



HIGHTECH PLANT

MES SOFTWARE VENDOR

We develop and integrate advanced Russian
MES software
ensuring efficient and reliable manufacturing
operations

hightech-plant.ru



Solutions

Accurate accounting of materials used and products manufactured

Comprehensive reports to evaluate production efficiency

Ensures adherence to quality control and traceability standards

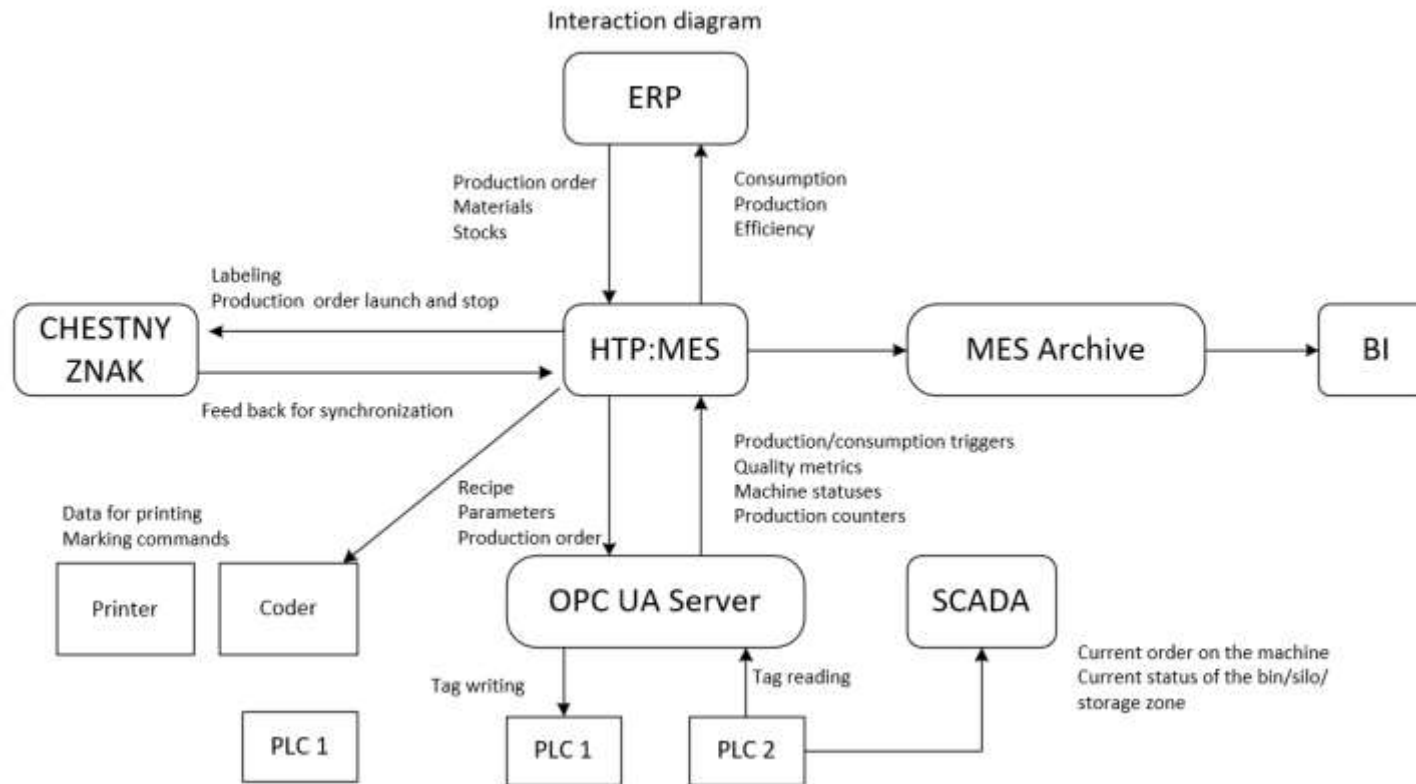
Centralized operator interface for managing operations, training, and performance dashboards

A Russian-developed product, ensuring ongoing development and support, free from international sanction

Elimination of paper-based records and prevention of manual entry errors

Integration with ERP, SCADA, printers, and the CZ marking system enables data consolidation on a single MES platform

