ziehm imaging


# Ziehm Vision RFD

## The ultimate C-arm to outperform

CMOS LINE

19" TFT monitors for bright, high-contrast images and cine loops displayed with a wide viewing angle
↗ 06

Anatomical Marking Tool for an additional layer of image information to support aortic stent graft implantation without the use of RSA
↗ 06

Latest CMOS technology, based on over a decade of experience with flat-panel detectors, for lower noise levels and higher spatial resolution
↗ 04

Beam Filtration[1] for reduced skin entrance dose without compromising on image quality
↗ 16

Wireless Video to transfer images to external monitors
↗ 06

Advanced Active Cooling for extended fluoroscopy time in challenging procedures
↗ 10

Powerful generator with 25 kW for improved penetration of large anatomy
↗ 10

Ziehm Vision RFD. The treatment of cardiovascular and degenerative musculoskeletal conditions calls for high-performance intraoperative imaging technologies. Incorporating the latest CMOS technology for excellent image quality, the Ziehm Vision RFD is the ideal product. In addition to the cardiovascular-focused 21 cm x 21 cm flat-panel version, the Ziehm Vision RFD is available with a 31 cm x 31 cm CMOS flat-panel detector. This is the preferred model for highly demanding orthopedic, trauma or cardiovascular interventions that require more information in one image. Both systems are equipped with a powerful generator for optimum penetration, Advanced Active Cooling to enable longer procedures and an intuitive operating concept for high clinical standards. The Ziehm Vision RFD is also available with cost-efficient detector variants.

## 01 / Trust in over a decade of flat-panel performance enhanced with CMOS imaging excellence

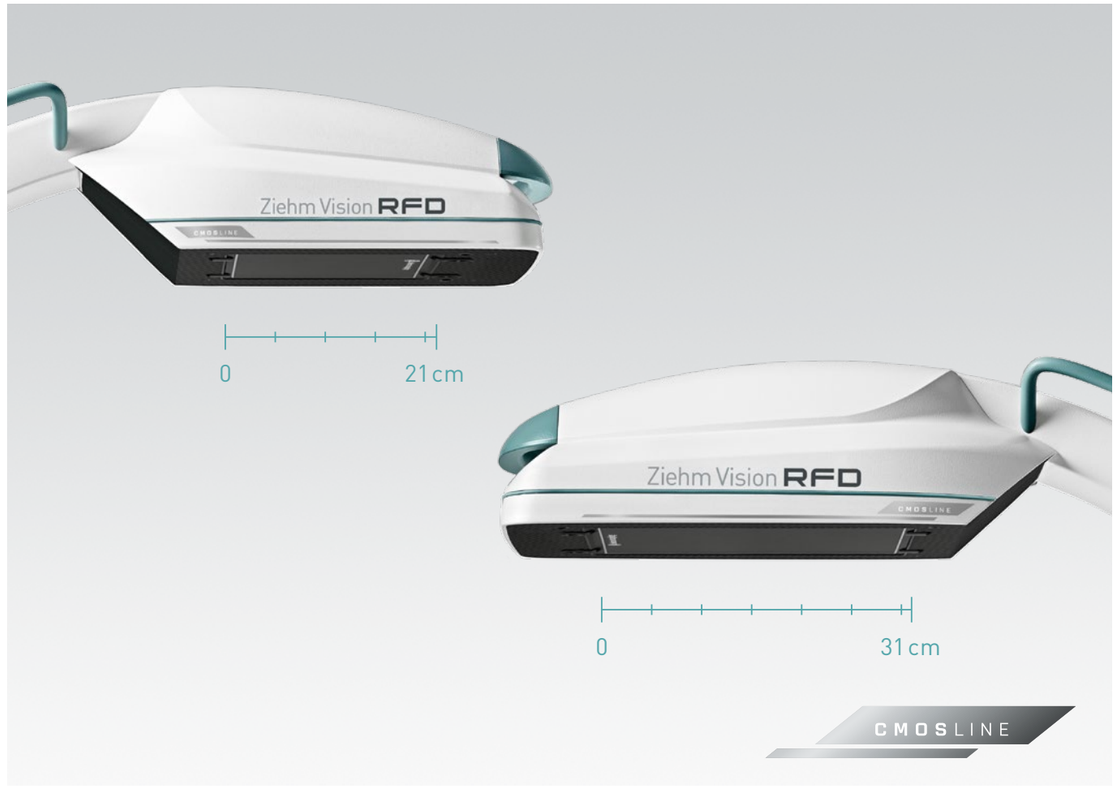
Building on more than a decade of experience in flat-panel technology, the Ziehm Vision RFD features the latest CMOS technology. Benefits of this enhancement include clear visualizations, lower noise levels and high spatial resolution for optimal soft tissue and bone contrast. These innovative improvements make the Ziehm Vision RFD ideal for challenging procedures in cardiovascular interventions and orthopedic, spine and trauma surgery.

