

No. 8 / August 2015

## Panasonic PanaCIM® Enterprise Edition Software Suite (Part 1)

PanaCIM® Enterprise Edition is a multi-level manufacturing execution system (MES) software solution for any size manufacturer. From the machine-level to the cloud-level, add new capabilities and automate processes across your entire enterprise and manufacturing operation.

With a modular system that can scale to support one machine or an installation of over 1,000, this Panasonic MES can integrate with any machine platform, business system, or location. And it helps you eliminate redundant manual process and decrease material labor costs.



### Easy to use

Completely pre-configured and ready to go so it's easy to set up the system in any factory – especially in smaller installations that require digital data collection yet do not have a dedicated IT staff.

### Flexible

When production expands, it's painless to integrate more boxes, redeploy them elsewhere in the factory, or to take a line-level approach that allows continuous production in one area while upgrading in another. Layout options are very flexible and recovery is simple too.

### Scalable

Building off the inherent modularity and scalability of PanaCIM Enterprise Edition makes this MES deployment solution relevant and cost-effective for any factory. Install the modules you need now; add on any time you need to down the road.

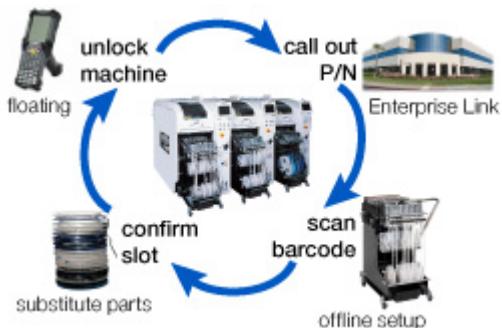
In the next three editions of our newsletter we like to inform you about the different modules and levels of the PanaCIM® software package. This month we will introduce the modules related to the production line level:

1. Material Verification
2. Product Changeover and Control
3. Production Monitoring and Dispatch
4. Traceability

Should you have any questions or require further information about the modules and the functions described in the following, please do not hesitate to contact your local sales manager or software specialist.

No. 8 / August 2015

## 1. Material Verification



Material Verification assists with changeover setup, splicing, and parts exhaust – ensuring the right components are loaded into the right place. Often parts or part numbers can appear similar; this function allows you to expedite set up time, ensure part accuracy, and prevent critical material waste by removing the opportunity for human error.

### Features for modular and traditional equipment

- RF based scanner – Scan 1D and 2D barcodes and transmit data to the host system and other equipment via a wireless access point(s).
- Operator login – Scan or type in an operator barcode to record operator selections.
- Recording of material data – Use material barcodes to collect part number, vendor, lot/date code, initial quantity and a site-wide user-defined field. Scan and/or key in data.
- Multiple data fields extracted from a single or multiple barcode label(s) – Configured data fields can be located in separate labels or a single label.
- Substitute part numbers – Import substitute part numbers for product setup. The original and substitute part numbers are recorded for traceability reporting.
- Invalid component management – numbers and/or vendors and/or lots can be specified as invalid to prevent mounting those materials.
- Support for screen printer materials – Up to ten item types such as “paste”, “squeegee”, “stencil”, etc.
- Component to panel traceability – Identifies the boards produced using a specified part and lot number. This helps identify boards built with defective components. Reverse identification is also available.

### Additional benefits

- Multiple scanners per module
- Guides operators through validation of required components
- Part exhaust, splice warning, splice anytime, and changeover operation support
- Supports intelligent feeders
- Production startup verification

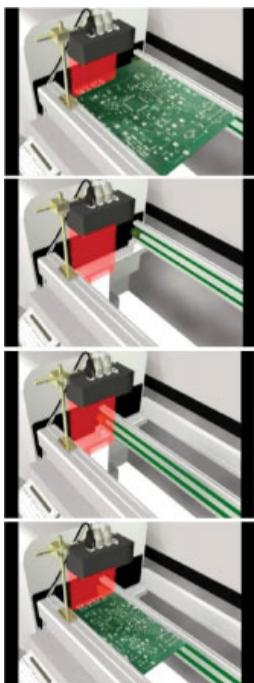
### Tray support

- Changeover and part exhaust
- Production startup verification option
- Part exhaust verification option

Material Verification is also used to specify invalid components that shouldn't be mounted. Part number/vendor/lot combinations can be entered. Once this data is saved, operators are blocked from mounting any scanned invalid component. Reports on the location of invalid components can be run to find any invalid components currently mounted on the placement machines.

