence and supervision control
- Analysis of resources and waste by JO
- List of needs

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Supervisory Control and Data Acquisition (SCADA)

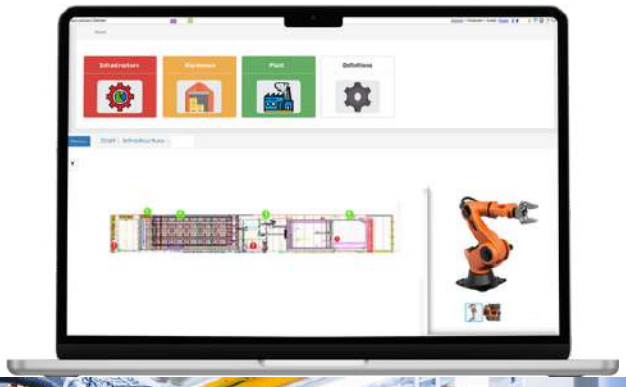
SCADA is a web-based software, which retrieves data from operators, machine sensors, PLCs (Programmable logic controllers) and various devices within a plant, even in remote locations.

- Fully customizable
- Suited to each plant layout
- Multi plant
- Various sections
- Any type of resource
- Synoptic panels support

SCADA has the ability to present a plant of all machines, operators, and processes in real time, allowing to reduce unproductive time

Main Features

- Local or remote supervision, multi-factory
- Real time information about the status of the machine operation
- Identification of employees who are working on the machine
- Production order that is in progress
- Quantities produced and rejected
- Operations carried out per job order
- Events and occurrences per machine and per job order
- Display of speed/cadence per machine in real-time
- Speed/cadence history
- Automatic record of downtimes and their reasons
- Actual time of adjustment and production
- Analysis of profitability
- Occupancy rates
- Analyzing productive vs. unproductive time
- Efficiency per machine



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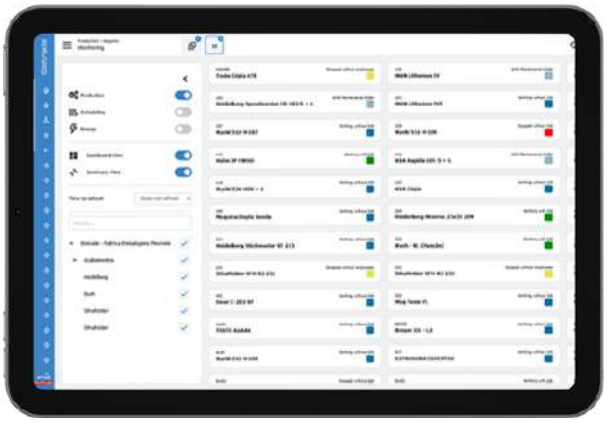
Data Acquisition (DAS)

The system provides a web based data collection that enables organizations to manually collect industrial data from industrial consoles, mobile devices or directly from machines and PLCs, applying the concept "Internet of Things".



Manual Data Collection

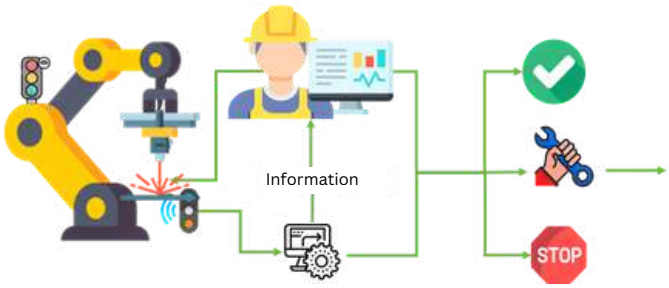
- Release of job orders (start/end)
- Start/end of operations (productive activities)
- Assign/withdraw employees to/from certain machines
- Reason of events (unproductive activities)
- Materials to be incorporated in the machine
- Production records
- Quality Control tests

Why automatic data collection?

