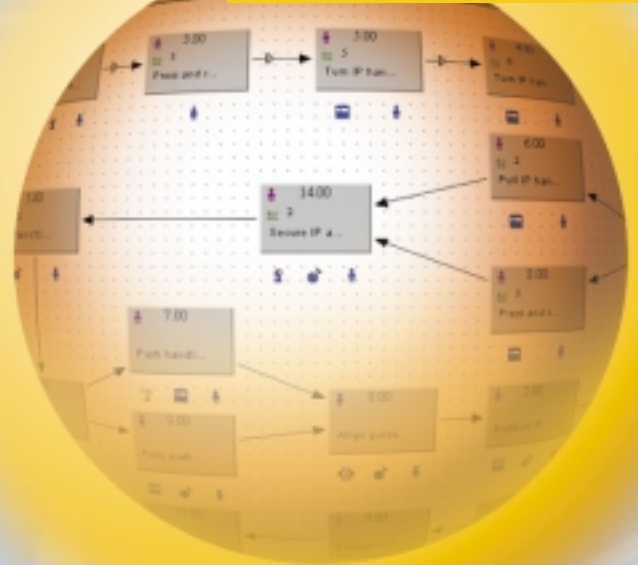


Tecnomatix

Realizing Your Manufacturing Vision



eMPower for Quality



Manufacturing Process Management Solutions

Delivering speed, flexibility and quality throughout the extended enterprise.

eMPower for Quality and Manufacturing Process Management

As the demand to bring quality products to market faster and at lower costs grows stronger for manufacturers around the world, the management of dimensional quality information becomes more and more critical. eMPower for Quality solutions help manufacturers define, analyze, measure, and control dimensional quality information across the enterprise, and implement SixSigma processes.

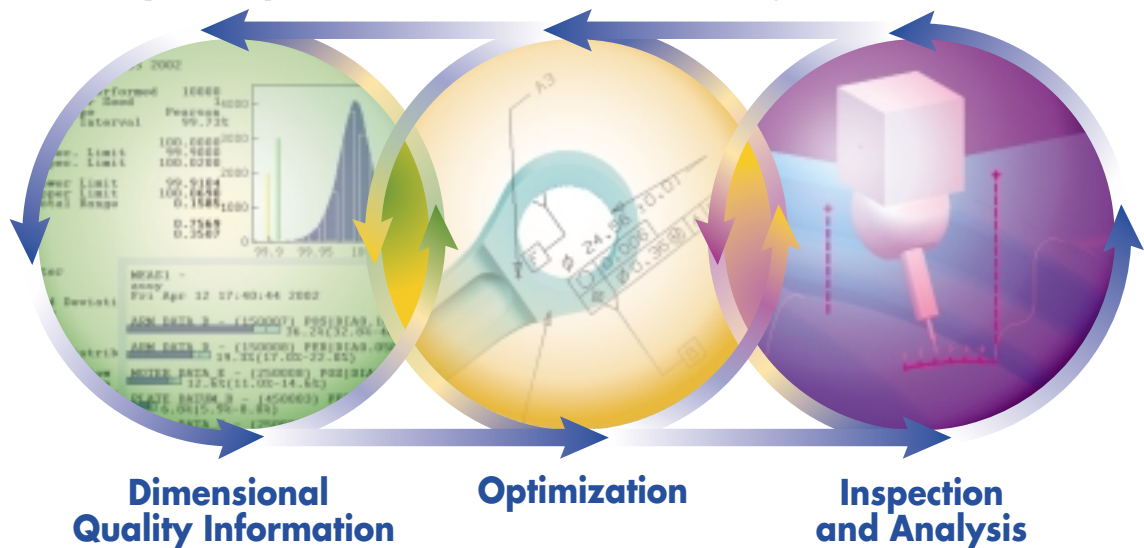
The eMPower suite from Tecnomatix is the leading Manufacturing Process Management (MPM) solution for the collaborative development and management of manufacturing processes throughout the extended enterprise. eMPower enables global manufacturers to build the best production strategies to succeed in their increasingly complex environments.