**No. 8 / August 2015**

## 2. Product Changeover and Control



PanaCIM™ Enterprise Edition's Product Changeover and Control module incorporates configurable levels of automatic line changeover management while integrating with other PanaCIM modules including Traceability and Material Verification.

Each work zone can have two levels of changeover control: Automatic Detection and Automatic Changeover.

This module identifies the next panel entering the production line and compares it with the work currently being processed within the controlled work zone. Panel identification is performed through an automated input device, i.e., barcode scanner. If a difference is determined between the panels, the upstream panels are held until the work zone is able to complete a product changeover. Once the changeover is complete, the upstream product is released into the normal flow of the work zone and new product production begins.

Product Changeover and Control also:

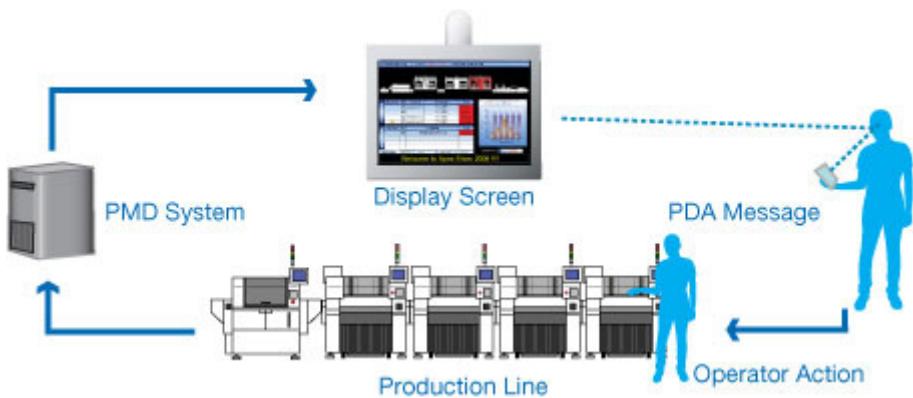
- Provides true "lot size of one" capability
- Identifies product/model
- Automates product recipe/program selection and downloads as required
- Processes top- and bottom-side within a single work zone
- Automates equipment configuration such as conveyor adjustment and material verification/ validation
- Tracks products (panels/boards) through the work zone(s)
- Allows enabling and disabling of the system (bypass Auto Changeover feature)
- Controls equipment execution such as automated start and stop as required

Changeover actions that can be performed while a product is being built in the work zone will be performed to keep changeover times down and maximize productivity. The level of this module's control for the work zone determines which changeover actions the module performs.

## 3. Production Monitoring and Dispatch

Production Monitoring and Dispatch (PMD) provides a centralized monitoring and notification system utilizing real-time data to identify events that can impact production and dispatch the corresponding tasks to the appropriate labor resources. Having this module's visual display system on your production floor allows maximum visibility and communication between all departments within the factory. Manufacturing enterprises without a centralized monitoring and dispatch system often experience unscheduled downtime due to work/load balance of labor resources and event response time. PMD's event tracking, performance metric displays, and labor dispatching allow labor resources to be notified of production events regardless of their location. The result is that the right person does the right task at the right time to keep your production moving.

No. 8 / August 2015



Real-time event data feeds into Production Monitoring and Dispatch from equipment and other PanaCIM® Enterprise Edition modules. Events such as part exhausts, inefficiency warnings, and upcoming changeover appear on notification displays—so all parties are in sync with the production line. As tasks for that event are acknowledged and completed, the system continues to monitor and dispatch new tasks along with real-time performance progress. The current state of the production line, including key performance indicators (KPI), is readily available at any time.

