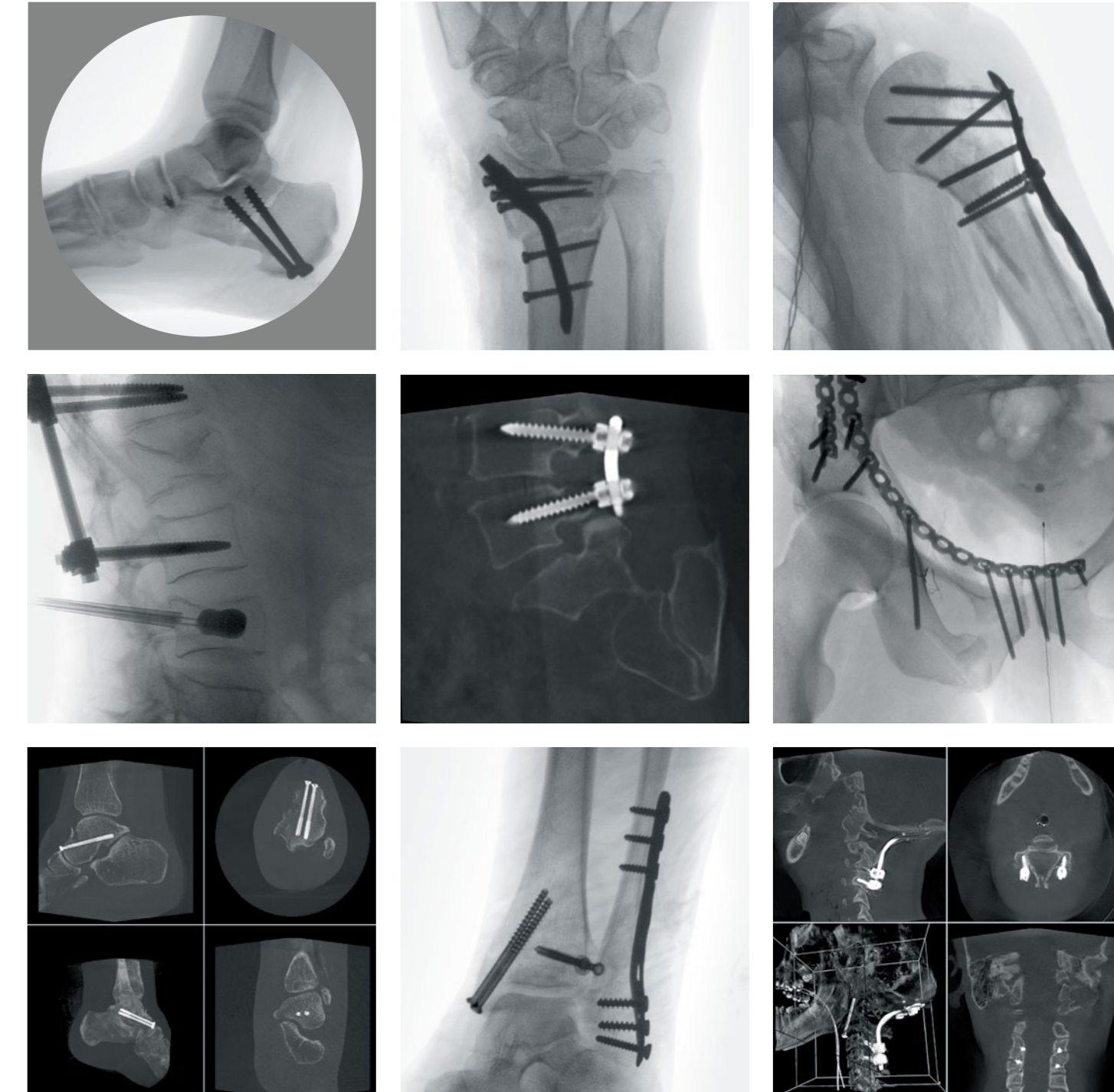




Mobile C-arm systems
Engineered for your clinical
imaging needs

- Orthopedics
- Traumatology
- Neurosurgery



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Ziehm Imaging is constantly improving its products and reserves the right to change the specifications without notice. Presented data are subject to tolerances. Country specific data and options may apply.

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Optimal solution for your clinical requirements. Our C-arms set international benchmarks and are ideal for applications in orthopedics, traumatology and spinal surgery. With a multitude of options, our C-arms can be specifically tailored to your requirements. We would be pleased to consult with you personally.



Ziehm Solo

Superb imaging meets versatile design.



