SisTrade®

Sistrade Software

Security Printing & Banknotes

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.
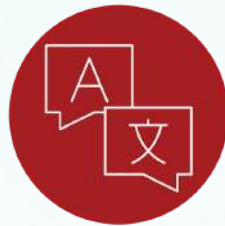
Thousands of Users	+ 15 Languages	Industry 5.0	Paperless
Total Integration	Process Automation	Complete Traceability	Continuous Improvement
Productivity Improvement	Cost Reduction	Waste Reduction	

Security Printing & Banknotes

Some of the main product ranges whose specific needs are solved by Sistrade Software

Identification Documents

Includes passports, ID cards, driving licenses and other documents issued by official entities. Security Printing on these documents can involve techniques such as holograms, watermarks, light-sensitive UV inks, embossed printing and microtexts.

Banknotes

The production of banknotes features several layers of security features, such as watermarks, security threads, optical inks and microprints. These features make counterfeiting more difficult and help guarantee the authenticity of the money in circulation.

Labels and Packaging

Product security is a growing concern for companies in various sectors. Security Printing is used on labels and packaging to protect against counterfeiting and theft, as well as guaranteeing the authenticity and integrity of products.

Stamps and Tax Documents

Tax stamps, tax documents and authentication seals are often produced with advanced security features to prevent counterfeiting and fraud.

Bank Cards

These include physical cards used for credit and debit transactions, produced using a variety of printing techniques, including offset printing, screen printing, digital printing, and may involve the incorporation of physical security elements such as holograms, magnetic strips or chips.

Sistrade Software - Security Printing & Banknotes

The Security Printing sector operates in its own production environment, with a particular workflow that differs from the rest of the printing industry. Dedicated to the production of printed documents and products designed to guarantee authenticity, integrity and protection against forgery, this sector plays a crucial role in the security of documents and products in various sectors, including government, finance, commerce and industry.
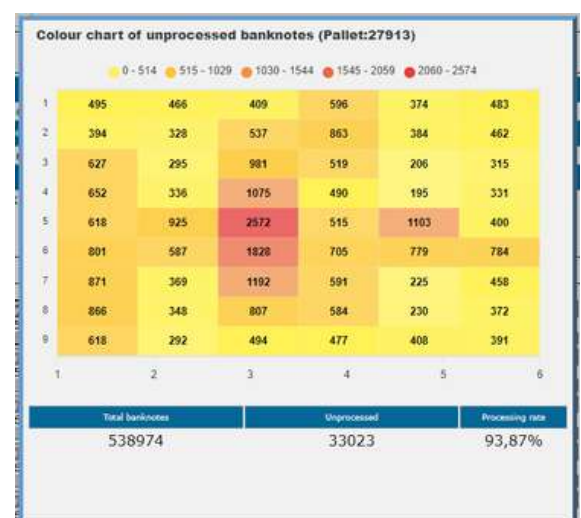
Aware of the special needs of this sector, SISTRADE has developed flexible, secure and modular system architecture that supports customization design and quick adaptation for any security requirement. Careful and exhaustive analysis, as well as sustained development to meet requirements, provide a comprehensive response to the special and unique demands of this sector.

Main Features

- Full compliance with security protocols
- "Secure Mobile Warehouse" concept
- Secure data transmission
- Encrypted User Passwords
- Encrypted data transmission through Wi-Fi connections (HTTPS protocol)
- Pre-assignment access rights per user, module and functionality
- Historical logs per user, device and activity
- Additional Security authentication per User/Device (Security tokens, Biometric, RFID, etc.)
- Full product traceability, from raw materials to dispatched products
- Connection with BPSs machines to retrieve all information related with the banknotes processing

Sistrade Software offers a comprehensive suite of features tailored to the unique demands of the security printing & banknotes industry:

