Metrolog II®

Click & control

The Unique Solution
For 3-D Measuring Machines

metrologic group®

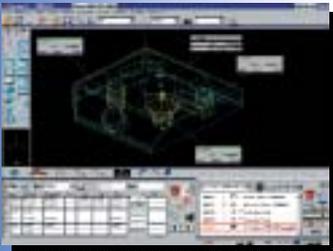*the advanced solutions*

metrologic group

Metrolog II®

A global Solution for all your Co-ordinate Measuring Machines

Avoid using multiple software packages and languages on your different Measuring Machines, use the standard software package compatible with any type of 3-D measuring machine: *Metrolog II®*

Software for 3-D measuring machines

A complete solution incorporating expert functionality and capable of modular upgrades.

Prismatic measurements

Metrolog II® includes a very powerful Prismatic/Geometric package that allows measures and construct enables measurement and construction of any type.
The GD&T modules allow you to further fulfill your needs in tolerancing according to the very specific ISO Standard.
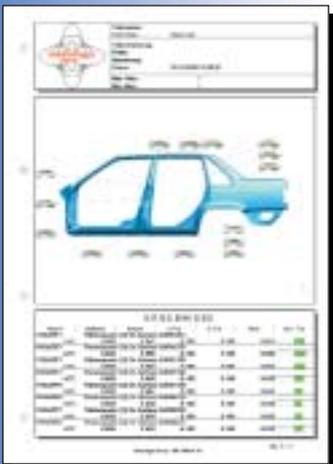
Surface measurements

The perfect tool to control free-form parts and automatically compare your measured values to the CAD file. *Metrolog II®* features all the necessary tools for any inspection job.

Part Programming

Powerful graphic tools assist you to create part programs on any type of CMM, from basic probing assistance to a complete off-line programming engine.
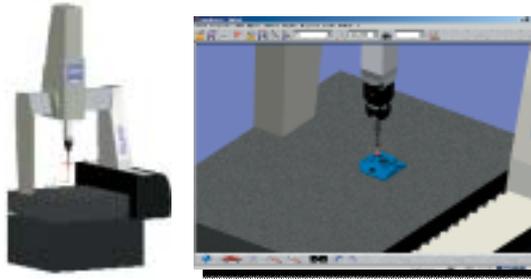
Inspection report editor

A fully and easily customizable report editor totally integrated to the software helps you instantly validate your measurements.

Metrolog II® ... *The reference*

■ **Can be installed on any type of 3-D measuring machine**, and is compatible with all brands and types of CMM (DCC, Manual, Lasers, Arms…).

■ *Works on a standard computer* running a regular 32 bit Windows operating system.

■ *Standardisation of all your CMMs:* Enables the use of a single software package on all your CMM brands and types.

■ *User Power and Versatility* that can work with a single piece of software on any measuring device, and can easily transfer part programs on different machines.

■ *An Industrial Standard* approved by large groups, industrial partners which use *Metrolog II*® as their unique software reference.

■ *A powerful installed base* with thousands of users worldwide.

Metrolog II®

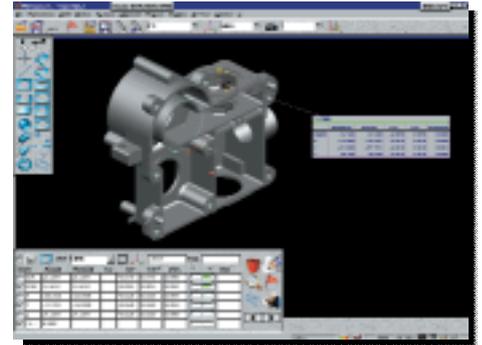## Software for 3-D Coordinate Measuring Machines

Metrolog II® can be installed on any type of measuring machine new or used, be it manual or DCC.
The standardisation of all your CMM with the **Metrolog II®** software package offers greater flexibility that saves you valuable time.