Ziehm Solo FD

Versatile design meets latest flat-panel technology.



Ziehm Vision

The new standard in mobile imaging.



Ziehm Vision FD

The new imaging standard for surgery.



Ziehm Vision Vario 3D

Excellent 2D image quality combined with intraoperative 3D imaging.



Ziehm Vision FD Vario 3D

Distortion-free 2D and 3D imaging with cutting-edge flat-panel technology.



Ziehm Vision RFD

The ultimate C-arm to outperform.



Ziehm Vision RFD 3D

The revolution in intraoperative 3D imaging.

Features				
Imaging	2D	2D	2D	2D
Flat-panel (cm)	-	20.5 x 20.5 (CMOS)	-	20.5 x 20.5 (CMOS)
Image intensifier (cm)	23	-	23/31	-
Applications				
Traumatology	••	•••	•••	•••
Orthopedics	••	•••	•••	•••
Neurosurgery	••	•••	••	•••
Spinal surgery	•	••	•••	•••
Pelvic surgery	•	••	•••	•••
Hand / foot / joint surgery	•••	•••	••	••

2D and 3D	2D and 3D	2D	2D and 3D
-	20 x 20 (a-Si)	20.5 x 20.5 (CMOS) 30 x 30 (a-Si)	30 x 30 (a-Si)
23	-	-	-
•••	•••	••	•••+
•••	•••	••	•••+
••	•••+	•••	•••+
•••	•••+	•••	•••+
••	•••	•••+	•••+
••	•••	•	•••+

not available -
good • | very good •• | ideal ••• | particularly recommended +

For more than 45 years, Ziehm Imaging has offered tailored imaging solutions for a diverse range of clinical applications. Through close cooperation with renowned universities, research institutes and hospitals, we are able to identify the needs of the market and thoroughly incorporate them into our product development.

Hand, foot and joint surgery
Pain management
Orthopedics
Spine Pelvic surgery
Traumatology
Neurosurgery
Maxillofacial surgery



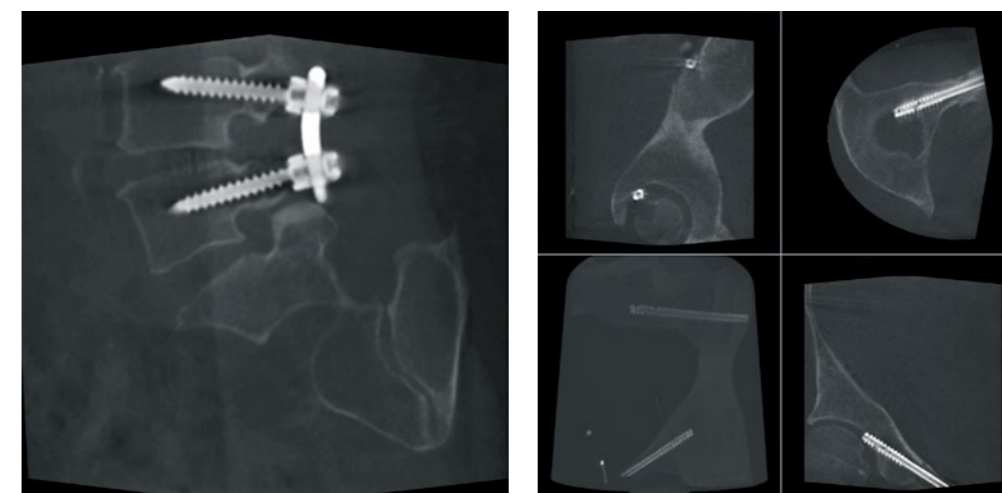
→ Trust in over 10 years of flat-panel performance.

Image quality. A detail- and contrast-rich display is an essential prerequisite for fast and reliable decision-making in the OR. So you can count on superb image quality – regardless of whether you need an image of an extremity or a view of the entire pelvis.

Penetration

Intraoperative imaging must provide optimal results for all patient sizes.

The number of surgical procedures in obese patients increases every year. In these cases, the lateral image of the pelvis and lumbar spine can be particularly challenging. A perfect combination of innovative hardware and software components with specially adapted organ programs ensures the best image quality.



Right: Image clearly shows malpositioned screw that could be intraoperatively revised.

High precision

When implanting osteosynthetic materials, accuracy is absolutely essential to a successful surgical outcome.

Our flat-panel detectors exclude geometric distortions in the X-ray image. This means you can now have the precision of high-resolution imaging available intraoperatively – something previously only possible diagnostically with a postoperative CT scan.