- Real-time production monitoring, providing immediate overview and feedback on production processes, ensuring adherence to security protocols.
- Integration with production machines, seamlessly connecting with printing machines (offset, intaglio, flexo, silkscreen, digital, screen printing), numbering machines, finishing machines (e.g. hot stamping), quality control machines (e.g. BPS), passport assembly lines and others, facilitating synchronized operations and enabling informed decision-making by gathering data such as machine status (stop/run), speed, and input/output quantities.
- Comprehensive ink management, including detailed ink specifications, allocation of inks and batches per printing unit, and consumption control through authorization mechanisms.
- Printing plate management where the entire lifecycle of printing plates is overseen, from production and imposition stages to serial number management, allocation to printing units, and monitoring of plate usage and lifespan. The same principle is also used for any other needed tool that can be internally or externally sourced.
- Setup/make-ready and production paper differentiation, defining and managing distinct controls for paper used in preparation and in production stages, ensuring material consistency and compliance.
- Full control of the security labels/seals identifying the raw materials and WIP at every stage.
- Serial number generation and tracking, automating the creation of serial numbers for different ranges of products, enabling precise tracking and logging of production outcomes. This includes banknotes, where each individual serial number is managed, tracked and validated, also passports, where serial numbers are generated, managed and interfaced with serialization machine for added control.
- Automated packaging registration, assisting in the registration of packages, boxes, and pallets, utilizing automatic identification labels to enhance inventory management.
- Work-In-Progress (WIP) identification, generating and deploying bar code or QR code labels for the automatic identification and tracking of items in progress, improving workflow efficiency.
- Visual shop floor management that offers visual tools to manage the shop floor, displaying performance metrics and machine availability indicators to optimize resource utilization.

- Traceability information also includes detailed BPS's information about Ok, Not Ok, Shredded or Rejected banknotes.
- System presents all information about what bundle/shrink-wrap/box/pallet was the specific banknote as well as others packed together.
- Individual banknote can be traced back to the sheet where it was printed, with the exact position in the sheet, and also what were the other banknotes in the same sheet.
- A heat chart is presented with the information about what are the sheet positions with more problems during the banknotes processing.

Colour chart of unprocessed banknotes (Pallet:27913)

0 - 514   515 - 1029   1030 - 1544   1545 - 2059   2060 - 2574

	1	2	3	4	5	6
1	495	466	409	596	374	483
2	394	328	537	863	384	462
3	627	295	981	519	206	315
4	652	336	1075	490	195	331
5	618	925	2572	515	1103	400
6	801	587	1828	705	779	784
7	871	369	1192	591	225	458
8	866	348	807	584	230	372
9	618	292	494	477	408	391

Total banknotes	Unprocessed	Processing rate
538974	33023	93,87%

These features are designed to enhance efficiency, maintain stringent security standards, and ensure the integrity of the production process in the Security Printing industry

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Warehouse Management System (WMS)

Sistrade's Warehouse Management System (WMS) module is designed to enhance the efficiency and accuracy of warehouse operations. It ensures full traceability of internal logistics, offering specialized features tailored to the unique requirements of the Security Printing industry, managing high-value and sensitive materials in a secure environment.


- The secure inventory tracking features ensures precise tracking of high-value, sensitive materials, using barcodes and RFID for secure and efficient stock management.
- With real-time monitoring, it provides up-to-date information on material movement, stock levels, and order status, enabling tight control over inventory.
- Provides full traceability of security materials from receipt to usage and shipment, ensuring accountability at each stage.
- Keeps detailed logs of all inventory movements, including access history, to comply with industry regulations and audit requirements, allowing easy access to historical data for audits and compliance checks.
- Enhances the picking, packing, and shipping processes, ensuring accurate and timely delivery of secure products.
- Seamlessly integrates with all other modules, allowing for synchronized data flow between the warehouse and production departments.
- Organizes warehouse space efficiently to manage sensitive materials while maintaining security protocols.
- Manages security material batches and lots, ensuring that each batch is correctly tracked and that production uses the appropriate materials, facilitating compliance with strict industry standards by managing specific lots for different production runs or security products.
- Implements user authentication and role-based access controls, ensuring that only authorized personnel can access or modify inventory records.
- Offers detailed reports on inventory movements, security material usage, and operational performance for better decision-making.