Without DAS

- Depending on the reliability of the operator
- Unknown machine status
- Lack of reliability in times, productivity, non-productivity, maintenance and breakdowns

With DAS



- Increased data reliability
- Minimises human error
- Improved control of machine speed, cadence and manufacturing orders
- Real-time machine status
- Reduction of non-productive times: Increase productivity

Sistrade software allows organizations to automate their production processes, and optimize their production lines and transform into a SMART FACTORY

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Data Acquisition (DAS)

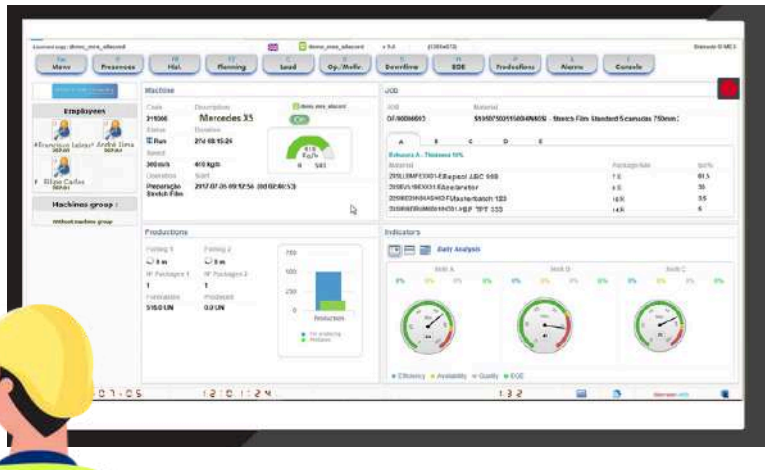
How to collect data automatically?

- Use proprietary acquisition cards
- Use standard PLC (e.g. Omron, Siemens, ...)
- Use standard protocol (e.g. OPC Server, XML, ...)
- Use relational database (e.g. SQL Server)
- Use of links between equipment API and Sistrade API

With automatic collection it is possible to present production indicators in real time directly to the employee in charge

Automatic Data Collection

- Machine status
- Instantaneous speed/cadence
- Average speed/cadence
- Produced quantity
- Setup and production time
- Downtime
- Consumed quantity (raw materials)
- Other signals that can be relevant



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Continuous Improvement with Lean Methodology

Sistrade software brings continuous improvement to the future, offering an interactive dashboard used to support the Lean implementation, substituting pen and paper dashboards with a highly dynamic and interactive dashboard.

Main Features

- Setups chart
- Downtimes chart
- Interactive dashboards
- Clear identification of goal vs. result
- Graphical OEE analysis in different dimensions
- Touch screen display to support continuous improvement meeting
- Analysis of setup times within a given time period
- Ability to immediately transmit the performance result
- Graphical analysis of indicators crossing different dimensions (machine, time, JO, shift, employee).

