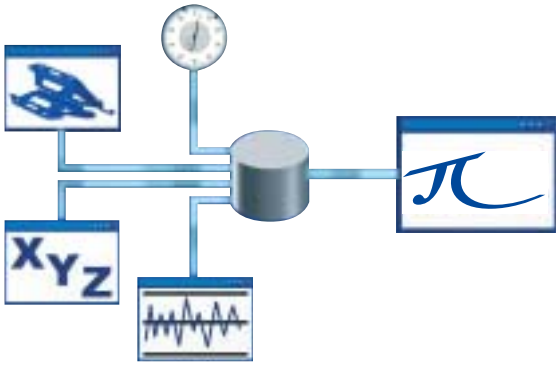
πWEB™ Realtime Process Control



- **Analyze**
- **Evaluate**
- **Graphic processing**

ZEISS

We make it visible.

Analysis, evaluation, graphic processing.

πWEB™ – the global quality data management system.

In the automotive industry and also in the investment goods and consumer goods industries, products are no longer manufactured in a central location. High costs and time constraints for both manufacturers and suppliers can only be offset by a decentralized production network.

The result: Large quantities of quality and process data that must be analyzed and evaluated. Without this process, considerable gaps in the quality assurance process are very likely and it can turn into a costly process. With the new πWeb web-based quality data management system – the π stands for process – Carl Zeiss has created a modular software solution that is precisely tailored to meet the demands of a global market.

Discover the true potential of your measurement data!

... without πWEB™

- Every manufacturer or supplier works with their own system.
- The quality data management systems are not compatible: it is not possible to exchange data.
- Redundant data is unavoidable.
- Potential sources of errors in current production are often only partially detected or noticed too late.

πWeb consists of four basic modules that are open for the integration of other data sources and can also be integrated into existing system environments.

Reporter | **Monitor** | **Planner** | **Mobile**

... with πWEB™

- "Real-time Process Control" from **πWeb** minimizes the time between measurement data acquisition and process evaluation.
- **πWeb** processes all types of quality and process data.
- Thanks to central data management with **πWeb**, for the first time it is possible to perform comprehensive real-time evaluations of all data from around the globe.
- Aided by state-of-the-art web service interfaces, **πWeb** permits global access to all quality and process data.
- Quality data can be uniformly evaluated regardless of the production site.
- Reports are not equipment-specific, but product-specific.
- Potential sources of errors or existing irregularities are recognized in current production within seconds. Production tolerances can be efficiently utilized.
- **πWeb** can be easily integrated into existing portals and evaluation programs. It is also possible to integrate other applications and components into **πWeb**.

What is πWEB™ ?

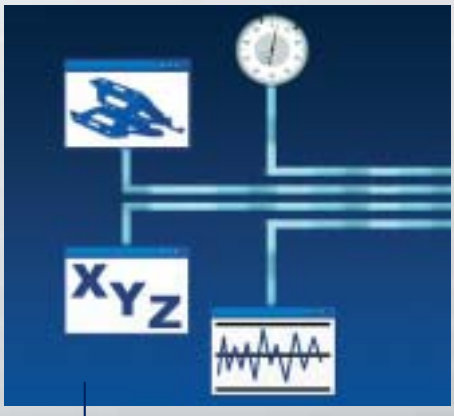
πWeb is a quality data management system that analyzes, evaluates and graphically displays all types of quality and process data

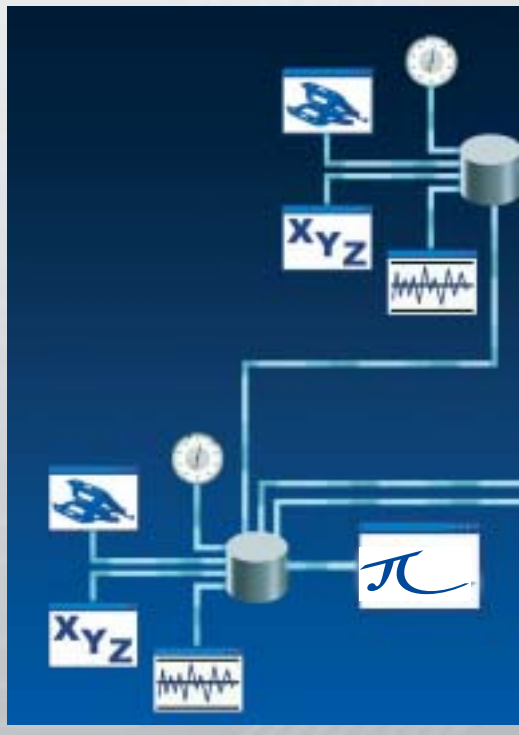
- in real time
- around the globe

Decentralized data acquisition – central quality management.