These specialized features of Sistrade's WMS module ensure the efficient and secure management of materials in the Security Printing industry, where traceability, compliance, and control over sensitive materials are critical

Secure Mobile Warehouse Management

In a Security Printing environment, the Mobile Warehouse concept, using grid cages or other secure mobile storage units, is an essential tool for protecting sensitive materials while maintaining flexibility in storage. Integrated in Sistrade's Warehouse Management System (WMS), it enhances security, inventory management, and operational efficiency by providing real-time tracking, access control, and reporting, ensuring that high-value items are both secure and easily accessible as needed:

- It tracks the movement and storage of materials in real time, where each mobile storage unit can be tagged with an RFID tag or barcode, and the system can track its location and contents.
- Maintains an audit trail of all transactions (e.g., when a cage was moved, who accessed it, and what items were retrieved or added), ensuring traceability and accountability.
- Real-time tracking of mobile units helps prevent loss or misplacement of valuable items by continuously monitoring their movements.
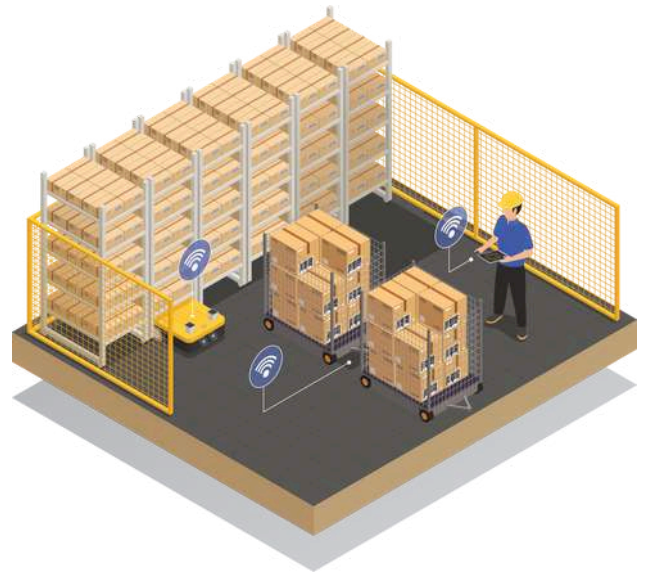
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Estimates & Sales

Estimates
Sales Orders
Expedition
Invoicing
CRM

Procurement & Purchase Management

Supplier Management
MRP / Analysis of Needs
Purchase Orders

Administrative & Financial

Accounting
Treasury
Fixed Assets
Human Resources

Production

Job Orders
Data Collection
Industrial Costing

MES

WMS
Scheduling
SCADA
OEE
Andon Board

Continuous Improvement
Equipment Maintenance
Quality Control
Energy Management

Shop Floor Control

IoT Messaging
OPC Unified Architecture
Message Queuing Telemetry Transport
Modbus
API Platform

Administrative and Financial

Scheduling

OEE

SCADA

Andon Board
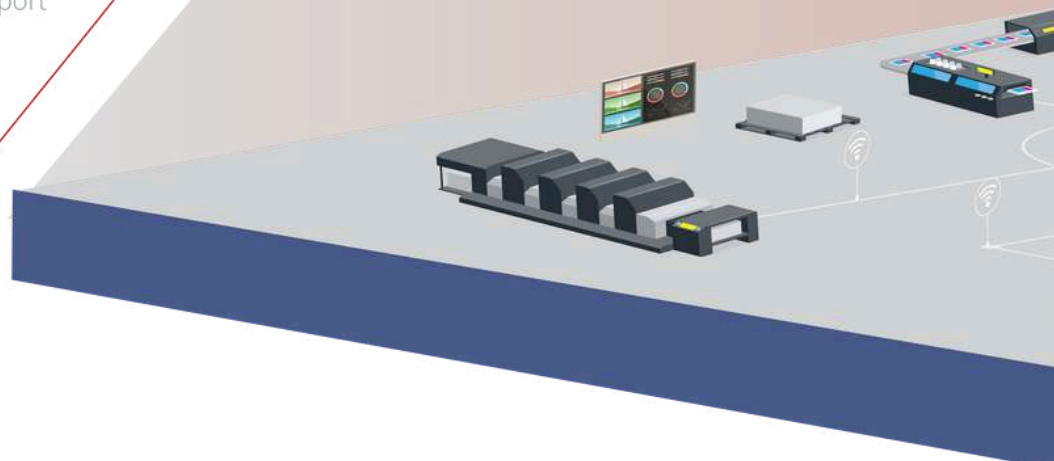
Strategic and business-level management
- Handles enterprise-wide planning, managing orders, finance, customer relations, and compliance.
- Integrates and oversees all operational data from lower layers for decision-making.

ERP

Estimates & Sales Management

Procurement & Purchase Management

Operational management and execution
- Bridges the gap between ERP and Shopfloor by translating business plans into actionable tasks.
- Monitors, tracks, and controls production processes in real-time.
- Manages production schedules, quality control, traceability, and performance metrics.