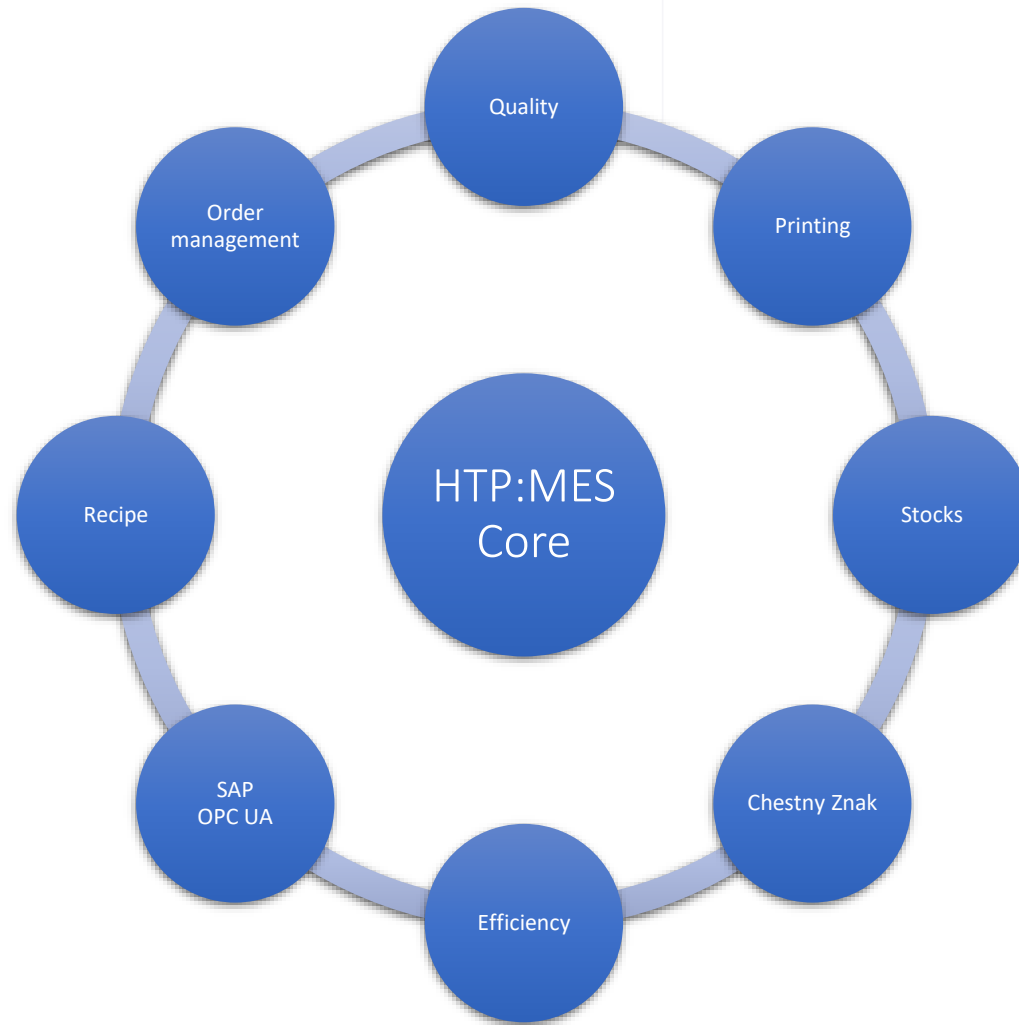
Interaction Diagram



About the Company

- Our company offers more than just an MES system—we deliver a comprehensive solution designed to align with the goals and strategy of your enterprise. Through the development of custom modules, we ensure exceptional value for our clients, driving production efficiency and enhancing competitiveness.

Modules/Functionality of HTP:MES



Core functions

- Creates a PO (Production Order) with the specified values of the parameters of production machines, recipes, target values of production lines downtime, parameters the quality and quantity of products produced;
- If an ERP system (SAP, 1C) is available, it receives a PO from these systems;
- Dispatch and launches the PO across production areas, loads parameters into controllers, manages recipe components, and ensures the registration of completed batches into the database for reporting;
- Enforces equipment and vessel lockouts in compliance with requirements to prevent mixing of different products and products of varying quality;
- Tracks the batch throughout the entire production chain and records it in the database for blocking and recall purposes;
- Creates reports on produced batches, energy consumption, and quality control parameter results. If an ERP system (SAP, 1C) is present, declares the manufactured product in SAP and synchronizes stocks.

