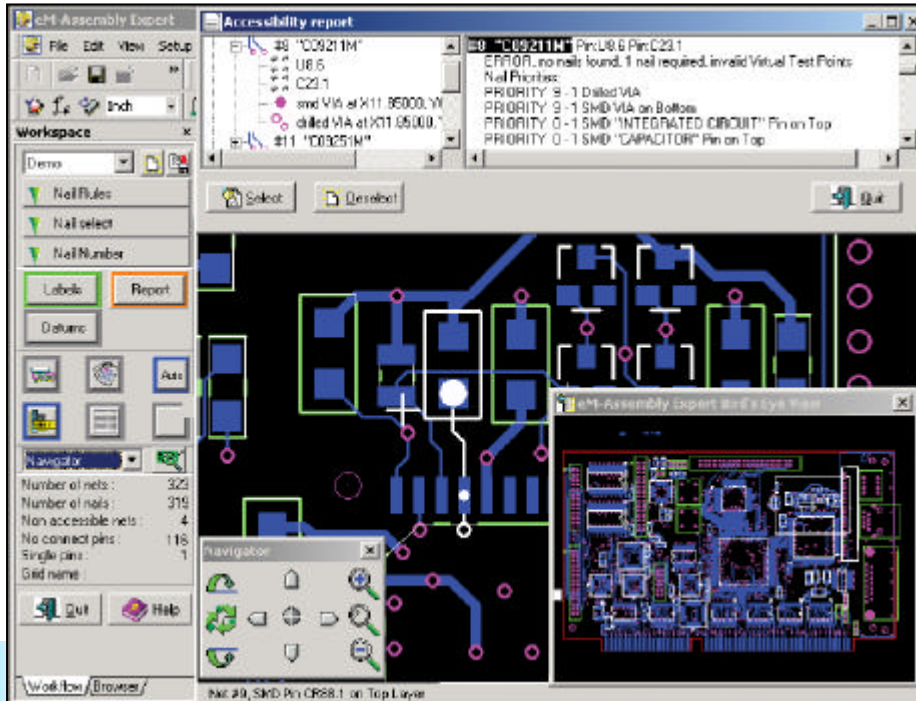




**Tecnomatix**  
Realizing Your Manufacturing Vision

## eM-Test Expert

From Design to Test & Inspection in Minutes, not Days



eM-Test Expert is a component of eM-Assembly Expert that increases productivity and performance by optimizing test and inspection processes. This Tecnomatix Unicam solution is an upgrade to the company's renowned FABmaster solution, proven in the electronics industry's most demanding manufacturing environments for over a decade.

eM-Assembly Expert delivers tools to optimize manufacturing processes, including assembly, test, part library management and production documentation to reduce production costs and provide competitive advantages.

### Key Business Values

Increased productivity & performance in test & inspection

- Supporting automated test program creation for more than 75 in-circuit test (ICT), flying probe, X-ray and AOI test equipment and systems
- Customers report gains of up to 20X in test fixture design and setup
- CAD/BOM recovery and documentation control is up to 60X faster
- All customers report significant gains in managing & reducing fixture costs

Worldwide deployment & support

- Over 3000 seats at 800+ sites in 30+ countries
- The de-facto industry standard
- The Best Technical Support, Training and Services worldwide

Improved quality in test & inspection

- Verifies Design for Testability (DFT) rules before fabrication
- Simplified and guided processes eliminate errors

### Full Test Capabilities

eM-Test Expert is a fully integrated solution that empowers electronics manufacturers to go from design to test and inspection in a matter of minutes or hours rather than days or weeks.

With its fast user programmable nail/probe selection routine and complementary interactive tools, eM-Test Expert offers complete flexibility and control during fixture design and flying probe selection. eM-Test Expert eases access on dense boards with a global probe offset tool. A nail advisor evaluates fixture cost. Automatic calibration box generation and interactive definition speed calibration box placement for optical inspection applications. eM-Test Expert reduces cycle times on variants of a same board by managing attributes needed for test and inspection such as device types, values and tolerances, and package and pad sizes/shapes. eM-Test Expert automatically generates recipes for more than 75 ICT, flying probe testers, X-ray and AOI machines.

### Process Oriented Flowchart guides the Automated Process

The flowchart contains all of the steps in the test/inspection process, guiding the user from CAD and BOM input, through probe selection and fixture design, to program generation. This ensures that the same, tested procedures will be used repeatedly to reduce errors.