One single environement for all your needs:

Metrolog II® can cover all the needs of any particular application:

- ✔ Power train mechanical type measurements
- ✔ Sheet metal and free form measurements
- ✔ Molding
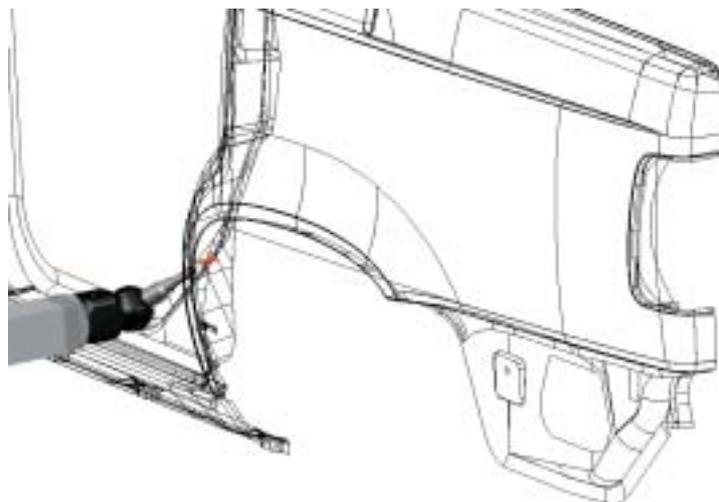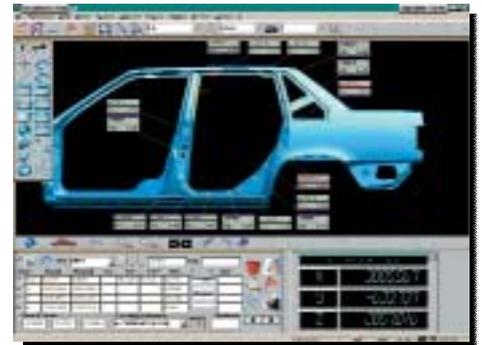- ✔ Plastic injection
- ✔ Tool manufacturing
- ✔ Etc.

A Global

A powerful user interface:

By fully utilising the power and technology of today's Video Cards, **Metrolog II®** displays and manipulates smoothly and easily large CAD Files.

This interface lets you design your own reports, for a complete visual interpretation of your measurement data.

CAD Files
- IGES
- SET
- VDAFS
- UNISURF
- Native CATIA
- Native Unigraphics
- Native Parasolid

PROGRAMS
- Natif *Metrolog II*®
- DMIS
- On-line
- Off-line

REPORTS
- HTML
- ASCII (text format)
- DMIS
- Graphic
- Statistics

INTERNET/INTRANET integration

Metrolog@Web
was designed to display your
Metrolog II® working sessions
in your browser using either your
Intranet or the Internet without
the need of a ***Metrolog II***®
Software license.

Metrolog@Web
is a freeware that can be
downloaded from:
www.metrologic.fr

Solution

For an even better integration of
Metrolog II® on your CMM,
Metrologic group® is able to offer
different options:
*Digital Read-out, Complete DCC
Controller, Keyboard and
joystick,…*
These components are designed
to be compatible with any type
of CMM: Bridge, layout machines
as well as other special equipment
sometimes available such
as rotary table, dual drive…
keeping in mind the perfect
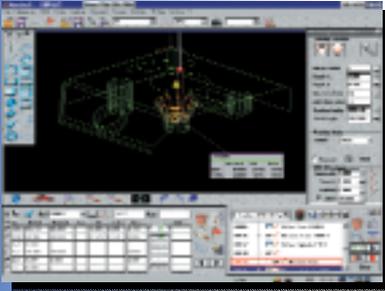***Metrolog II***® harmonized system.

Metrolog II® also integrates
an error map module that
allows you to fully software
compensate your CMM.
Depending on the CMM
type, you can compensate
squareness, rotation and
linear errors. On certain
type of CMM you can even
include column deflection.

When retrofitting your CMM, we can offer
a complete customized solution: our team
of highly qualified engineers can train you
either on your premises or at any
Metrologic Group® Approved Facility.
After this training, our support team remains
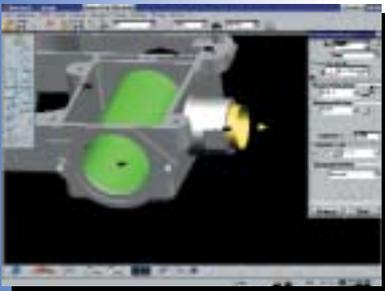available for any particular questions you could have.