Core functions (continued)

- Enables the launch of PO using batch or continuous processing systems;
- Custom modules for specific requirements;
- Calculation of line efficiency;
- Quality control;
- Label printing and marking management;
- Integration with the SCADA (HMI) system;
- Built-in reporting;
- Inventory management;
- Flexible recipe management system.

HTP:MES features

- Web application;
- Modular structure (Core +);
- ERP integration compliant with the ISA-95 standard.
- Integration with controllers and sensors;
- Operator panels;
- Optimized for handling large volumes of data;
- Open architecture for integration via API;
- Integration with SCADA systems via OPC UA;
- Cross-platform solution.

HTP:MES modules developed and deployed in production

- Core: production orders, warehouse, declaration of produced products and consumed raw materials, synchronization with SAP;
- Integration with SCADA - connection to controllers via OPC\UA;
- Performance - reasons of machine stoppages, production line bottlenecks;
- Recipe – process and engineering parameters;
- Material Preparation - minor Ingredient accounting;
- Marking - label printing;
- Chestny Znak - integration with the Chestny Znak system;
- Raw material loading - loading from containers into the line;
- Container management.

HTP:MES - Core

Functions

- Application configuration;
- Real-time PLC data acquisition;
- Reports;
- Production order management;
- Raw material write-off and product declaration;
- Customizable lockouts;
- Warehouse Management (movement, stock levels, etc.)

Features

- Centralized management of all modules;
- Unified operator console;
- Flexibility and scalability;
- User-friendly and well-designed interface;
- Integration with industrial controllers and SAP

HTP:MES Core: Details

- Application Configuration - a web interface for setting system parameters, configuration of the factory model, activation of modules, connections configuration, specification of units of measurement, etc. Uses domain (LDAP) user authentication (SSO) to manage access privileges;
- Real-time PLC data acquisition - after configuring communication with controllers, the MES writes tag values to the controllers to enable visualization and the operation of controller logic at the automation level (HMI), collects data for performance indicator calculations, reports, and dashboards;
- Dashboards - standard dashboards are provided for operational management (calculated line efficiency parameters (downtime percentage, etc.), lists of produced product lots, consumed raw materials, etc.);
- Production Order Management - receiving PO from SAP, displaying the list of available orders on target resources (machines, equipment), automatic order splitting into batches with recipe recalculation, order launch by the operator, automatic loading of recipes, parameters, and order data into controllers, the history of operations saved;
- Customizable lockouts - interlocks ensure that, during movement, consumption, or production, the operation is verified for compliance with the established material restrictions. (e.g., preventing mixing of different materials or batches) or container restrictions (prohibiting the use of a locked container);
- Warehouse Management (movement, stock levels, etc.) - automatically maintains the current status of all storage locations (warehouses and intermediate buffer zones) configured in the system in an up-to-date state (Inventory) during operations;
- Raw material write-off and product declaration - automatic Inventory status update during raw material write-off and finished product declaration. Synchronization with SAP.

HTP:MES - Efficiency

Functions

- Automatic/Manual line stoppage collection;
- Automatic/Manual equipment counter collection;
- Dynamic root cause identification for stoppages;
- History of reclassification and other operations saved;
- Waste accounting and linking it to events;
- Linking events to production orders;
- Calculation of metrics for production efficiency evaluation;
- Monitoring of planned stoppages and product changeovers;
- Integration with SAP.

Features

- Dashboards for displaying indicators;
- Easy-to-configure and user-friendly interface;
- Operator console for convenient display and management of machine statuses and counters.

