

ProControl

Increase Product Quality and Maintain Test Cycles



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BASIC INFORMATION

Short Definition of Quality Assurance

To ensure that a consistently high product quality is achieved, many successful manufacturing companies rely on the statistical process control (SPC). For this purpose, standardized error detection and evaluation procedures such as quality control charts (QCC) and fault tally sheets (FTS) are used.

This systematic monitoring of product characteristics, processes and tolerances simplifies continuous improvement at the same time.

An important requirement for quality assurance is the central control of planning, implementation, documentation and evaluation of the test. In addition, the test should at all times be made to uniform criteria.



Cosmino® *express* ProControl Areas of Application

The area of application is quality management for the production of parts, from the planning and order management to the evaluation of qualitative and quantitative test results.

As a SPC system for statistical process control and sampling inspection, *express* ProControl can either be used as a standalone solution or fully integrated with other Cosmino® modules.

The most important functions of Cosmino® *express* ProControl at a glance:

- ◆ Creating your own test plans, acquisition of test plans from ERP/MRP systems or generation of test plans from test data e.g. of coordinate measuring machines
- ◆ Data collection and archiving by means of scanning documents (the handwritten notes are made on self generated QCC/FTS entry documents)
- ◆ Data entry via an online interface (touch-screen dialog function, no additional hardware is required)
- ◆ Recording, monitoring and documentation of product and process characteristics
- ◆ Evaluation of test results
- ◆ Creating control plans, in which the inspection process is steered – including definition of measures and responsibilities in case of deviations
- ◆ Statistically correct calculation of key metrics as, e.g. C_{pK} by means of integrating qs-STAT® (qs-STAT® license not included in Cosmino® module)
- ◆ Steering of improvements with the all including innovation and improvement management

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BASIC INFORMATION

Ready-to-use Philosophy

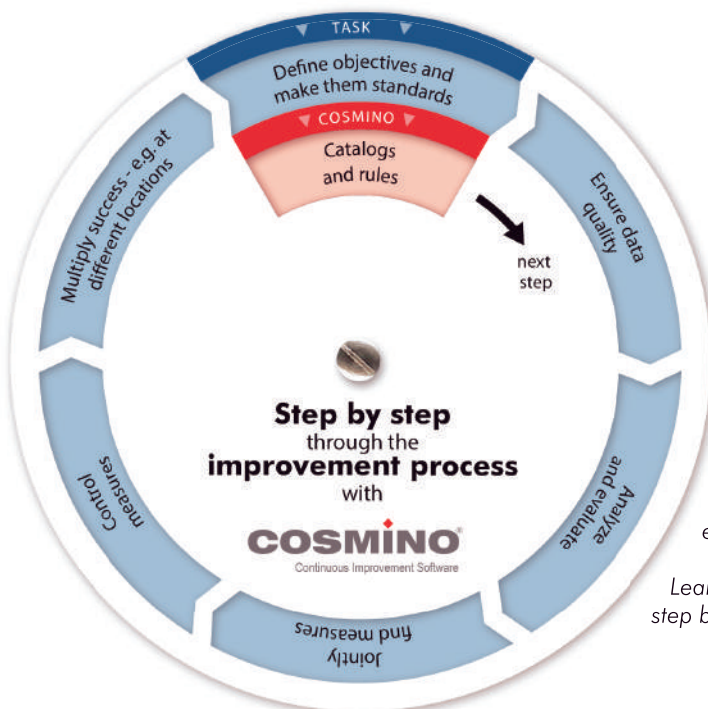
Cosmino® *express* ProControl is a streamlined standard software package, that can be integrated into any IT environment with minimum effort and which can be immediately used.

A variety of well thought out details makes the simple introduction into quality management possible with Cosmino. This allows inspection plans to be flexibly created and imported, and the standard templates for entry documents allow an immediate start of data acquisition.

If you would like to extend the features of Cosmino® *express* ProControl, there are currently 13 further modules of the Cosmino® *MESplus* available (see page 11).