Furthermore, the specially developed algorithm ZIR (Ziehm Iterative Reconstruction) optimally minimizes fan and metal artifacts in 3D reconstructions. This new technology leads to significantly more distinguishable anatomy, defined bone crests and optimum slice views in the coronal, axial, sagittal and individually adjustable planes. Imaging in applications with an increased amount of metal implants, e. g. shoulder or calcaneus fractures, can be displayed in high quality with significantly reduced metal artifacts.

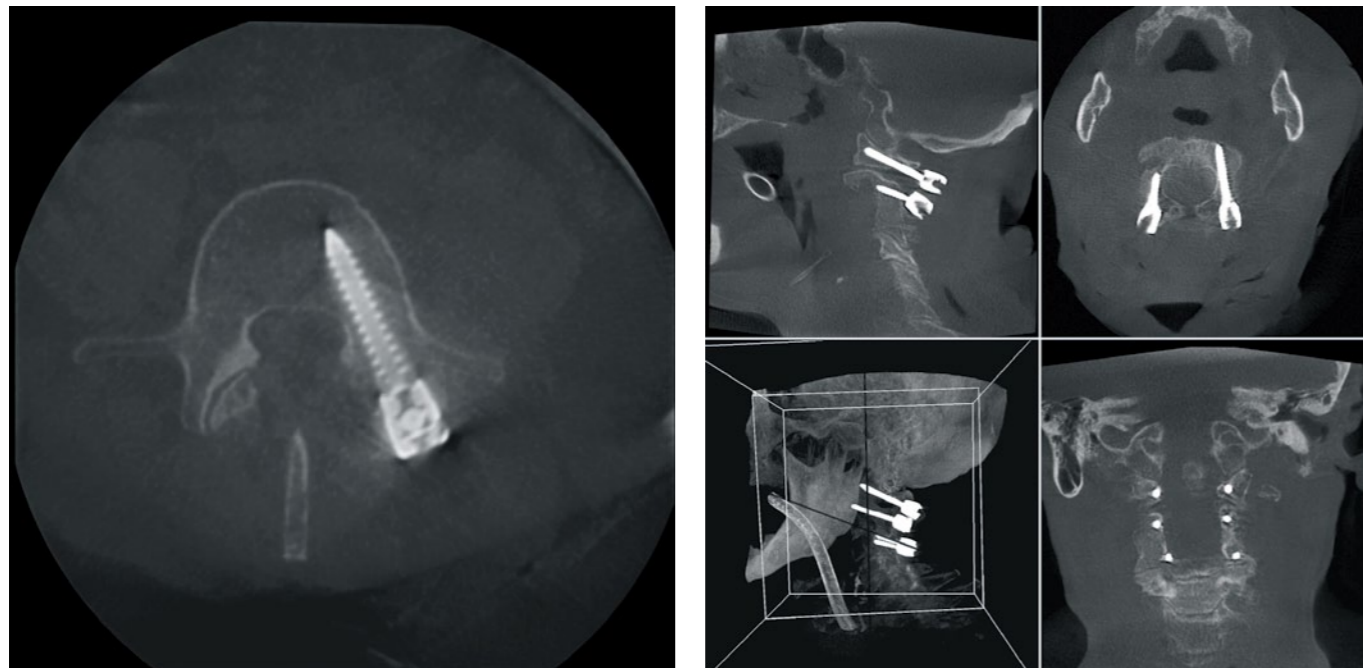
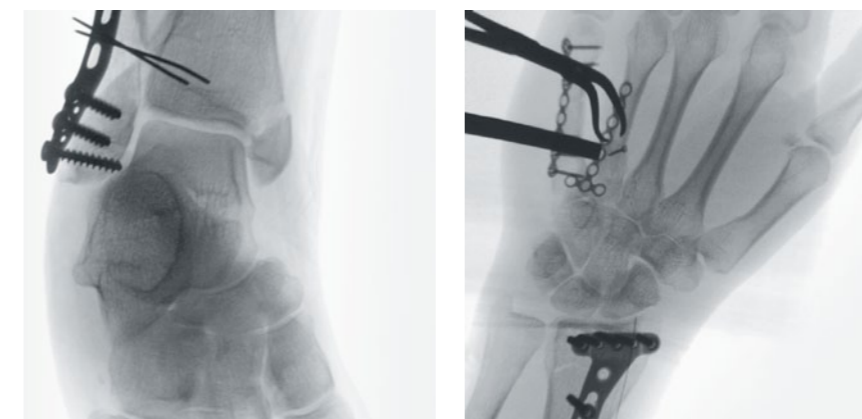


Image contrast

In order to evaluate the position of the implant, you need a clear view of the adjacent anatomy.