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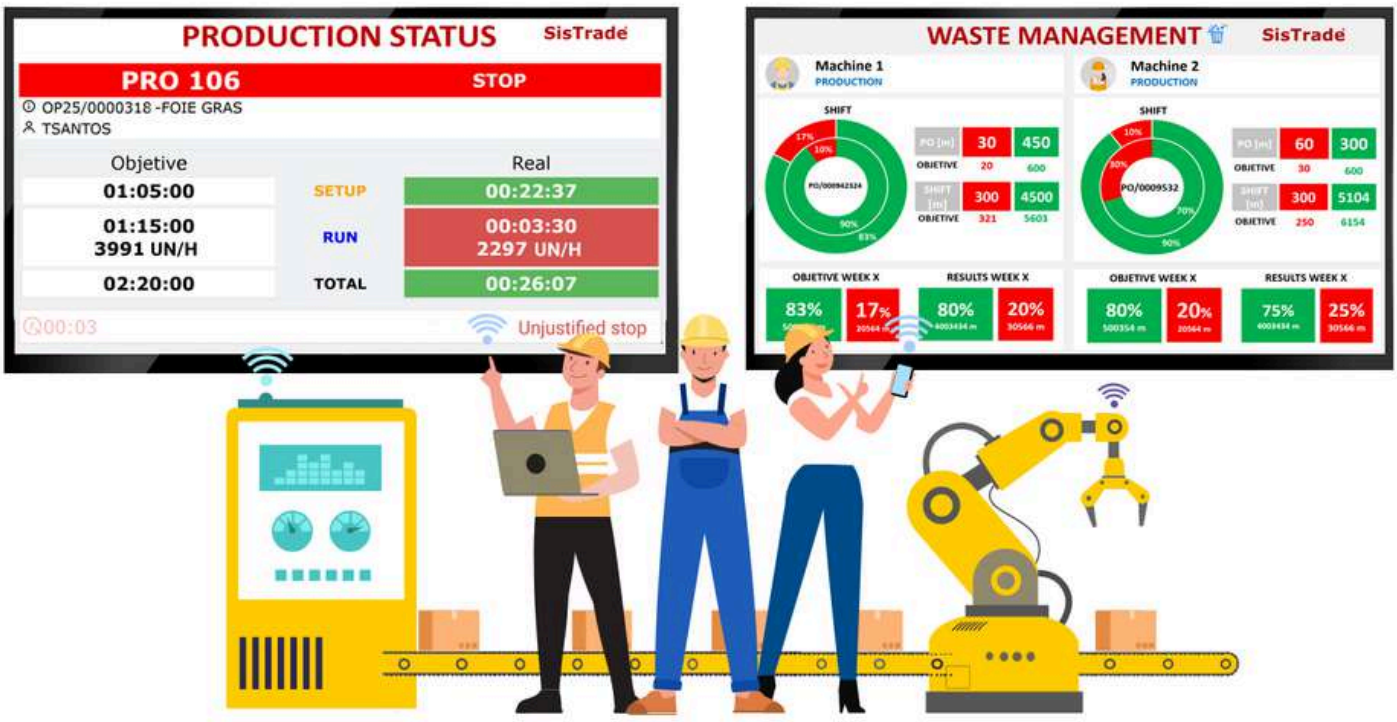
Andon Board

Sistrade software delivers a digital board displaying status changes of production lines and alerts when events happen.



Real-time graphic representation of production indicators

Main Features

- KPIs
- Notifications & alarms
- Delays and downtimes
- Current/next job order
- Customizable visuals to highlight parameters
- Events
- Target/real
- Good/waste
- Setup times
- Downtime

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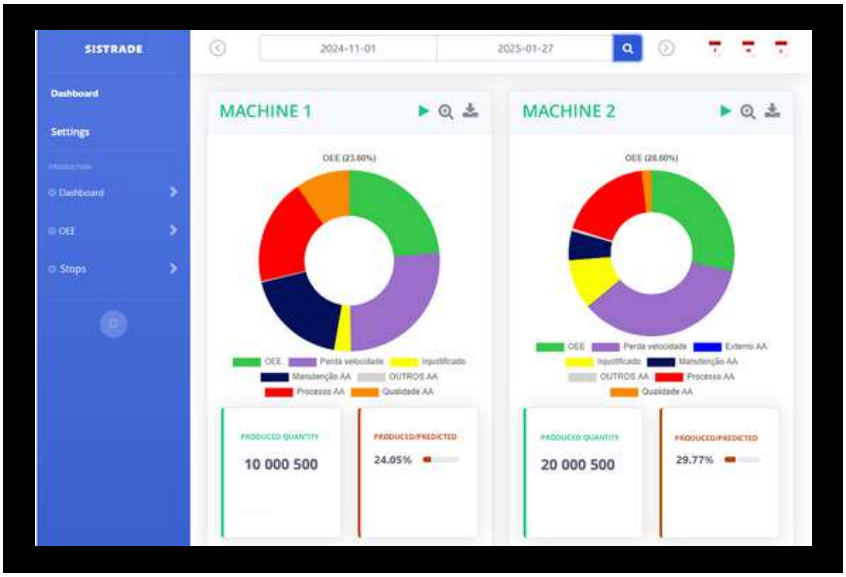
Overall Equipment Effectiveness (OEE)

