High Level Eyelit MES Module Descriptions

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M1: Core System

The core system module allows the definition of static, linear routes. The routes define the flow of material through the factory and can provide work instructions and standard times for each operation.

Users can record the start and completion of each operation, and as a result an electronic “traveller” will be collected. This includes traceability information relating to who did what and when including actual hours booked to manufacturing operations. A real time view of WIP location and quantities highlights bottleneck and on-time delivery issues.

Actual vs standard labour hour analysis provides detailed views of labour costing information. When combined with the time and attendance module a comprehensive view of labour utilisation, performance and effectiveness is provided.

M2: Inventory

The inventory module allows operators to record and analyse material transactions including: receipts, stock adjustments, splits, return to vendor and moves. It supports the definition of material locations and minimum stock levels and re-order quantities. Material can be assigned to jobs (kitting). Goods-In processes can be defined.

Purchase Orders can be raised and tracked to control the supply of raw material.

Dispatch Orders can be raised to define requirements for outbound shipments. Users can then pick and dispatch material against an agreed schedule.

M3: Routing Advanced

Advance routing supports the modelling of complex manufacturing operations where routes are dynamic or conditional such as routing to a rework or repair process when certain quality tests have failed (for example). The same operation may be “visited” many times by the same item or job if required. Advance routes may “jump” to other lines and back again for example to have a rework processed carried out.

Additionally, advance routing permits the “teardown” of a parent item into numerous child items for example when a batch is initially processed as a whole, but subsequently gets broken down into discrete items for individual processing.

M4: Bills of Material and Material Use

BoMs and material usage permit the definition of multi-tier bills of materials. When building a parent item the system can enforce the collection of build information relating to the child material consumed. This provides both traceability information (forwards and backwards) and also precise quantity usage information rather than having to rely on standard quantities off the BoM.

Material traceability can be at the individual serialised item level, or at the batch level.

“Receipt at point of consumption” allows the collection of traceability information relating to purchased or delivered material at the time the material is used without an additional goods-in process.

M5: Rework Recording

The rework module supports the scheduling of repair jobs for existing items that are returned for repair.

Items in stock can also be returned to a repair line on an ad-hoc basis.

Repairs allow the removal of “child” items from the build to be replaced with alternative parts along with all the normal routing options e.g. test and inspection recording.

M6: Skills

The skills module allows skills to be defined which permit/deny access to specific manufacturing operations and transactions. Skills can be defined as time-limited, e.g., valid for a year before re-certification required or “use-it-or-lose-it”, e.g., you retain the skill if you have used it in the last *n* days. The skills module can also be used to control permissions to manufacturing operations, e.g., only supervisors are allowed to sign-off a particular test as complete.

M7: Timesheets and Attendance

Operators can record when they clock in and clock out each day and also record periods of absence due to sickness or holiday.

Operators can make indirect bookings other than to manufactured items, e.g., to book time to a job without specifying an operation, or to a non-production task, e.g., team meeting.

Time and attendance reports provide comprehensive “Overall Labour Productivity” analysis including details of labour utilisation and labour performance to standard.

M8: Tooling

The tooling module supports the definition of tool types and individual tools. Manufacturing operations can be defined as requiring the use of a tool of a specific type. Which tool is in use when an item is manufactured is recorded both for traceability and tool usage records.

Tool types are defined as having specific calibration requirements. Calibration frequencies can be set on either a duration or usage basis. Operators can be prevented from carrying out a manufacturing operation unless an in-calibration tool is selected.

M9: Downtime

Asset statuses can be defined and operators can log changes of asset status, e.g., from available to mechanical breakdown. Analysis can be carried out to identify principal causes of downtime by asset, asset type, production line, reason, etc.

M10: Documents

The documents module allows documents to be associated with manufacturing operations. Operators are either forced to view, or can elect to view documents associated with their current activity without having to navigate through a document

management or filing system.