πWEB™ – here's how it works.

❶ **Decentralized production**
Large amounts of quality and process data are generated at various locations around the globe. Because πWeb was designed as a web-based system, all data can be collected via a simple Internet connection.





❷ **Data acquisition**
πWeb is open for all types of quality and process data. Values ranging from simple manual gages, coordinate values, roughness, colors or prints – regardless of the source, all data can be recorded online.

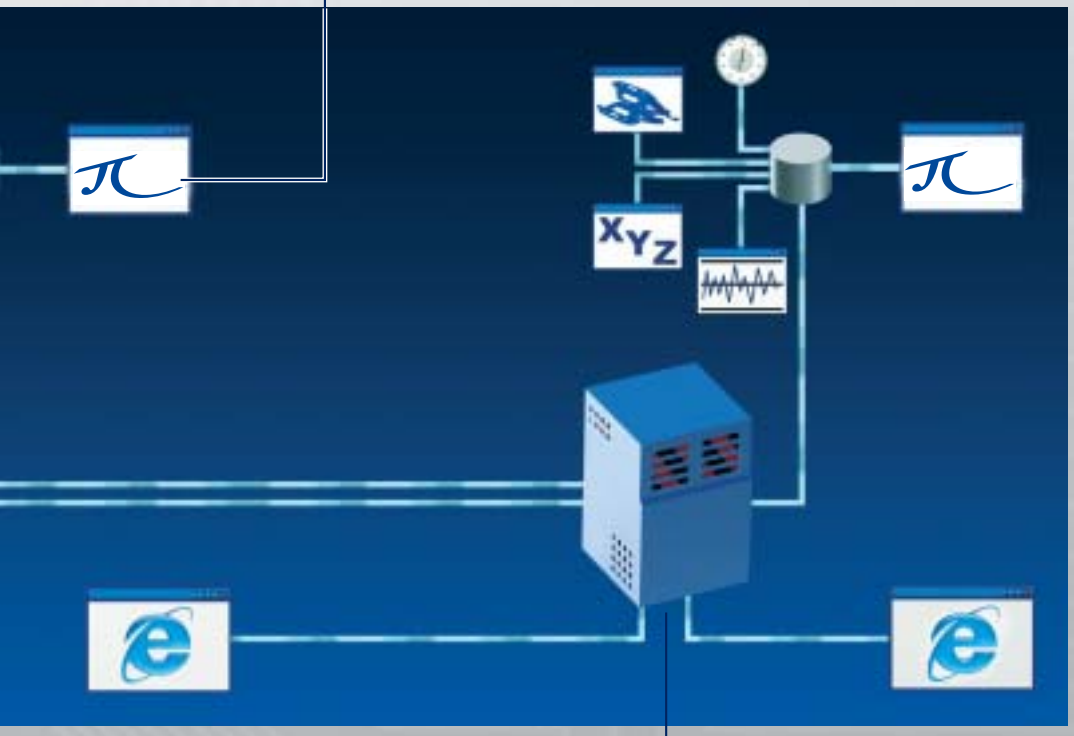
❸ **Storage and classification**
The database contains not only measurement values, but all measurement plans as well. All values are then automatically allocated to the correct measurement plan.

