

Error Proof® Manufacturing Execution System (MES):

Freedom's Error Proof® Manufacturing Execution System (MES) helps manufacturing companies leverage their QAD investment by supplying more precise information and accurate schedules, resulting in realistic production plans, shorter cycle times, less WIP and lower inventory.

Error Proof® MES also provides the shop floor control and visibility needed to effectively deal with multifaceted traceability requirements. Using real-time "good data" from automated transactions collected from the shop floor, Error Proof® MES links supplier information, lot numbers, serial numbers, time/date or other records to the appropriate finished goods, back to the raw material or work order.

With Error Proof® MES QAD customers have the ability to:

Effectively deal with complex genealogy and traceability requirements, using automated transactions from shop floor workers and machines to tie lot numbers, serial numbers or other data to the appropriate finished goods and back to the work order.

Efficiently trim down scrap and waste through real time production reporting and limit the number of bad parts and wasted material.

Eliminate equipment downtime and successfully increase uptime by having access to up-to-the-minute scheduling of machines, resources and machine maintenance.

Reduce the cost of recalls by using track and trace capabilities to trace back to each incoming lot, subassembly and part or item used; and after locating the origin of a problem track components out to the current location of all end products.

Manage resources including machines, tools, labor skills, materials as well as documents that must be available in order for work to start at the operation.

Track and direct activities to maintain equipment and tools to verify availability for manufacturing, schedule for maintenance, create alarms to immediate problems and maintain a history of events to aide in diagnosing problems.

Realize major productivity improvements, improve customer satisfaction and obtain an overall competitive advantage in the marketplace.

Freedom's MES system bridges the gap between QAD and the shop floor using the collection of automated data to manage the application of manufacturing resources; people, equipment and inventory. Freedom's MES can assist in realizing a significant business improvement as a result of giving access to the right information, "What gets measured gets done."

CORE PRODUCT

ERROR PROOF BASE provides the basic functionality of the Error Proof system. This includes access to:

- Setup, configuration and inquiries using the Error Proof Administrator
 - System setup
 - Employees
 - Printers
 - Label formats
 - Security - Menus, queries and reports

- Configuration
 - IPL and ZPL designer
 - Report Designer
 - Query Designer
 - Telnet/Windows/Browser Designer
 - Downloads
 - Scheduled tasks
- Work station (Windows client/server) install is provided as part of Error Proof Base. Included with the Workstation install are the following device drivers:
 - Buffer (simplified SQL access)
 - COM/Serial
 - File
 - Monitor
 - Shell
 - Timer
- Error Proof Services
 - Label Print Manager
 - Telnet Server
 - Windows Server
 - Web Server
- Maintenance functions
 - Archiving
 - Change history
 - Submittal of update transactions
- All the Error Proof database tables are loaded as part of the Error Proof Base install
- Database queries of pending or updated transactions
- Foundational DLLs for other modules
- Export/Import routines for configuration scripts

INTERFACE MODULE

QAD HOST INTERFACE MODULE links Freedom Error Proof with QAD and EDI systems.

Features/Functions/Benefits:

1. Allows automated data collection of standard ERP or EDI transactions from devices running Error Proof (i.e., bar code middleware)
2. Automates label data generation from Host systems
3. Enables mapping of Error Proof Base transactional data to host ERP/MRP/EDI systems
4. Provides a library of standard data collection business objects for your ERP transactions
5. Provides for deferred submittal to the host system
6. Provides aggregation capabilities to reduce processing load on the host system

Transaction Modules & Description (Requires Standard and Host Interface Manager)

SHIPPING MODULE

1. Allows for scan-to-verify functionality (verify to an order or release).
2. Allows for scan-to-ship (verify the staged part or container is on the order).
3. Stages and validates pallet and container shipments.
4. Tracks movement of individual pallets and containers.

5. Links shipment contents to container and pallets via a single bar code scan.
6. Tracks serial and / or lot numbers.
7. Supports pallet package container tracking.
8. Prints bar code labels for product location, racks, pallets and serial numbers.

PICKING MODULE

1. Provides automatic pick list generation with manual overrides.
2. Picklists can be generated from sales orders, work orders, pre-shippers. Other sources of picklist requirements can also be configured.
3. Pick list printing.
4. Tracks picking status.
5. Supports walk path (i.e.; picking order) specification by zone.
6. Pick completion/shortage review on the handheld scanner.
7. Automatic conversion to shipper.

LABOR DISTRIBUTION

Supports entry of labor and machine transactional detail – run time, setup time, down time.

1. Records shop floor run time labor.
2. Records indirect labor.
3. Records setup information.
4. Records down time with reason codes.
5. Records scrap, rework, MRB disposition.
6. Records machine up and down time.
7. Reports multiple jobs and/or multiple employees and prorate activity (Utilizes labor splitting algorithms for concurrent work).
8. Stores event information for historical analysis.
9. Allows reporting by start and stop times.
10. Track employee productivity.
11. Facilitates labor variances and corrections.
12. Employee badge support.
13. Track employee productivity.