Your Cosmino® *express* ProControl Advantages

- ◆ Fast, cheap and easy start of measurement and error data collection as well as in automated evaluation
- ◆ Avoid manual data entry through automatic data import of measuring instruments (e.g., digital calipers)
- ◆ Minimum training effort for automatic acquisition of handwritten documents
- ◆ Cost-effective data acquisition via existing hardware (online interface/touch screen)
- ◆ Helpful in customer acquisition, as SPC is frequently asked for by customers
- ◆ Objective proof of achieved quality levels
- ◆ Seamless integration with ERP / MRP systems (automatic takeover of test plans)
- ◆ Time and space savings, as the required documentation of measurements in a single operation are both recorded and archived
- ◆ Flexible connection to any hard and software which supports the DFQ standard
- ◆ Quality improvement through simultaneous representation and analysis of quality data and plant effectiveness data (OEE)



The Cosmino® user is guided step by step through all work steps of the improvement process.

As the workflow is defined, training and familiarization effort is minimal, and operating errors are largely excluded.

Learn, how Cosmino® supports you step by step: www.cosmino.com



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GENERAL TEST PLANNING

As a comprehensive tool for quality assurance in the factory, Cosmino® *express* ProControl provides you with all major functions for test-planning, data collection and evaluation.

Product characteristics and process parameters are precisely recorded, the compliance with tolerances and limit values are reliably monitored.

Create Individual Test Plans

First, define your fault types, fault locations and individual test characteristics in the master data and then create your individual test plan with a few mouse clicks.

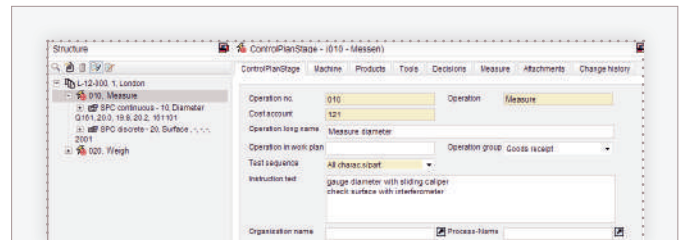
A test plan can include a multitude of test specifications depending on the inspection specifications:

- ◆ Material and machines to be inspected
- ◆ Testing sequence
- ◆ Test equipment for a specific inspection characteristic
- ◆ Definition of the procedures for faulty products (e.g. handling as scrap or rework and escalation messages)
- ◆ Characteristics or attributes of a test piece (SPC or non-SPC, qualitative or quantitative method of data acquisition, dimensions, tolerances and limits, control charts, sample size, test frequency)

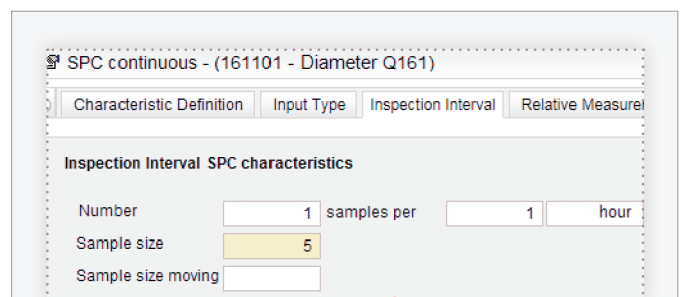
You can also create control plans which direct the testing process, here for example measures and responsibilities have already been determined in the event deviations occur.

Automation of the Creation of Test Plans

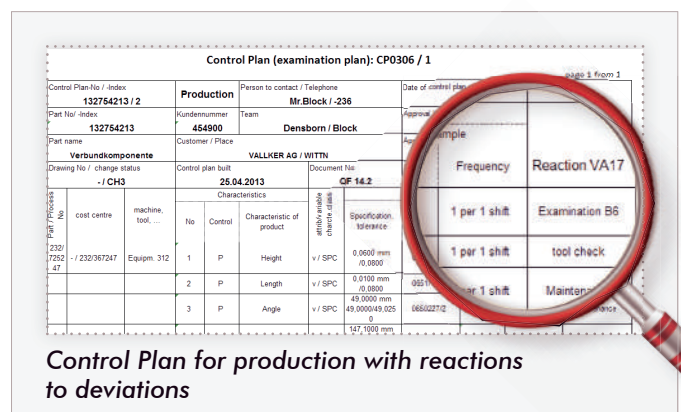
If test plans are deposited within ERP / MRP / CAQ systems, these can be automatically taken over into Cosmino® *express* ProControl. Also possible is the generation of test plans from measurement data, as for example coordinate devices in the form of DFQ files.