Overall equipment effectiveness quantifies how well a manufacturing unit performs relative to its designed capacity, during the periods when it is scheduled to run.
Sistrade software delivers OEE supervision and analysis in real time in order to optimize production performance and efficiency, contribution for a company's continuous improvement.

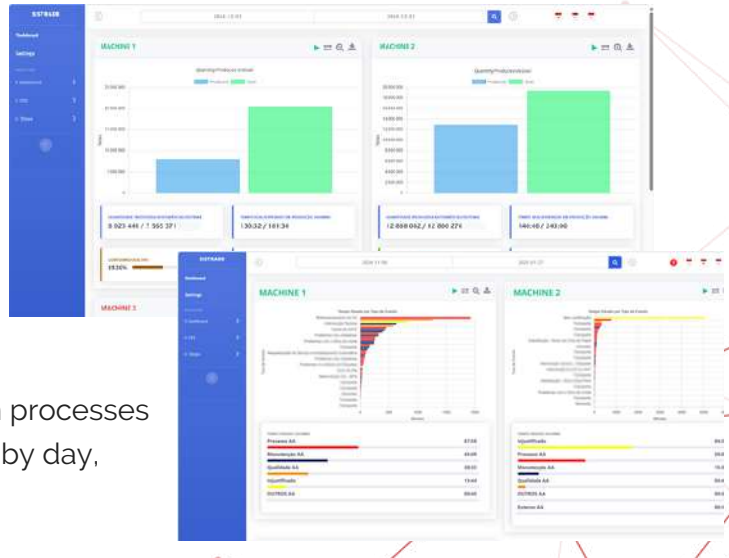
% OEE = Availability X Performance x Quality



OEE measures the percentage of planned production time that is truly productive

Main Features

- Analysing current performance
- Downtime analysis
- Availability ratio
- Efficiency ratio
- Quality ratio
- OEE ratio
- Charts and analytics
- Optimizing efficiency and reliability of production processes
- Performance by shift, by machine, by employee, by day, month and year
- Others Key Performance Indicators



