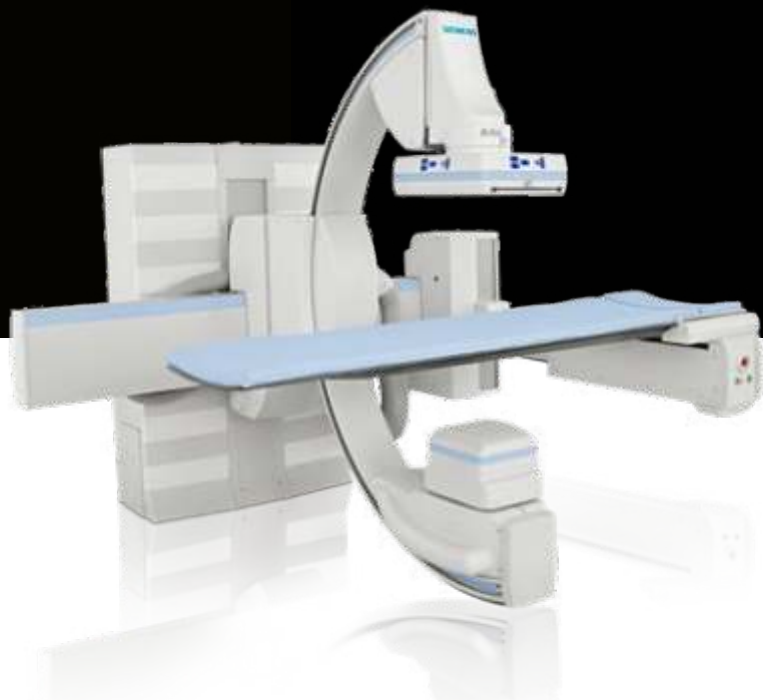
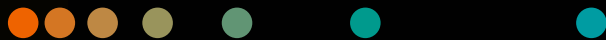


Artis zee

# Tackle every challenge

Artis zee multi-purpose with PURE®



# Investing intelligently for long-term sustainability

Healthcare today faces a predicament. Simply put, costs are increasing, budgets are not. In light of declining reimbursement rates and evolving technology, it is clear that an investment such as an angiography system must be not only cost effective; ideally, it should also serve you reliably for many years to come.

**\$ > 25%**

## Reimbursement cuts

Percentage of European institutions operating with a significant reduction in reimbursement\*.



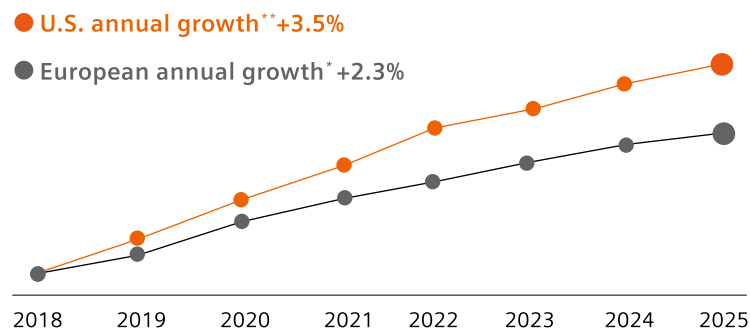
A growing population puts enormous pressure on healthcare systems around the globe. As a result, many have responded with significant cuts in reimbursement.

\*European Society of Radiology. *The consequences of the economic crisis in radiology, Insights Imaging* (2015)

# Supporting growing, challenging fields

Demand for gastroenterological interventions is constantly increasing. In complex endoscopic procedures, outstanding image quality is needed to visualize and check small devices to prevent complications or misdiagnoses. Another trend radiologists are

encountering is the declining need for diagnostic fluoroscopy exams and an increasing need for interventional radiology procedures. A versatile multi-purpose solution is required to cover angiography, fluoroscopy, and radiography procedures in a single room.



The number of complex gastroenterological procedures, such as ERCP, is growing at a rate of 3,5 % (U.S.) and 2,3 % (Europe) per year.

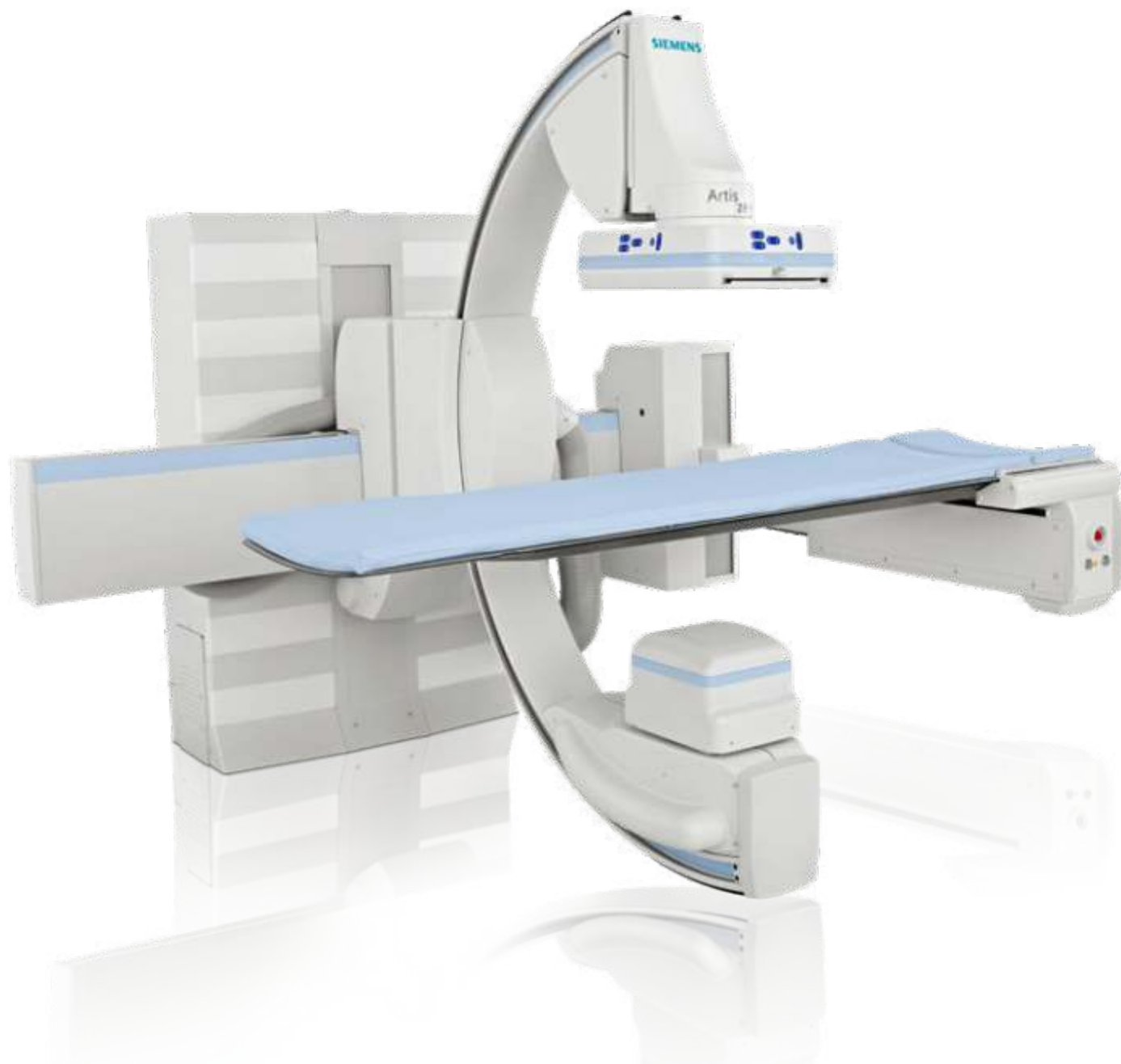
Since every imaging system is an investment in the future, we believe that the best systems are those that grow with your needs – expanding your possibilities now and in the future. That’s why we innovate with sustainability at the core.

