OR *inspect*

Software for digtital radiographic testing (RT)

Control software for the acquisition and evaluation of radiographic images with matrix detectors (DDA) and imaging plate systems (CR)

Professional

OR *inspect*

acquisition software

Software for digital radiographic images with X-rays or gamma radiation and standard-compliant evaluation and reporting (e.g. ISO 17636-2)

ORinspect is a professional acquisition and evaluation software for radiographic testing with X-radiation using digital detectors. The X-ray software enables non-destructive testing with matrix detectors (DDA) and imaging plate readers (CR) of virtually any manufacturer.

The software also controls the operation of X-ray generators and X-ray units of different suppliers, thus enabling an optimal, efficient workflow. The user-friendly and straightforward user interface is operated via touchscreen or mouse. The professional high-performance image processing is adaptable to individual users' and material-specific requirements and and thus guarantee industrial radiographs with the highest image quality.

Many helpful integrated features and the intuitive handling make the workflow and documentation an easy routine. The integrated *ORinspect* viewer allows evaluation the radiographic images in the acquisition software and supports the creation of standardised inspection reports. Optionally, ORinspect can be upgraded to an archive solution based on DICONDE.

ORinspect is thus the core of a digital testing system, no matter if it is retrofitting an existing inspection system, a completely new system including generator control or portable suitcase solutions with mobile X-ray generators.

Adding photos to
the test images to
document the test /
inspection and
saving them in
DICONDE format

Fast and efficient
work via touchscreen
guarantees an optimal
workflow

Recording of
recurring examination
procedures as macros

Optimal workflow

The easy-to-use software offers many advantages:

- **Modern graphical user interface** (GUI) adaptable to almost any language

- **Touchscreen operation** – to ensure quick and efficient work and a smooth workflow

- **Free configuration** of the **test objects** already contained in the system (specifications for test exposures incl. X-ray setting values)

- **Secure and fast acquisition** of ad hoc tests / inspections (spontaneous test without detailed prior planning)

- Allows **switching between the planned examinations / inspections** of a test object

- Enables the subsequent **addition of shots to tests / inspections**

- **Multi-generator operation** for switching between mobile and stationary X-ray systems / radiation sources

- Capture recurring inspection sequences as macros

- **Photos** can be assigned to the test exposures **for documentation** of the test situation / inspection and saved in DICONDE format

- Possibility of **controlling** the digital RT system **via a wireless remote control** incl. displaying the work list, previewing the captured image to check the capture and much more.

1

With full support for touchscreen control, *ORinspect* offers predefined schedules that can be adapted to your recurring inspection tasks *(customisation)*.
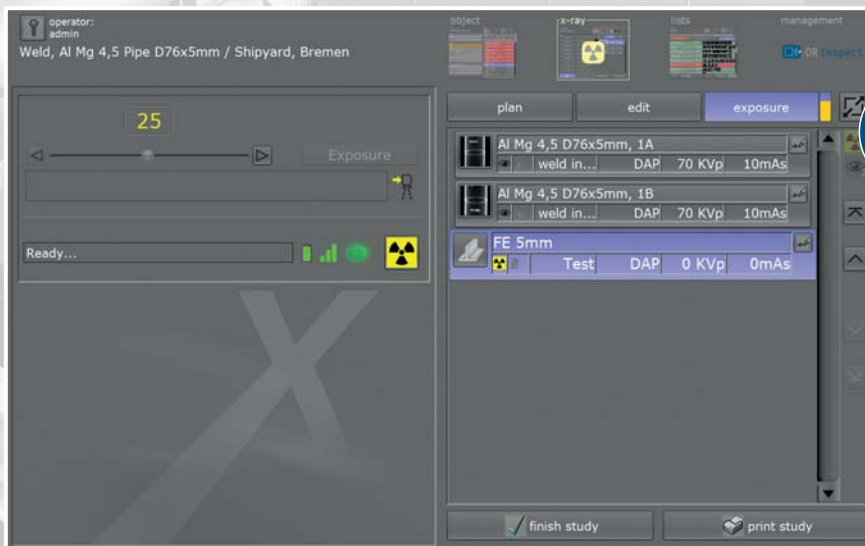
2

ORinspect fully controls your Golden Engineering generator. The software allows easy adjustment of the pulses and triggering of the radiation.
[optional]

3

ORinspect provides a quick preview image, e.g. for checking the image section, and enables easy access to important tools or entry into the internal viewer.