Viewing of documents is logged providing an auditable trail that the correct document was referenced during manufacture.

Document revisions can be tracked and operators can be forced to view new issues before carrying out an operation.

M11: Basic Scheduling

Jobs can be placed in a schedule for operators to pull from. Operators can be restricted to process jobs in the sequence they have been scheduled, or be granted permission to run jobs out-of-order.

Jobs can be given due dates which together with WIP information can highlight on-time delivery issues.

M12: Outward Integration

Outward integration allows activity and transactions recorded in Eyelit MES to trigger transactions in third-party systems. For example the recording of a job completion may trigger an issue to good stock in an ERP system.

M13: Inward Integration

Inward integration allows Eyelit MES to receive data from third party systems. Examples where this is commonly used is to receive a schedule from an ERP system, or a BoM from a PDM tool.

M14: Label Printing

The label printing module allows users to print barcoded labels of a predefined format at any stage of a manufacturing process.

M15: Quality

The quality module allows the definition of a test/inspection plan and the recording of results during manufacture.

M16: Production and Scrap Counts

The production counting module supports the collection of production and scrap counts against individual assets and jobs. The data collected is used in conjunction with downtime information to provide “Overall Equipment Effectiveness” reporting and analysis.

M17: Issue Tracking

The issue tracking module supports the recording of non-conformances and issues of any type. Example uses are to track product faults, customer complaints, audit non-conformances and improvement ideas.

Each issue can be categorised and associated with reason/fault codes and issue history can be analysed to identify recurring patterns and target improvement activity.

Corrective and preventative actions can be assigned to the issue and allocated to a user so that the actions, and ultimately

the issue, can be tracked through to closure.

M18: Pay Hours Management

The pay hours module allows users to define shift patterns and pay rules for employees. Attendance hours are recorded and used to calculate pay hours for each pay period worked. Approval rules can be defined ensuring hours are approved before being sent to payroll.

M19: Advanced Planning and Scheduling

The advanced planning and scheduling module provides comprehensive finite capacity planning tools to optimally sequence work for each work centre in the factory. Unlimited multiple constraints can be modelled including machine, labour, inventory and tooling to provide a realistic and achievable plan.

Patented algorithms provide genuine optimisation to create a plan that is not only possible given the constraints, but optimum given priorities configured.

Real-time feedback in both directions between planners and the shop floor, provides a single source of truth for current priorities and visibility of achievement against plan. When events mean that execution varies from the plan (such as a machine breakdown), the impact can be immediately evaluated and a new optimum plan created.

What-if scenario analysis allows planners to model changes to demand and resourcing levels and use data to commit to promise dates.

M20: Rough-Cut Capacity Planning

The rough-cut capacity planning (RCCP) Module allows capacity analysis for longer term scenario planning. This supports the creation of unlimited forecasts for both demand and supply to evaluate the impact of potential changes to capacity (such as the acquisition of new equipment or changes in work patterns) or changes to demand (such as changes in sales forecasts, new product introduction).

M21: Machine Connectivity

Integration of Eyelit MES with on-prem equipment, e.g., for machine status, production counts and process parameters. Various methods of connectivity are supported including an “IIoT Hub” which utilises an MQTT broker to exchange data in either direction with on-prem equipment.

M22: Electronic Control History Records (eCHR)

The eCHR module provides advanced record keeping and auditing tools designed to ensure demonstrable compliance with FDA and ISO standards for quality management in the medical device and other highly regulated sectors.

Capabilities include:

- Validation packs.
- e-Signatures (compliant with CFR 21 part 11 regulations).
- Approval routings.
- Robust workflow/BoM/Recipe version control and management.
- Blockchain based immutable control history record (eCHR) audit trails.

- “Test/Validation Modes” for testing and deploying configuration changes.

This module also includes product label design control and printing reconciliation. This supports efficient management and approval of both label design and label data, including translations.