REPETITIVE

The standard RF backflush transaction is accessed to report production (components that are consumed during production) at the end of a sub-assembly or assembly line. This transaction will be updated in QAD via menu item 18.22.13 (Advanced

Repetitive\Backflush Transaction)

18.22.13 - Backflush Transaction

18.22.14 - Run Labor Transaction

18.22.16 - Reject Transaction

18.22.18 - Scrap Transaction

18.22.19 - Move Transaction

18.22.22 - Non-Productive Labor Feedback

WORK ORDER (STANDARD)

This transaction releases the work order in QAD (16.6) and at the same time prints any required bar code labels needed for work order processing. WIP labels are also generated at this time if WIP (multiple operations) label processing is being performed.

16.6 - Work order release/print

16.10 - Work order issue (issue individual components)

16.11 - Work order receipt – receipt into stock

16.12 - Work order receipt / backflush (combined receipt into stock and component issue)

TRANSFERS

The standard RF transfer transaction is accessed to transfer/move inventory from one location to another. The transaction will be updated in QAD via menu item 3.4.3 (Transfer with Lot/Serial Change). This process will allow a user to transfer inventory by the label serial number to a label that was generated via Error Proof® or by item/part number. The process will also allow the user to perform split/partial transfers by serial number as well. The split transfer logic allows printing of new labels for the split quantity.

CYCLE COUNTING

The Cycle Counting module provides the means to perform cycle counting activities using serial numbers. A cycle counting control form is used to generate or enter the parts and/or locations to be counted. The labels are then scanned. Once the labels are scanned, the results can be reviewed and discrepancies checked against the Error Proof® serial inventory before submitting to QAD. When submitted to QAD, the entries are summarized to create the entries for QAD menu 3.14 (Cycle Count Results Entry).

PURCHASE ORDER RECEIPTS

The PO Receipts transaction is used to receive material into QAD via the normal receipt process (5.13.1). The receiving process provides these additional capabilities:

1. Provides on-line validation against purchase order or release details.
2. Prints container bar code labels for materials received if needed.
3. Master labels can also be generated for sets of containers during the receipt process.
4. Tracks receipts by item, container or pallet.
5. Integrated with the Error Proof® Receiving Inspection process. During receipt, a check is performed to see if the item needs to be inspected. If so, the receipt location is modified and the user is informed of the change.

RECEIVING INSPECTION (SKIP LOT) – REQUIRES ERROR PROOF ® RECEIVING

Receiving Inspection provides a means for sampling based inspection of inbound parts based on a user specified sampling plan. Receipts are redirected to an inspection area during receiving. At this point, inspection of the received material is performed based on a set of user specified inspection instructions. If the material passes inspection, it is transferred to a good inventory location and the good inspection count is incremented. If the material fails inspection, it is transferred to a hold location and the good inspection count is reset to zero – resetting the sampling count plan.

REQUIRES ERROR PROOF ® RECEIVING

In addition to the standard receiving transaction functions, ASN Receiving provides enhanced validation and update capabilities based on the availability of ASN information. The ASN information from QAD is used to verify receipt information (part, PO & line, and quantity received). At completion of receipt entry, verification is performed to see if all ASN quantities have been received. A discrepancy listing can then be displayed on the RF handheld device. During QAD update, materials can be updated directly through 5.13.1 (as in standard receiving, or (optionally) receipt can be performed using QAD's ASN receipt transaction and discrepancies only updated through screen 5.13.1.

UNPLANNED ISSUES/RECEIPTS

The Unplanned Issues and Receipts transaction supports unplanned material receipts/issues. Labels can also be created and printed during this process if required (i.e.; receipts)

TIME AND ATTENDANCE

Time and Attendance provides the following:

1. Record employee check-in; check-out (attendance).
2. Record lunches and breaks automatically.
3. "Grace" periods for flexible check-in / check-out processing.
4. Temporary badge assignment.
5. Badge control by activity code logic.
6. Supervisory review capabilities.
7. Temporary shift overrides with stop/stop dates.
8. Can feed to external time and attendance or payroll systems.
9. Logic allows for corrections and re-submittal of updates to ERP system.

ERROR PROOF® SHOP FLOOR SCHEDULING

1. Monitors and displays work center loads.
2. Enables rescheduling and electronic dispatching of work.
3. Supports discrete and repetitive schedule environments.
4. Allows modification of the schedule - modification of quantities or splitting/transferring requirements to different work centers.
5. Schedule presentation can be integrated with line error proofing to provide a complete work cell solution.

ERROR PROOF® SEQUENCE (SCHEDULING & SHIPPING)

This module provides Error Proof® customers with sequential shipping functionality. From the retrieval and processing of customer build and sequential shipping data to the sequential shipping of customer sequence data based on customer sequence order and customer rack size/quantity.

1. Configurable based on multiple internal suppliers and multiple work centers.
2. Demand is directed to the proper work centers using mapped cross reference entries.
3. Interfaced with IBM WebSphere MQ for the retrieval of customer sequence data and the transmittal of customer-required data.
4. The retrieval and processing of customer build and sequence data is modular based, as well as the rack size/quantity calculation process module.
5. Sequential shipping module is RF based for on-floor operator flexibility.
6. Ability to setup multiple sequential RF shipping modules based on internal suppliers and/or multiple work centers.

Additional modules available upon request. Please contact Freedom Technologies to discuss your requirements.