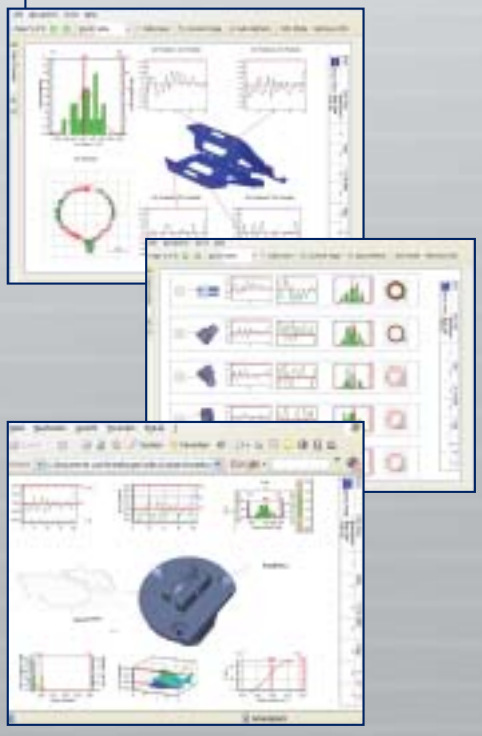
❹ **Local evaluation**

Process and quality data is recorded locally at all production sites and made available for central or local evaluation.

❻ **Realtime Process Control**

All data is calculated "on the fly," and thus evaluated in real-time. You can monitor the quality data from your running processes live from any location.





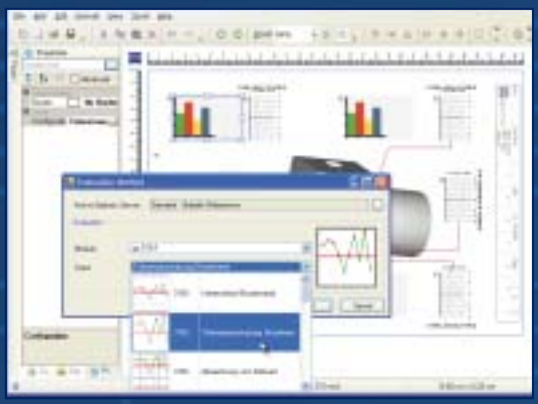
❺ **Central linking**

Data from various locations can be gathered in the central πWeb server for joint evaluations. In this process, other applications, such as QS-STAT, can be integrated into the evaluation.

Quality management customized.

πWEB™ Reporter – simple report design.

Reporting systems have already been in use in decentralized production for some years now. But can traditional systems also meet the production requirements of the global market? Often, the difficulties already start with the integration into existing software, or with the incorporation of existing applications into the reporting framework.

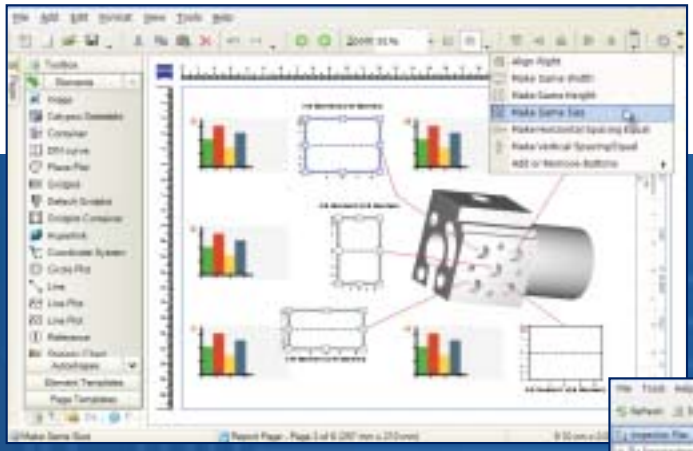


This is precisely why Carl Zeiss development engineers have created πWeb – a quality management system that can be variably adapted to the specific needs of any production site. One of its basic components is the πWeb Reporter that is used to create and maintain graphic evaluations.

Thanks to the intuitive user interface, users can produce reports simply and efficiently without having to attend special training courses. Company-specific templates and designs can be easily integrated into the interface. For further statistical evaluation, the functions of the QS-STAT statistics server are available at any time. Reports are not limited to the database of the respective site, but can also be created for many locations via a global network of different databases.

