# **Valor MSS Foundation**

# **Centralized Data Management for the Valor MSS Solution**



The MSS Foundation is the data management engine for the MSS platform. Foundational data, such as factory layout and equipment details, BOM information, work-order details, and process routing definitions are initiated and edited here. This core module also provides infrastructure for managing the storage of real time information collected from manufacturing operations on the shop floor.

#### Manufacturing

D A T A S H E E T

# **MAJOR BENEFITS:**

- Common infrastructure leverages information between applications
- Reduce redundancy and configuration errors with centralized data management
- Work Order management improves on-time delivery
- Centralized compliance of Build Records for all products
- Lower cost of process traceability and device history
- Seamless integration with 3rd party solutions
- Powers the investment in ERP

# **Overview**

The Valor MSS Foundation provides a single view of the truth in resolving many of today's operational challenges in electronics manufacturing. MSS Foundation is the central environment for Master Data Management within the Valor MSS suite. Centralization of data prevents redundancy and reduces configuration errors. This module is the single point for creating the detailed factory configuration and the master schedule with full visualization of the work orders released to operators in the factory. The common infrastructure creates information leverage between the Valor MSS applications, and the API interface provides seamless integration to 3rd party solutions. Valor MSS Foundation is designed to power the investment in ERP by updating ERP data for more accurate inventory management, power the marketability of products and services by maintaining a detailed electronics build record for all units produced, and to improve competitiveness by increasing the on time delivery performance of the factory. Valor MSS Foundation is organized into two primary functions- Master Data Management and Scheduling.



### Master Data Management

The Valor MSS Foundation is a master data management system of factory, product and material attributes in relation to quality and operations data. The data manager is used for the factory definition/configuration, product definitions and Routing and Work Orders

#### **KEY FEATURES**

### **Factory Configuration**

The configuration of the factory is managed in layers, i.e. Plant, Floor, Line and Equipment. The Plant can have many shop floors, each Floor can have many lines, each Line can have many machines, and each machine is configured as a unique asset or Equipment item. The plant/

| oduct and Route | Ass              | embly Number 🔶 🔺 | Revision | Index | Name            | Produ |
|-----------------|------------------|------------------|----------|-------|-----------------|-------|
| Assemblies      | <del>ا</del> ب ا | 24681300         |          |       | Computer C1     |       |
| noduct Families |                  | 28999100         | 2.1      | 0     | Laptop L1       |       |
| Customers       |                  | 28999200         | 2.1      | 2     | Motherboard M10 |       |
| Assembly Groups |                  | 28999300         | 1.2      | 4     | Memoryboard Me3 |       |
| Panels          | - OH             | 28999400         | 1.3      | 0     | Laptop L2       |       |
| 🛲 Parts         | •                | 28999600         | 1.4      | 0     | Laptop L3       |       |
| GB Routes       | i di             | 28999800         | 2.2      | 2     | Laptop L4       |       |
|                 | •                | 2900000          | 3.3      | 2     | Laptop L5       |       |
|                 | i di             | 29000200         | 1.1      | 2     | Laptop L6       |       |
|                 | •                | 29000400         | 1.0      | 1     | Laptop L7       |       |
|                 | - OH             | 29000600         | 1.0      | 1     | Laptop L8       |       |
|                 |                  | 29000800         | 2.0      | 1     | Laptop L9       |       |
|                 | - ol             | 87733300         | 1.2      | 0     | Computer C2     |       |
|                 | - D-I            | 87733700         | 2.2      | 1     | Computer C3     |       |
|                 | ф I              | 87734100         | 1.1      | 1     | Computer C4     |       |
|                 |                  | 87734400         | 1.0      | 1     | Computer C5     |       |
|                 | - di             | 87734700         | 4.0      | 1     | Computer C6     |       |

Master Data Management centralized the product structure and essential product attributes so that there are no redundant data actions and many errors are therefore eliminated. Product configuration includes Assemblies, Product Families, Customers, Assembly Groups, Panels, Parts and Routes.

floor/line configurations are managed in a 3D environment for clear and accurate visualization of the entire factory. The software includes an extensive library of 3D equipment models, many are exact replicas of the actual the most popular machines used in today's factories. In cases where a model is not available there are generic "equipment" models that can be used for visualization purposes. The resource settings and configuration are an integral part of the whole Valor MSS suite for shop floor applications to control and manage the manufacturing process.

| Assembles       Product Families         Customers       Assembly Groups         Partels       22999400 13:0         Partels       23999400 13:0         Partels       28999400 13:0         Partels       28999400 13:0         Partels       28999400 13:0         Partels       28999400 13:0         Partels       2000000000000000000000000000000000000   | 28999400_1.3 i0   |      |   |  | Define Count            | ing Sequ                                  | ence 🕶 🤅 | *  |  |   |  |  |  |  |
|--|---|------|---|--|-------------------------|---|----------|--|--|---|--|--|--|--|
| Product Families       1       1       0       28999400 13 /0       28999400 13 /0         Assembly Groups       23       4       27       5       23       6         Parts       28999400 13 /0       289999400 13 /0       28999400 13 /0   | duct and Route  | <    |   |  |                         |   |          |  |  |   |  |  |  |  |
| Customers       28999400 1.3 0       289999400 1.3 0       28999400 1.3 0       28999400  | Assemblies  |      | (1.)  |  | 1 1.2                   |   |          | 2 113  |  |   |  |  |  |  |
| Assembly Groups       2899400 1 3 /0       2899400 1 3 /0       2899400 1 3 /0       2899400 1 3 /0         Parts       2899400 1 3 /0       2899400 1 3 /0       2899400 1 3 /0       2899400 1 3 /0       2899400 1 3 /0         28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0         28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0         28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0         28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0         28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0         28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0         28999400 1 3 /0       1 0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0         9       1 1 1       1 0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0         9       1 1 2       0       28999400 1 3 /0       28999400 1 3 /0       28999400 1 3 /0         9       1 1 2       0       28999400 1 3 /0   | Product Families  |      |   |  |                         |   |          |  |  |   |  |  |  |  |
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Many SMT factories work on complex panels rather that single PCB. Valor MSS Foundation allows the user to configure the product panel in the way that best suites production requirements.