*“Interventional procedures in gastroenterology have evolved greatly over the last few years. Now we perform [...] endoscopic procedures as well as percutaneous interventions with simultaneous endoscopy of the bile ducts, pancreas, or infectious intraabdominal tumors and necroses.”*

**Professor Jörg Albert, MD**  
University Hospital Frankfurt, Frankfurt am Main, Germany

\* Quelle: Gastrointestinal Endoscopic Devices Market Analysis, Size, Trends | Europe | 2019-2025 | MedSuite

\*\* Quelle: Gastrointestinal Endoscopic Devices Market Analysis, Size, Trends | United States | 2019-2025 | MedSuite



# Tackle every challenge

## Artis zee multi-purpose with PURE®

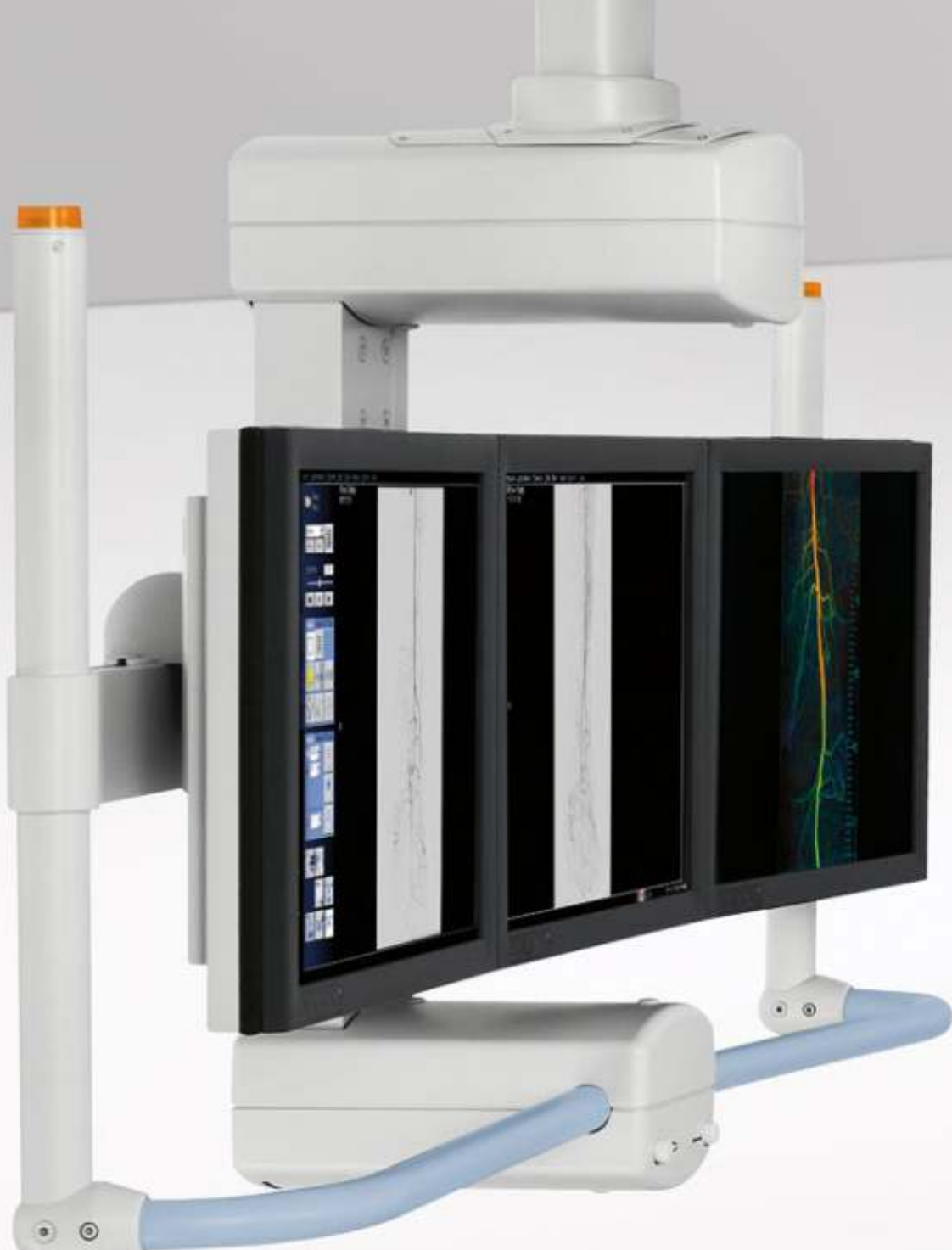
With pressures increasing on healthcare systems, providers are now expected to do more with less. This calls for greater versatility and flexibility in the use of valuable resources – equipment, space, and, of course, time.

A truly all-in-one system, Artis zee multi-purpose is uniquely positioned to help hospitals respond to the escalating challenges facing them today and in the future. A fully functional angiography system, Artis zee multi-purpose offers the same excellent image quality and range of routine angio capabilities as all Artis zee systems.

Equipped with cutting-edge applications and the very latest PURE® software platform, Artis zee multi-purpose combines advanced solutions with a proven reliable system for angiography, radiography, fluoroscopy, and interventional gastroenterology. Its industry-leading imaging technology, unique dose management tools, highly flexible positioning, and easy, well-thought-out usage concept also make it the ideal choice for multidisciplinary rooms. A single system in a single room.

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<b>Deliver optimal image quality</b>	<b>7</b>
<b>Broaden your procedure mix</b>	<b>15</b>
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# Deliver optimal image quality

Regardless of the patient you treat, regardless of the procedure, Artis zee multi-purpose helps you meet a greater range of clinical demands with excellent image quality at low doses.

Optimal image quality in interventional radiology and cardiology, gastroenterology, radiography, and fluoroscopy is key. Clinical decision-making depends on what you can see in the images – and the more you can see, the better you can treat your patients.