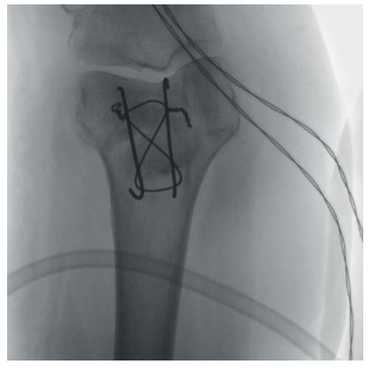
### → CMOS flat-panel technology

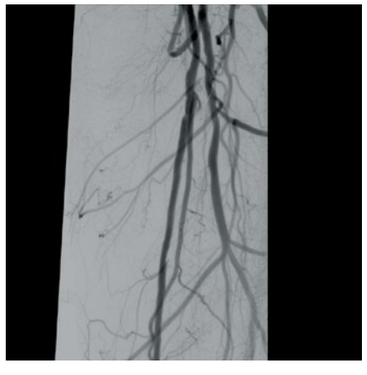
The Ziehm Vision RFD CMOSline² integrates the innovative detector technology for two specialized detector sizes. With the choice of 21 cm x 21 cm and 31 cm x 31 cm flat-panels, the mobile C-arm provides comprehensive information with each examination, previously capable only with fixed room systems. CMOS technology achieves higher spatial resolution due to a smaller pixel size combined with lower noise levels and a higher read-out speed at full resolution. With CMOS technology true resolution, especially in magnification modes, makes interpolation unnecessary and improves overall efficiency.

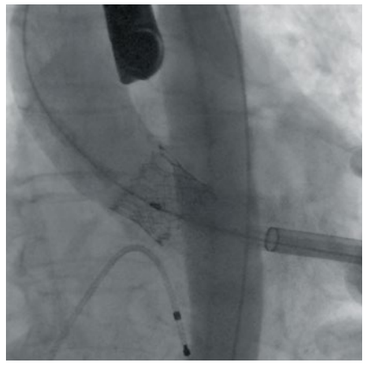
In addition, the Ziehm Vision RFD CMOSline comes with an enhanced version of our comprehensive SmartDose concept[4]. Our dose-saving technology – Beam Filtration[1] – supports the latest improvements in our enhanced CMOS imaging chain, thus enabling an exceptional skin entrance dose reduction. This innovation allows the Ziehm Vision RFD CMOSline to provide excellent image quality with a lower dose.

Whether cardiovascular or highly demanding orthopedic and trauma procedures, the Ziehm Vision RFD offers solutions to fulfil all those needs.







## → Contrast-rich display

For the excellent display of the crystal-clear X-ray images the Ziehm Vision RFD uses 19" duo-flat-screens, which are designed for the highest demands in the OR. They stand for their exceptional brightness and contrast even at a distance. With Wireless Video you benefit from fewer cables in the OR and the ability to transfer live X-ray images to external monitors.

The Ziehm Endo Package is a unique configuration designed in cooperation with clinicians to optimize minimally invasive endoscopy procedures (e.g. ERCP) under fluoroscopic X-ray control. A 26" color monitor enables the combined display of the X-ray image and the live endoscopic image side by side. The surgical team gains more space as a separate endoscopy monitor becomes unnecessary.