Metal components pose a particular challenge for image quality during complex screw placement, transposition osteotomies and in the field of endoprosthetics. Thanks to intelligent metal correction, overexposure is avoided. Object recognition ensures that the anatomy is displayed regardless of its position.

For hand and foot surgery, high image resolution and dynamic range are required in addition to object recognition. Our flat-panel detectors acquire more than 65,000 shades of gray, thereby producing a dynamic range 8 times greater than that of image intensifiers. This means you capture more information per image.



Benefits

- Position-independent display through automatic object recognition
- High image resolution and dynamic range
- Almost no overexposures
- Superb display even with lateral pelvic imaging



→ 3D imaging should become indispensable in your everyday work.

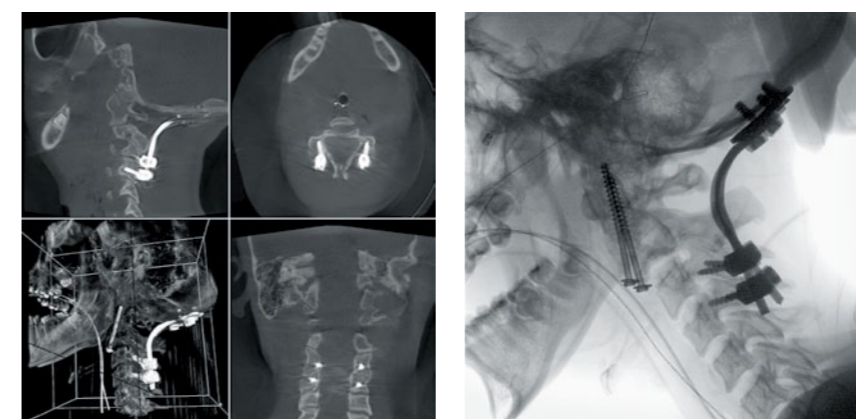
3D imaging. Multiplanar reconstructions have established themselves as the standard in preoperative diagnostics. We provide intraoperative axial planes that allow immediate control during procedures such as pedicle screw placement. Postoperative CT scans and revision procedures are thereby reduced.*

Intraoperative control

Intraoperative 3D imaging helps to safely position implants.

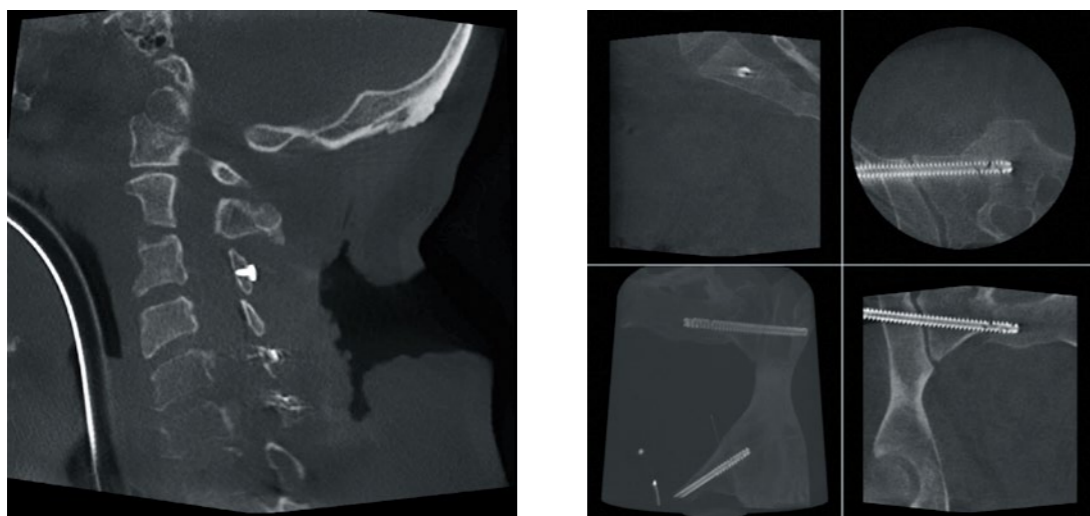
When positioning screws, additional information from the 3D image enhances the quality of the procedure. Intraoperative 3D images allow you to directly monitor results while still in the OR. Incorrect positioning can be quickly detected and corrected if needed. You can thereby reduce the number of revision procedures* – which is in both your own and your patient's interest.