Metrolog II®

Geometric Measurements

Metrolog II® uses a powerful graphical interface to display all your measurements and constructions. This interface provides the operator with a complete tool to fully visualize and make a thorough analysis of the inspection results.

■ Geometric/Prismatic Features.

Any type of prismatic feature can be built or defined in *Metrolog II®*. This powerful module enables the control of any part or assembly and gives you the choice to work with GD&T (ISO Standard) and finally display your results or print them out on a text or Graphic Report.
The algorithms used are certified by both the PTB (Physikalisch-Technische Bundesanstalt) in Europe and the NIST (National Institute of Standards and Technology) in the USA.
Metrolog II® is not limited to the standard algorithm of Least Squares. Depending on the expected result, (form fault, minimum circumscribed, maximum inscribed, ...) others algorithms are available (Tchebychev, constraints, …) to give the operator an accurate and coherent result based on the current ISO standards.
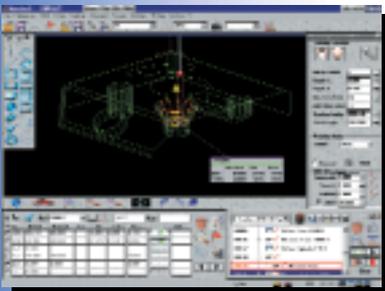
■ Geometric and Dimensional Tolerancing.

Geometrical and Dimensional Tolerancing based on the ISO Standard is one of the main features of the prismatic module. *Metrolog II®* includes all the Tolerancing related to the ISO 1101 Standard (true position, parallelism, coaxiality, circular run-out, etc…). This module uses algorithms of calculations specially developed for tolerancing. Moreover, it integrates an ISO GD&T interpretation assistant.
All the calculation methods have been developed and tested by specialists and validated by renowned national and international experts.
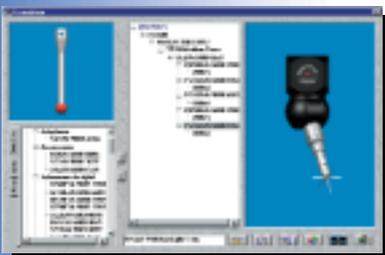*Metrolog II®* has today the most powerful GD&T module available in any 3-D Inspection Software on the market.

■ Geometric constructions.

The measurement of parts such as power train compnents requires the construction of geometric features.
Metrolog II® integrates a module that allows the construction of any features from any other feature, point or entity.
This function is very important to construct particular part alignments and to determine specific results.
All the constructed features are automatically displayed on the screen: the operator can then directly see the constructed features and make sure of the coherence of the measurements.

■ Probing assistance.

Metrolog II® offers an automatic probing assistance available for all features. This function is essential to ensure quality measurements and a better reproducibility.
The probe path is directly displayed on the screen: it allows the operator to validate an error and collision-free measurement.
Through this module, it becomes extremely easy to make your own part programs, even for complex parts and paths.

■ Probes and Simulation.

Features are probed using probes defined in *Metrolog II®*.
Many type of probes can be used: touch probes, optical probes, scanning/measuring probes.
The calibration procedure on a reference sphere is fully automatic for a better calibration and then measurement results.
On the simulation side, *Metrolog II®* allows the modeling of a full probe head: a complete library of accessories allows quick and easy definition of an existing probe configuration.

■ Alignments.

The menu "Alignment" offers different alignment strategies to easily define your part
coordinate system: From geometrical features, using optimizations, specific constraints, based
on the CAD model, etc.
The created alignment will be displayed in real time to further assist the operator and eliminate errors
in this critical step when controlling the dimension of a part.
Metrolog II® can manage different alignments all along one single control as well as calculate
and display instantaneously the results of a control in different alignments.
When used in Duplex mode, the **Metrolog II**® Twin mode enables the exchange of alignments between
the two arms and then the measurement of one part using the two arms.
For DCC CMMs, the operator can drive the CMM in the Part coordinate system for better control
and improved ease of use.

■ Graphical analysis.