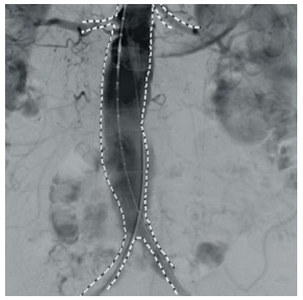
## → Comprehensive tools to support optimal image quality

SmartVascular offers a specialized workflow to meet the needs of complex vascular procedures. It allows to easily switch between Fluoro, DSA, MSA and RSA with just one click. This enables the surgeon to perform an RSA from a single DSA image, which saves precious time in the OR as well as reduces the dose applied to the patient. In addition, SmartVascular features a dedicated footswitch configuration, that supports an easy and intuitive vascular workflow.

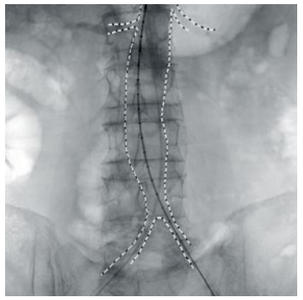
With the introduction of color to our comprehensive set of software functions, Enhanced Vessel Visualization and the improved measurement functions enhance daily communication in the OR and boost fast, efficient and secure decision-making and help to ease daily workflows.

The Anatomical Marking Tool (AMT) enables the user to apply markings and annotations, such as left/right labels, to live images by using the touchscreen. This innovative tool allows marking of blood vessels, branches or implant positions on live images – now also enhanced with color.

Contrast medium imaging with $CO_2$ is an innovative and cost-efficient alternative for patients with allergic reactions or other contraindications to conventional iodinated contrast agent. With the specialized $CO_2$ package for the Ziehm Vision RFD, DSA, MSA and RSA images are displayed in the known way as with iodine-based contrast agent.

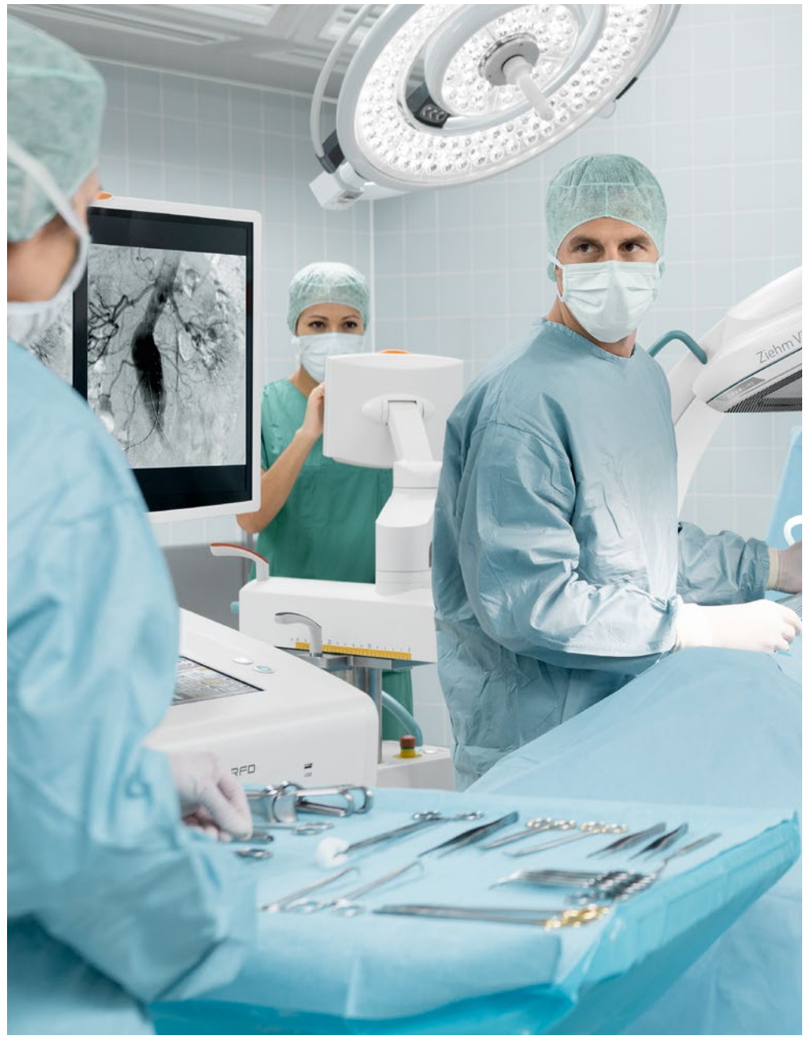


DSA: Marking of the aneurysm and the aortic branches with the AMT.



