DATA SHEET
PCB MANUFACTURING

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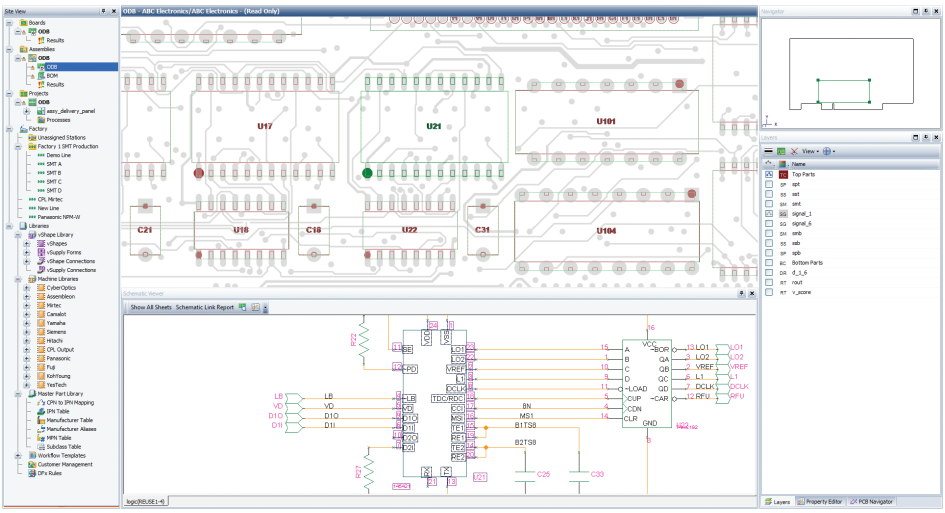
Valor Process Preparation
Complete Engineering Solution for PCB Assembly and Test



The Valor Process Preparation solution is a complete engineering solution for PCB assembly and test, including upfront critical DFA analysis, BOM validation, workflows for stencil design, SMT programming and line balancing, test and inspection engineering, documentation and work instructions, and box-build or hand-assembly operations.

Error-Free Manufacturing Process

Valor Process Preparation by Mentor Graphics provides manufacturers with everything they need to accurately and efficiently run the manufacturing process, while saving costs. The Valor Process Preparation module's unique approach creates a single, central database of all manufacturing process definitions (MPD) and engineering data, leveraging ODB++ and simple bill of materials (BOM) files. The true client-server application reduces work in process (WIP), increases overall equipment effectiveness (OEE), and ensures you can achieve a streamlined flow in your production process. SMT, THT, stencil design, hand work, box build, electrical test, and both optical and
X-ray inspections are all supported for maximal advantage. It is easily configured for your specific workflow, including data preparation, DFA analysis, documentation, SMT programming, test and inspection engineering, and stencil design—all in one seamless, cohesive solution.
Valor Process Preparation promotes an error-free manufacturing process, and it gives you the flexibility to move between machine vendors and different manufacturing sites and to optimize your SMT program, which is essential in today's manufacturing market.

Avoid Manufacturing Mistakes with a Single Engineering Tool

Valor Process Preparation provides a single environment for all stages of the manufacturing process, including assembly, test, and inspection.
Therefore, changes you make during these different stages, are updated into a centralized location, ensuring data in constantly up-to-date. This approach saves manual, error-prone updates, which can cause consistency and reliability issues through the manufacturing process.

Major Benefits

- Increase engineering efficiency by using a single tool for all process engineering tasks
- Eliminate redundant preparation work with Learning Libraries
- Increase documentation efficiency through automation and use of templates
- Maximize off-line preparation to eliminate on-line trial and error delays
- Preserve manufacturing know-how, including manufacturing best practices, libraries, and customer data preparation flows
- Increase product profitability by seamlessly moving production between lines and factories using PPF

A Single Data Model for All Processes and Vendors

Reduce manufacturing mistakes with a single data model that covers multiple processes and vendor platforms. Built-in error checking, learning library, and profiles for each design center helps you quickly and accurately create a complete data model of the PCB assembly, fully optimized for manufacturing.

It provides a hierarchical view of assemblies, including support for multiple instances.
Machine shapes can be generated on demand, and customizable workflows allow multiple people to share projects and track their status. All part numbers and attributes are placed in a central master part library that supports all manufacturing processes, test, and inspection, helping you achieve first-time success.

Optimized SMT Program Portability

A single centralized programming resource, along with a centralized part library for all SMT machines, helps avoid a machine specific library, which limits the manufacturer's work flexibility and efficiency. Part libraries can be created for each machine directly from the master parts library, and custom parameters can be created or modified to enhance part and shape data.

Native machine programs can also be imported and quickly converted into alternate machine formats, which can be optimized with Valor Process Preparation to quickly migrate production across vendors.

Product Portability

Having the flexibility to move products between different locations is a key requirement of a multi-site PCB manufacturer. Technically, this can be done by any manufacturer, but the challenge is to move that product efficiently and in an error-free process because line configurations are rarely identical. The result is that most PCB manufacturers start the NPI process from the beginning, increasing time-to-market and setup costs.
An intelligent PPF file allows you to share the full product model data, including PCB data and all related part and package data, for fast transition of products from one location to another. Once a product has been transferred to another location, that data can immediately be imported by the target-site process NPI team to generate new programs and documentations for the new manufacturing environment. Each site maintains its process data, stencil guidelines, assembly machines, inspection machines, test equipment, and work instructions. You can either switch from a single machine vendor across a company or between different vendors as needed (e.g., Juki to Panasonic, ASM to Panasonic, or for test equipment from Teradyne to Keysight).