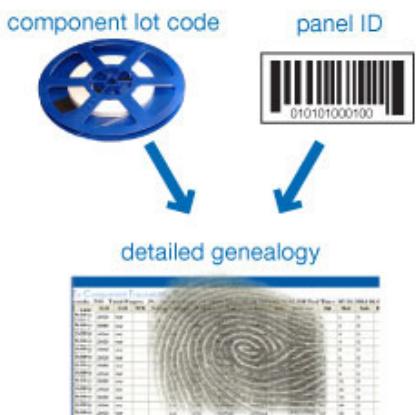
#### Features of Production Monitoring and Dispatch include:

- Immediate visual notification of real-time events, line and machine status
- Adaptive scheduling to actual production conditions
- Provision for operator acknowledgement and ownership of tasks
- Automatic detection of event resolution
- Key performance indicators (KPI) display
- Current product information display
- Upcoming product changeover information display
- Report generation for event history analysis by product, operator, and equipment
- Detailed production schedule display

Performance progress displays can be as large as you require and are placed in strategic locations on your manufacturing floor to provide maximum visibility for each line's operators. There is no limit to the number of displays that may be used. Each display is configured by the administrator to display data for a single production line.

No. 8 / August 2015

#### 4. Traceability



The Traceability module of PanaCIM® Enterprise Edition helps you meet regulatory requirements—whether they are the industry's, your customer's, or your own.

Barcode readers are used to capture panel identification data while the module integrates with PanaCIM Enterprise Edition's Material Verification module to provide traceability of materials to panels for mounting equipment as well as screen printers and hand place stations. All machine errors are captured by panel and various reporting options are available with support for a customer-defined data archival period.

#### This module offers three levels of traceability to meet your needs:

- Panel – Scanned barcodes track and record information about the panel, the product being built on it and the machine used to build it
- Component to Panel – Allows for the identification of which materials were used on which panel
- Placement to Panel – Building on the previous two levels, identifies placements by reference designator in addition to tracking the panel and materials used

Component to Panel and Placement to Panel levels require integration with PanaCIM Enterprise Edition's Material Verification module for full traceability capabilities. More information about the specific data tracked in each of these levels and Material Verification's integration is available on the reverse side. Various traceability reports are available depending on the level of traceability in use. Reports are viewable via web browser for maximum accessibility. Report types include: Barcode Trace, Component Trace, Placement Trace, and Panel Trace.

##### Barcode Trace

Input panel serial numbers and retrieve a material trace "bill of materials" for each panel, including the material data (part number, lot/date code, vendor code, user data) from panel assembly.

##### Component Trace

Input component material data (part number, lot/date code, vendor code, user data) and retrieve a list of panels built with the specified material. This report can be helpful in identifying panels that may need to be quarantined or recalled due to defective material.

##### Placement Trace

Input material data (part number, lot/date code, vendor code, user data) and retrieve a list of panels built and the placement reference designator positions with the specified material – helpful in identifying panels that may need to be quarantined or recalled due to defective material.

##### Panel Trace

Generate a report of panels that passed through a specified line over a specified time period.

##### Panel-Level Traceability

Fixed or handheld barcode readers record the ID of each panel as it enters your equipment. Data available for reporting includes the timestamp, panel serial number, panel model number, product name, and equipment zone name. Supported panel barcode types include 1D and 2D barcodes, and RF tags, dependent on equipment/hardware.

No. 8 / August 2015

**Component-to-Panel-Level Traceability**

This level is provided when integrated with the Material Verification module, which records the times during which particular materials are installed on each piece of production equipment. That info, with the panel traceability, allows identification of each panel serial number produced with specific material including part number, lot/ date code, vendor code, initial quantity, and user-defined data.

**Placement-to-Panel-Level Traceability**

This level also requires the Material Verification module on modular mounting equipment. Material Verification's recorded info combined with panel traceability and additional info from the placement equipment, allows placements to be identified by reference designator on each panel serial number produced with specific material including part number, lot/date code, vendor code, initial quantity, and other user-defined data.



## Factory Solution Conference 2015

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