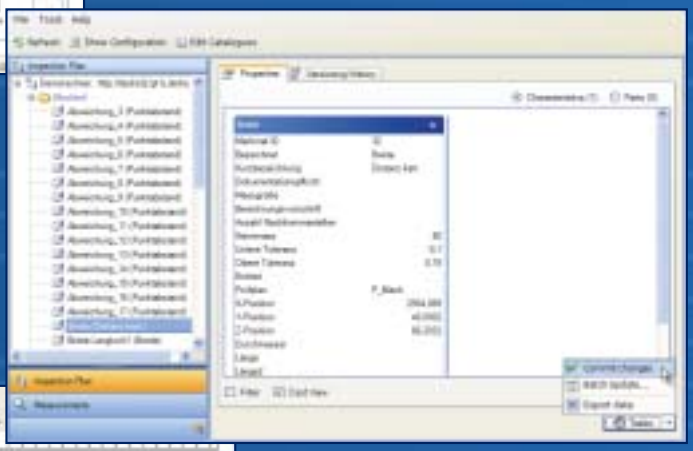
What can the πWEB™ Reporter do?

- Automatic generation of informative reports
- Seamless integration into the intranet
- Integration of QS-STAT for statistical quantities and evaluations
- Additional reporting capabilities



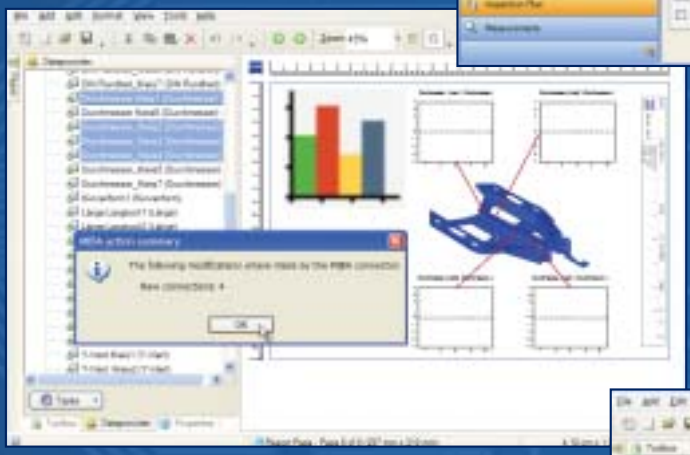
Simple report design

Easy and efficient generation of reports thanks to intuitive interface.



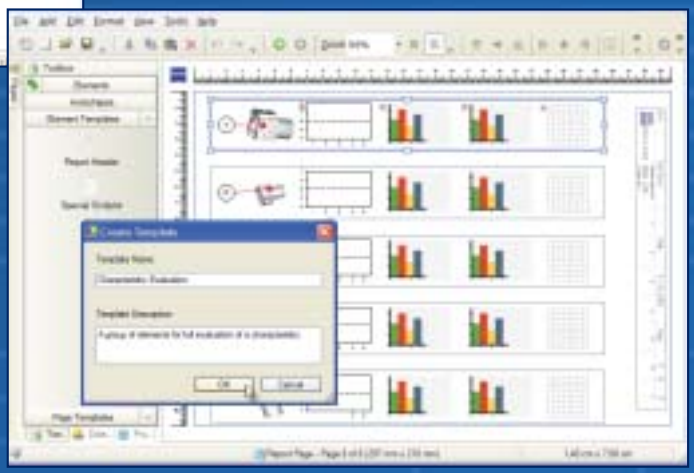
Maintenance

Little maintenance is required with the central measurement plan management. Automatic updating of all reports.



Evaluation plots

Automatic linking of the evaluation plots with the real position in the workpiece image.

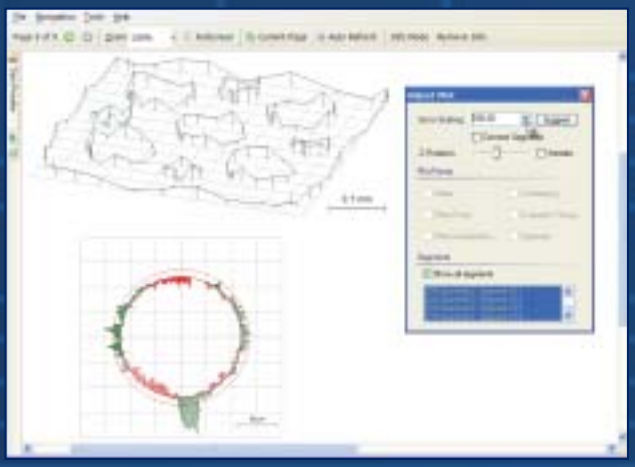


Templates

Storage of all elements and pages as templates. Retrieval with just one click.