Creating a test plan with work sequences & test characteristics



Definition of an inspection characteristic (here: Inspection interval)



Control Plan for production with reactions to deviations

Your Cosmino® Advantages

- ◆ Minimum training requirements for planners and production staff
- ◆ Test planning efforts significantly reduced because one test plan can be applied for multiple products and systems
- ◆ Field-tested and well-proven solution

2

TEST PLANNING WITH DOCUMENTS

Generate Entry Documents

If the test is made with the support of paper documents, then automatically these inspection documents are created from the test plans.

Standard Entry Documents (FTS / QCC)

Using the Cosmino® standard documents, ready to use control and inspection charts are available to you, which have been successfully well proven in a multitude of industrial enterprises.

Individual Entry Documents

In addition to the standard Cosmino® entry-documents, you can create customized documents (for example with a customized layout, photos, fields for inspection stamps).

Entry Document Management

With Cosmino® *express* ProControl you always have an overview of even the comprehensive inspection tasks, because you can see at any time:

- ◆ Which documents have been issued
- ◆ Which documents require processing or should be scanned
- ◆ Which documents, e.g. need to be printed out on the next day

Your Cosmino® Advantages

- ◆ Enhanced quality assurance through integration of the statistical process control and qualitative tests – also in the assembly
- ◆ Cost-effective data collection, as it enables complete SPC even without installing test equipment

The image shows two forms. The top form is a 'COSMINO' inspection order (no. 45873-20, Product: FC34-A) with handwritten data for year (12), signature, and shift (1). It includes a 'Types of defect' table with handwritten entries for 'Angle Defect' (2), 'Geometry' (1), and 'Crack'. The bottom form is a 'Precontrol' chart for 'Burr' (Type: 0031448-1) showing a control plan with '1 per 1h, n=5' and a corresponding data table with handwritten 'X' marks.

Handwritten, machine-readable fault tally sheets (above) and quality control charts

The image shows a 'Checkliste - EVP-Checkliste EP22' for product 13109160. It contains a barcode, a date/time stamp (26.02.12 10:30:32), and a list of inspection points with checkboxes. Below the list are three machine-readable inspection stamps (025, 026, 027) with barcodes and data fields. The bottom stamp (028) is a 'Seite/zwischenzeichnung' stamp.

A development of COSMINO AG: machine-readable inspection stamp for the production document

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DATA ENTRY

Cosmino® *express* ProControl offers three different possibilities to carry out data acquisition.

Which ever it is you decide on, you always benefit from

- ◆ A high quality of data, since the plausibility of the data is checked automatically (for example, thoroughness of samples and plausibility of quantities)
- ◆ A higher flexibility, because different data collection methods can be used at the same time or in parallel

1. Handwritten, Scannable Entry Documents

COSMINO is the market leader for the automated data entry of machine-readable written records – a sophisticated data acquisition method which has been successfully applied in a large number of companies.

The most important features at a glance:

- ◆ Quality recording in areas where there is not yet IT equipment present
- ◆ Scanning of documents with a standard (document) scanner
- ◆ High performance handwriting recognition
- ◆ Data is not only digitalized but archived in a single-step

Further information can be found in the Cosmino® IntelliScan brochure

Archive with various entry documents:
www.cosmino.de/en/software/procontrol/



Error entry documents with images of faults

2. Connection of Measuring Systems

Cosmino® *express* ProControl allows the standard import of data in DFQ format. Other data formats available upon request.

Your Cosmino® Advantages

- ◆ Visual support in data entry by the pictorial representation of products or error types / locations
- ◆ Easy traceability through archiving of scanned documents in the system
- ◆ Reliable revision, as the history of modifications to documents remains traceable at any time
- ◆ Excellent cost-benefit ratio

3

DATA ENTRY

3. Online-Dialog: Data Input via Touch Screen

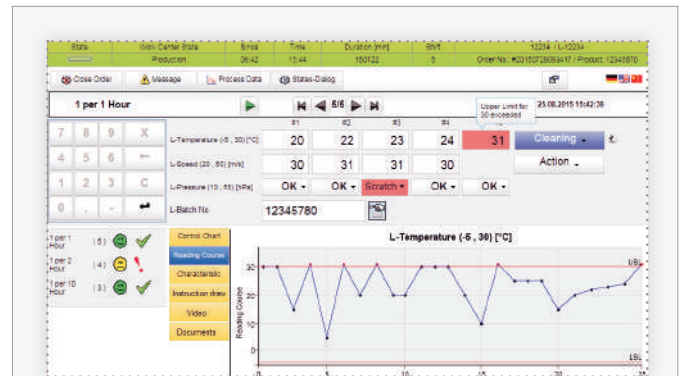
The later an error is discovered, the more expensive it is to rectify – so many companies want to evaluate test data as soon as possible. In such cases, the entry data is provided by touchscreen directly at the workplace.

