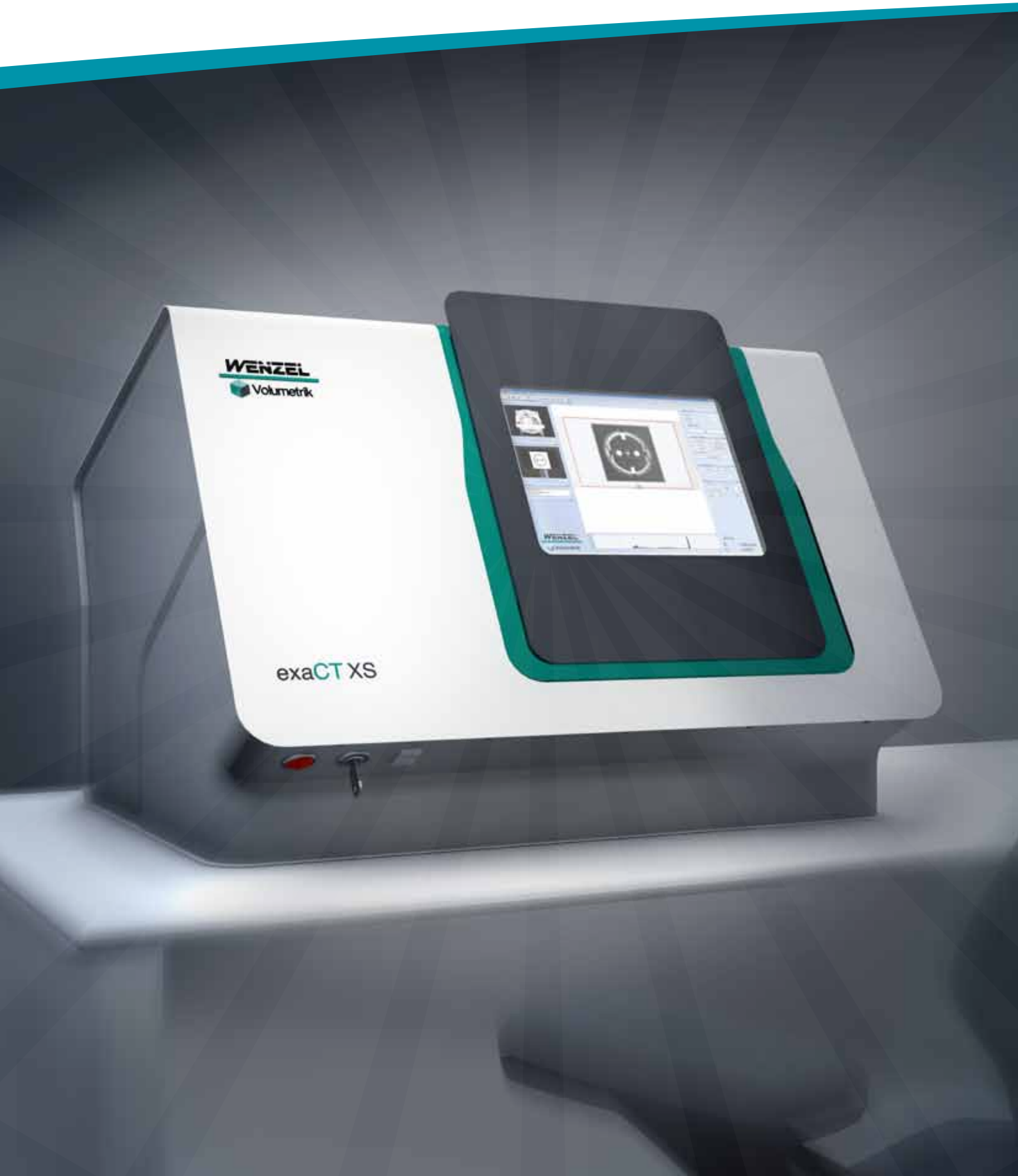
WENZEL®
Volumetrik

The new generation of industrial computed tomography

The Desktop CT exaCT®XS



Operating concept and fields of application of the exaCT® XS

Beautifully simple and well conceived

Above all, the performance and the user friendliness of the integrated application software ensure that the full extent of the innovative device concept of the exaCT® XS is brought to bear. The exaCT® control data acquisition software for optimised control of the computer tomograph and the exaCT® Volume reconstruction software for precise calculation of the volume data was developed by WENZEL Volumetrik. The evaluation software of the exaCT® XS has a direct link to the proven software products of Metrosoft QUARTIS from WENZEL Metromec and PointMaster from WENZEL Knotenpunkt. The applications for the exaCT® XS are measurement and testing technology where 3D data of complex inner structures are required. Based on a single measurement comprehensive evaluations are possible e.g. material analysis, dimensional measurements, nominal-to-actual comparisons with CAD data, reverse engineering and tool optimizations.

CT control and reconstruction

You don‘t need to be a computed tomography specialist to operate the exaCT® XS. Intuitive user guidance allows excellent measurements to be generated after a short training period. The exaCT® XS thinks too: Measurement parameters are automatically optimised by the system. Specially developed for industrial use, the CT control unit and reconstruction software ensure high precision and high quality results. In contrast to other manufacturers, the entire image processing chain and 3D reconstruction are carried out with our own software. This allows the components to be optimised and finely matched to one another, thus achieving the high quality standards.