# Procedure of an X-ray test / inspection with *OR*inspect

4 ORinspect's internal viewer supports the detection of defects with numerous functions (e.g. zoom, adjustment of brightness and window level, sharpness filter, etc.).
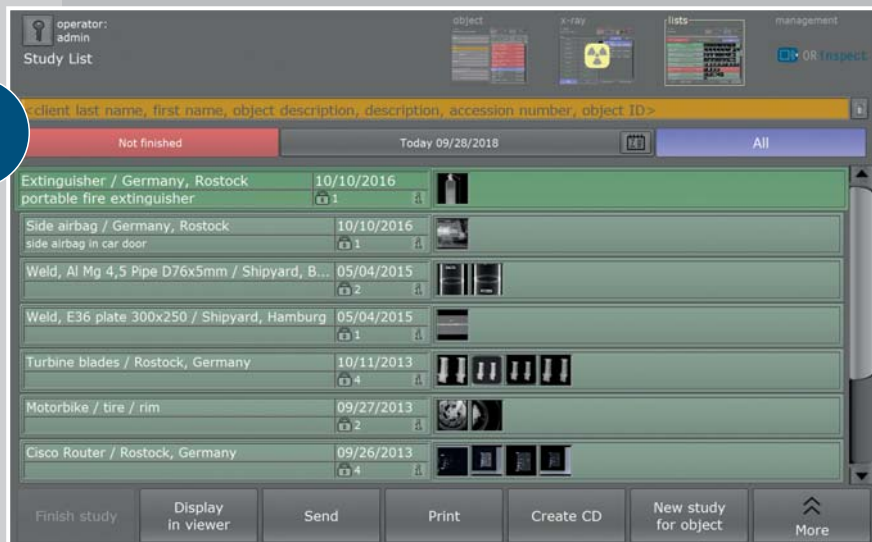

5 The internal viewer of *ORinspect* also offers many special tools for the evaluation of your test images (e.g. colour LUT, SNRN measurement, automatic evaluation of the double-wire test specimen and much more).
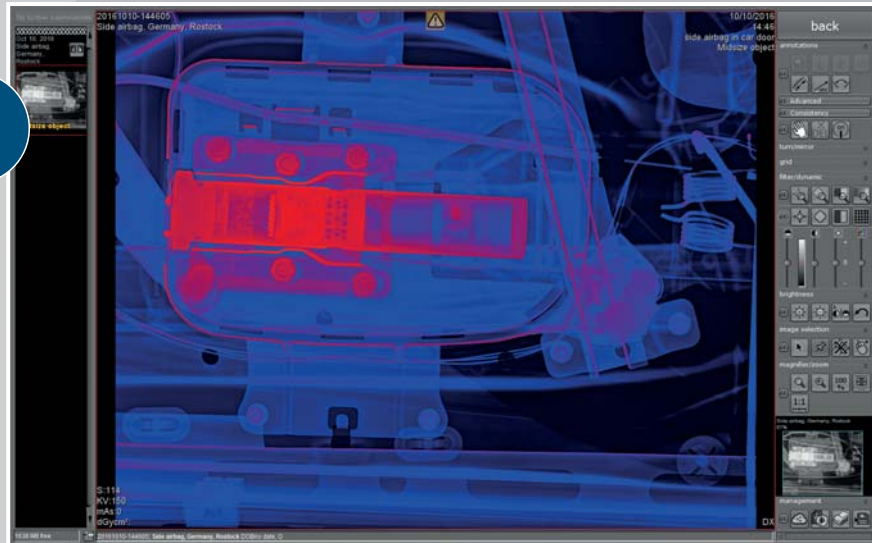
6 Extensive search functions and display of the results list. Complex test sequences can also be saved as macros and do not have to be planned individually.

Evaluation
Evaluate test
images and
create / export
test reports

X-ray devices
(motorised)

[Industrial Radiography]
**Detectors and
CR systems**
(different manufacturers)

Raw images

Test
rimages,
measure-
ment results,
descriptions

Control of the
motorised system,
collimator etc.

Panel control

Positioning
protocol

□ ☁ *OR inspect*

- evaluate test images
- create test reports
- operation software
  for generator and panel
- image processing
- image management

DICONDE Worklist
Provision of
inspection data and
examination orders

KVp, mAS, etc.