A great number of useful functions automatize the testing and reduce the necessary testing effort to a minimum:

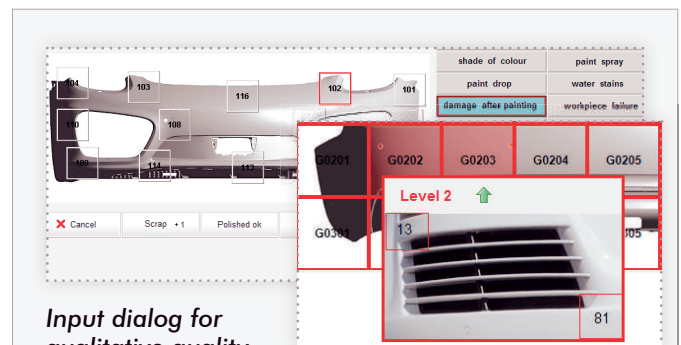
- ◆ Direct selection of the inspection order and immediate entry of the measured values with feedback for limit violations
- ◆ Observe control charts, progression of measured values, characteristics information and drawings and linked online documents
- ◆ Notification of designated testing due dependent on date & time, machine running time or number of pieces produced
- ◆ Selection of predefined measures for fast error correction (e.g., clean filter, recalibrate) incl. archiving

Your Cosmino® Advantages

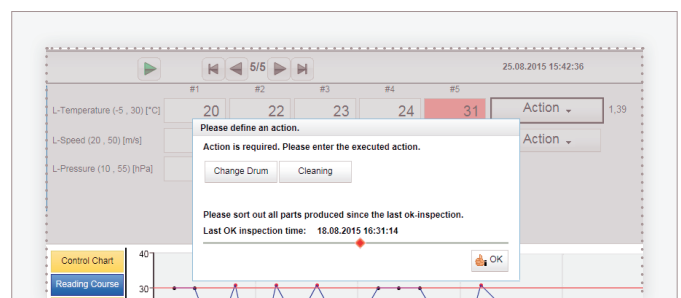
- ◆ Easy to understand as well as fast and straightforward to use at any location
- ◆ Reduction of errors and rework costs, since the realtime generated data allows rapid intervention
- ◆ High flexibility through seamless integration in the overall process – a connection to SAP solutions is possible, as is the possibility of maintaining your existing quality control chart system
- ◆ Saves time because only faultless OK parts are booked in the ERP, while defective parts are booked to the corresponding rework stations (at 100% testing)



Input dialog for quantitative and qualitative quality data, with run chart



Input dialog for qualitative quality data with possibility of fault location detection, via grid and with several levels of detail



Input dialog with escalation message: take action and sort out; cpk value on the right

4

EVALUATION

If improvement successes are to be quickly achieved, fault types and fault locations must be reported back to the workers as soon as possible.

Cosmino® *express* ProControl puts these requirements consistently into practice and provides you at all times with statistically correct results.

Connection to qs-STAT® and minitab

Thus it is possible that the recorded quality data is automatically transferred to qs-STAT® so that long-term calculations of key metrics are carried out.