We now bring iterative reconstruction techniques, so far only known from CT imaging, to a mobile 3D C-arm. The hardware-based and specialized algorithm ZIR (Ziehm Iterative Reconstruction), which was developed in-house, minimizes fan and metal artifacts in 3D reconstructions. The result is a significantly more distinguishable anatomy, defined bone crests and optimum slice views in the coronal, axial, sagittal and individually adjustable planes.



Compact in a single unit:
Superb 2D image quality with
intraoperative 3D imaging.

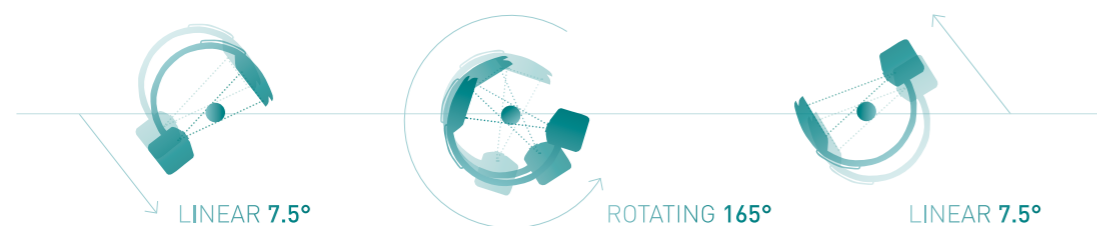
Image courtesy of Leipzig University Hospital, Germany; Prof. Dr. med Christoph Josten
* J. von Recum, K. Wendl, B. Vock, P. A. Grützner, J. Franke, "Intraoperative 3D C-arm Imaging. State of the art." Der Unfallchirurg, 3 / 2012, Pages 196 – 201.



180 degree imaging due to SmartScan

Can a mobile C-arm create a complete 3D dataset?

A 180 degree scan is required to create a complete, informative 3D dataset. Ziehm Imaging's SmartScan is a revolutionary concept that enables the Ziehm Vision RFD 3D to generate the complete 3D information of even the smallest anatomical structures while keeping the geometry of a conventional 2D C-arm. The intelligent combination of linear and rotating movements enables 180 degrees of scanned information – at every point in the field of view. With this dataset, procedures can be assessed intraoperatively: Fine details, like cortical rims, pedicle diameters or even orbital floors, are optimally visualized.



[Link to navigation systems](#)

To keep you flexible, a C-arm must be compatible with all navigation systems.

The Ziehm NaviPort open interface gives you flexibility when selecting your navigation system and even offers the option of connecting to systems from different manufacturers with one and the same C-arm. Our 3D C-arms offer a fully automatic transfer of the image data. The 3D dataset is then available for the navigated procedure without further registration. This saves you valuable OR minutes and minimizes additional technical effort by your OR team. Ziehm NaviPort is available for 2D navigation and 3D navigation on different systems. For this reason, Ziehm Imaging has partnerships with Brainlab, Stryker and Medtronic. For detailed information please contact your local Ziehm Imaging partner.



3D applications

- Midfacial fractures
- Cervical/thoracic/lumbar spine
- Dens fractures
- Vertebroplasty
- Pedicle screws
- Shoulder joint
- Wrist fractures
- Distal radius fractures
- Pelvic surgery
- Tibial plateau fractures
- Calcaneus
- Ankle fractures

Benefits

- 2D and 3D imaging in one compact unit (with minimum space requirements)
- In under 2 minutes: intraoperative 3D monitoring of results
- Reduction in revision procedures*
- Flexibility in selecting your navigation system

* J. von Recum, K. Wendl, B. Vock, P. A. Grützner, J. Franke, "Intraoperative 3D C-arm Imaging. State of the art." Der Unfallchirurg, 3 / 2012, Pages 196 – 201.



→ A large C-arm opening is especially convenient while operating.

Set-up and availability. Imaging must be constantly available without interfering in a crowded OR environment. With our C-arms you still have sufficient clearance during your procedure, and if you need your C-arm in another OR you can simply take it with you.

Minimum space requirement

Ideal solutions when OR space is limited.

Emergency rooms, crowded treatment rooms and operating rooms are consistently being upgraded technologically. The space required for a C-arm is therefore becoming an increasingly important factor. Our units are some of the most space-saving C-arms on the market. The Ziehm Solo and the Ziehm Solo FD give you the ability to work without the need for a separate monitor cart.