Exposure
protcol

Feedback
when the job is done

(Company-)
**Management
software**
(z. B. SAP)

**X-ray
generator**

DICONDE
Worklist

DICONDE
store

Handover of the
finished processed
images incl. all
inspection data
and recording
parameters

Functional principle
The *ORinspect* software for
taking and evaluating X-ray
images enables non-
destructive testing, e.g. of
welds seams, castings or
even individual workpieces,
works of art and sculptures.

PACS
(e.g. *dicondePACS*®)

Flexible image acquisition

Optimum adaptation to all X-ray systems

- Support of various **direct radiography (DR)** matrix detectors (**DDA**, digital detector array) and **CR imaging plate systems** from different manufacturers. A function for **parallel operation of imaging plates (CR) and matrix detectors (DDA)** is included as standard. This flexibility also provides an excellent failure concept for a possible defect of the matrix detector.

- Possibility to **connect up to three digital X-ray detectors** in one system.

The software allows simultaneous control of a CR system and one or more X-ray detectors by default

- Intuitive concept for multiple shots (multi-frame images) for SNR improvement

- The configurable generator interface allows the control of X-ray generators or X-ray systems from different manufacturers and thus enables the generator parameters to be controlled directly via the software. The automatic programme allows automatic setting of all X-ray parameters for each exposure with simple, manual post-processing options.

- Automatic and manual **stitching** (stitching together serveral shots) *[optional]*

- Easy **creation of test reports** (e.g. according to ISO 17636-2)
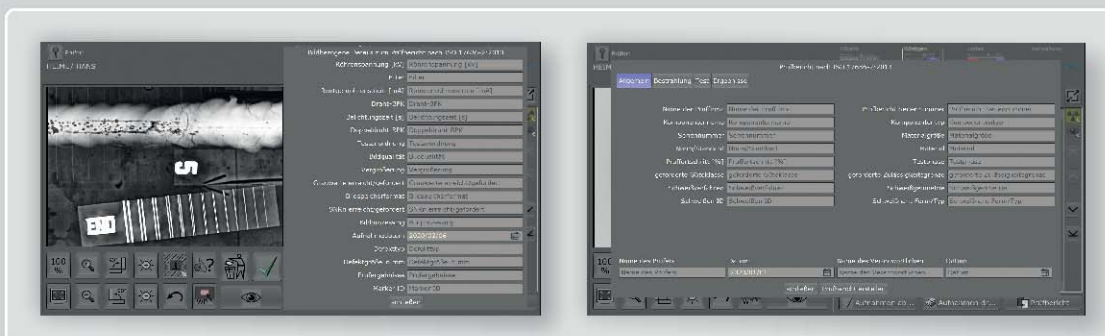
Automatisches Bildprozessing

Image processing
## Automatic image optimisation for perfect images

- Perfect images at all times – generally no adjustment required

- Integrated software for

  - **ADPC – automatic dead pixel correction**
    Automatically eliminates dead pixels – this reduces the need
    to calibrate the flat panel

  - **AIAA – automatic image area analysis**
    Automatically analyses each image and applies the most suitable
    image processing algorithms

  - **MFLA – multi frequency level analysis**
    Analyses each image on various frequency levels for ideal sharpness
    and high contrast

  - **ANF – automatic noise filter**
    Algorithm for optimal noise reduction

  - **IBC – intelligent brightness control**
    Automatically displays the image at the ideal level of brightness

  - **ACO – automatic contrast optimisation**
    Automatic contrast equalisation across the entire image

- Professional and adaptable image processing for each individual inspection/
  test for optimal image calculation for special customer requirements

- Very good detail recognition and image quality

- Noise suppression

Integrated *OR*inspect viewer: Allows the evaluation of radiographic within the acquisition software and offers numerous tools (e.g. **SNR measurement/ SNR$_N$ determination**) the creation of **standard-compliant inspection reports**.