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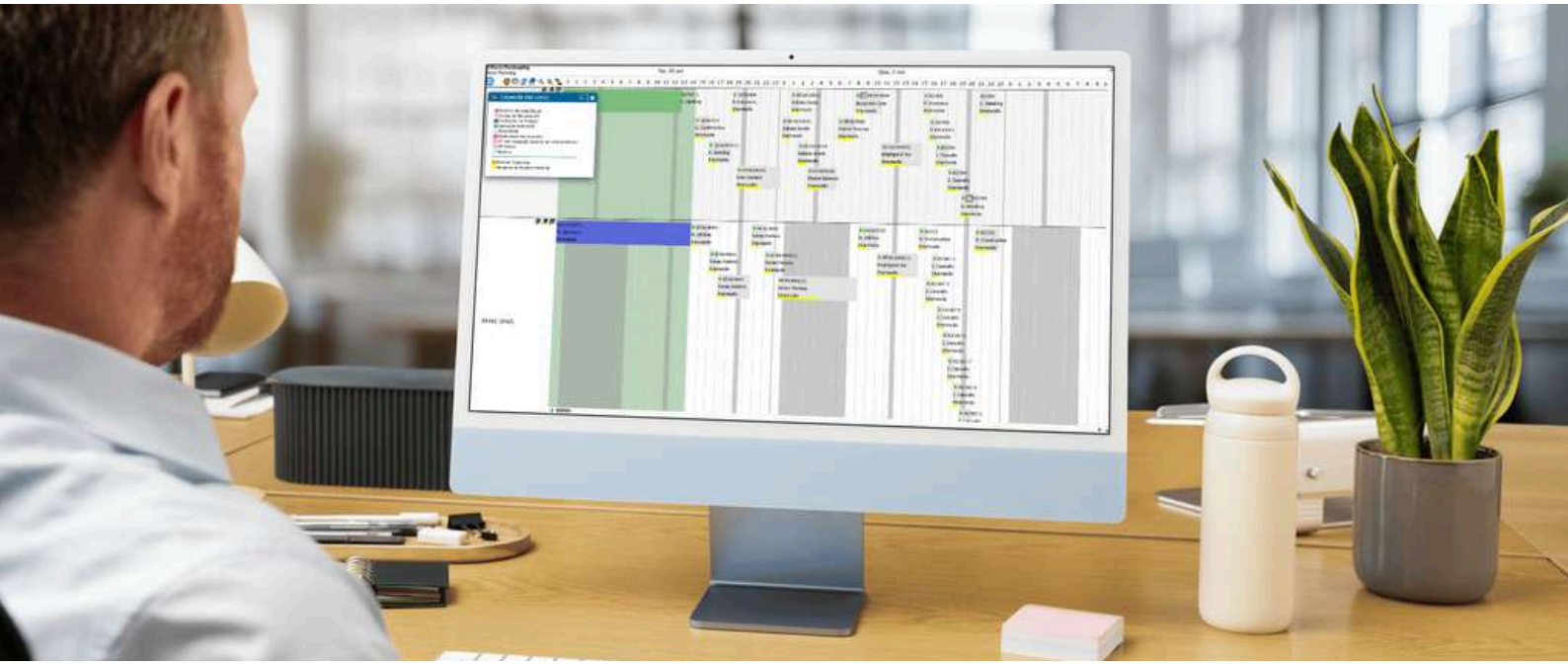
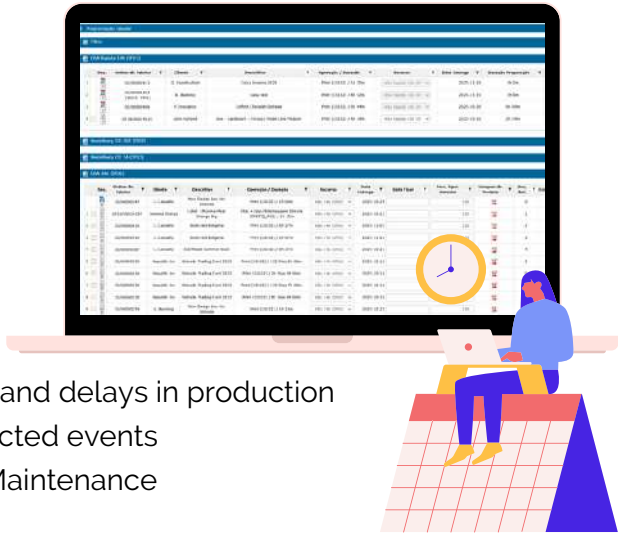
Scheduling

The Scheduling module offers a solution to organise all tasks and activities through in an automated and fully interactive Gantt chart. The Sistrade software has the ability to allocate machines and resources to its employees, offering Drag-and-Drop functionality, resulting in a fully dynamic and intuitive system.