The Ziehm Solo FD is one of the most compact C-arms available on the market. With its various configuration options, it can be specifically tailored to your OR:

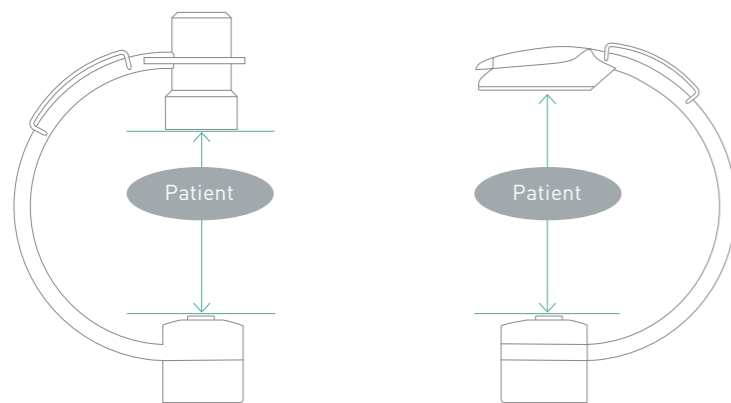
- Monitor on C-arm
- Viewing Station
- Connect to ceiling- and wall-mounted monitors

Ready to go

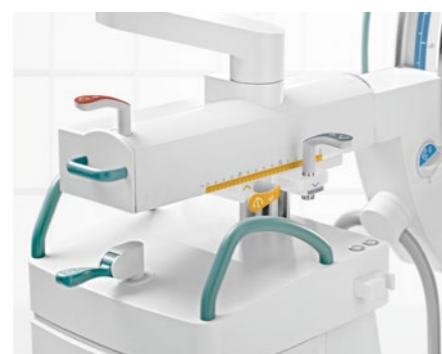
A C-arm should be quick to set up and easy to position.

The compact, lightweight design and the easy-drive system ensure that the C-arm is easy to maneuver in the OR. You can quickly move it into another room or department. Steering and braking functions are controlled by just one lever. Thanks to short set-up times your C-arm is quickly up and running.

The wider C-arm opening enabled by the flat-panel detectors make it fast and easy to position these systems at the patient. The significantly wider opening allows additional space for your procedure. This additional space provides a much more comfortable working environment without your having to move the unit away from the OR table.



Compared with conventional image intensifiers, the flat-panel provides considerably more free space.



Easy to operate

Clear communication is fundamental, especially in critical situations.

Colored brake levers allow you as the surgeon to give simple and straightforward instructions for positioning the C-arm.



Benefits

- Minimum space requirement
- Easy maneuverability for fast imaging
- Larger C-arm opening with flat-panel detectors
- Fast, effective handling thanks to colored brake levers



→ You can focus on the clinical procedure, not on imaging settings.

Ziehm Usability Concept. Heavy case loads and a large number of different users call for OR equipment with highly standardized and ergonomic designs. We support this need with the unique Ziehm Usability Concept*. Seamlessly integrated workflows offer unprecedented levels of usability – anytime, anyplace.

Full control of the C-arm

You can determine what you want to see and when you want to see it directly from the OR table.

Different procedures and working methods require flexible C-arm control options. That's why our units are equipped with the Vision/Solo Center: touchscreen control panels that are mounted on the C-arm as well as on the monitor cart and synchronized with each other. With an identical user interface, they offer you complete control at both the C-arm and the workstation. In addition, the C-arm can be supplemented with the Remote Vision Center/Remote Solo Center** and the Position Control Center***, which makes it fully operable directly from the sterile OR table.



With the Remote Ziehm Solo/Ziehm Solo FD and the Position Control Center, you can control the C-arm directly from the OR table.

* The Ziehm Usability Concept includes all above mentioned features. Due to regulatory reasons the availability of each feature may vary. Please contact your local Ziehm Imaging partner for detailed information.
 ** Remote Solo Center is only available for the Ziehm Solo/Ziehm Solo FD.
 *** Position Control Center is only available for the Ziehm Vision RFD 3D and the Ziehm Vision RFD Hybrid Edition.

The Anatomical Marking Tool (AMT) enables the user to apply markings and left/right labels to live images using the touchscreen. It is also a straightforward tool for marking blood vessel branches or implant positions on live images.



The C-arm is operated completely via the touchscreen panel. Ziehm SmartEye gives you a convenient view of the current X-ray image. All functions can be directly selected via SmartControl. You can thereby adjust the collimators and control the image rotation with just one finger.