Artis zee multi-purpose offers one combined system that supports you with automated dose management in combination with outstanding image quality. Profit from diagnostic confidence and excellent image quality for both routine and complex cases. For cardiac interventions, the new ACOM.PC option turns any standard PC into a professional diagnostic and evaluation DICOM workstation. Industry-leading technology and unique dose management tools allow you to achieve optimal images every time.

**Get the balance right with automated dose management.**



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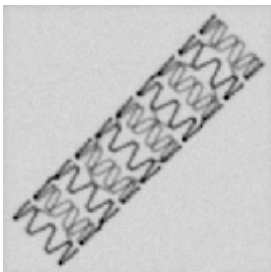
**Get the balance right with  
automated dose management**

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# Technology for optimal image quality ...

## It all starts with the tube

Image quality starts with the X-ray tube. This is why the MEGALIX Cat Plus tube has been designed to combine durability and power to deliver sharp images no matter what. With up to 40% greater fluoro power and higher current, it is optimally equipped for larger patients and steeper angles. High tube current (250 mA) also means that you benefit from optimal image contrast.



## Sharper images due to a smaller focal spot

The quadratic shape of the unique flat emitter technology makes it possible to obtain sharper images in all directions – for enhanced image quality even in challenging situations.

*“The CARE features allow us to significantly reduce radiation exposure to the patient. We have been using the low-dose protocols in all applications with excellent results. We were able to reduce the dose by approximately 50%.”*

## Professor Thomas Albrecht, MD

Head Physician at the Institute for Radiology and Interventional Therapy, Vivantes Klinikum Neukölln, Berlin, Germany

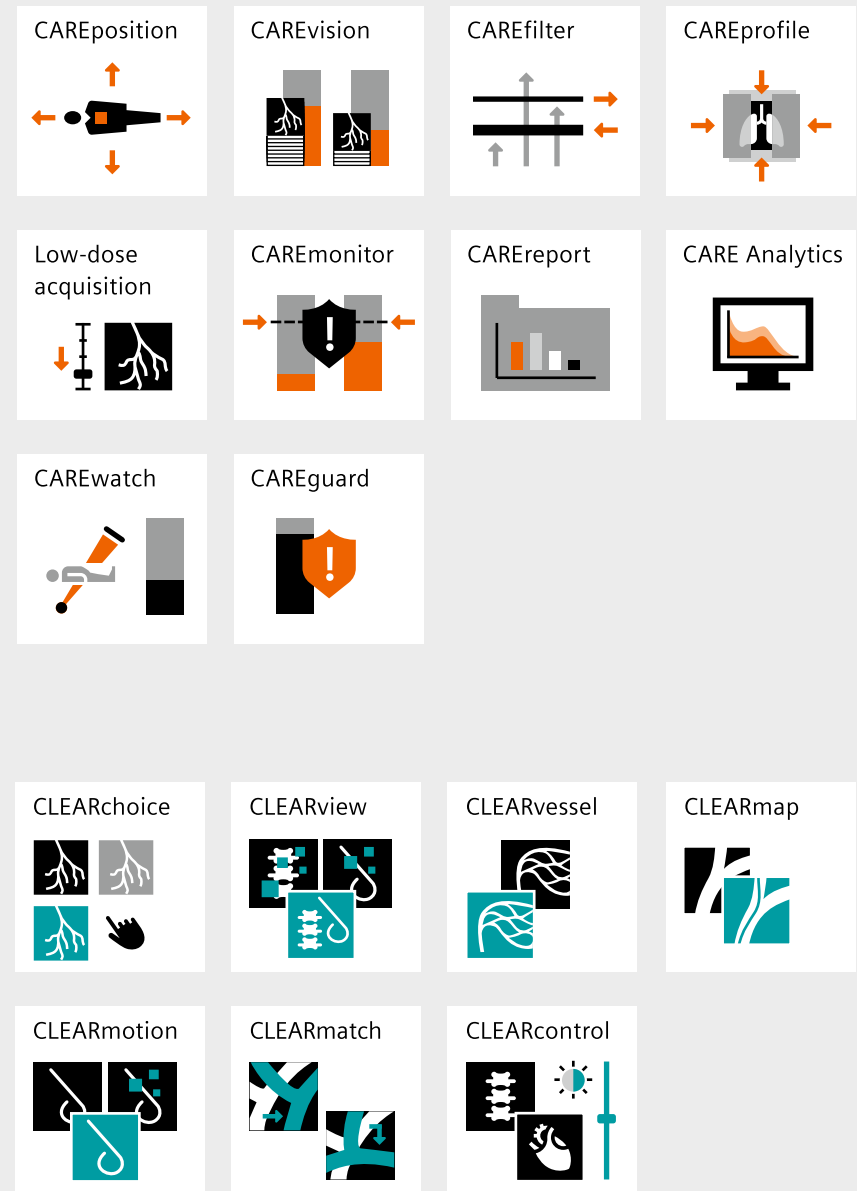
# ...and applications to take it further

## Reduce dose but still maintain image quality

Like every Artis system, Artis zee multi-purpose comes with a standard, comprehensive portfolio of applications for dose-saving and image quality enhancements: Siemens' Combined Applications to Reduce Exposure (CARE) and CLEAR. This builds on a strong legacy of developing technologies that allow users to reduce dose without compromising image quality.

CARE applications are designed to help you deliver better care at the lowest possible dose, reducing exposure both to patients and staff. CAREposition, for example, avoids fluoroscopy during repositioning, and CAREvision reduces dose by adapting the frame rate. In addition, CARE features let you monitor radiation during procedures and easily compile structured dose reports.

CLEAR functions automatically enhance image quality – during acquisition and processing. For example, CLEARcontrol enhances image brightness, and CLEARview reduces noise in low-dose images. Whether to optimize contrast or sharpness or customize the image according to your preferences, the CLEAR portfolio helps you achieve optimal image quality to increase certainty in interventions.

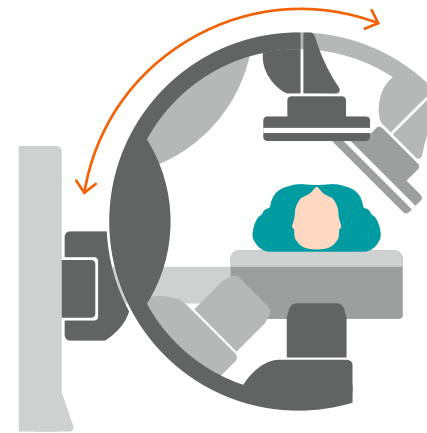


# Intelligent dose optimization

## Adjust to each individual patient and angulation

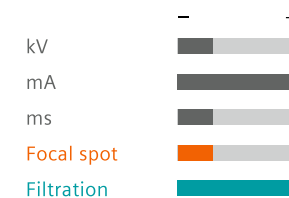
Automatic Exposure Control (AEC) automatically adjusts the following five parameters depending on the C-arm angulation: tube current, focal spot, filtration, exposure time, and tube voltage.

AEC estimates patient thickness in real time and adapts the parameters according to the current angulation – without manual selection or switching to a different program. AEC automatically provides best possible spatial resolution and the lowest possible dose at any time and angle during the procedure.