Quality assurance live.

πWEB™ Monitor – Real-time Process Monitoring.



❶ **Interactive form plots:**
The zoomable vector graphics make detailed evaluations possible:

❷ **Convenient selection:**
Individual details of the measured components can be easily and conveniently selected and visualized. Each measuring result can be individually adapted and displayed accordingly.

Quality assurance should take place directly in the production area. In the past, displaying quality data directly at the individual process stations was seen as a vision for the future. πWeb turns this vision into reality.

The **πWeb Monitor** makes it all possible: for the first time ever, all process relevant data can be displayed directly on large monitors in the production area. All data is calculated "on the fly" and displayed in real time. This provides all production personnel with an overview of the quality level currently being received in production. In this way, potential sources of error are recognized exactly where they occur and can frequently be immediately eliminated.

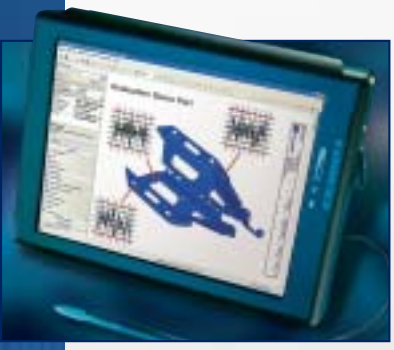
What can the πWEB™ Monitor do?

- **Process monitoring:**
  All quality data can be displayed live at the production line.
- **Real time display:**
  All measuring data is calculated "on the fly" and displayed in real time.
- **Quality assurance on site:**
  πWeb Monitor allows quality assurance directly in the production area.

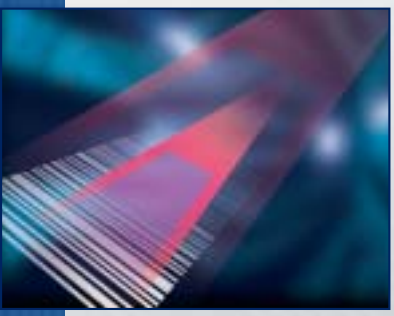
Flawless documentation.

πWEB™ Planner – reliable measurement planning.

Version management:
Management of measurement plans including version management



πWEB™ Mobile:
πWeb Mobile allows quality data to be transferred to portable instruments such as PDA or Tablet PC.



Barcode reader:
With the barcode reader, even the targeted selection of workpieces or measuring results is no problem.

Alerts:
If certain intervention limits are exceeded, πWeb Mobile permits sending of alerts via SMS or email.

In times of ever shorter innovation cycles, repeated changes to measurement plans are part of the daily manufacturing process. Often, these are merely minor feature changes – nevertheless, they must be traceable at all times. Flawless documentation of these ongoing changes is one of the central tasks of any reporting system.

The **πWeb Planner** was specially developed for reliable measurement planning. Here, all features and feature changes are documented and managed. Unlike other reporting systems, the **πWeb Planner** features effective version management which documents the entire change history. At the same time, the **πWeb Planner** serves as an interface to higher-ranking systems such as SAP.

What can the πWEB™ Planner do?

- Create and manage measurement plans
- Track and document changes to measurement plans
- Import measurement plans from other systems such as QS-STAT, DaimlerChrysler, Catia and SAP

Economical, fast, global.

Real time process control with πWEB™.

Every manufacturer must have reports that verify and substantiate the quality of their product. In the automotive industry, for example, 3000 to 4000 features are expected per production center. This equates to about 1400 reports. If we ignore the actual production of the reports and take only their maintenance into consideration, it soon becomes obvious how much maintenance reporting systems require and how prone they are to error.