Main Features



- Master plan of production
- Multiple Drag and Drop in Gantt chart
- Scheduling of the JOs and/or orders
- Visualization of job orders on Gantt chart
- Setting time of operations
- Subcontracting a particular activity
- Synchronized with the production data collection
- Auto-optimization
- Dynamic planning with indexing to the beginning/end and delays in production
- Auto adjustment settings including delays and unexpected events
- Integration with Stocks Management and Equipment Maintenance
- Easy employees/operations job assignment
- Matrix-based scheduling
- Integrated alarm system
- Simulation and comparison of production planning scenarios
- Report for controlling JO planning times
- Report employee productivity, presence and supervision control

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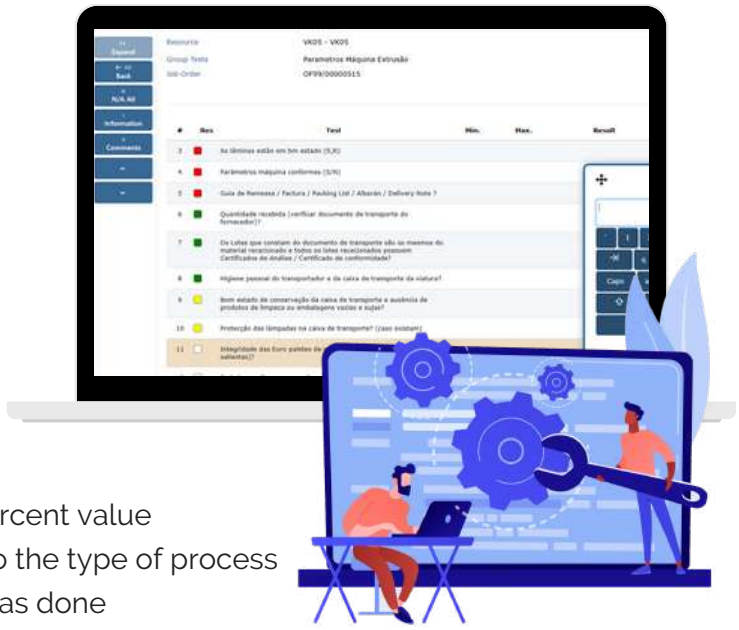
Quality Control

Sistrade software offers a wide range of solutions in this department to improve product quality, focusing on detecting nonconformities, calibrating equipment, managing equipment costs. The software is prepared to respond in real time to all challenges, giving the user the possibility to record every information for future historical analysis. Additionally, this module is prepared to trace each equipment and material available, in terms of nonconformities, tests, and inspections.

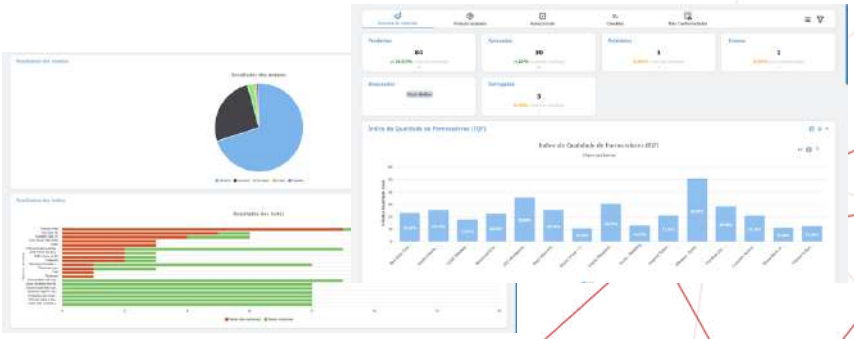
Main Features



- History of quality control
- Statistics of reclassified products
- Quality certificates
- Alert system
- Conduct tests and testing groups
- Calibrations
- Control costs
- Traceability
- Real time reactive actions
- User-friendly interface for quality records
- Definition of tolerance intervals in absolute or percent value
- Configuration of quality parameters, according to the type of process
- User identification, date, time in which the test was done
- Interface optimized for touch screen and portable data terminal
- The possibility of connection to measurement equipment.
- Analysis of waste per shift and per job order
- Nonconformities per shift, per machine and JO
- Graphic analysis of defects

A company's reputation relies on its products and services quality, which requires a high degree of control to fulfil clients' requirements

Dashboards



- Graphical interface
- Suppliers assessment by product family and subfamily
- Nonconformities