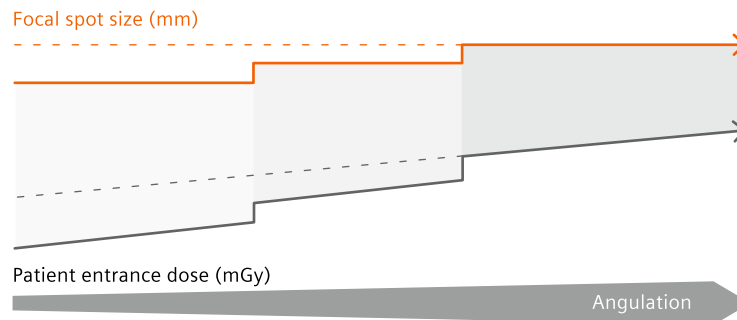
## Siemens 5-parameter AEC

Parameter adaption



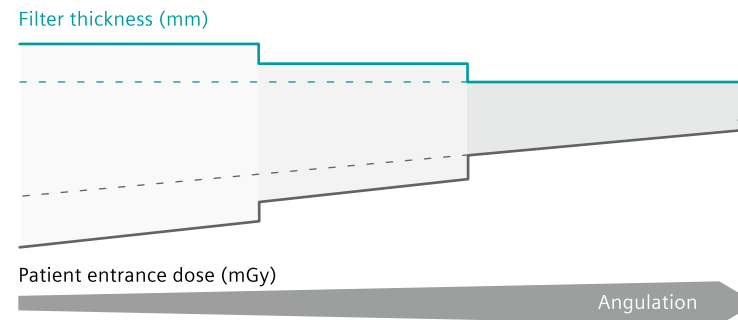
Angulation-dependent AEC – best ratio of image quality to dose for all angulations.

## Effect of focal spot size on patient entrance dose



Comparison of focal spot adjustment (orange arrow) with a fixed focal spot (orange dashed arrow) and the corresponding effects on dose (gray arrow and gray dashed arrow).

## Effect of copper filter thickness on patient entrance dose



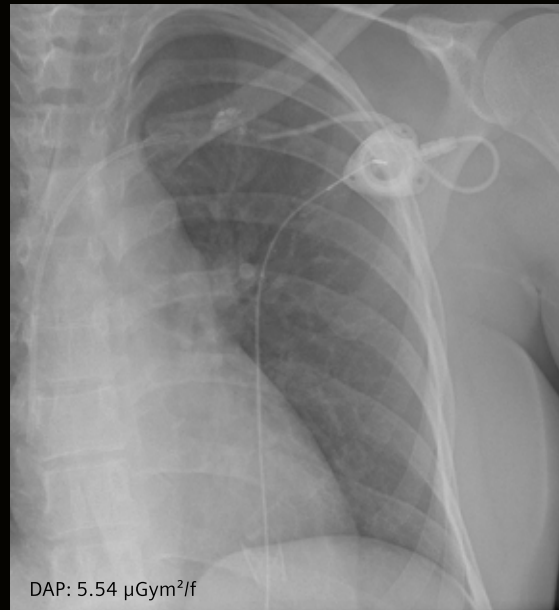
Comparison of CAREfilter (teal arrow) with fixed prefiltration (teal dashed arrow) and the corresponding effects on dose (gray arrow and gray dashed arrow).

### Excellent low-dose results

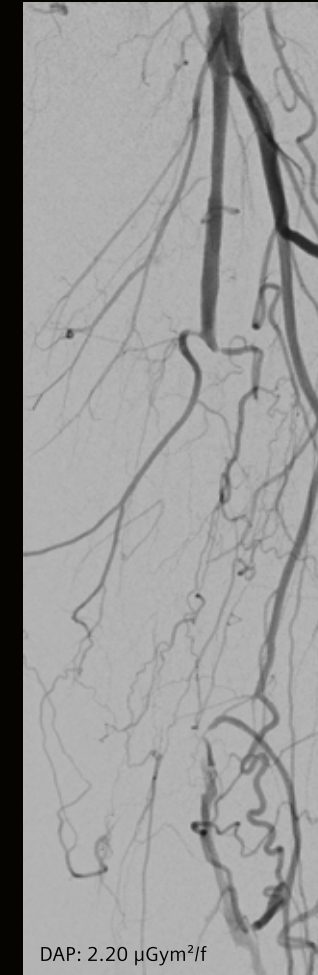
The dose-area product (DAP) values for the following images show that Artis zee multi-purpose delivers excellent image quality at low doses.



DSA of hepatic metastatic colorectal carcinoma during chemoembolization



Fluoroscopy during port control

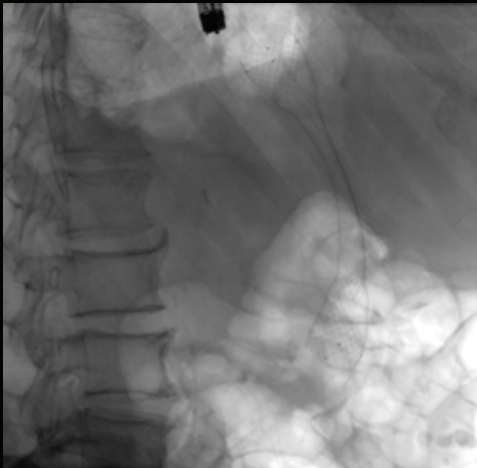


DSA of the arteria femoralis superior before treatment of occlusion

Courtesy of Björn Loewenhardt, MD, Herz-Jesu-Krankenhaus, Fulda, Germany

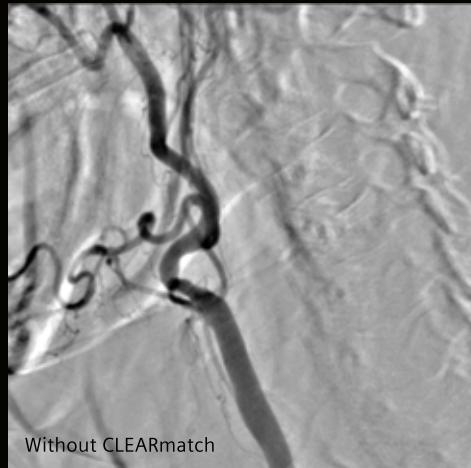
# Clearly better images with 2k imaging and CLEARmatch

For angiographic, fluoroscopic, and radiographic procedures, CLEAR applications reduce noise, increase image sharpness, and compensate for motion artifacts. With 2k imaging, enhanced image quality in Roadmap, and real-time pixel shift, Artis zee multi-purpose equips you to achieve optimal image quality in 2D.



2k imaging provides four times the information and twice the resolution for both pre- and postprocedural imaging. It allows you to visualize even the smallest vessels in large format and to zoom in on the image without losing detail.

*Courtesy of Michael Repp, MD,  
Klinikum Altenburger Land, Germany*



Without CLEARmatch

CLEARmatch compensates for patient movement with next-generation pixel shift in DSA and Roadmap. It retains the live image while pixel-shifting the mask image in real time.