### Project Manager

eM-Test Expert splits the project in a hierarchical way: project, product (family) and job (revision). After selecting the purpose of the project (eg. Design for testability, full test or inspection) and specifying an in-house or custom library, eM-Test Expert graphically displays the differences between the revisions of a product.



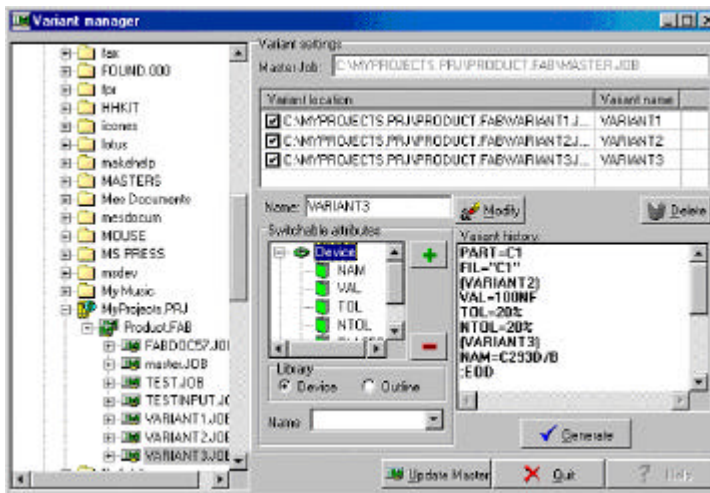
# eM-Test Expert

## Global Probe Offset

The Global Probe Offset tool is a major timesaving innovation for increasing flying probe test access on dense boards. For instance, when recovering SMD packages, you can define an offset attribute to deviate the probe location by a percentage. This will ensure that the probe points to the pad rather than the pin of the component.

## Variant Manager

This new feature makes it easy to use the same fixture for many variants (or versions) of one board. For a minor revision of an existing board, eM-Test Expert will define the changes needed for an existing test fixture. When used before a family of boards is produced, eM-Test Expert will automatically generate a universal fixture design that can be used to test all product variants within that family. eM-Test Expert can also display the differences between the variants and specify which attributes are relevant to each variant.



## Library Checker

eM-Test Expert streamlines data entry by allowing users to check and correct essential missing part attributes listed in the BOM. Defined, optional and mandatory part attributes (electrical and physical units) are color-coded once the machine has been selected, streamlining part data entry.

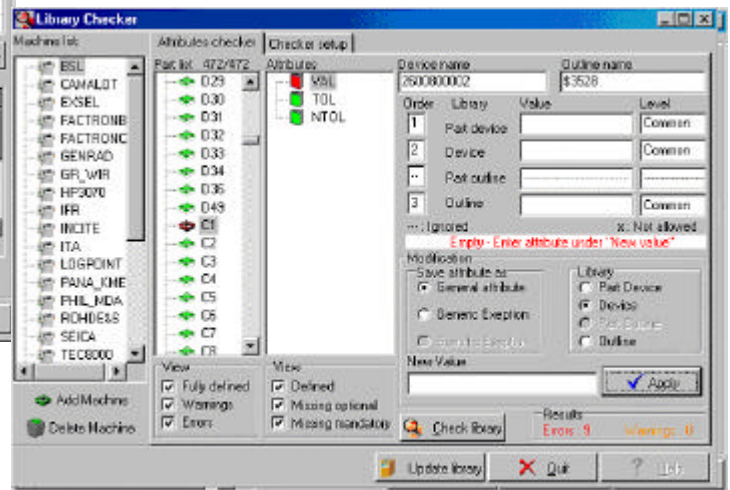
## Library Editor

The Library Editor is used to add and modify attributes for individual or selected electrical devices, physical outlines and parts. For example, spurious access problems can be eliminated by using a graphics editor to correct polygonal body limits and to fine tune the global probe offset on SMD lands or stagger them on connectors. Also, complex devices can be split into simple equivalents to avoid the unnecessary creation of test models.