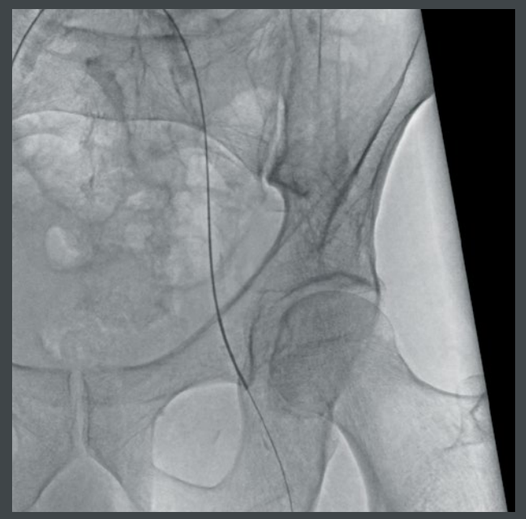
Marking stays in place during stent placement.

DSA control: successful placement of the stent.



Versatile viewing options offer maximum flexibility in the OR.

Vascular extremities



Pelvis

Endoscopic retrograde cholangiography (ERCP), native

Endovascular aneurysm sealing

Abdominal aortic aneurysm

# 02 / Unlock the power to perform with advanced generator and cooling technology

A powerful 25 kW monoblock generator for optimum penetration provides ideal support for surgeons. Advanced Active Cooling keeps the generator at a consistent operating temperature and prevents system failure due to overheating, making the Ziehm Vision RFD a reliable and safe choice for complex procedures.

## → Compact and powerful

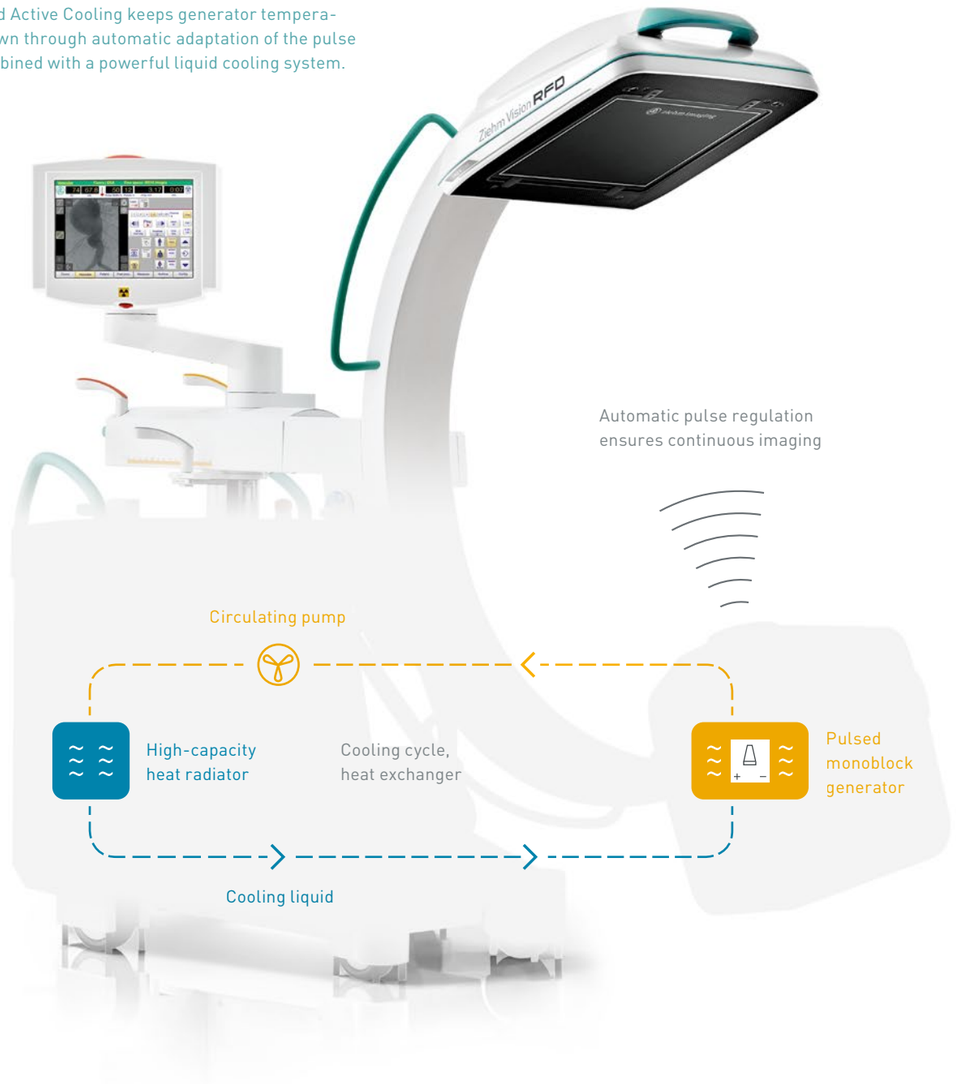
This industry-leading high-frequency generator operates with a variable pulse width, which optimizes the image quality while minimizing dose levels. With up to 25 frames per second, the C-arm provides you with crystal-clear images, even of fast-moving objects. Due to its outstanding generator performance and innovative imaging chain, the systems deliver excellent results – also during exposures with steep angles and lateral projections. The small housing of the compact yet powerful generator further simplifies its positioning at the OR table.