*Courtesy of Alfried Krupp Hospital,  
Essen, Germany*



With CLEARmatch

This delivers consistent image quality in Roadmap, as well as sharper images and enhanced treatment even in challenging situations, whether in interventional radiology, gastroenterology, or radiography.

# 3D imaging in a multi-purpose room

Whether you want to expand your procedure mix or speed up workflows, Artis zee multi-purpose offers a range of applications that give you the flexibility to meet different demands and challenges.



**DYNAVISON DR**  
Provides native or subtracted 2D viewing with 3D impression based on rotational angiography with angle triggering.

*Courtesy of Thomas Zöpf, MD,  
Sana Kliniken Düsseldorf, Germany*

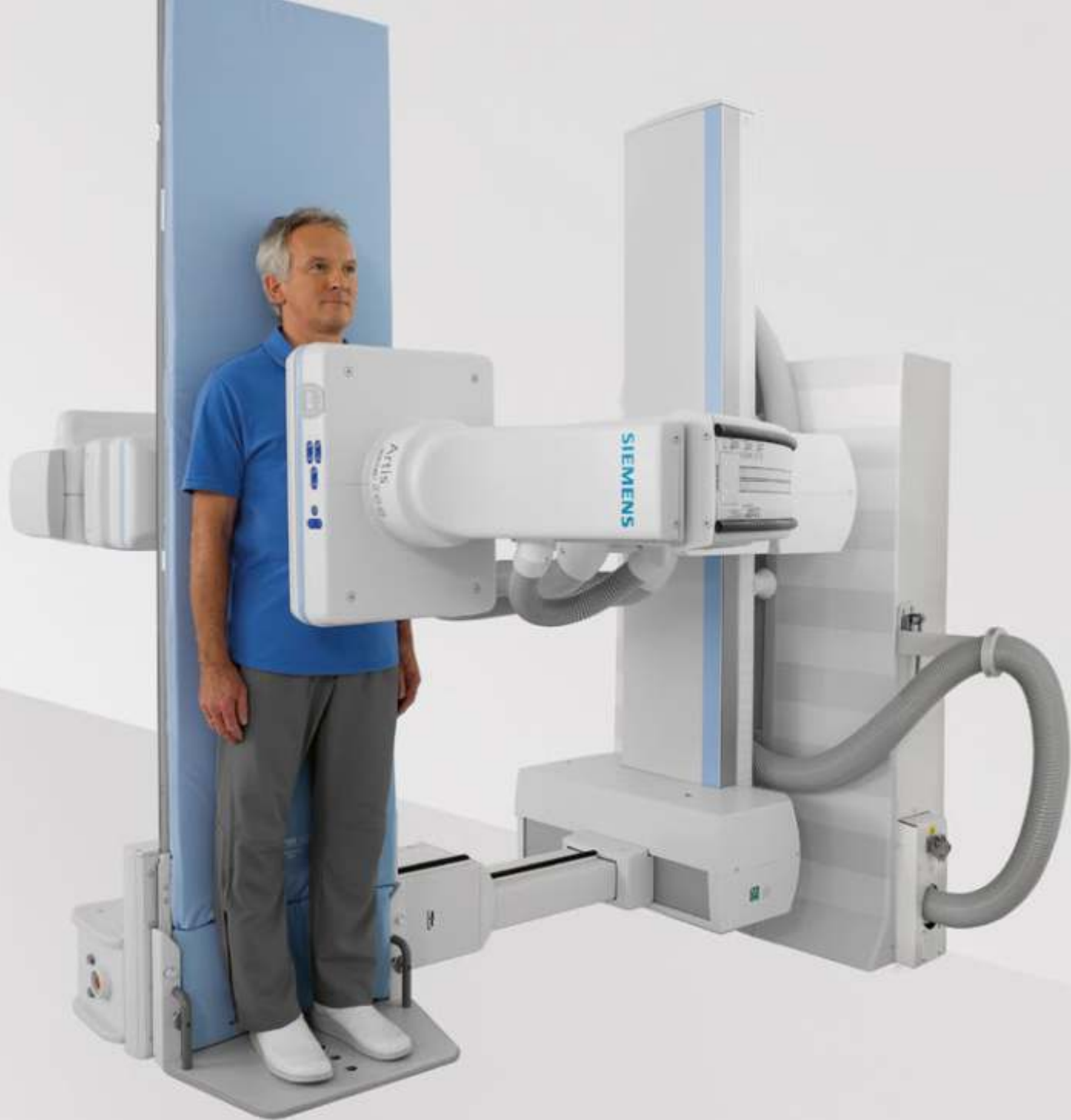


**syngo Dyna3D**  
Provides high-contrast 3D for clear visualization of structures to support decision-making.

*Courtesy of Inselspital,  
Hôpital Universitaire de Berne, Switzerland*



**syngo Needle Guidance**  
Provides live and integrated needle guidance for efficient needle procedures.



# Broaden your procedure mix

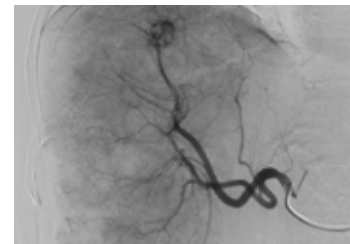
As the spectrum of clinical cases expands, hospitals are having to perform more procedures every day, and must find ways of accommodating multiple disciplines in one room. With its outstanding positioning flexibility and optimal image quality, Artis zee multi-purpose allows clinicians to share one system in a single room.

Artis zee multi-purpose with right-side table suspension enables routine interventional angiographic procedures, fluoroscopy, and radiographic exams on one system. Left-side table suspension provides optimal patient access during endoscopic procedures to enable treatment as well as diagnostics.

So whether you are working in interventional radiology, fluoroscopy and radiography, or interventional gastroenterology, Artis zee multi-purpose equips you to tackle the full range of cases that come your way, and to expand your clinical portfolio.

*“Radiology has become a huge discipline today. It makes sense that clinicians share equipment.”*