## Probe Selection/Fixture Design

User programmable profiles contain rules for automatic nail/probe selection on in circuit and flying probe testers, making it easy for test engineers to select probes and design fixtures for single or panelized boards in accordance with in-house standards. Some of the rules include:

- Priorities (for device classes, individual parts, part pins, vias) number of probes per net
- Assignment of a net to a specified tester channel or bank
- Use of test point numbering defined in CAD
- Forcing of probes onto all or selected pins of a given device or part such as ASICs or PALs
- Probing unused pins
- Nail/probe sizes such as 100 mil, 75 mil and 50 mil and shapes like chisel, crown, tulip and spear
- Minimum clearance between probes of the same and different sizes
- Minimum probe to part body clearance
- Minimum probe to board edge clearance
- Relative priority of different probe sizes (typically the larger the probe, the higher the priority in order to maximize contact and minimize fixture cost)
- Tester channel limit
- Wire/multi-point selection



## Board Accessibility Report

eM-Test Expert's recovery of the full CAD data allows probes to be selected and the fixture designed before a single bare board has been manufactured. eM-Test Expert generates a complete, easy to follow Accessibility Report that can be fed back to Design if modifications are required. The report states if no or not enough nail/probe locations were found on each net and indicates why. Examples include: nodes on the net were inaccessible due to solder mask; there are insufficient probe/probe or probe/part body or probe/board edge clearances; the tester channel limit has been exceeded.

# eM-Test Expert

## Graphics Links and Search Engines

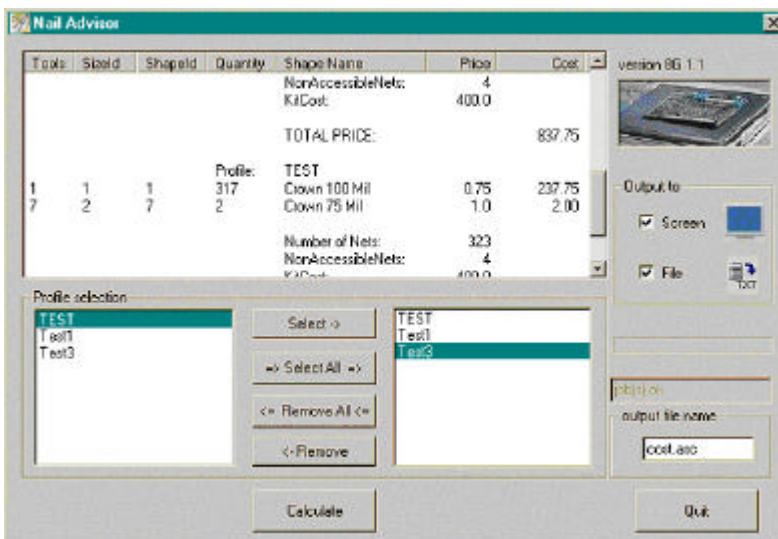
An automatic link between the Accessibility Report and the CAD graphics makes it easy to view problem nets and decide on corrective action. Search engines for parts, nails, nail shapes, nets and pins facilitate the checking of nail/probe selections.

## Interactive Nail/Probe Editor

When there are special requirements, an interactive editor can be used to add, move and delete nails/probes. An automatic checking routine can be enabled to verify that changes made using the editor conform to the rules in the current test profile. Any nails/probes that do not conform to the rules are flagged graphically.

## Nail Advisor

eM-Test Expert allows the user to easily calculate fixture costs by using different sets of design rules. This will help the fixture designer to select the most cost-effective set of rules that take into account the price per nail shape and size, test coverage, and therefore the cost of the kit.



## Fixture Update

When a design is modified, the fixture update routine saves time and money by making it easy to modify the fixture to take changes into account.

## Fixture Documentation

After fixture design, eM-Test Expert generates a complete set of documentation (listings, check plots and drill files).

## Full Range of Test and Inspection Outputs

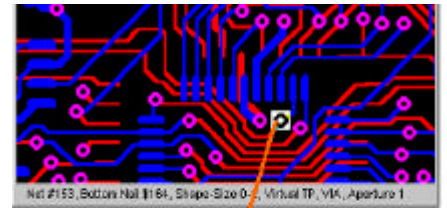
eM-Test Expert supports over 75 test and inspection systems.

## Schematic Viewer

Schematic diagrams are recovered in HP-GL format for use during repair and diagnostics applications.

## Nail Retro-Annotation

eM-Test Expert graphically displays nails on the PCB layout, and allows you to annotate nails back to the schematic. This is helpful for repair because it will allow cross-probing of nails between the PCB layout and the schematic viewer.



## eM-View Expert for Test

Using the eM-View Expert for Test software, electronics manufacturing personnel and customers of electronics manufacturers can view boards in production. In particular, customers can check that board design data has been correctly received and processed by the manufacturer before boards go into production. Customers can search the Database for parts, nets and nails.

Visit [www.tecnomatix.com](http://www.tecnomatix.com), or ask for our eM-View Expert for Test data sheet for more information.

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