Determination of the basic spatial resolution: After creating a grey value profile plot, the image unsharpness value is **automatically determined** by analyzing the duplex-wire-type IQI
(standard compliant to ISO 17636-2 and ASTM E 2446).
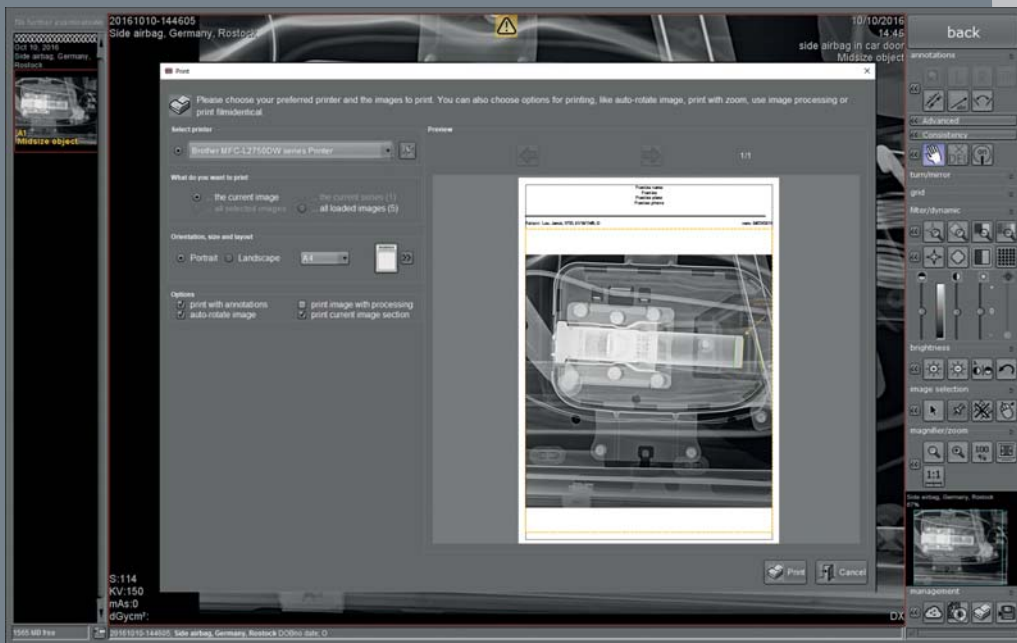
Image export:
Printing of X-ray images on Windows printers (paper) and laser imagers (film)

Image analysis

Professional Evaluation and image processing with the integrated viewer

Completely integrated *ORinspect* viewer for image diagnosis, further processing and storage of images in an SQL database incl. image manipulations and filter, export options, layout adjustments, freely configurable user interface and much more

- SNR measurement and SNR_N determination (ISO 17636-2, EN 12681-2)
- Automatic determination of the image blur number of the double-wire test specimen (ISO 19232-5)
- Measure grey values, plot grey value profiles
- Stepless zoom, panning, cropping, magnifying glass function
- Measurement of distances, angles, areas, wall thicknesses (calibrated and uncalibrated), labelling and marking, e.g. arrows, free text, ellipses, rectangles, etc.
- Adjustment of window/level values, gamma correction
- Noise reduction, sharpness filter, high-pass filter
- False colour display (pseudo colour), intelligent image inversion
- Provision of many additional functions, e.g. image comparison (subtraction), stitching (optional), etc.
- Expandable to a networked DICONDE image management system (PACS)

Image export

- Worldwide distribution of images to colleagues and customers via ORCA
- Images can be exported in **JPEG, TIFF, BMP** and **DICONDE** formats
- Images can be printed with Windows OS printers as well as laser imagers via DICONDE Basic Print
- Creation of USB sticks for customers with free WEB viewer or virtual customer CD (code generation for online access to images via the *ORCA*® Cloud)
- If required, external archiving can be realised via the *ORCA*® Cloud
- Built-in **email tool** for image distribution - no external email application necessary
- Image distribution to multiple recipients via image management systems and DICONDE store

Individual adaptation of the graphical user interface according to the specifications of the OEM partner

Complete control of X-ray generators and X-ray systems from various manufacturers

Orderly and optimal workflow
&
Simple and user-friendly user interface

OEM: Software wanted?

Who can profit from the professional acquisition and control software *OR*inspect by OR Technology?

OEM partnerships provide numerous benefits to manufacturers who are interested in combing their X-ray systems with our *ORinspect* software under a chosen brand name. The software helps all manufacturers **reduce their development costs** and significantly **shorten the time to market for digital solutions**.