Form fault of a geometrical feature is an important analysis. **Metrolog II**® includes a fully functional
graphical interface that displays on the screen the form fault, probed points as well as different
possibilities of simulation using different algorithms of calculation.
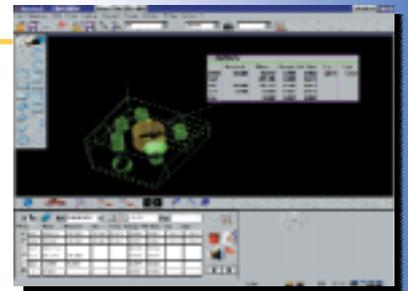Then a specific statistical analysis gives the main results.

■ Data management

An integrated database allows you to save all your measurement results, but also constructions
and various calculations into **Metrolog II**®. Its ease of use allows modification of all the parameters
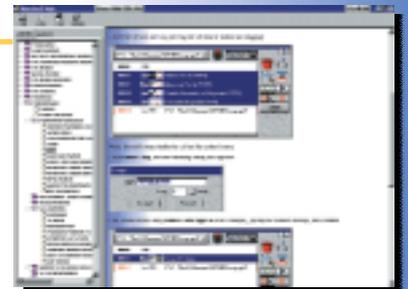for interactive and immediate results.
All the information contained in this database can be exported in numerous formats for further analysis
or can be completely integrated into your standard company PDM.
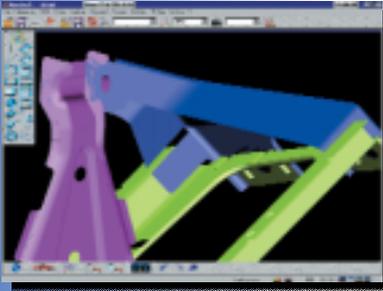

■ On-line Assistance

The on-line help is aan extremely valuable resource for the operator: All measurements,
constructions and also **Metrolog II**® features are described in this on-line help.
The operator has the ability to retrieve helpful advice about measurement strategies,
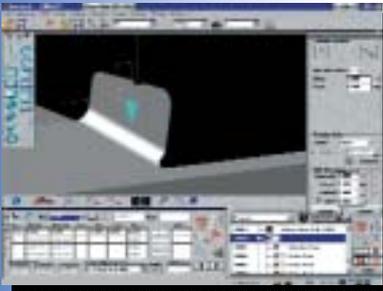just by click of a button.

DEMO PART

Metrolog II®

Surface Measurements

***Metrolog II®** is the perfect tool to control parts defined with a CAD file: the inspection becomes easier, faster and programming more efficient.*
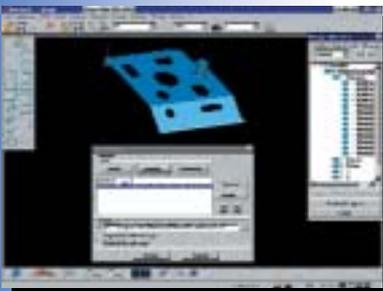
■ CAD interfaces.

Metrolog II® is able to work with any type of CAD files, including different formats.
The main neutral CAD formats available are IGES, VDAFS, SET and UNISURF.
Native formats can also be read directly (CATIA, UG,…) and do not require the use of a license for one of these CAD stations.
The exact recovery of the full geometry of the part is ensured by reading all the entities of the CAD model (Bézier, NURBS, B-Spline uniforms, 2D and 3D curves, 2D and 3D entities, …)
The CAD File assistance brings a valuable help to the operator: Nominal values of the various features, automatic calculation of deviation, probing assistance, automatic programming, reporting support, etc…
The CAD rendering provides a real support for the operator, from the off-line programming using the part geometry to the printout of the inspection report.

■ Measurement comparison to CAD model.