MES

WMS

Quality Control

Shop Floor Control DAS

Energy Management

Equipment Maintenance

Continuous Improvement

Real-time production and equipment-level control
- Involves direct interaction with machinery, operators, and materials.
- Collects real-time data on production progress, machine performance, and defects.
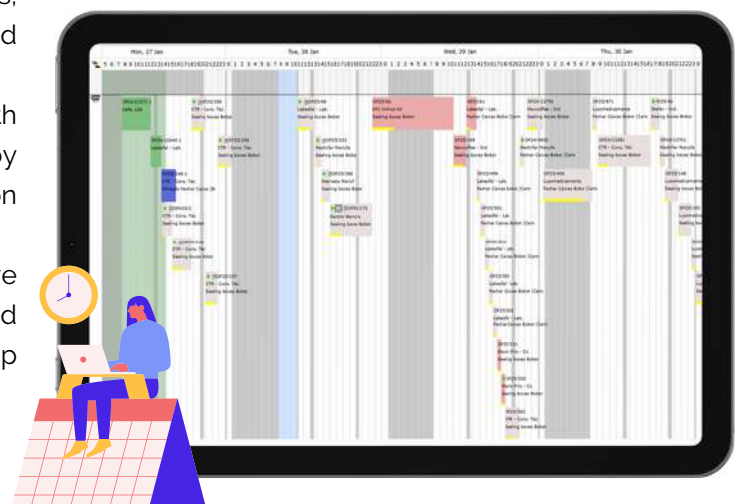
SHOP FLOOR

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Scheduling

Sistrade's Scheduling module is designed to optimize production planning and ensure efficient resource allocation:

- It uses algorithms to optimize production sequences, minimizing setup times and maximizing machine utilization, handling complex scheduling scenarios with multiple constraints, such as resource availability, deadlines, and priorities.
- Real-time scheduling updates that dynamically adjusts schedules in response to changes on the shop floor, such as machine breakdowns or delayed material deliveries which ensures scheduling remain accurate and relevant throughout production.
- The Gantt chart visualization provides a visual representation of production schedules with interactive Gantt charts and allows users to easily identify bottlenecks, overlaps, and idle times.
- The Tabular visualization ensures a structured representation of production scheduling in a spreadsheet-like format, enabling users to quickly view, sort, and analyse detailed task information, such as start and end times, durations, and resource allocations.
- With the resource optimization, machines are allocated efficiently based on availability and job requirements to help reduce waste and ensure optimal use of all resources.
- Supports hierarchical scheduling for managing complex production lines with interdependent processes, enabling planners to coordinate schedules across multiple departments or production stages.
- The multiple scenario analysis offers "what-if" analysis capabilities to simulate the impact of changes in production plans and helps managers to make informed decisions by visualizing potential outcomes.
- Being fully integrated with Sistrade's Shop Floor Data Collection it ensures real-time data flow between planning, execution, and reporting for a seamless production workflow.
- It analyses production capacity and workload to identify potential issues before they occur also supporting long-term planning by forecasting resource needs.
- The job prioritization based on multiple criteria allows managers to assign priorities to jobs, ensuring that critical tasks are completed on time and keep the focus on high-value or urgent orders.
- Automatically generates alerts for scheduling conflicts, resource shortages, or delays, keeping teams informed of potential disruptions to production.
- Adapts to industry-specific requirements with customizable scheduling rules and constraints by supporting unique workflows and production environments.
- The User-Friendly interface features an intuitive interface that simplifies complex scheduling tasks and enhances user productivity with drag-and-drop functionality and easy navigation.

Sistrade's scheduling tools are designed to improve production efficiency, enhance decision-making, and ensure on-time delivery of products. This makes it a valuable asset for businesses aiming to streamline their operations

Shop Floor Data Collection

Sistrade's Shop Floor Data Collection module provides a robust system to optimize and monitor manufacturing processes across every production stage. Its main features include:

- Real-time data collection, capturing live data from shop floor operations, including production progress, machine status, and worker activities and providing immediate feedback to managers, helping them make timely decisions.
- Seamlessly share information through the different software modules, ensuring that collected data flows into enterprise-level management for better planning and analysis, enhancing consistency and transparency across all operational levels.
- Interfaces directly with machines via IoT devices or APIs to automate data capture, reducing manual entry and errors, tracking machine uptime, downtime, and performance metrics.
- Monitors raw material usage and inventory levels in real time, comprehending job-specific resource allocation, ensuring that resources are used efficiently.
- Efficient work order management provides real-time updates on work orders, including job status, expected completion times, and any delays, enhancing coordination among different departments.
- Tracks operator performance through user logins and task completion rates, offering insights into workforce productivity and areas for improvement.
- Ensures full traceability of production batches, from raw materials to finished goods, helping maintain compliance with industry-specific regulations and standards.
- Offers user-friendly dashboards for monitoring key performance indicators (KPIs) and generates detailed reports for production analysis, audit purposes, and strategic planning.
- Enables operators and managers to access and input data via mobile devices and web browsers, promotes flexibility and enhancing accessibility.
- Its role-based access control ensures that users can only access information pertinent to their responsibilities and protects sensitive production data with encryption and secure authentication mechanisms.
- Accurate cost calculation, allowing precise calculation of all production costs for complex jobs, including indirect costs.
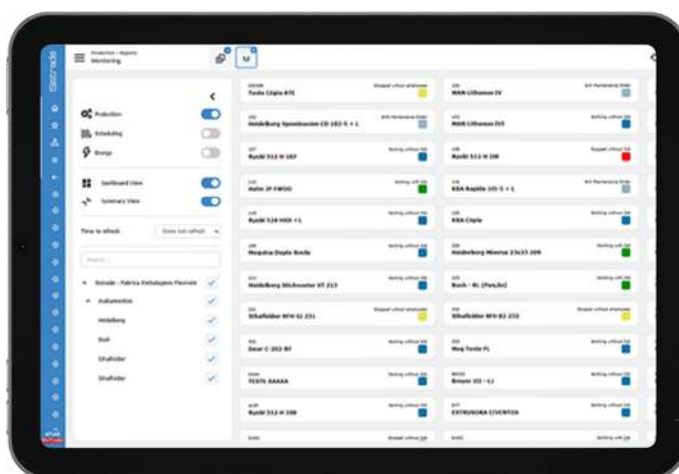
Sistrade's Shop Floor Data Collection system empowers businesses to enhance efficiency, minimize waste, and improve overall productivity by delivering a comprehensive view of shop floor operations

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Quality Control

Quality Control Management module is specifically designed to ensure the highest quality standards for sensitive and high-value printed materials. Its features address the tight requirements of the Security Printing industry, emphasizing traceability, compliance, and defect prevention.

- Incoming material inspection where the quality of raw materials such as security paper, inks, and holograms is verified before they enter production.
- Tools inspection where each tool preparation or receipt is checked and validated in order to approve the tool (e.g. printing plate, embossing gravure) before its usage.
- In-Process control, where checks are conducted during each production stage to detect and address quality issues early.
- Final product inspection to ensure that finished products meet predefined quality and security standards before dispatch.
- Maintains detailed records of quality checks and results for each production batch or lot, linking quality data to specific jobs, machines, and operators to ensure accountability.
- Supports compliance with industry regulations and standards by providing traceable quality documentation, also supporting customizable quality control plans tailored to specific security products, such as banknotes, passports, or certificates.
- Ensures adherence to international quality standards (e.g., ISO 9001) and manages the compliance during the audits.
- Generates detailed quality reports, including defect rates, inspection results, and compliance statistics. It also provides dashboards for monitoring quality KPIs in real time.
- Enables historical analysis for continuous quality improvement while maintaining a secure audit trail of all quality control activities, crucial for regulatory compliance and client trust.
- Non-conformities management tools, logging non-conformities and automatically triggering workflows for investigation and resolution.


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

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.

- Hierarchical structure of assets, with detailed equipment tree of components/parts.
- Preventive maintenance planning, scheduling routine maintenance tasks based on predefined intervals or usage metrics.
- Corrective maintenance management, recording and managing repairs for unexpected equipment issues.
- Spare parts and inventory control, maintaining an inventory of spare parts, including stock levels, locations, and reorder alerts, also tracking usage of parts in maintenance tasks.
- Log detailed maintenance histories for all equipment, including performed tasks, dates, and costs.
- Generate reports to analyse trends and improve equipment performance.
- Integration with production scheduling, coordinating maintenance schedules with production planning to minimize disruption.
- Real-time monitoring of equipment status to identify maintenance needs promptly.
- Operator and technician tracking, assigning tasks to specific operators or teams and track their performance.