ORinspect is THE software for the complete integration of X-ray generators, stands, detectors, CR systems, image processing, file management, patient administration and PACS (including cloud computing).

The system is openly programmed and can be **customised to the specifications of the OEM partner**. The Look & Feel can be adapted to the existing CI/CD.

ORinspect is a professional acquisition and control software for X-ray images generated by various X-ray detector systems (DR) and CR units (imaging plate reader). The software also controls the operation of X-ray generators and X-ray units manufactured by varios companies, thus ensuring an efficient and orderly workflow. The user-friendly and straightforward visual interface functions via touchscreen and mouse.

Determination of the authenticity of a
painting by Walter Spies (1895-1942)

The **stitching module**
creates a single image
from separate digital X-ray
images. The images are
loaded, correctly aligned
and merged to one image.

Upgrading

Which option can be added to the **OR**inspect software?

[optional]

ORinspect may not only be used as a software for the acquisition and evaluation of X-ray images, but can also be upgraded to a MiniPACS or even to an Enterprise Multi Modality PACS. Thousands of installed workstations in over 120 countries (cross-sector - as of 03/2021) prove that our customers are satisfied.

A single workstation system with installed *ORinspect* software can be upgraded with the following options:

Extended viewer functionalities
(extract)

- **Generator control** transfer of the test parameters for the X-ray image to the generator (for already integrated generators)

- Automatic and manual **stitching** (Correct alignment and stitching of multiple images)

- Creation of test reports in MS Word with integrated images

- Connection of several monitors for the evaluation of the X-ray images/radiographs

- **Statistical evaluation**

- And much more …

ORCA ® *Archive*

ORCA ® *Share*

**Benefits of cloud archiving
with *ORCA*®**

Minimal expenditure: *ORCA*® does not require investing in expensive infrastructure such as server and data cables.

Scalability: The amount of memory required when using *ORCA*® is determined by the demand.

Long-term security: *ORCA*® archives data on many individual European servers in professional and air-conditioned data centres. Server technology is continuously updated.

Accessibility: *ORCA*® stands out by being highly accessible. Since data is saved with multiple redundancy, *ORCA*® guarantees more continuity than a mere server solution.

Environmentally friendly: *ORCA*® is sustainable – through the optimised use of resources and their distribution.

Location-independent: *ORCA*® guarantees access to archived patient data – worldwide.

Simplicity: *ORCA*® allows easy data access from any computer – from your workplace of work, from the comfort of your home or from any other computer or tablet PC.

Stress-free: *ORCA*® deals with everything – no need to struggle with loose network cables, removed hard drives or software problems.

Modules & Features

ORCA® – Filesharing and archiving with the DICONDE cloud [optional]

Cloud solutions have proven their worth in industrial non-destructive testing (NDT). They allow you to simplify your own IT infrastructure and only pay for the capacities that are actually used (pay per use). The *ORCA*® cloud helps you manage, track and monitor NDT projects in compliance with all rules and procedures, which we can customise for you on a project-by-project basis. Connect with manufacturers, engineers, contractors and inspectors through our cloud and streamline your workflows to enable consistent, accurate documentation.

ORCA® offers two application options:

→ ***ORCA*® *Archive:* Safe, long-term archiving** of DICONDE images with intelligent usage of internal databases

→ ***ORCA*® *Share:* Communication platform (exchange of images and test reports)** with with manufacturers, engineers, contractors and inspectors.