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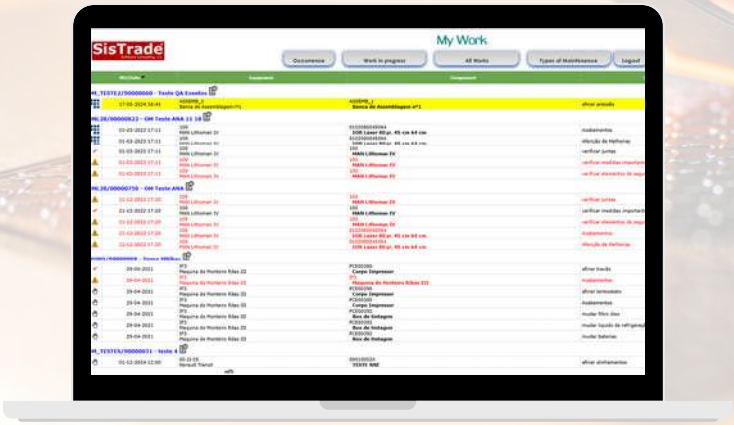
Equipment Maintenance

Asset management requires special attention from every organization, especially the ones, which have critical equipment as crucial investments. Poor asset management can lead to huge financial losses.



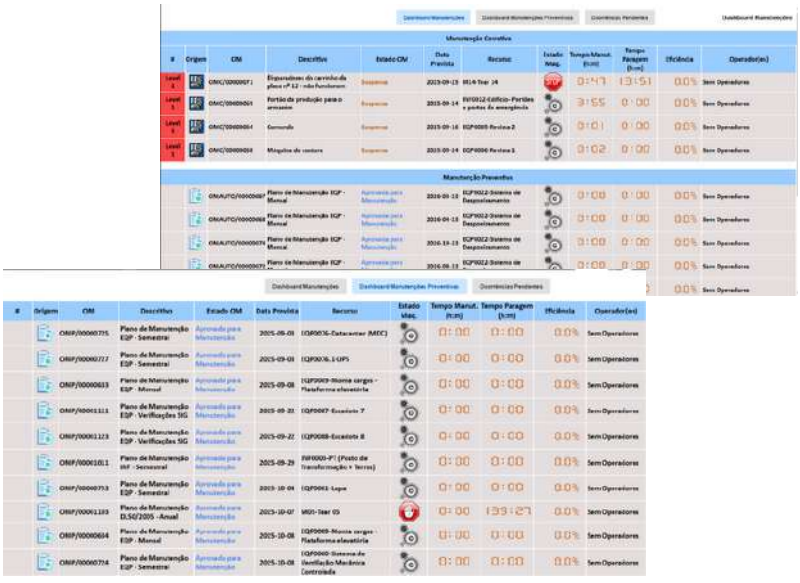
Main Features

- Hierarchical structure of assets
- Equipment tree
- Detailed equipment sheet
- Automated maintenance requests
- Preventive and corrective maintenance
- Recorded incidents and interventions
- Integration with Scheduling
- Maintenance analysis
- Alerts for response times above default

This module delivers a 100% web maintenance control tool for all infrastructures, equipment, and components, including maintenance planning, management of all maintenance orders and preventive and corrective maintenance

Dashboards

- Weekly summary of maintenance by employee/equipment
- Equipment register
- Needs list
- Maintenance costs
- Maintenance records
- Maintenance hours by machine
- Maintenance hours
- Occurrences by section
- Real vs predicted maintenance