This module includes all free form measurements against a CAD model: Deviation from CAD, surface measurement, edge measurements,… are the most common uses.
The power of **Metrolog II®** is especially useful for very specific measuring cases sush as gap and flush measurements, flange measurement, etc.
All your measurement needs are grouped together in this powerful module of **Metrolog II®**.
They are most useful to the moulding, plastic injection, stamping… industries, and at different levels in the manufacturing process: from a single part to the full assembly of multiple finished parts.
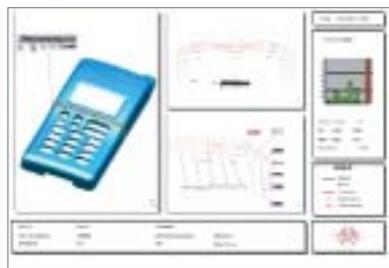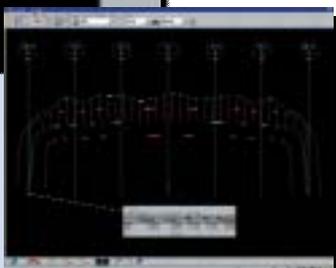
■ CAD models management.

Metrolog II® integrates multiple tools to manage CAD models. A CAD model can be transformed to create a mirrored part or modified using single or multiple translations/rotations. When required, you can even create CAD surfaces by extension of existing CAD surfaces using the same orientation or applying a defined angle to the newly created surface. You can also create CAD entities from measured, defined or constructed features.
These newly created entities can be exported to IGES to create a new reference model or to be used on any other CAD station.
Metrolog II® gives all the tools to the operator to quickly and easily modify the CAD file used during the inspection process without going back to the CAD department for minor changes that could take days.

■ Sections.

This module is especially designed to perform profile inspection with or without a CAD file.
Every single step of this process is built in this module: from the simple definition of the section (section plane, direction…) to the complete probing assistance (starting point, direction, number of points and display of the whole path on the screen). Also, the graphic interpretation of the result is instantaneous, including a view detailing all the points used and their deviation.
The printout of this section can be done according to a specific scale defined by the operator.
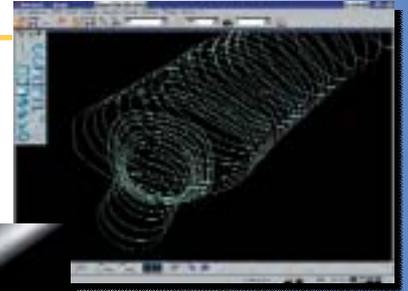
■ Scanning.

The scanning module is used to measure a part of an unknown shape.
Using a direct link with the DCC Controller, this is a real tool used to determine an unknown shape.
All the path generation and the probing points are fully managed by the DCC Controller based on various parameters defined by the operator. (Step variation depending on the shape, number of points, probe diameter compensation,…)
After scanning a part, the operator can manipulate and export the cloud of points recorded automatically by the CMM. Very sophisticated algorithms can in some cases integrate the probe diameter compensation in order to properly calculate the points on the surface of the part. These points can also be used within *Metrolog II*® to construct the desired geometric features or export to different formats for use external application (for example, reverse engineering).
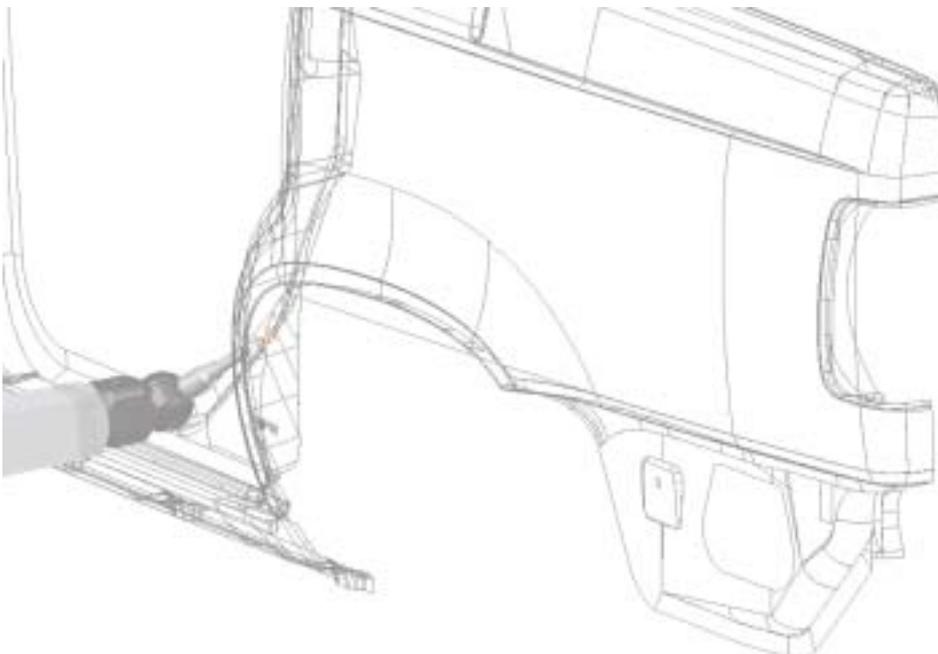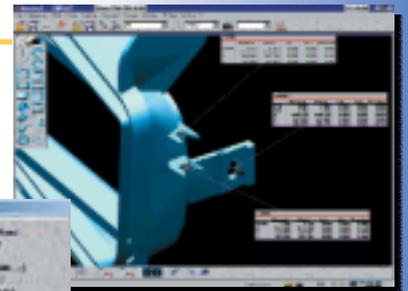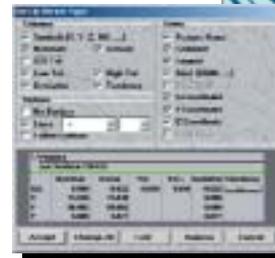