**Professor Dierk Vorwerk, MD**  
Klinikum Ingolstadt, Ingolstadt, Germany



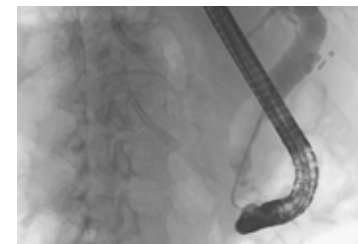
Interventional radiology



Fluoroscopy



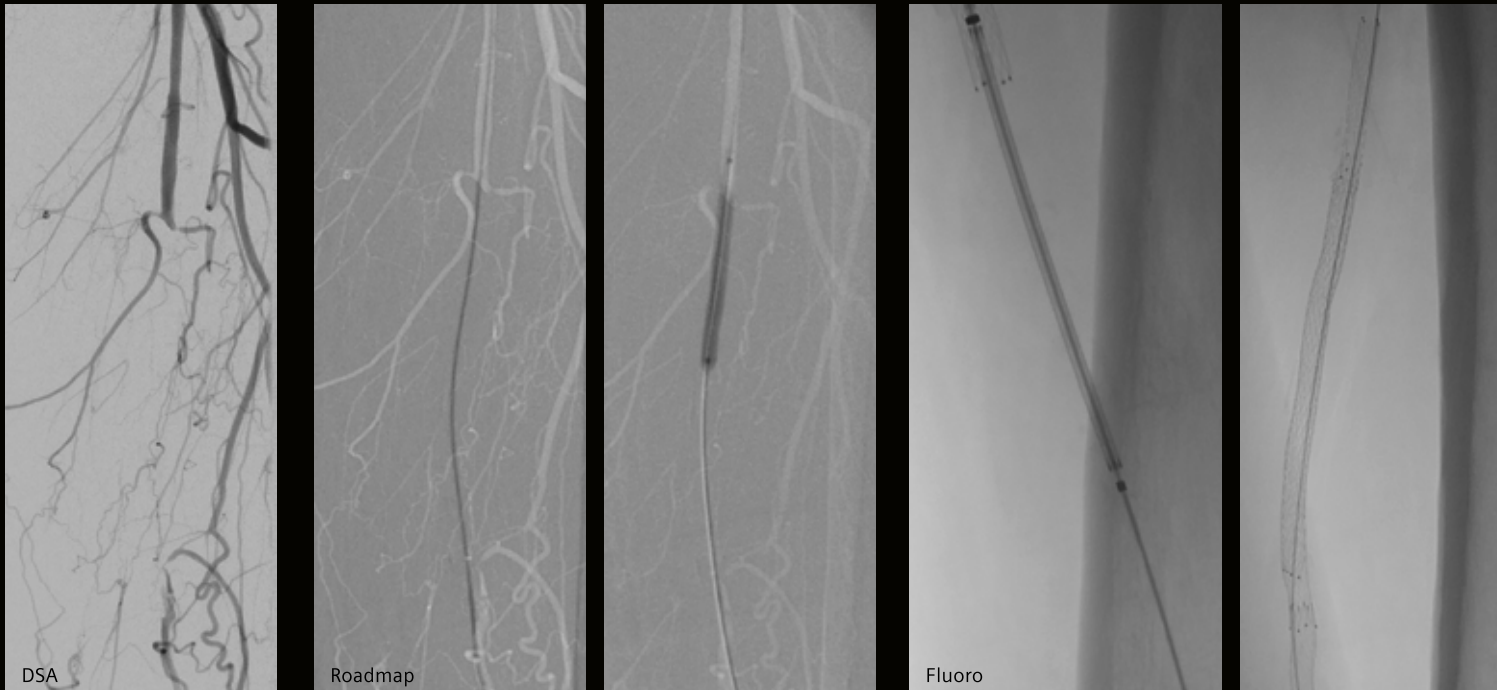
Radiography



Interventional gastroenterology

# Optimal image quality in interventional radiology

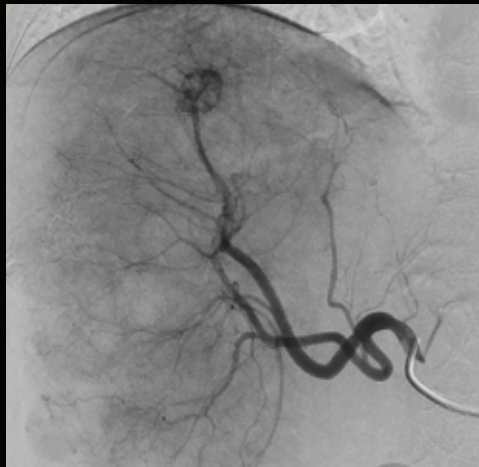
Excellent imaging during percutaneous transluminal angioplasty (PTA)



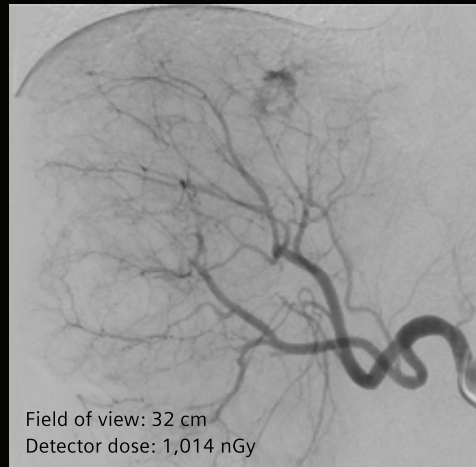
Dilatation of stenosis and introduction of two plastic stents.

*Courtesy of Björn Loewenhardt, MD, Herz-Jesu-Krankenhaus, Fulda, Germany*

**Supporting interventional oncology procedures such as transarterial chemoembolization (TACE) of the liver**



Treatment of a patient with hepatic metastatic colorectal carcinoma. Discontinuation of systemic chemoembolization due to severe side effects.



Selective intra-arterial application of 100 mg Irintecan on 40  $\mu$ m microspheres in the arteria hepatica dextra. Additive application of Gelfoam until stasis.

**Effortlessly support multiple diagnostic and interventional procedures**

Easily find the right projection – from AP to lateral – by angulating the C-arm. Move it longitudinally with combined C-arm and table movement that provides head-to-toe coverage of 194 cm.



Broaden your procedure mix

# Flexible system positioning in fluoroscopy ...

Fluoroscopy study of myelography and barium swallow



*Clinical image courtesy of Klinikum Bogenhausen,  
Munich, Germany*

*Clinical images courtesy of Amran Abdul Rahman,  
MD, KPJ Ampang Puteri Specialist Hospital,  
Ampang, Kuala Lumpur, Malaysia*

**High level of positioning flexibility**

Benefit from continuous table tilting in both directions (up to 90°) for flexible patient positioning and access during gastrointestinal passage, as well as optimal contrast mediaflow during myelography or phlebography.



# ... and radiography

## Easy patient positioning and optimized workflow

Achieve optimal image quality by angulating the C-arm to the optimal projection to avoid overlapping structures.



## Radiography study of the foot

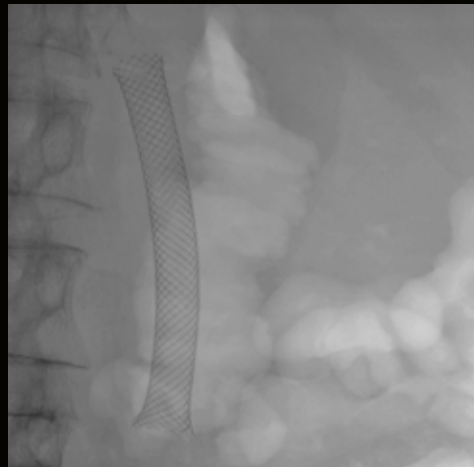


# Optimal image quality during ERCP

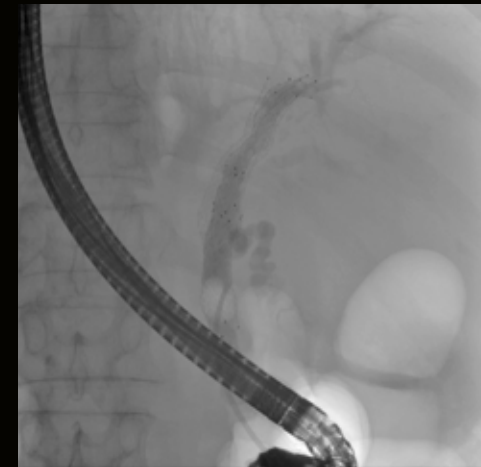
## Stent repositioning of a proximal dislodged metal bile duct stent



Implantation of a second uncovered metal stent, with a proximal tumor overgrowing the first covered metal stent.