# Hierarchical Product Structure

The Valor MSS Foundation creates and maintain and the hierarchical product structure (normally imported from ERP/ PLM). This product structure defines the parent child hierarchy of a multilevel Bill of Materials (BOM) and is used to perform the following tasks:

 Assign Process related properties required to control the manufacturing process

 Assign default route with Scheduling and Enforced Routing definitions

 Define panel structure per Assembly

• Link Assemblies to Product Families, Assembly Groups and Customers



Each part number is managed within a Centralized Parts Library where the essential Parts Attributes are defined and subsequently used by the Valor MSS shop floor solutions to control processes.

### **Process Routing**

The Valor MSS Foundation maintains process routings for scheduling and enforced routing logic. Here the routes are created and assigned to valid and default resources per each operation in the Route.

# **Work Orders**

The Valor MSS Foundation creates, maintains and releases Work Orders (normally imported from ERP) with assigned resources. Here we can also create Rush Orders, use default Route assigned to the Assembly, or modify the Route according he the needs of the Work Order and define exact Resources to use for the Work Order

# Scheduling

Valor MSS Foundation stores the released Master Schedule used by the shop floor applications and Engineering solutions. The scheduling capabilities includes interfacing to 3rd party solutions to get the rough schedule from e.g. ERP, managing the orders with connection to routes, assemblies and machine programs (recipes), as well as delivering the released schedule to operators and MSS shop floor clients. The MSS scheduling solution supports all discrete operations in the factory environment, including material preparation, SMT, test, manual & system assembly, packing etc.

### **KEY FEATURES**

### Import from ERP

The raw schedule is imported from ERP. The software also supports loading Hierarchical BOM structure and Route definitions from ERP as well.

### **Product and Schedule Definitions**

Product related scheduling definitions are maintained as follows. Each Assembly is related to scheduling properties. The defined Route is linked to the Assembly with the ability to limit the allowed resources to be used for a given assembly. The Recipes, such as SMT programs created in the Valor MSS Process Preparation module and assigned and required by the resources to produce the Assembly. Also specific Material Attributes required for a given Assembly are defined.

### Work Order Management

The Work Order tool assigns exact resources to be used for each Work Order Operation. When needed, Rush Orders can be created, or the Work Order Routes can be modified. When everything is ready, the Work Order is releases for production.

# Schedule Management

Visual schedule management allows the user to see the sequence and status of each job by work order operations, per resource. The Schedule can be managed by changing the priority of jobs for a given resource, move jobs to other resources, or changing the status on jobs (i.e. start, pause, stop).

| Schedule   |  | Order Number                                   | Operation       | Status  | Part Number | Revision | Assembly    | Quantity | Planned Start       |  |
|------------|--|--|-----------------|---------|-------------|----------|-------------|----------|---------------------|--|
| Sequencing | Resource: 1. Floor (SMT) / Line 12 / 1009 - FCM2 |  |                 |         |             |          |             |          |                     |  |
|            |  | 97   | 67 - Schedule   | Planned | 24681300    | 2.1      | Computer C1 | 0        | 11-10-2011 07:52:47 |  |
|            |  | Resource: Motherboard Production / Line 1      |                 |         |             |          |             |          |                     |  |
|            | F  | 1111   | 64 - SMT Top    | Planned | 24681300    | 2.1      | Computer C1 | 7000     | 01-01-1980 00:00:00 |  |
|            |  | 97   | 64 - SMT Top    | Planned | 24681300    | 2.1      | Computer C1 | 0        | 11-10-2011 07:52:47 |  |
|            |  | Resource: Motherboard Production / Line 2      |                 |         |             |          |             |          |                     |  |
|            |  | 97   | 65 - SMT Bottom | Planned | 24681300    | 2.1      | Computer C1 | 0        | 11-10-2011 07:52:47 |  |
|            |  | Carl Resource: Motherboard Production / Line 3 |                 |         |             |          |             |          |                     |  |
|            |  | 2222   | 64 - SMT Top    | Planned | 87733300    | 1.2      | Computer C2 | 5000     | 01-01-1980 00:00:00 |  |
|            |  | 2222   | 65 - SMT Bottom | Planned | 87733300    | 1.2      | Computer C2 | 5000     | 01-01-1980 00:00:00 |  |

Valor MSS Foundation provides production scheduling with tight integration to the other MSS shop floor applications.



3

### **Shop Floor Integration**

The Shop Floor Operator tool is used to visualize the schedule for a given resource. Integration to shop floor control applications is used to automatically change job and job status based on the released schedule, and to pick material from stores based on the released schedule, and to stop material picking when Job is near completion.

### **Key Administration Functions**

### **Material Registration and Administration**

The MSS Foundation provides a set of applications that are used when managing the details of the master data associated with materials that will be used in the operation. This includes solutions for the registration of all materials into the system and the printing of barcode labels when required, as well as solutions for managing the storage of materials in stock areas, and dry stock / ovens. Additionally the solution provides the capabilities to administer the detailed rules associated with the management and picking of materials for those customers taking advantage of the MSS Material Management module.

#### For the latest product information, call us or visit: www.mentor.com/valor

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