πWeb eliminates the time and costs required for these procedures from the outset: the quality data management system updates all changes from the database automatically. In the above example, this single function alone would save more than one year in production startup.

In addition to considerable cost reductions, **πWeb** enables substantial process and quality enhancement. Since the production process can be monitored globally in real time, there is a clear reduction in reaction times. The result: the process becomes more stable. This also allows the full utilization of production tolerances.

Since **πWeb** operates on the basis of industrial standards and cutting edge technology, this reporting system offers a future-proof alternative to traditional systems. **πWeb** was not designed as a closed system, but is open for the integration of other data sources and can also be integrated into existing systems at the same time. If the system environment changes, **πWeb** can be re-customized at any time.

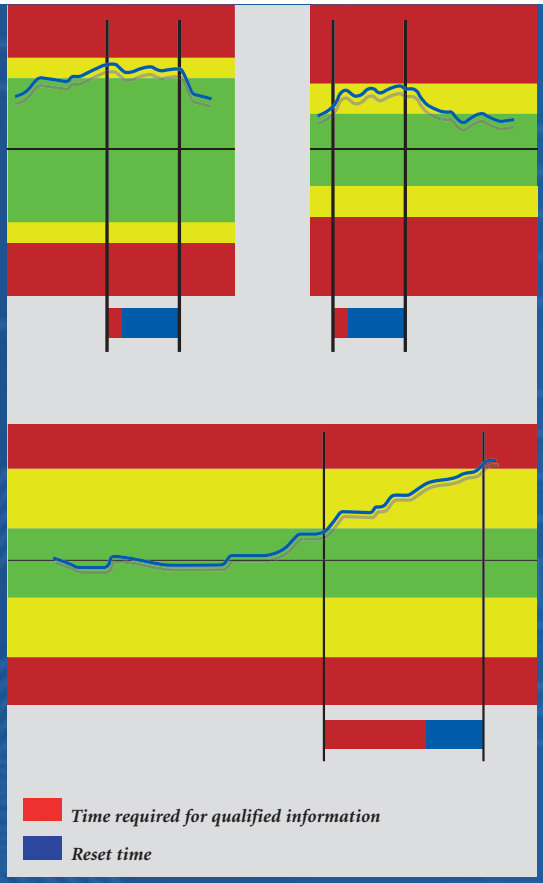
πWeb is easily scalable and can therefore be tailored to the size of the respective site and the special requirements of every customer.

Sample calculation from automotive manufacturing: savings in production startup for car bodies

Traditional report creation		**Report creation with πWeb**	
Average no. of measuring sheets	1400	Average no. of measuring sheets	1400
Between 1 and 8 hours are required for the creation of one measuring sheet		**A maximum of one hour** is required for the creation of one measuring sheet	
Total time needed for the creation of all measuring sheets	6300	Total time needed for the creation of all measuring sheets	1400
in years	**3.9**	**in years**	**0.9**

- Savings potential of over 3 years for report creation in production startup
- The sample calculation does not include the maintenance required for updating and error elimination
- Savings potential of one further year possible

πWEB™ Real Time Process Control



To ensure that interface problems are prevented from the start, Carl Zeiss has created **πWeb** as a complete package: process management, local data capture and integration, visualization and central evaluation, global service and support – all from a single source.

Thanks to **πWeb**, networking with the quality and process data of the supplier industry is easy: with **πWeb**, integration into the Digital Factory becomes reality.

With πWeb:
Prompt error detection – full utilization of production tolerances

As **πWeb** evaluates data in real time, process irregularities can generally be detected in a matter of seconds. Prompt intervention ensures that the process is stabilized in a very short time. This allows maximum utilization of production tolerances.

Without πWeb:
Late error detection increases the time and costs involved

Process deteriorations occur so gradually that it is rarely possible to detect them immediately. Without **πWeb** it can take hours to detect errors. As the process is severely destabilized during this time, much more time and money is required for re-stabilization.

What can πWEB™ do?

- **reduce costs**
- **enhance processes and quality**
- **fully utilize tolerances**
- **is future proof**
- **provide customized, scalable solutions**
- **connect to the digital factory**
- **all from one single source**

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