## → Advanced Active Cooling

The unique liquid cooling system Advanced Active Cooling (AAC) supports the mobile C-arm during lengthy, demanding procedures. Even during complex applications such as TAVI, angioplasties and EVAR, the Ziehm Vision RFD thereby delivers reliable results for the duration of the entire procedure. In the event of a temperature increase, the pulse frequency is automatically reduced until the generator's temperature has cooled down.

Sophisticated system to avoid generator overheating

Advanced Active Cooling keeps generator temperatures down through automatic adaptation of the pulse rate combined with a powerful liquid cooling system.



# 03 / Deliver advanced surgical care with the Ziehm Usability Concept

Best-in-class ergonomics pave the way for an ultra-intuitive operating experience, enabling consistent, high-quality outcomes. With an orbital movement of 165 degrees for easier patient coverage and the Wireless Freedom Concept for added operational safety and flexibility, the Ziehm Vision RFD raises the bar for procedural efficiency.

## → Best-in-class ergonomics

With a footprint of 0.8 m², the Ziehm Vision RFD is one of the most compact mobile C-arms on the market. With its easy-drive system it can be maneuvered with minimal effort during long procedures. The big C-arm opening and 165 degrees of orbital movement ideally support the workflow and provide easier patient coverage. In addition, different-colored scales and handles allow the surgeon and staff to quickly and simply select the desired function.

## → Intuitive user interface

The Ziehm Vision Center is a rotating and tilting touchscreen control panel mounted on the mobile stand as well as on the monitor cart and, optionally, directly at the OR table or on a separate trolley. Up to three synchronized user interfaces offer the entire range of functions on both units. The wizard-guided workflow, coupled with clear and easy-to-follow icons, supports an intuitive operation of the imaging system. With SmartArchive, it has never been more convenient and faster to access the current patient folder at any time.

Easy access even from the sterile field

Ziehm SmartEye technology mirrors the live image on the touchscreen, enabling the operator to keep track of orientation and object position.


Easy handling

The 165 degrees of orbital movement and an 84 cm C-arm opening provide ideal support for clinical workflows.

## → Ziehm Usability Concept

Heavy case loads and a large number of different users call for OR equipment with a highly standardized and ergonomic design. Ziehm Imaging supports this need with the unique Ziehm Usability Concept[3]. Seamlessly integrated workflows offer unmatched levels of usability – anytime, anyplace.

As an innovation and technology leader, Ziehm Imaging has developed the sophisticated yet intuitive Ziehm Usability Concept that combines a unique and finely tuned set of hardware features with seamlessly integrated software functionalities. In a challenging clinical environment, the entire concept is geared toward increasing ease of use in daily tasks. It improves process efficiency and ensures standardized quality levels in the OR for optimized patient outcomes.