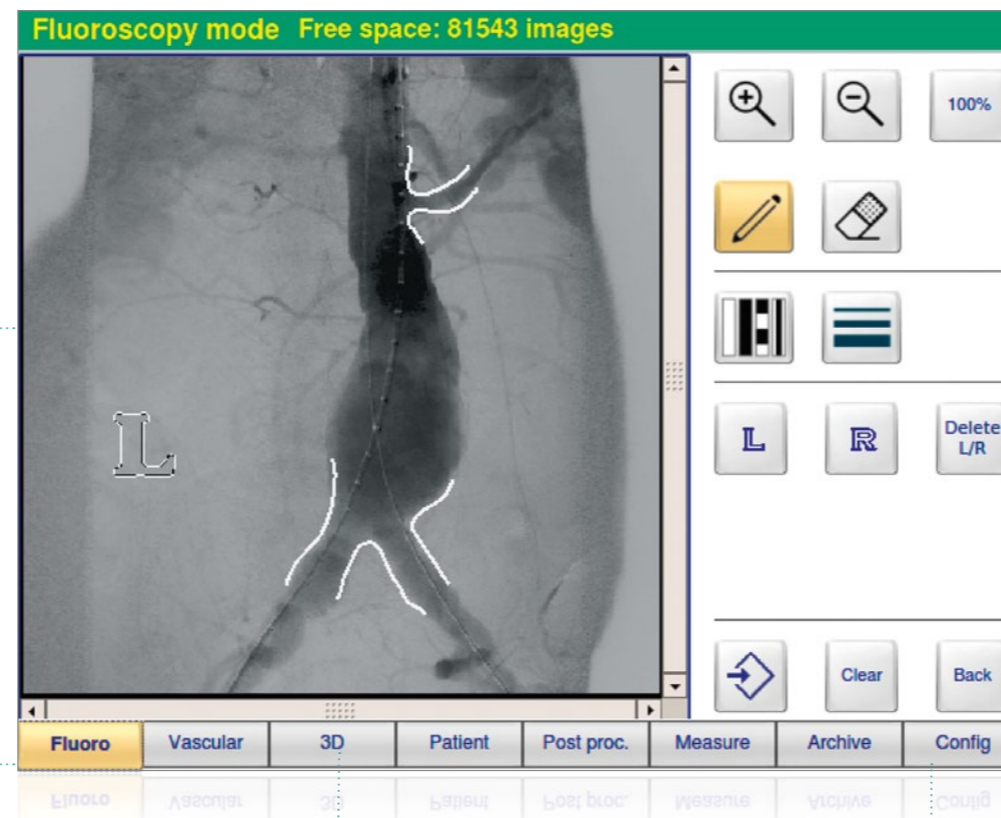
All functions are equipped with dose-free image preview.

Switch quickly from 2D imaging to 3D functionality with just one click. In 3D mode, you are then guided through the workflow in only 4 steps.

Intuitive archiving

Patient data and X-ray images are organized in such a way that you can quickly find all relevant information.

Administration in clinical environments is steadily growing. This makes it even more important to have quick access to patient data and keep images intuitively archived in the existing IT networks. With SmartArchive, X-ray images are transferred to PACS in DICOM 3.0 format. SmartArchive provides you with thumbnail views on the touchscreen that make it easy to quickly scroll through and find locally stored images on the C-arm. The X-ray images can then easily be transferred to PACS in DICOM 3.0 format.



Up-to-date thanks to the touchscreen


Your C-arm shouldn't only be state-of-the-art today, but tomorrow as well.

The synchronized touchscreens are designed to meet your specific needs at any time. Updates and software maintenance are not bound by fixed operating elements but can be flexibly expanded. We thereby ensure that your C-arm can always be kept up-to-date.

Easy-to-follow icons help facilitate intuitive C-arm operation for every application. To ensure a clear overview, the touchscreen displays only those functions that are currently being used.

Benefits

- Central access to all functions via synchronized touchscreens
- Intuitive operation
- Clearly designed screen display with non-relevant functions masked out
- Remote control of C-arm even from OR table



→ You can always rely on working with a minimized dose.

Best image quality – minimized dose. Minimizing dose while maintaining image quality is an important goal worldwide for surgeons, their staff and patients. We support this through further improvements to SmartDose* for different applications and set new benchmarks for user-friendly adjustment of dose exposure.

Exact positioning of scanning field

You can selectively scan only those areas that are relevant for your procedure.