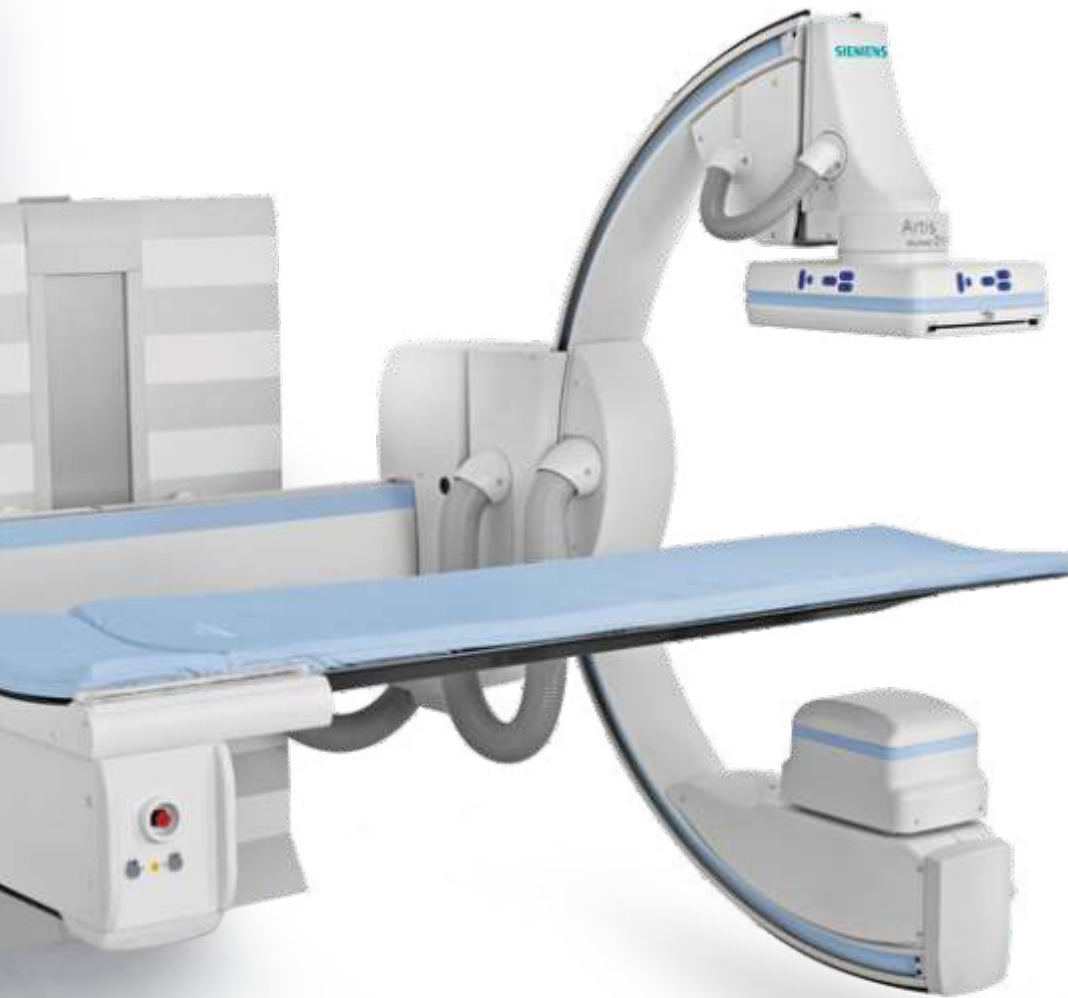


Distal dislocation of the covered metal stent and turning of proximal metal stent in the lower stent area.



Repositioning of the proximal stent and implantation of an additional self-expanding metal stent in the distal bile duct.

*Courtesy of Michael Repp, MD, Klinikum Altenburger Land, Germany*



**Unparalleled patient access and optimal visual control during interventions**

Gain patient access at any time by moving the tabletop in all directions with motorized six-way travel.

*“The Artis zee multi-purpose with the table with left-side suspension provides ample space around the patient at all times, even during interventions using anesthesia or a large surgical team.”*

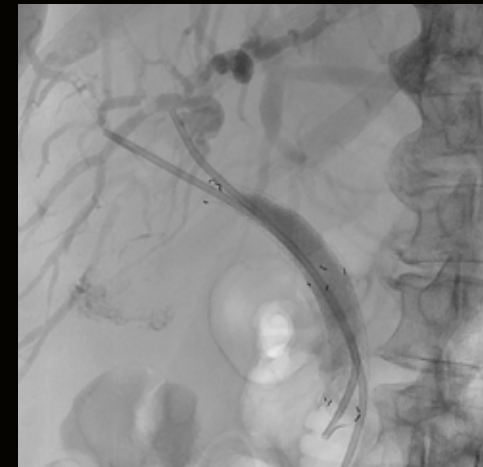
**Professor Dieter Hörsch, MD**  
Zentralklinik Bad Berka, Bad Berka, Germany

# Optimal image quality during ERCP

Infiltrative gall bladder carcinoma, postoperative metal stenting in the bile duct

*Rotational cholangiography allows a higher detection rate of bilar and peripheral bile duct stenoses and simplifies their clear and unambiguous anatomical orientation."*

Thomas Zöpf, MD  
Sana Kliniken Düsseldorf, Germany



Dilatation of stenosis and introduction of two plastic stents.