Advanced technology for enhanced quality and competitiveness

eMPower for Quality manages dimensional quality information from design through production and back again. It enables strong improvements in product quality and competitiveness by supporting the seamless sharing of knowledge and information for improved production at reduced cost. Using open-platform technology, eMPower for Quality integrates and manages dimensional quality data defined in the design stage with inspection data collected on the shop floor. Through secure Web technology, it makes this information available to all collaborating departments, any-time, any-where. Feedback through this closed-loop fosters closer and more productive working coordination between design and production.

eMPower for Quality fully supports Geometrical Dimensions & Tolerancing (GD&T), as well as Dimensional Tolerances (DT). GD&T accurately and unambiguously defines shapes, form, fit and function, which can significantly reduce production and inspection costs as well as provide valuable, production-based know-how for the design process.

eMPower for Quality A Key Component in the Manufacturing IT Environment



eMPower for Quality manages dimensional quality information for the design and production processes. The closed feedback loop enables tolerances and assembly methods to be optimized at the design level, and streamlines inspection on the shop floor. The closer working relationship between design and production reduces product cost and improves competitiveness.

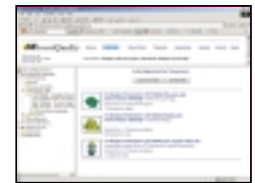
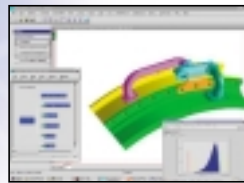
eMPower for Quality — Improving product quality, reducing production costs and increasing enterprise competitiveness.

Design

Shop-Floor

Collaboration

eMServer



eMPower for Quality solutions can be completely integrated into 3D CAD, seamlessly sharing dimensional quality information among design and production. Through secure Web technology, tolerance information and inspection data can be verified against defined parameters. The feedback loop also enables design to incorporate what they learn from actual production experience.

eMPower™

eMPower for Quality solutions enhance enterprise competitiveness by:

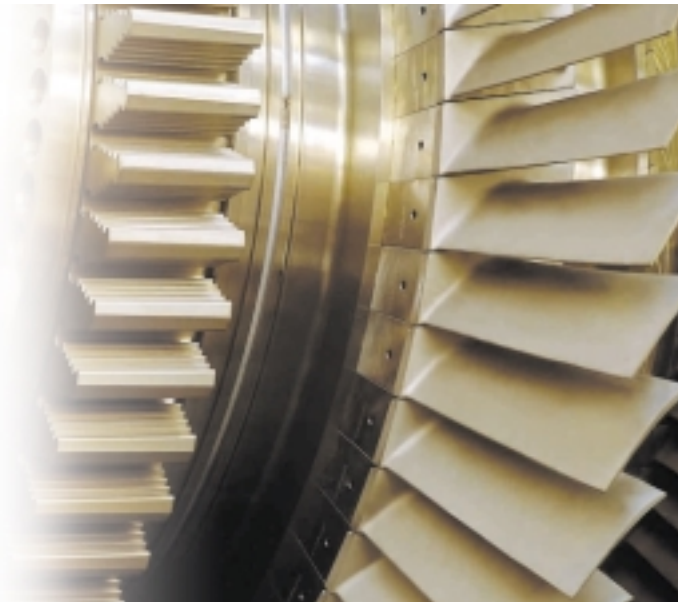
- Improving the quality of processes and products
- Implementing, monitoring, and improving Six Sigma programs
- Reducing variability in the assembly process
- Implementing and transferring best practices and standardizing quality
- Identifying causes of scraps and reworking
- Communicating quality information across the extended enterprise
- Ensuring that manufacturing processes conform to design intent

“Mazda Digital Innovation represents a corporate initiative to shorten product development life cycles, reduce R&D hours, cut development costs and decrease facility investment, while improving product quality. Tecnomatix MPM solutions are an integral part of this initiative.”

Yoshimi Okada
Senior Staff Manager
Information Systems Division
Mazda

eMPower for Quality

eMPower for Quality is the solution for defining, analyzing, measuring and controlling dimensional quality information across the extended enterprise. eMPower for Quality enables you to implement Six Sigma initiatives and lean manufacturing processes that continuously improve the dimensional quality of your products at lower cost and in less time. Through every phase of the industrial process, eMPower for Quality minimizes manufacturing variations, reduces engineering changes, cuts reworking and helps manufacturing and assembly to be in line with design intent.



Product and Process Design

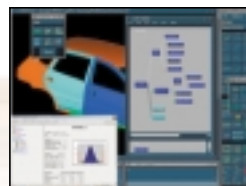
eMPower for Quality allows 3D tolerance variation analysis of complex assemblies, considering the combined effect of tolerances and assembly methods. The system identifies critical features and ranks them by their percentage of contribution, allowing you immediate problem correction. You can conduct comparative "what-if" studies and optimize tolerance and assembly methods, eliminating costly trial-and-error studies on the shop floor.

eMPower for Quality allows you to define 3D features and tolerances (dimensional and geometrical) within your CAD system and to check these tolerances against international standards such as ISO, and, ANSI/ASME.