Valor Parts Library (VPL)

The Valor Parts Library is ISO9001-certified, covering over 35 million part numbers. It is a centralized location of all accurate shape data, pin contact area, and component classification (JEDEC). A neutral assembly shape and specific machine shapes can be automatically derived from VPL to build an accurate and consistent virtual-prototype build, helping you achieve an error-free manufacturing process.

Preserve Knowledge for the Future

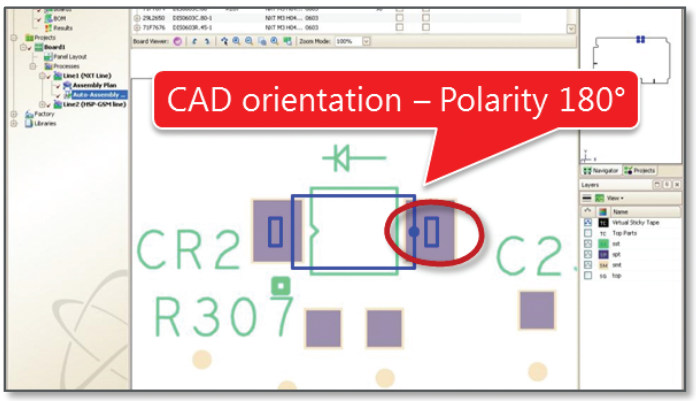
Valor Process Preparation seamlessly captures knowledge of manufacturing processes to maximize your efficiency now and into the future. Use an auto-generation mechanism to capture part and package data to maintain knowledge for other people, or to shorten future processes, such as switching manufacturing setups.

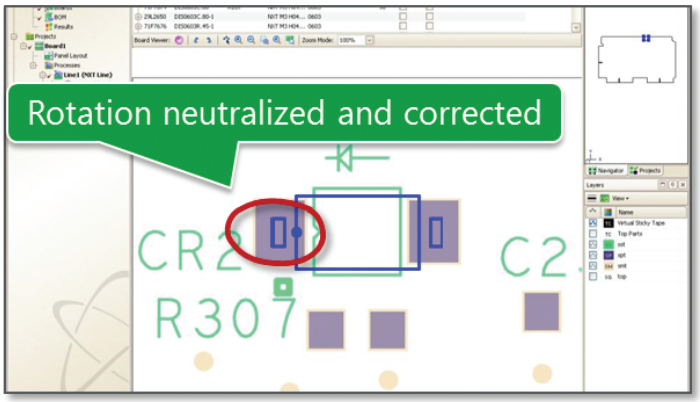
Capture experience in the manufacturing industry by creating neutral machine shapes. Managing a single vendor specific machine library forces the manufacturer to use that vendor's equipment. Managing your part data in a neutral manner allows you to convert between vendors according to different target formats as needed. This provides greater flexibility to the manufacturer, making it possible to select the most appropriate equipment given the location and needs.

Information and methods developed by specialists at a single occasion can later be used by any worker, using the advanced capabilities of Valor Process Preparation.

Increased Efficiency with Intelligent Line Utilization

Valor Process Preparation includes off-line simulation to show how individual machines will place each component, reducing the time taken to prove out a new program using virtual Sticky Tape. Also, intelligent analysis of the common part numbers across multiple boards maximizes the number of products that can be manufactured within the same setup, increasing your efficiency.





NPI Acceleration

PCB assembly lines today nearly always include multiple vendors once inspection and test stations are considered. Therefore, multiple applications are needed to prepare the CAD and CAM data for the respective machines, adding time and costs to your manufacturing process.

With Valor Process Preparation an automated test probe selection and positioning is based on available access to each electrical node, along with full reporting of placements, including reason codes for inaccessible points. Programs take into account the location of AOI/ AXI machines on the line and components that should be placed up to that point. All leading industry tester formats are supported.

It also includes a software development kit (SDK) to create custom scripts needed to further accelerate the NPI phase.

Process Documentation Guidelines Template

Dramatically simplify creation of documentation using a template for an easy and efficient documentation process. The tight integration with the BOM makes sure every change in the design is automatically updated in the document, preventing consistency issues. Built-in and custom-defined templates for static and interactive documentation are available, and they can include any design, product model, SMT, test, or other production information. You can also embed images and files into your documentations, making sure all information is preserved and clear.

Set and Maintain DFT Guidelines

Use the library information you have on components, board, materials, etc. to create an output that can be used for electrical testing in a few simple mouse-clicks.

Use the test plans to capture the DFT guidelines for future test engineers to use. DFT analysis in Valor Process Preparation includes identification of high-risk areas and provides feedback on inaccessible points, preventing issues later in the process. A graphical user interface enables adjustments to be made quickly and easily, without having to locate specific ASCII files that control comparable capability.

Valor Process Preparation also has the ability to import schematic files and to cross-probe between schematic, layout and the BOM file. This could be extremely useful when performing an electrical testing, for example, when trying to identify specific nets.

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