HTP:MES - Efficiency: Details

- Automatic/Manual Line Stoppage Collection - identification of machine stoppage reason codes, configuration of OPC-based communication with controllers, polling of all machines, and real-time metric calculation. Displayed on dashboards. Includes the ability to reclassify stoppage reasons, identify bottleneck machines, and manually set statuses for non-automated equipment;
- Automatic/Manual Equipment Counter Collection - collection of counters for both good product and product for rework. Allows configuration of formulas for indicator calculation and display on dashboards;
- Manual event addition and modification are kept in an archive;
- Dynamic root cause identification for stoppages - Accounts for cases where a machine is idle due to upstream or downstream machines stoppages;
- Waste tracking and linking it to events (stoppages) via counter collection;
- Linking events to production orders - collecting stoppage statistics in the context of a production order;
- Calculation of metrics for production efficiency evaluation - calculation and real-time display of OEE indicators based on data received from line controllers;
- Monitoring of planned stoppages and product changeovers - configuration of standard time, display of an animated timer for tracking remaining time. Archiving of history;
- Integration with SAP - transfer of stoppage information to SAP.

HTP:MES - Label Printing

Functions

- Connection to printers and coders via TCP/IP;
- Automatic/Manual label printing during product or pallet declaration;
- Automatic/Manual data loading to industrial coders;
- Data preview before sending to print;
- Label template configuration and assignment to printers;
- Configuration of command sequences in coder templates.

Features

- Automatic selection of the correct template for printing;
- Display of status and messages from the printer/coder;
- Use of label printing and coding without operator involvement (elimination of manual entry error);
- Centralized print management.

HTP:MES - Label Printing: Details

- Connection to printers and coders via TCP/IP - configuration of access to printers and coders through TCP/IP connection;
- Automatic/Manual Label Printing During Product or Pallet Declaration - Configuration of controller connections for each line section to enable automatic product declaration with label printing option (e.g., for big bags, pallets, etc.). Settings for label printing via controllers without production declaration. Label printing is also available manually through the web interface. Display of the print history;
- Automatic/Manual data loading to industrial coders - Configuration of automatic and manual data loading for the coder when launching an order on the equipment. Display of loading history;
- Data preview before sending to print - Verification of data to be sent to the printer or coder during manual submission;
- Label template configuration and assignment to printers - Creation of a template library for different printer types and label types. Setting up the connection between printers and templates (ability to add a default template);
- Configuration of command sequences in coder templates - Creation of a template library for different types of printers and label types. Configuration of the connection between printers and templates (ability to add a default template).

HTP:MES - Quality

Functions

- Creation of quality control checklists, equipment launch, and shift handover;
- Automatic and manual logs with varying frequency;
- Collecting log data from controllers;
- Process parameter monitoring;
- Synchronization with ERP to obtain checklists for product release;
- SPC data analytics.

Features

- A unified environment for configuring checklists, logs, and quality indicator monitoring;
- Tracking timely completion of checklists/logs;
- Storage of the complete history of log/checklist entries;
- Elimination of paper-based records;
- Flexible frequency configuration.

HTP:MES - Quality: Details

- Creation of quality control checklists, equipment launch, and shift handover - flexible configuration of quality parameters and log elements, ability to configure response options;
- Automatic and manual logs with varying frequency - configuration of frequency (hourly/daily, order launch, start of a new shift, etc.) for checklist completion, ability to activate a log via a controller trigger;
- Collecting log data from controllers - ability to configure fully automatic log population using quality data from the controller;
- Monitoring of process parameters to detect deviations from established threshold values (limits) - configuration of limits and real-time tracking of process parameters, operator notification when values exceed boundaries. Ability to display on a trend for analysis;
- Synchronization with ERP to obtain checklists for product release - Retrieval of product release criteria from ERP for production orders, for operators to complete during manufacturing. Submission of results to ERP upon order completion;
- SPC Data Analytics - All data collected within the Quality Module is available for display in charts, tables, and for export to Excel for detailed analytics. Digital data can be used for SPC analysis;

HTP:MES - Chestny Znak

Functions

- Connection to the Chestny Znak state products tracking system via API;
- Search for the correct template by material number;
- Automatic transfer of order data and batch number to the Chestny Znak system;
- Synchronous launch/stop of orders in the Chestny Znak system via MES;
- Automatic verification of conditions for starting/stopping the marking process;
- Machine/equipment roles.

Features

- Unified interface for launching production orders and coding;
- Elimination of operator error through integration of the two systems.