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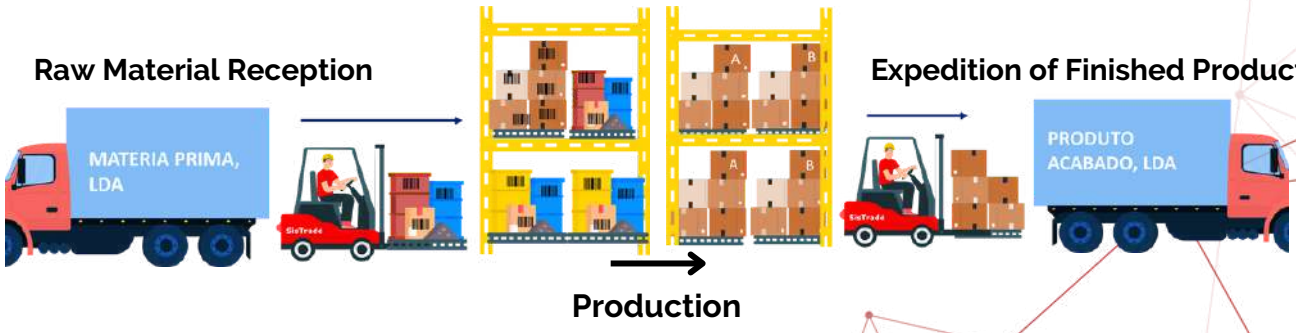
Warehouse Management System (WMS)

The WMS (Warehouse Management System) module ensures full traceability of internal logistics, from the arrival of the raw material to the dispatch of the finished product. Thus, it is intended to simultaneously streamline transfers of raw materials or finished product to defined locations automatically, intelligently and according to plan, but also to ensure full internal traceability of stocks/products.

The WMS offers the necessary traceability for internal logistics, guaranteeing lack of stock or overstock, speeding up the process of dispatching products

Main Features

- Material reception with intelligent unloading suggestions
- Stock correction
- Grouping/division of lots
- Preparation of material for shipment (division by warehouse and shipment timeline)
- Issuing delivery note
- All information available through mobile devices that can be associated to forklifts and others



Energy Management

Sistrade software Energy Management monitors all energy related information regarding companies' equipment and machines in real time and offers an alert system to keep track of all unexpected events. This tool intends to gather data in order to provide the customers with production specifics costs energy wise. This is 100% web available which means organizations can stay up to date with their energy resources consumptions anywhere and real time.

Main Features

- Real time data monitorization:
  - Parameters related to energy monitoring per sector or per machine
- Warnings (vs Patterns) in real time about excessive energy consumption
- Energy information associated with production lines, respective JOs and associated resources
- Energy consumption display by manufacturing layout
- Real-time analysis and definition of trends for internal co-generation or renewable energy sources
- Report on carbon footprint generation, product, job, line, plant
- Comparison of cost and time per production and line
- Maintenance and configuration of the parameters and energy costs
- Records of energy cost per production cycle and time
- Exact energy costing of production – possibility of historical comparison
- Implementation of specific consumption data (kW, % renewable, CO_2,) in invoices

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Eco Efficiency

Nowadays, smart factories pay special attention to the environmental footprint.
SISTRADE's purpose is to develop a decision support tool to characterize and improve the eco-efficiency of organization's production systems keeping in mind economic performance as well. This module is prepared to simulate scenarios and generate performance benchmarks, compared with reference levels.

Main Features

- Model of Environmental Impact Calculation
- Environmental Performance Evaluation
- Analysis of Mass Flow and Energy
- Value Calculation Model
- Simulation of scenarios and definition of economic and environmental goals
- Easy analysis/evaluation of mass balance and production systems energy (inputs/outputs)
- Methodologies for defining indicators of economic and environmental performance (KPI and KEPI)
- Integration of economic performance with the company's environmental performance (or processes) and generates the information necessary for the evaluation of eco-efficiency
- Presentation of results as dashboards (summary tables) of charts and tables based on the key variables for the user
- Generation of an economic and environmental profile of the company or process under study
- Depending on the results obtained, the user can set priorities and measure the most significant inefficiencies, which also allow the implementation of the improvement actions focused on reducing costs, on the more efficient use of resources and raw materials, and reducing the environmental impacts of the activity

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