■ Graphical display of the results.

Results can be displayed directly on the screen using "stickers". In a few steps, you can prepare your inspection control reports using these stickers and different views. All these stickers can be configured independently or all together to fulfill your needs regarding their content, style, size and position. This ease of use enables *Metrolog II*® to prepare any type of graphical report for a simple to understand analysis/display of your measurements.

Metrolog II

Part Programming

Metrolog II® includes multiple programming capabilities. Making a part program becomes easier and much more efficient using a language adapted to part measurements and controls.
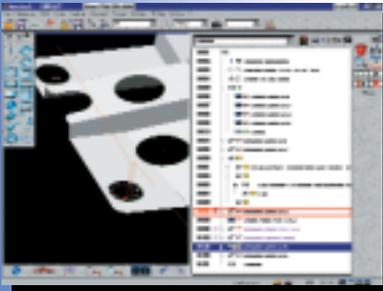
■ Part Programming.

Metrolog II® offers multiple programming capabilities for any type of coordinate measuring machine, either manual or DCC. Your part program can be created using any method: Teach mode on a part, in manual mode or DCC mode, or even off-line.
Using *Metrolog II*®, you can simulate the execution of your part program to test and validate your calculations (probe points/path, constructions, tolerancing,…).
A very powerful import function allows you to automatically create part programs from external files. This function is able to generate all your probing paths and points to be probed starting from only a file of points, giving this function a wide range of applications.
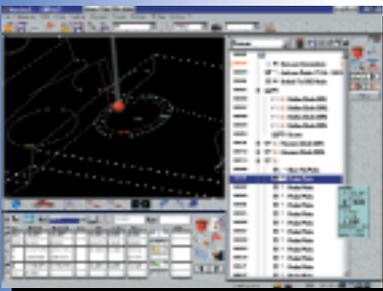*Metrolog II*® is a very powerful tool, easy to use and able to answer very specific needs and requirements.

■ Programming Tools.

Programming the inspection process of a part becomes easy using the *Metrolog II*® native programming language. Any instruction can be edited just by double clicking on the corresponding line of the program. High level commands are also supported, such as loops, conditional branching that allow the management of events that can occur during the execution of a part program (error management, automatic selections of a program to be run, auto recognition of the part that is being measured, feature search function and measurement of particular features…). Applications are endless.
Some other essential tools such as auto correction of the approach vector, information messages to the operator, break points, creation of a mirrored program for the mirrored part, auto calculation of the probe position, master-slave and anti-collision management for duplex CMM… are also available to improve your measurement process.
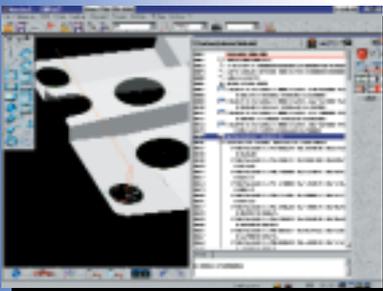
■ Part programming assistance.