HTP:MES - Chestny Znak

- Connection to the Chestny Znak state products tracking system via API - Bidirectional integration with the coding system to start/stop orders and receive feedback on success or errors. In case of an error, the operator receives a detailed description of the cause;
- Search for the correct template by material number - For appropriate coding, MES searches the coding system for a template according to the order the operator intends to launch. If the template is missing, the operator cannot start the order;
- Automatic transfer of order data and batch number to the Chestny Znak system - When launching an order, all data required to initiate the coding process (material, order, lot number, quantity, identifiers, etc.) is automatically transferred to the coding system;
- Synchronous launch/stop of orders in the Chestny Znak system via MES - The two systems remain synchronized at all times to prevent scenarios where an order has been already launched in MES and product was moving along the line, but the coding system has not initiated the order;
- Automatic verification of conditions for starting/stopping the coding process - If the coding system is not ready to operate or the template/order status is incorrect, MES will block further actions;
- Machine/equipment roles - ability to configure different roles for machines and transfer this information to the coding system.



Detailed description of implemented
projects

Infant dry formula production plant in Vologda

- Production order management;
- Integration with SAP;
- Secure WEB API interface;
- BOM management;
- Process parameter management;
- Emptying sequence management for bags;
- Minor ingredient preparation;
- Weight and quality control using scales;
- Raw material write-off from warehouse;
- Warehouse stock synchronization with SAP;
- Intermediate storage inventory control;
- Full traceability (Genealogy) support;
- Automatic declaration in SAP;
- Label Printing Module (CLP);
- Connection to controllers via OPC UA servers;
- PreProd environment for testing;
- Successful launch;
- 24/7 technical support.

Full-cycle coffee production plant in Timashevsk

- MES installed on three production lines of the plant;
- Production order management;
- Integration with SAP;
- Secure WEB API interface;
- BOM management;
- Process parameter management;
- Bag emptying sequence management;
- Preparation and feeding of minor ingredients into the line;
- Weight and quality control using scales;
- Custom raw material reception module;
- Raw material write-off from warehouse;
- Intermediate storage inventory control;
- Full traceability (Genealogy) support;
- Automatic finished product declaration in SAP;
- Line efficiency evaluation module (OEE);
- Connection to controllers via OPC UA;
- PreProd environment for testing;
- Successful launch of all three production lines under HTP:MES control;
- 24/7 technical support.

Pet food production plant in Vorsino

- Production order management + all aforementioned functions implemented at the plants in Vologda and Timashevsk;
- Plus a Packaging Line Performance Monitoring Module (OEE) with bottleneck identification, automatic collection of statistics on the most frequent stoppage causes, product counters, motor hour tracking, and transfer of this data to SAP;
- Plus a Label Printing Module for both intermediate batches (to control the sequence of operations along the production line) and finished products on packaging lines. Integration with the "Chestny Znak" system;
- Connection to the automation level (PLC controllers) via OPC UA servers. Preliminary testing on PreProd. The plant launched production using HTP:MES. 24/7 technical support is organized.

Culinary production facility in Vyazniki

- Production order management and all the aforementioned functions implemented at the plants in Vologda and Timashevsk;
- CLP Label Printing Module;
- Management of raw material emptying directly into containers through integration of the Container Management Module, container reservation function for materials, display of container contents, synchronization with the automation level (HMI);
- Integration with the "Chestny Znak" system;
- Connection to the automation level (PLC controllers) via OPC UA servers. Preliminary testing on PreProd. The plant has launched production using HTP:MES. 24/7 technical support has been set up.

Confectionery production factory in Perm

- Production order management and all the aforementioned functions implemented at the plants in Vologda and Timashevsk;
- CLP Label Printing Module;
- Connection to the automation level (PLC controllers) via OPC UA servers. Preliminary testing on PreProd. The plant has launched production using HTP:MES. 24/7 technical support has been set up.

Chocolate factory in Samara

- Production order management and all the aforementioned functions implemented at the plants in Vologda and Timashevsk;
- Packaging Line Performance Monitoring Module (OEE) with bottleneck identification, automatic statistics collection on the most frequent stoppage reasons, product counters, motor hour recording, and transmission of this data to SAP;
- Quality module logs for monitoring quality parameters and shift handovers;
- Integration with the "Chestny Znak" system;
- Connection to the automation level (PLC controllers) via OPC UA servers. Preliminary testing on PreProd. The plant has launched production using HTP:MES. 24/7 technical support has been set up.