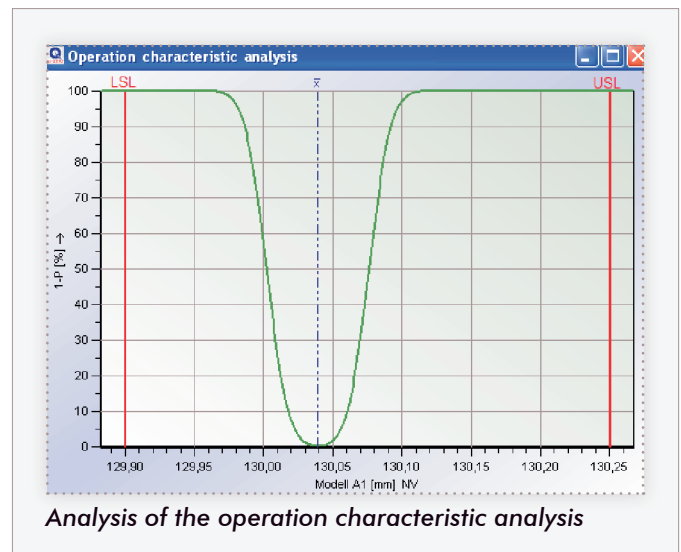
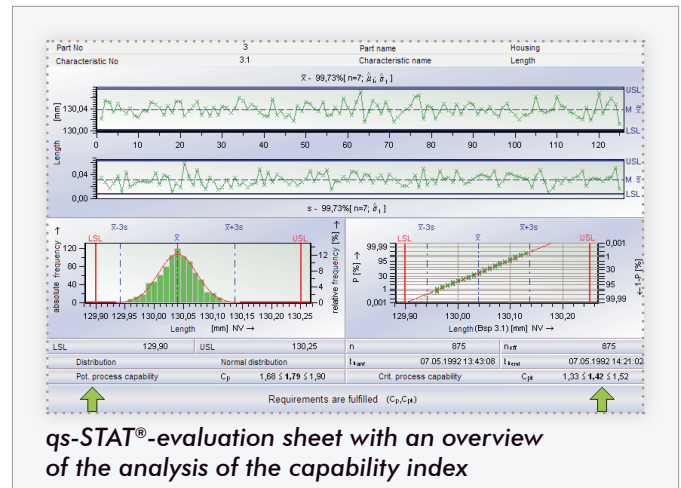
This works via Q-COM server (as a background process) as well as directly in qs-STAT® (as a foreground process).

The typical processing sequence:

- ◆ ProControl: bundling the original values and automatic data transfer to qs-STAT® in DFQ format
- ◆ qs-STAT®: calculation of key metrics and automatic transfer of the results to ProControl and visualization in the online dialog
- ◆ ProControl: central storage of key metrics in Cosmino® data archive

Your Cosmino® Advantages

- ◆ Save time through automated workflow (e.g. no manual data entry required in qs-STAT®)
- ◆ Reliable basis for decision making as qs-STAT®-evaluations are accepted as a quasi-standard e.g. in the automotive industry and comply with all auditor requirements
- ◆ Increased validity of recorded quality data because they are part of the OEE evaluations



4

EVALUATION

Reporting

The evaluation of the recorded quality data is made automatically and easy to understand using the Cosmino® DynaMon module.

In the case of deviations, teams responsible are informed by e-mail, upon request a commentary or a measure can be demanded.