The complete probing path can be automatically defined for the measurement of a particular feature. *Metrolog II*® has a powerful probe path generator that can be adapted to any situation. The visualization of the generated path is interactive and based on different parameters (number of points, probing depth, approach, retract,…). Using this tool, the operator can display in real time all the paths and modify them before the execution on the CMM.
The display of the probe and its full path gives an even better idea of the whole environment to the operator.
Preparation time is significantly reduced using this particular feature, operator error and unexpected probing become almost obsolete and quality is highly improved due to this powerful assistance tool.

■ DMIS Language.

Metrolog II® has an integrated pure DMIS engine using only commands included in the latest DMIS standards.
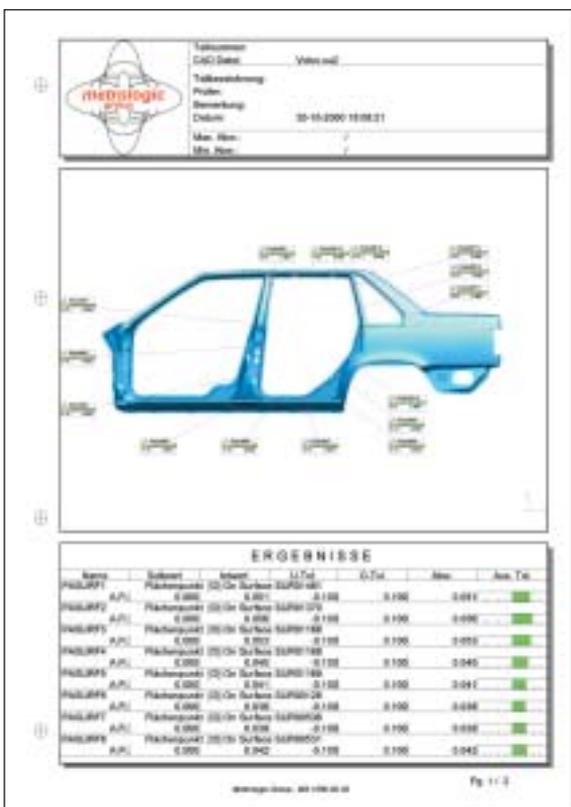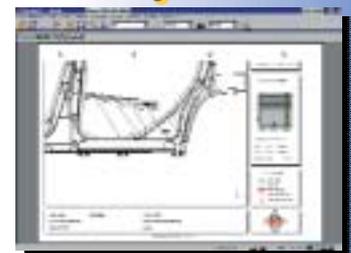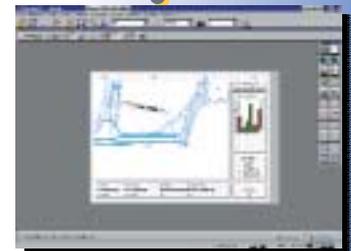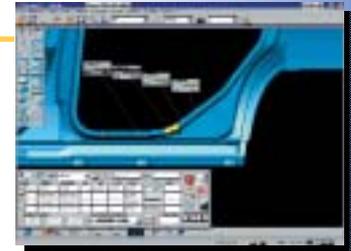Compared to competitive products, *Metrolog II*® reads directly native DMIS commands without the need to import or translate them into a flavoured format. The creation or modification of DMIS part programs is done in DMIS format, in teach mode, direct input into the program or by importing other commands from another program. High Level Language commands including Conditional Statements, Subcall of other part programs, intrinsic functions are also supported by this powerful universal language DMIS engine.