Dimensional measurement

The decades of experience gained by WENZEL Metromec in 3-dimensional coordinate measurement technology is underlined in the key advantages that the Metrosoft QUARTIS measurement software also offers its users in the field of computed tomography:

- Non-destructive and non contact metrological evaluation of all contours and surfaces of a component as well as the internal structures of workpieces
- Clear, flexible and results-oriented user interface with proven construction and alignment functions
- Full functionality for evaluation of shape, position and dimension with simple display of the measurements in meaningful measurement reports
- Intuitive measurement programming for the automation of measurement sequences

Nominal-to-actual comparison and reverse engineering

The PointMaster software from WENZEL Knotenpunkt is one of the world’s best surface generation tools which can be used to generate and process exact free-form surfaces from CT data. PointMaster also fulfils important functions for CT evaluations:

- Can be used for reverse engineering
- Nominal-to-actual comparisons against 3D CAD models, display using colour rendering
- Innovative functions for iterative compensation of material shrinkage in injection and casting moulds

Product advantages

The excellent price-performance ratio of exaCT® XS makes computed tomography affordable even for small companies. The technical advantages are numerous. The stable and maintenance-free X-ray source in combination with the industrial detector from own production and the high-precision rotary table provide an excellent basis for metrological applications.

The type-approval certificate under German law eliminates the authorization process in Germany. This ensures both the quick startup and the flexible modification of the installation site. You only need space on the desk and an electrical outlet for operation. The data is exchanged via a fast network connection.

SAFETY INCLUDED

The new exaCT® XS has a type-approval certificate under German law. The fully protected device based on the strict legal requirements of the German X-ray Directive and DIN 54113.
Its use is non-hazardous for the operator. There is also no danger from components that have been exposed to X-ray.

Simply exaCT

Computed tomography on the desk

The highly compact desktop CT exaCT® XS is the ideal solution for the volume measurement of small plastic parts and components with low density. Thanks to its optimized dimensions and low weight, it can be placed on desktops or portable trolleys easily. The device is controlled by a modern touch-screen monitor. The innovative and user-friendly operating concept allows to setup a measurement within a few minutes. All components of the exaCT® XS are integrated in one unit. This ensures a very small footprint.

TECHNICAL DATA

WORK PIECE DIMENSIONS:	
Maximum scan diameter	75 mm
Maximum scan height (depending on the component diameter)	45 mm
X-RAY SOURCE:	
Maximum acceleration voltage	80 kV
PHYSICAL DIMENSIONS:	
Length x Width x Height	600 mm x 520 mm x 430 mm

MECHANICS:	
Turntable bearings	High-precision roller bearing
Position measuring systems	High-resolution precision measuring systems
Calibration and monitoring	Calibration and test artifact acc. to VDI/VDE 2630 (draft)
Radiation protection	Full radiation protection chamber, type-approval certificate under German law
Setup	Table top installation

exaCT® Volume scanning technology

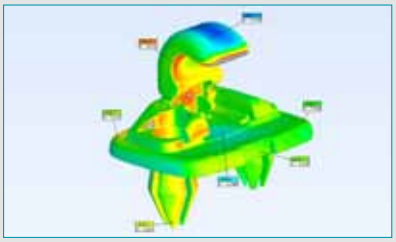
One measurement – multiple evaluations

The strengths of the exaCT® XS are revealed in the specific application. The possible applications are, however, too numerous to mention them all. For this reason we have shown examples of specific applications here to make our advantages clear. As with the exaCT® volume scanning technology, both material and geometry data are present, so multiple evaluations can be carried out on the basis of a single measurement. Because of the non contact and non destructive measurement, components that are not suitable for other measurement techniques, such as tactile or optical coordinate measurement machines can be examined. Fast and complete digitising of objects can be performed by scanning the overall geometry in a single measurement step.

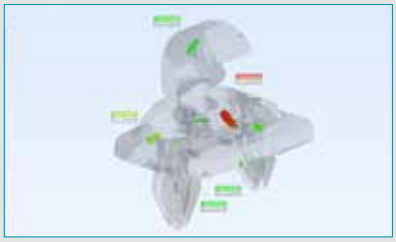
Dimensional measurement and material analysis on a plastic injection moulding part

Injection moulding part with complex internal structures

The CT scan generates a complete 3D surface model of the part. This includes internal and external geometries.

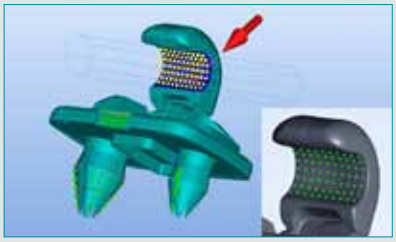


The nominal to actual comparison shows deviations between the manufactured part and the CAD model. Local variations can be indicated by measuring flags at selected points.



3D-Porosity analysis on a plastic injection moulding part: In this example cavities are classified in size, extent and volume.

Using a semi-automatic process, it is possible to create a CAD model from the scan data (Reverse Engineering).



With the software Metrosoft QUARTIS, internal and external structures can be measured such as with a coordinate measuring machine.

WENZEL Volumetrik GmbH
Maggistraße 7
78224 Singen / Hohentwiel
Germany
Phone: +49-7731-14436-0
Fax: +49-7731-14436-299
info@wenzel-volumetrik.com
www.wenzel-volumetrik.com