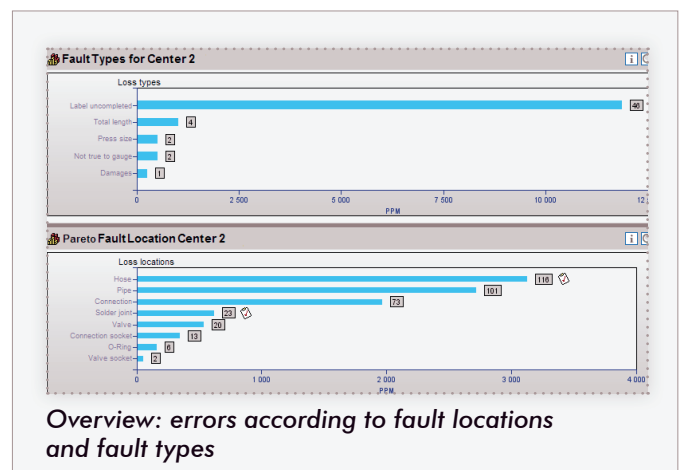
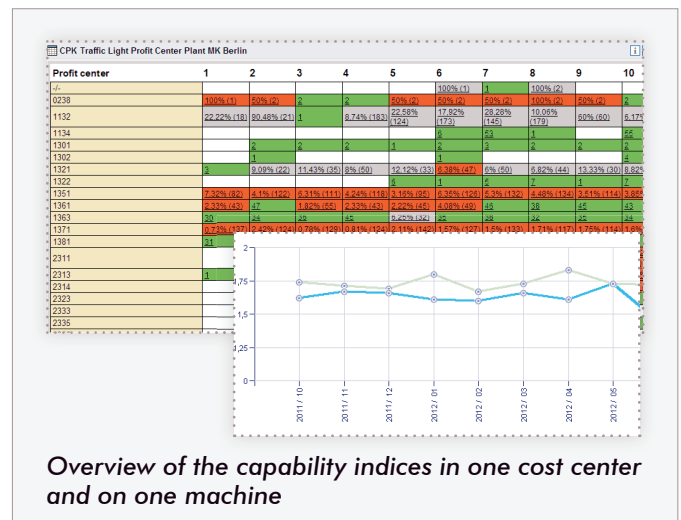
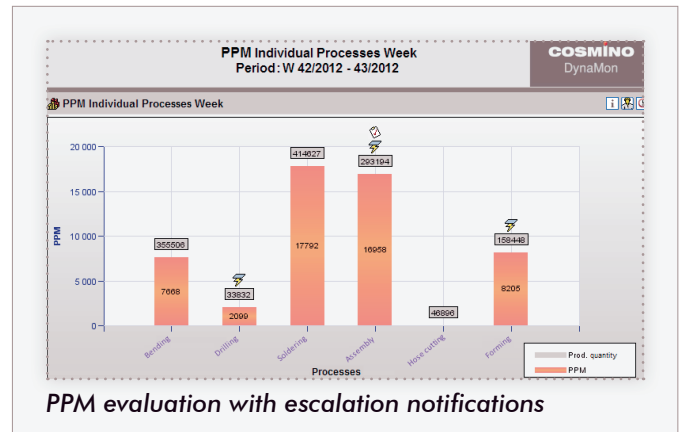
The most important functions at a glance:

- ◆ Trend graphs in reports visualize the development of key metrics and successes of measures
- ◆ Cumulative output of error indicators:
 - rework and scrap share
 - Pareto analysis of defects
 - PPM-figures
 - C_{pk} process capability lists
- ◆ For a specific product defect the associated processes or machine(s) used can be investigated (hierarchical structure of the quality indicators)
- ◆ Analysis across production sequences, since data can be linked with work plan and inspection plan data from SAP
- ◆ Suitable for assembly processes
- ◆ SAP-BW Integration: Cosmino® Reporting can be accessed directly
- ◆ Full integration with the high performance Cosmino® Measure Management

Your Cosmino® Advantages

- ◆ Easy to understand evaluations
- ◆ High objectivity from up-to-date, statistically correct analysis at all times
- ◆ Cost saving due to automatic reporting

Further information can be found in the Cosmino® DynaMon brochure



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CONTINUOUS IMPROVEMENT

Define, Initiate and Evaluate Measures

Analysis indeed shows improvement potential. However, it is only with actually implemented measures that you optimize your process.

As a complete solution for the continuous improvement, Cosmino® supports you specifically:

- ◆ To mutually draw the correct conclusions from the knowledge gained,
- ◆ Then to initiate the best measures and finally
- ◆ To examine the success of these measures in real time.

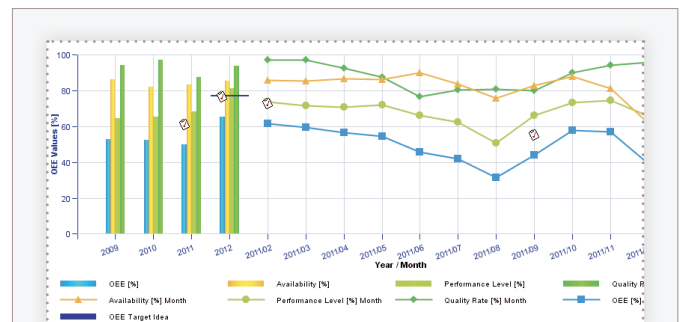
The practical linking of ideas and measures with products, workplaces, evaluations, types of errors etc. always ensures a transparent overview and easy retrievability.