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
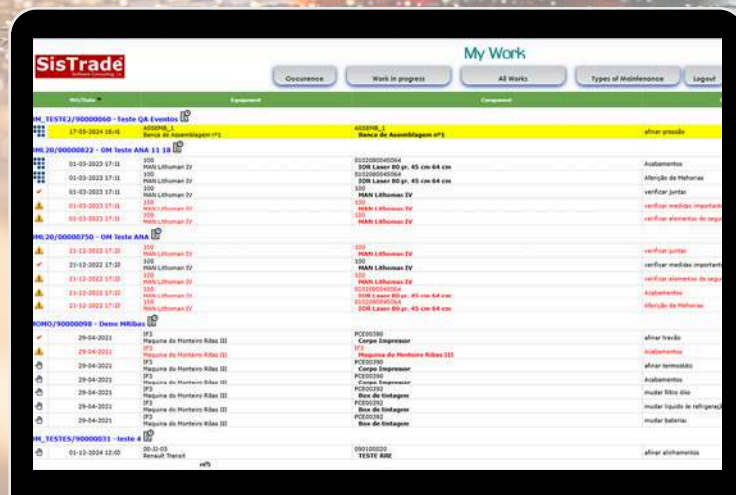
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Continuous Improvement

Continuous Improvement module is tailored to enhance efficiency, reduce waste, and support the high-quality demands of the security printing industry.

- Identifies causes of inefficiencies or defects linking issues to specific processes, machines, or materials for targeted interventions.
- Leverages real-time and historical data from the different modules to inform process improvements.
- Comprehensive OEE (Overall Equipment Effectiveness) metrics are managed:

  - Availability: Measures actual equipment uptime against planned production time, addressing unexpected downtime.
  - Performance: Compares the speed of production against ideal machine speeds, highlighting underperformance.
  - Quality: Tracks defect-free products relative to total output, crucial for ensuring the integrity of security materials.

- Tracks the OEE of production equipment in real time and identifies inefficiencies and bottlenecks immediately for proactive resolution.
- Analyses production waste, including material, time, and energy inefficiencies, helping the implementation of corrective actions to minimize waste without compromising security.
- Benchmarking and Goal setting allows for performance comparisons across shifts, machines, or production lines by setting targets based on OEE metrics and operational data.
- Offers visual dashboards and detailed reports for OEE analysis, historical trends, and comparisons.
- Sends real-time alerts for significant drops in performance or prolonged downtimes
- Categorizes downtime reasons, such as maintenance, material shortages, or operational delays and provides actionable insights to reduce machine stoppages.
- Promotes a culture of continuous improvement by involving operators and managers in identifying and resolving inefficiencies.
- Aligns improvement efforts with security printing standards, ensuring compliance with ISO standards and other regulations while maintaining traceability and audit trails for all changes and improvements.
- Provides meaningful data through customized reports, highlighting areas for potential efficiency gains and tracking the impact of improvement initiatives on production performance and product quality.
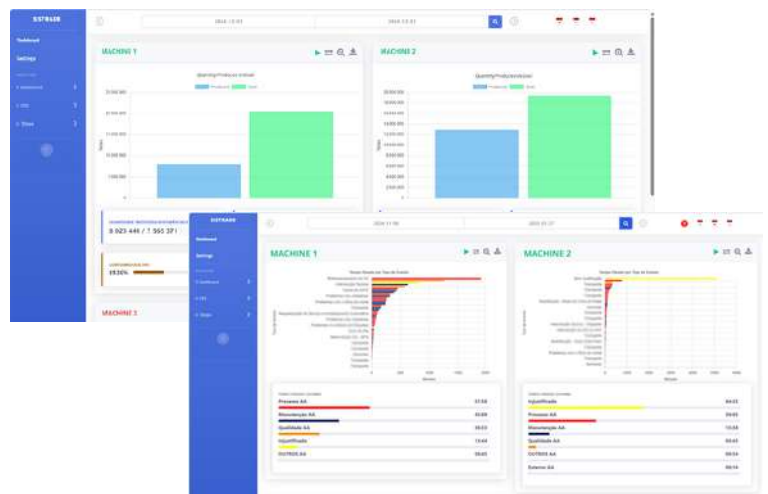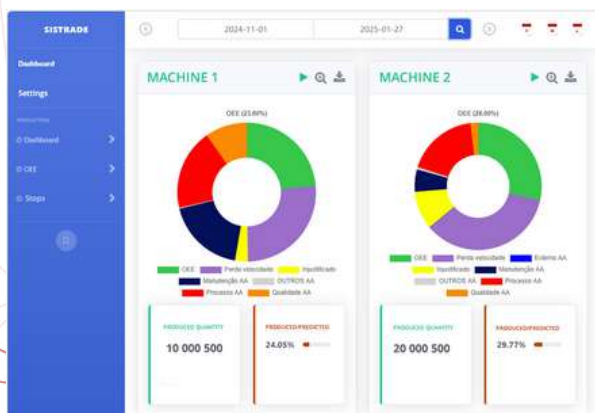
Key Benefits for Security Printing