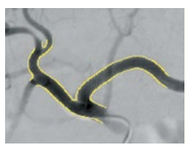
**COLOR-CODED SCALES AND HANDLES**
to ensure clear communication in the OR

**MOST COMPACT FOOTPRINT WITH 0.8m²**
to fit in even the smallest treatment scenarios

**UP TO 165° OF ORBITAL MOVEMENT**
to support easier patient coverage

**ZIEHM VISION CENTER**
featuring an intuitive touchscreen user interface

**SMARTEYE**
enabling users to keep track of orientation and object position



**ANATOMICAL MARKING TOOL**
to easily apply markings and labels to fluoroscopic images – now enhanced with color

**WIRELESS DUAL-PLUS FOOTSWITCH**
to control all imaging functionalities without any disturbing cables

**ZIEHM NETPORT**
with WLAN enables easy integration into IT networks

**WIRELESS VIDEO**
transmitting live X-ray images to external monitors

**CONTROL MODULES**
for a fast and flexible setup in the sterile field

**VERSATILE VIEWING OPTIONS**
to offer maximum flexibility in the OR

# 04 / Reduce exposure significantly with the next-generation SmartDose Concept

The Ziehm Vision RFD is designed to meet growing demand among surgeons and their staff for minimized dose exposure without compromising on image quality. Optimal filtration and advanced anatomical programs deliver on these demands, making this device perfect for dose-sensitive applications.

## → Best image quality. Minimized dose.

The comprehensive concept consists of a broad, clinically proven application portfolio to address daily challenges of low dose and high image quality. With significant dose savings, Ziehm Imaging sets the benchmark in user-friendly adjustments of dose exposure. SmartDose[4] helps display even the smallest details of complex anatomical areas and reduce dose with intelligent pulse regulation and optimized anatomical programs. Furthermore, dedicated SmartDose functions significantly reduce exposure in pediatric surgery[5].

## → Beam Filtration for reduced skin entrance dose

Our feature-rich SmartDose Concept comes with the groundbreaking Beam Filtration[1] technology. Dose reduction techniques for an optimized X-ray spectrum support our enhanced CMOS imaging chain. Beam Filtration enables an exceptional reduction in the skin entrance dose for Ziehm Imaging flat-detector systems in comparison to systems with conventional filtration technology.

SmartDose
Best image quality. Minimized dose.

**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 large 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

**BEAM FILTRATION**
for reduced skin entrance dose without compromising on image quality

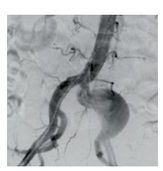
## FEATURES

| | | |
|---|---|---|
| Imaging technology | IGZO, flat-panel, 31 cm x 31 cm<br>a-Si, flat-panel, 30 cm x 30 cm | CMOS, flat-panel,<br>21 cm x 21 cm / 31 cm x 31 cm |
| Detector resolution | IGZO, 2 k x 2 k<br>a-Si, 1.5 k x 1.5 k | 2 k x 2 k / 3 k x 3 k |
| Power generator | 25 kW, pulsed monoblock generator | 25 kW, pulsed monoblock generator |
| Ziehm Usability Concept | ■ | ■ |
| SmartDose | ■ | ■ |
| Advanced Active Cooling | ■ | ■ |
| Orbital movement | 165 degrees | 165 degrees |
| Optional: endoscopic landscape color monitor | ■ | ■ |