An integrated laser light enables exposure-free positioning. The X-ray field can be precisely isolated to the relevant structure by the use of virtual collimators. The SmartControl feature allows you to optimally adjust these with your fingertip on the touchscreen.

With intelligent image processing functions, the operator can continue to work without additional exposure. PreMag displays image sections in 1st and 2nd magnification levels in advance. The PreMag feature thereby reduces the number of scans, and thus dose, to a minimum.



In pediatric surgery, you can significantly lower the C-arm dose with a single click. When combined with a corresponding anatomical program, this ensures a particularly gentle examination.

¹ The SmartDose concept includes all features mentioned on page 23. Due to regulatory reasons the availability of each feature may vary. Please contact your local Ziehm Imaging partner for detailed information.

Automatic object and motion detection

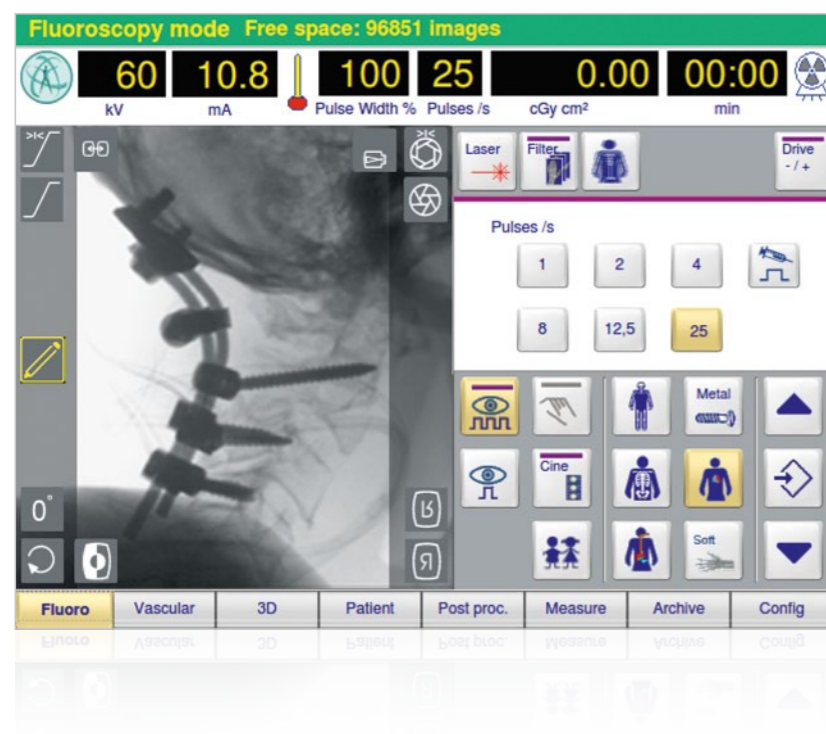
As little dose as possible, as much as needed.

Our C-arms feature ODDC technology (Object Detected Dose Control). ODDC provides a real-time analysis of the entire viewing area with respect to patient position and motion. This allows you to generate optimal images in all conditions, even when the object is not centered, and simultaneously avoid overexposure.

If the object is not moving, ODDC automatically reduces the pulse frequency to 8p/s. If motion is detected, the pulse frequency is adjusted accordingly. You always get crystal-clear images and reduced dose, benefiting patients and OR staff alike.



SmartDose
Best image quality. Minimized dose.



Precise isolation of beam path with SmartControl.

- LASER POSITIONING DEVICE**
Integrated in flat-panel or I.I. and generator housing for accurate and dose-free positioning of C-arm
- REDUCTION OF PULSE FREQUENCY**
manually or fully automatically to lower the accumulated dose
- OBJECT DETECTED DOSE CONTROL (ODDC)**
to automatically analyze the area of interest and minimize dose while optimizing image quality
- ANATOMICAL PROGRAMS**
with automatic optimization of dose and image quality for best results
- HIGH-SPEED ADR**
for intelligent, fast regulation of pulse rate to lower the dose level
- ZAIP ALGORITHM AND FILTERS**
to display fast-moving objects like guide wires and even the smallest vessels in razor-sharp image quality
- LOW DOSE MODE**
in all anatomical programs for particularly dose-sensitive procedures, e.g. in pediatrics
- PREMAG**
for exposure-free magnification of X-ray images
- AUTOMATIC ADJUSTMENT**
for obese patients – with no additional increase in dose
- REMOVABLE GRID**
to reduce dose in pediatric and other dose-sensitive procedures
- VIRTUAL COLLIMATORS**
for exposure-free positioning of collimators