- Enhanced Efficiency: Optimizes machine utilization and reduces downtime in secure printing environments.
- Improved Quality: Ensures defect-free production of high-value and sensitive materials.
- Regulatory Compliance: Maintains adherence to industry-specific standards for security and traceability.
- Sustainability: Minimizes waste while preserving the integrity of secure production processes.

By integrating the Continuous Improvement features, Sistrade provides a robust framework for enhancing operational excellence and ensuring the high standards required in security printing production.

Andon Board

Sistrade's Andon Boards module for Security Printing enhances shop floor visibility and communication with real-time production status updates and issue alerts. Key features include:

- Displays live data on production performance, machine status, and job progress, ensuring operational transparency.
- Uses color-coded signals to indicate issues like downtime, delays, or quality defects, enabling immediate action.
- Connects seamlessly with other systems for centralized monitoring and synchronized data updates.
- Tailors displayed information to critical parameters specific to Security Printing, such as sensitive material usage and quality controls.
- Improves operator and team collaboration by highlighting production priorities and potential disruptions.
- Links alerts and updates to specific jobs or machines, ensuring accountability and compliance with security standards.
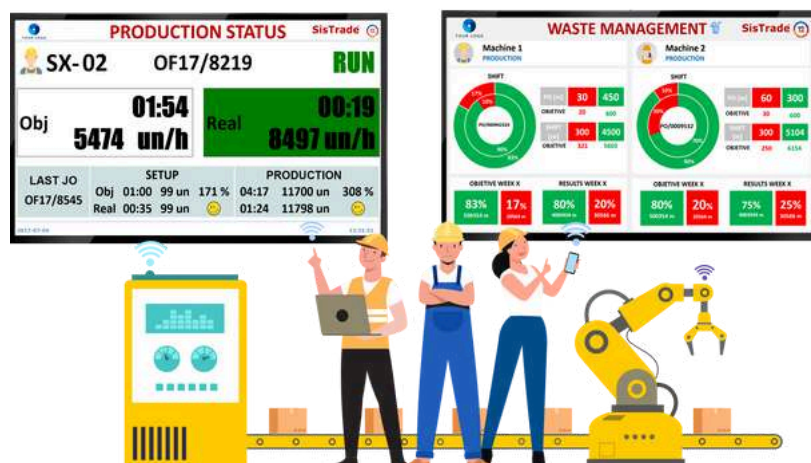
This module ensures efficient, secure, and transparent operations in high-stakes Security Printing environments, reducing downtime and enhancing overall productivity

SisTrade®

Travessa da Prelada, 511
4250-380 Porto - Portugal
inov@sistrade.com

Spain

Parque Empresarial La Moraleja
Avenida de Europa, 19 3º A
28108 Madrid - Spain
madrid@sistrade.com

France

39 rue du Mûrier (BP 125)
37540 Saint-Cyr-sur-Loire - France
paris@sistrade.com

Germany

Krümmlingsweg 10a
D-63110 Rodgau - Germany
frankfurt@sistrade.com

Poland

Al. Niepodległości, 69 - 7º
02-626 Warsaw - Poland
warsaw@sistrade.com

Slovenia

Rozna dolina, Cesta II/29
1000 Ljubljana - Slovenia
ljubljana@sistrade.com

Serbia

Birčaninova, 40
11000 Belgrade - Serbia
belgrade@sistrade.com

Turkey

Dikilitaş Mahallesi, Hakki Yeten
Cad. 10/N Sel. Plaza Kat:6
34349 Besiktas - Turkey
istanbul@sistrade.com