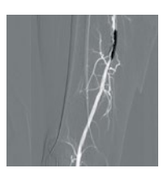
available ■ | not available –

## CLINICAL APPLICATIONS

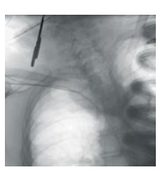
Orthopedics/ Trauma/Spine



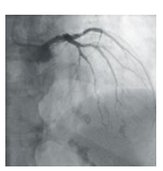
Vascular surgery



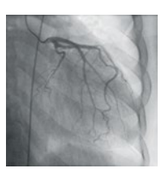
Angioplasty



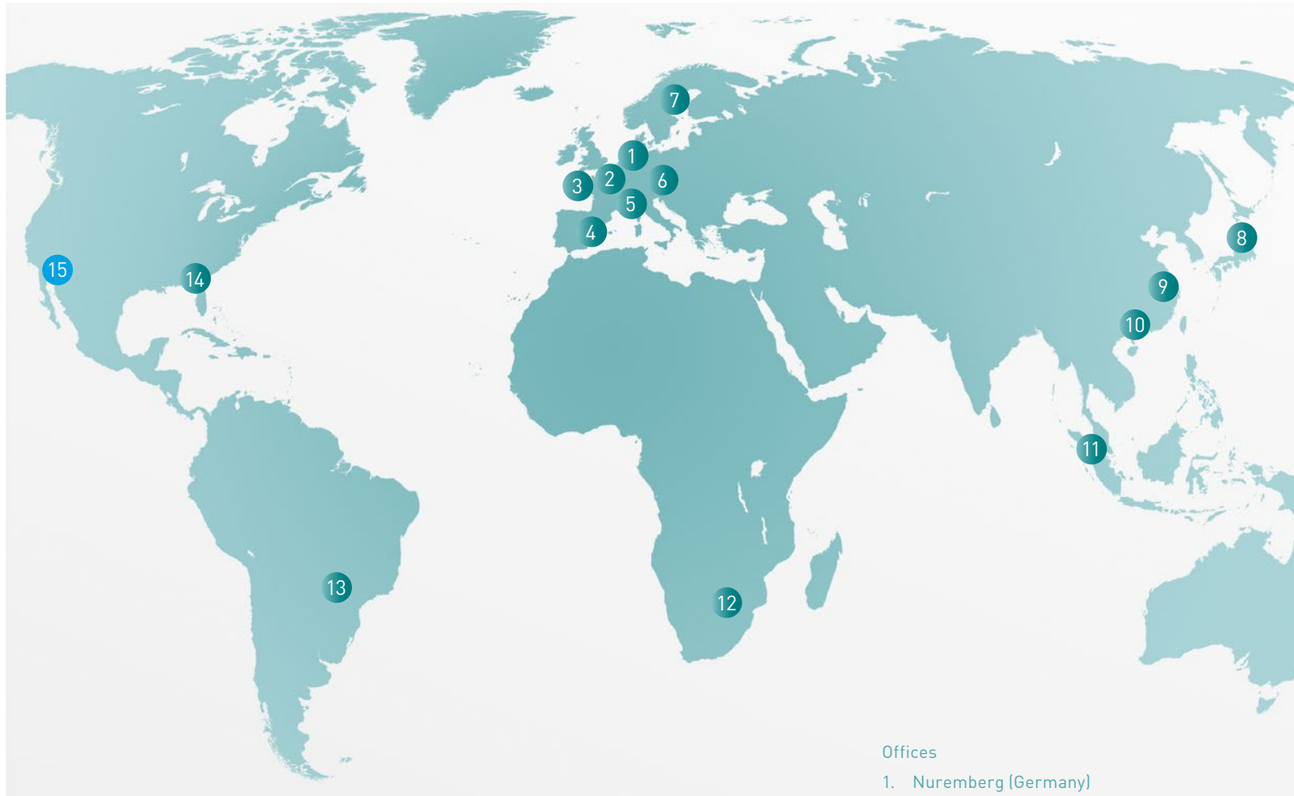
Electrophysiology



Cardiac surgery



Coronary imaging




## MAXIMIZE YOUR UPTIME

### Make sure to get the best service for your daily business.

Rely on Ziehm Imaging for flexible and fast service to stay on the cutting edge of technology. Tailored service packages, remote service and individual upgrade paths keep you competitive in your daily hospital routine.

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9. Shanghai (China)
10. Guangzhou (China)
11. Singapore (Singapore)
12. Midrand (South Africa)
13. São Paulo (Brazil)
14. Orlando, FL (USA)
15. Scottsdale, AZ, Orthoscan (USA)

www.ziehm.com/RFD

[1] The technology Beam Filtration reduces dose exposure for Ziehm Imaging flat-detector systems in comparison to conventional filtration techniques. Data on file. Results may vary.
[2] CMOSline represents a system configuration that is based on a Ziehm Imaging CMOS flat-panel detector.
[3] The Usability Concept includes a variety of hard- and software features. Due to regulatory reasons the availability of each feature may vary. Please contact your local Ziehm Imaging sales representative for detailed information.
[4] The SmartDose Concept includes a variety of hard- and software features. Due to regulatory reasons the availability of each feature may vary. Please contact your local Ziehm Imaging sales representative for detailed information.
[5] Gosch D. et al. "Influence of grid and ODDC on radiation exposure and image quality using mobile C-arms – First results," RöFo, 09/07


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