The end-to-end eMPower for Quality



eMServer – Supports the sharing of quality information throughout the process



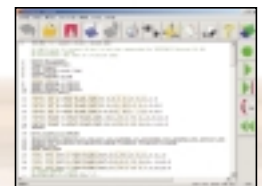
Variation Analysis

Optimize tolerances and analyze different options to define the best assembly sequence and operation.



Quality Planning

Define the off-line inspection strategy for CMM and NC machines on top of the original CAD model.



Execution and Data Collection

Drive the measurement device (CMM or NC machine tool) and collect the data.

■ eMPower for Quality—enhancing enterprise competitiveness by:

- Reducing Engineering Change Notices by 30%
- Reducing assembly tooling cost by 30-40%
- Accelerating off-line programming time by up to 75%
- Increasing production quality sigma level by 60%
- Decreasing cost of quality by 45%
- Minimizing your investment in hard gauges
- Reducing time for complex surface analysis by up to 70%
- Reducing buyoff time by up to 60%

eMPower for Quality on the Shop Floor

eMPower for Quality Shop-Floor applications enable off-line creation, optimization and verification of inspection programs for CMM and NC machines. Embedded in the CAD master model, the system enables you to analyze inspected data from any standard measurement machine, and compare this data to specified design tolerances and the CAD model. You can inspect and analyze partially machined parts, calculate and adjust fixture offsets or tool lengths, and optimize the remaining NC machining passes. eMPower for Quality also drives NC machine tools from a DMIS program.

Web-based tools allow access to inspection data, work instructions, programs and analysis from a central repository system. The applications allow users in any

plant to execute CMM and NC inspection programs, analyze inspection data, verify the production process and analyze shop-floor data via the Internet.

Efficient Production Monitoring

eMPower for Quality solutions bring easy and fast access to quality dimensional data, facilitating effective collaboration both inside the extended enterprise and among the supplier community. A unique and powerful analysis tool quickly identifies discrepancies between the “designed” model and the “built” model. Causes of “out-of-tolerance” can be evaluated and promptly applied to a reworking using the correct positioning of the part.

The system enables you to carry out a consistent, accurate analysis from any standard inspection machine.

eMPower for Quality offers both CAD embedded and Web-based applications for production monitoring:

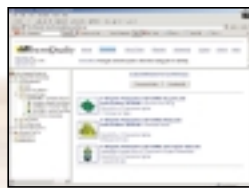
- The CAD-embedded application allows users to map results against the CAD model, providing a quick way to identify out-of-tolerances.
- The Web-based application allows graphical analysis of inspected data, using a simple Web interface, so that you can retrieve results from inspection and graphically plot them against a 3D geometry representation. Point and historical data can be analyzed during the buy-off of an article, prototyping, or mass production. Quality data can be quickly accessed and shared by everybody inside and outside the organization.

Process



Measured Data Analysis

Analyze measured data and compare them to the original CAD model. Perform root-cause analysis if part fails initial inspection.



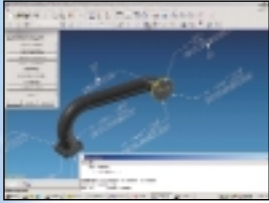
Web Access and Distribution

Retrieve and execute job inspection, analyze results and distribute them over the Web.

“eMPower will contribute significantly to a collaborative workflow across the entire process planning chain. We are aiming to further reduce time-to-market while increasing planning and production quality as a result of our eMPower implementation. We anticipate this will help to reduce the total project costs.”

Dr. Frank Mantwill
Head of Methods
Planning/Design Body Shop
Audi AG

eMPower for Quality Solutions



eM-Gauge

eM-Gauge enables the definition, measurement and analysis of features and tolerances in a CAD model. It provides a 3D electronic representation of tolerances known as a “softgauge”, to validate that tolerances conform to standards.

eM-TolMate

eM-TolMate enables you to calculate variability of the critical-to-quality characteristics of the product, by simulating the assembly. Calculation of the product variability along with a ‘root-cause’ analysis allows user to optimize the product and process.