Data is exclusively archived on European servers with the relevant safety certificates.
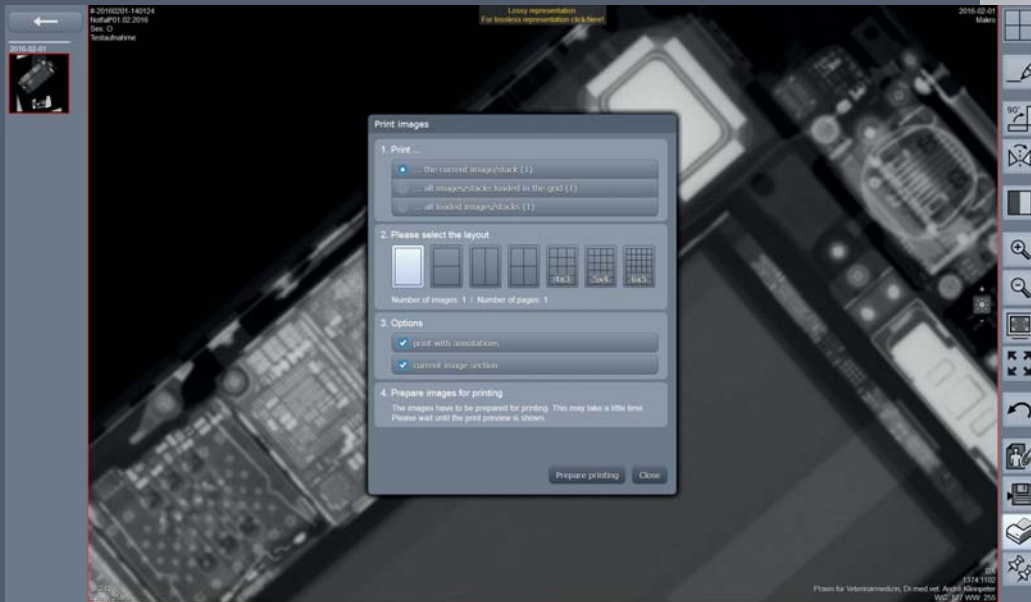
Printing images and documents

Create inspection reports incl. the possibility to use / create different report templates.

Various functions for image editing: invert, adjust brightness/ contrast, zoom in/out.

ORCA® basic functions of the DICONDE cloud

ORCA® *View* is a web based image viewer offering file sharing
capabilities (email with integrated address book, image anonymisation,
etc.), print and export functions, as well as all basic functions for
viewing and analysing images:

- Image annotation in various colours (e.g., arrow, text)

- Measurement (e.g., length, angle)

- Recording of inspections incl. the possibility to create different inspection templates

- File attachment

- Image comparison using different grids

- Image rotation and mirroring

- Brightness and contrast adjustment, image inversion, zooming in/out

- Full screen and fit image modes

- Image panning

- Image series scrolling

- Document and image export

- Document and image printing

The main advantages at a glance:

- The web-based viewer offers an important range of functions of a professional PACS viewer:

    - Draw annotations
    - Measurements
    - Registration of diagnostic findings
    - Attach documents
    - Draw lines and arrows (multi-coloured)
    - Compare images in different grids
    - Adjust brightness / contrast
    - Flip and rotate images
    - Adjust brightness / contrast
    - Invert, zoom in / out
    - Full screen, fit image
    - PAN
    - Scroll through image series
    - Cine loop for multi frame series and CT / MRI
    - Export images and documents
    - Print images and documents

- High flexibility through compatibility with various internet browsers, including Microsoft Internet Explorer, Mozilla Firefox, Google Chrome, Safari 5, Safari for iPad and Android browser

- Intuitive operation

- Supports the multi-touch operating technology (e.g. zoom in and out with two fingers)

- Supports full screen mode

- Allows accessing the *ORinspect* oder *dicondePACS*® database without any additional modules

- Allows playing series (e.g. CT)

- High loading speed with modern streaming technology

Further information about *dicondePACS*®*MobileView* is available here:

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Module & Features

The web-based viewer for displaying DICONDE images on mobile devices or PCs [optional]

The web-based viewer *dicondePACS*®*MobileView* is one of the numerous extension modules of the inspection software *dicondePACS*® (Digital Imaging and Communication in Non Destructive Evaluation). The viewer allows image retrieval in DICOM/DICONDE quality from any end devices such as tablet computers, ultrabooks or even PCs via an internet browser - regardless of the number of installed workstations. Almost browser-independent, it offers viewing of X-ray image material, photos, process information, comments and other documents on mobile devices, in your working environment in the context of non-destructive testing (NDT) for material and quality inspections. The user can access all image and document material via the *dicondePACS*® system from anywhere in the world via a network connection.

The viewer also offers text capture and export of images and texts. export of images and texts. Documents can also be attached and exchanged.

dicondePACS®*MobileView* can be installed in addition to existing *dicondePACS*® viewing modules. It is irrelevant whether the software is used on a network PC (pure viewing workstation) or/and on a mobile end device. Via a network connection, e.g. VPN access of a used mobile end device to the central *dicondePACS*® system, there is worldwide access to all image material.

For more detailed information
please see: **www.or-technology.com**

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www.or-technology.com | **X-perts in X-ray**

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