Your Cosmino® Advantages

- ◆ Time-saving through flexible application of suggestions for improvement from reports, audits or meetings as well as directly to the system
- ◆ In-depth knowledge of the users through detailed descriptions and documentation (before / after) with the help of any attachments (photos, video and voice recordings)
- ◆ Automatic evaluation of the ongoing measures in real time by means of the reporting system
- ◆ Maximum transparency and knowledge sharing through centralized data management (knowledge- data bank): double processing is avoided, existing ideas can simply be built up
- ◆ Easy installation, management and monitoring of deadlines and tasks on the Cosmino® ImproveManager module

Further information can be found in the Cosmino® ImproveManager brochures

Creating an improvement idea



In graphics assigned measures are displayed as a clickable notepad icon

6

INTEGRATION INTO THE COSMINO® MES^{plus}

COSMINO AG supports you in getting the full potential of your manufacturing and achieving the best results:

- ◆ More output
- ◆ Better quality
- ◆ Increased reliability
- ◆ Reduced costs
- ◆ Full transparency

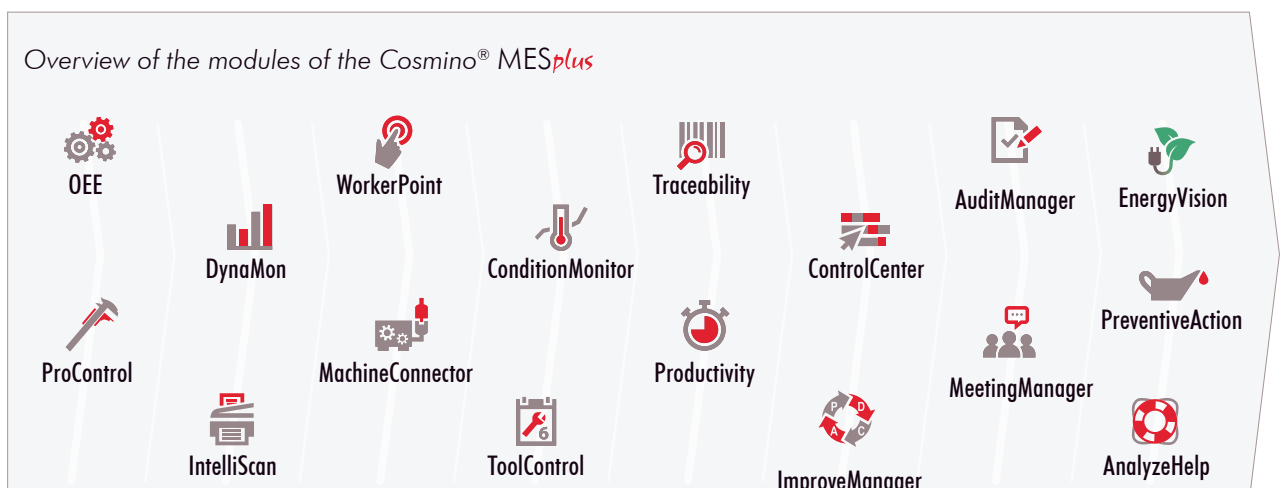
Our software belongs to the field of Manufacturing Execution Systems (MES) and can therefore be your navigator on the path to Industry 4.0 (Integrated Industry).

Thanks to more than 26 years of project experience, we can count global companies like BMW AG, Daimler AG and Continental AG among our clients today.

Thanks to its modular, standardized architecture, Cosmino® MES^{plus} offers particularly medium-sized companies from various industries important support in the optimization of their processes and products.

Your Cosmino® MES^{plus} Advantages

- ◆ Focus on people
(their knowledge will be developed and used)
- ◆ Causes instead of symptoms for downtimes
(by integrating the employee's knowledge)
- ◆ Reporting system oriented on measures
(award-winning, fully automated and easily understood)
- ◆ Integrated improvement management system
(measures are linked to metrics)
- ◆ Quick start (*express*) is possible
(automate data from paper forms; get digital data by scanning)
- ◆ Award-winning Online Data Acquisition Dialog
(acquires data and displays information)



COSMINO AG has specialized
in consulting, software development and service
in the fields of Manufacturing Execution Systems (MES) and
continuous improvement processes since 1988.



COSMINO AG supports industrial companies of any size achieve full potential of their manufacturing systems and shows how the best possible result can be achieved using the existing resources. From data acquisition to improvement management, the potential of all employees will be brought to bear.

Have we awakened your interest?
Our sales team is looking forward
to making contact with you!

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