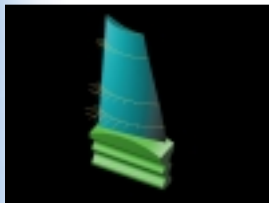
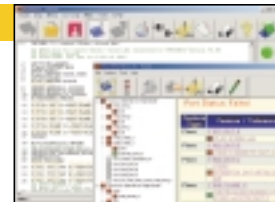


eM-Probe CAD

eM-Probe CAD enables you to generate complete, verifiable CAD-based machine inspection programs for CMMs and NC machine tools quickly and accurately without prior programming knowledge. It virtually eliminates trial and error in the programming of inspection machines.

eM-Inspector

eM-Inspector enables the inspection and analysis of parts on the shop floor. It supports over 30 CMMs and NC machine tools, performs online modification of inspection processes, and reviews analysis results of measured features in real time.

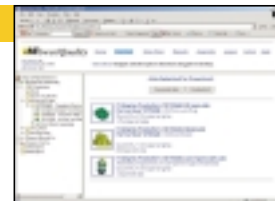


eM-Qualify

eM-Qualify enables the analysis and evaluation of measured data against nominal models, and provides consistent mathematical and graphical data to perform best-fit analysis and the verification of possible causes of failure.

eM-Measure

eM-Measure allows access to inspection jobs and work instructions residing in a central repository system using a neutral Web interface and standard Web Browser. You can execute CMM and NC programs directly from the Web tool, analyze inspection results and save the information in the system’s repository to be accessed by colleagues at other facilities.

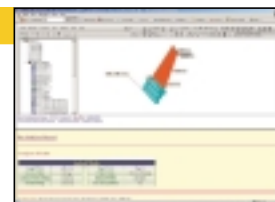


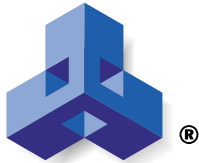
eM-Viewer

eM-Viewer enables visualization of inspection data using standard web browsers. users share a common way to view inspection results and verify production processes from the shop floor and from different plants and suppliers.

eM-Insight

eM-Insight, using standard Web browsers, lets users view inspection data and perform sophisticated mathematical analysis to identify possible causes of failure.





Tecnomatix

Realizing Your Manufacturing Vision

Tecnomatix Technologies, Ltd.

Tecnomatix Technologies, Ltd., (NASDAQ: TCNO) is the driving force in Manufacturing Process Management (MPM) solutions. Today's leading global manufacturers are adopting MPM strategies to expand revenue potential and reduce costs by enhancing manufacturing's ability to support their business strategy of choice. These companies are using Tecnomatix eMPower MPM solutions to accelerate product introductions, shorten time to volume, and optimize production execution. eMPower enables our customers to succeed with its collaborative, open platform and applications for defining, simulating, managing, and executing manufacturing processes across the extended enterprise.

For additional information about why automotive, electronics, aerospace and other discrete manufacturing leaders—such as BMW, Ford, GM, Mazda, Comau, Faurecia, Sanmina-SCI, Solectron, Nortel, Philips, Boeing, Airbus, GE Aircraft Engines, and Lockheed Martin—have been turning to Tecnomatix MPM solutions, visit www.tecnomatix.com

Selected Customers

AUTOMOTIVE:

AUDI, BMW, DAIMLERCHRYSLER, FIAT, FORD,
GENERAL MOTORS, HYUNDAI, MAZDA,
MITSUBISHI MOTORS, NISSAN, PSA, RENAULT,
TOYOTA, SAAB, VOLKSWAGEN, VOLVO

AUTOMOTIVE SUPPLIERS:

ABB ROBOTICS, ANTOLIN, COMAU, DCT, DELPHI EDAG,
FAURECIA, DENSO, HUTCHINSON, ISRINGHAUSEN,
J.S. MCNAMARA, KUKA, MSX, NACHI, PHOENIX,
REIS, VISTEON, YASKAWA, YAZAKI

ELECTRONICS:

ALCATEL, BOSCH, CANON, CELESTICA, ERICSSON,
FUJI, INTEL, LUCENT, MIELE, MOTOROLA, NOKIA,
PHILIPS, SCHNEIDER, SCI, SGI, SIEMENS,
THOMSON, TOSHIBA, UNIVERSAL

AEROSPACE:

AEROSPATIALE, BOEING, BRITISH AEROSPACE,
DASA, EADS, FIAT AVIO, GENERAL ELECTRIC, LEARJET,
LOCKHEED MARTIN, MCDONNELL DOUGLAS,
MITSUBISHI, PRATT & WHITNEY