Report Editor

Metrolog II® includes a fully integrated powerful report editor for all your necessary inspection printouts. Easy to use, this report editor allows you to create and save your own templates in minutes.
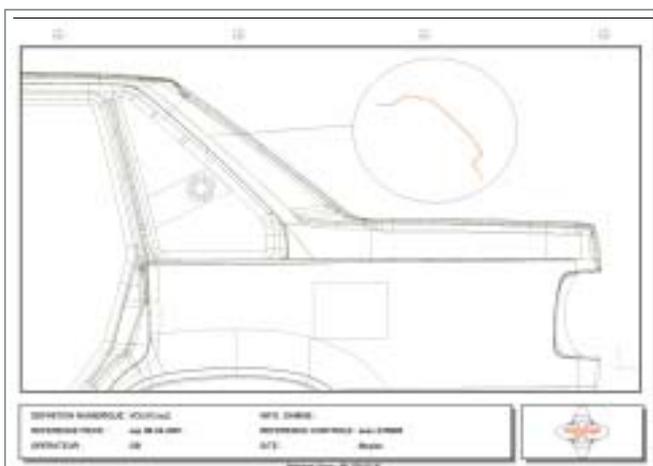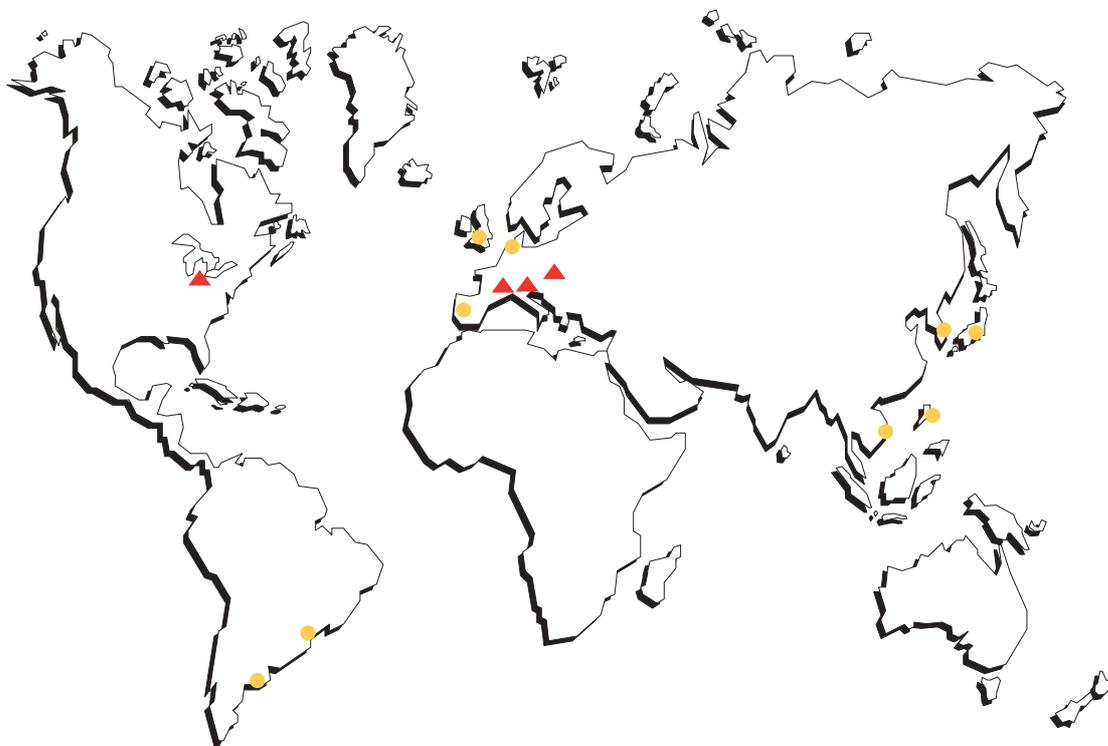
■ Graphic Editor.

Fully integrated to **Metrolog II®** , this graphic editor is used to create inspection reports completely customized by the operator using a user-friendly interface.

This editor includes all necessary functions required to fully customized the report headers, auto import information like operator name, session name, … include logos, histograms and a detailed table displaying a selection of the measurement results. The positioning of the labels and creation of different views is easily done on the screen in a few clicks.

On a single report, it is possible to integrate multiple views to fully detail the results of your measurements and give an easier interpretation of the results (area of the part, particular section,…).

Examples of reports

Metrolog II® automatically comes with various report templates that you can easily modify to fulfill your needs using a user-friendly interface

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Metrolog II˚

exists in 7 languages

French

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