*Courtesy of Beate Faust-Herzog, MD, Heinrich-Braun-Klinikum, Location Kirchberg, Germany*

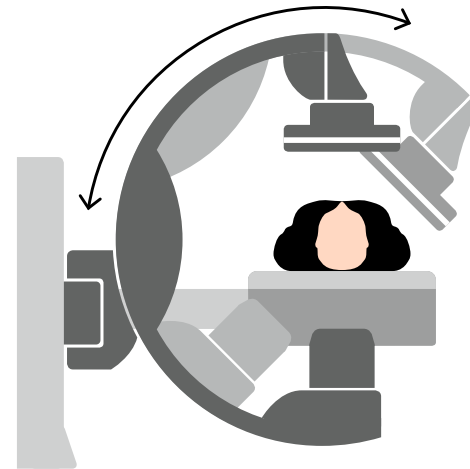
### ERCP procedure supported by syngo Dyna3D



Courtesy of Thomas Zöpf, MD, Sana Kliniken Düsseldorf, Germany

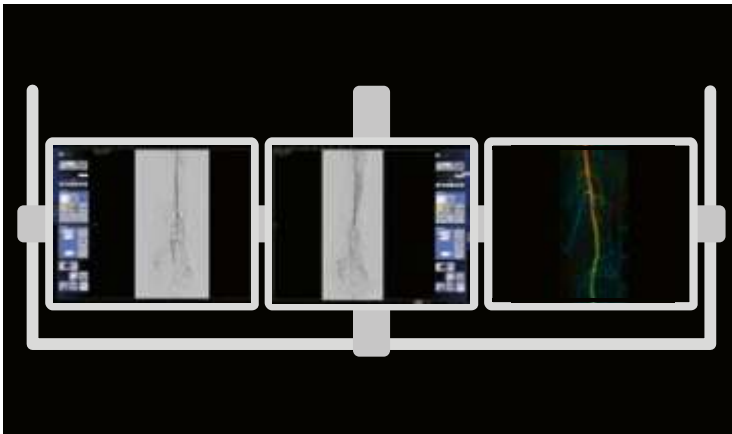
### Exceptional clarity of detail

Use rotational angiography to simplify the spatial impression of complex anatomical structures.

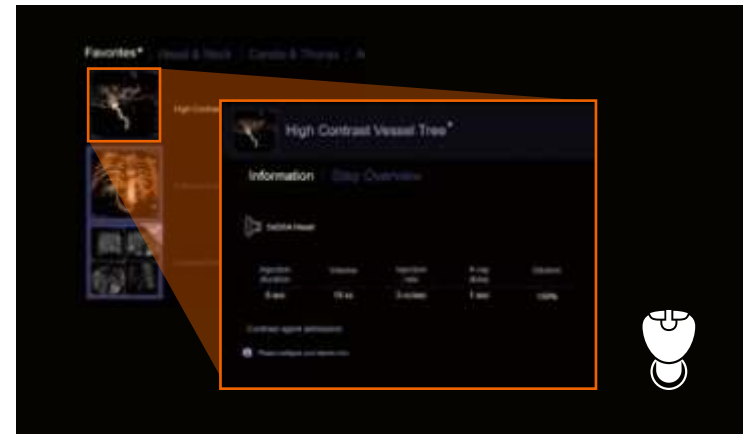


# 3D user guidance with PURE<sup>®</sup>

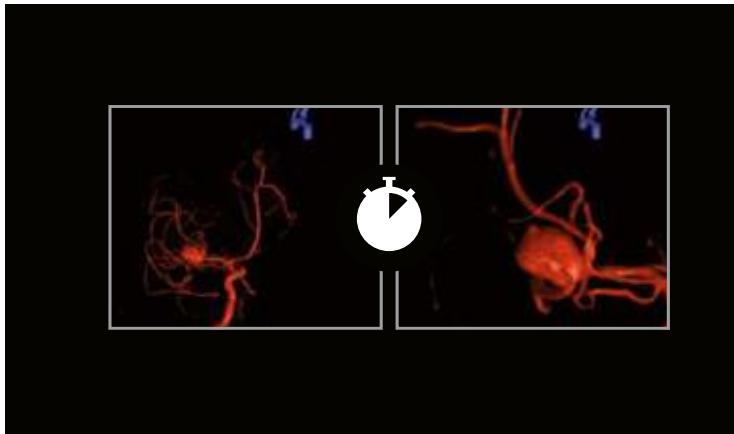
To expand your range of procedures and enable them to run more smoothly, Artis zee multi-purpose comes with optimized user guidance, especially for 3D. With PURE<sup>®</sup>, you increase your process efficiency in the angio suite, enable all your staff members to get the full potential from the system, and enhance your patient treatment outcomes – adding smooth to smart.



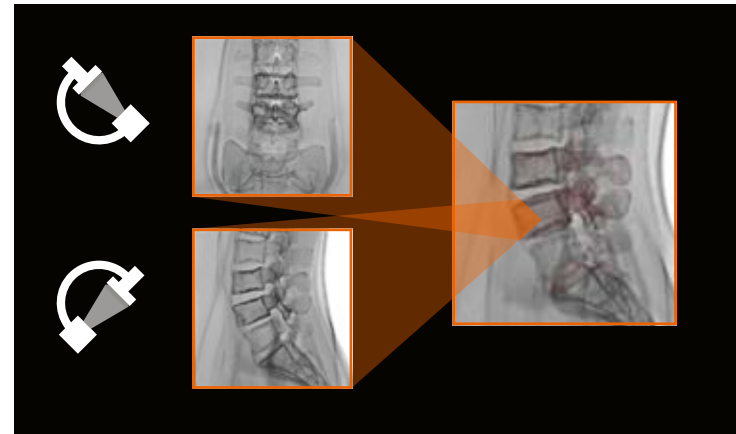
The Heads-up Display helps keep the user's attention where it is needed. The context-sensitive on-screen menu allows intuitive interaction with the system – without the need to look down when manipulating 3D volumes.



The 3D Wizard offers step-by-step guidance to allow even non-experienced users to achieve the 3D imaging results they want. Choose the desired image from a predefined pool and let the system guide you through the 3D scan.



QuickZoom speeds up your workflow by letting you focus and zoom within a 3D volume at bedside with just one click. Simply click on your region of interest – and QuickZoom centers and zooms automatically.



The *syngo* Fusion Package lets you integrate pre-op CT, MR, or PET volumes for live image guidance. With only two fluoro projections, you can easily fuse 3D volumes – and save both dose and contrast media.

# Smother workflows and easier system interaction



**Achieve higher efficiency with a touchscreen control console**  
With an intuitive touchscreen console, organ program selection and examination control can be managed simply and swiftly.



Operate the system and select organ programs from anywhere in the room with the trolley-mounted control console.



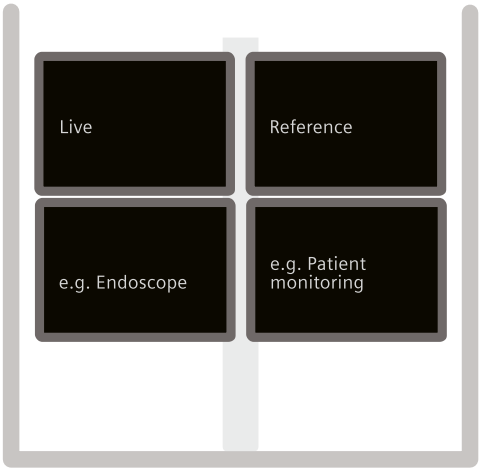
**Simplify your working environment with detector switches on all sides of the detector**

- With the controls always in reach, operating the C-arm and gantry is easy and can be done without leaving the patient's side



**Accelerate your workflows with an individually configurable wireless footswitch**

- Start X-rays from anywhere in the room, for easier cleaning and no tripping over cables
- Configure your footswitch to control the lights or select low-dose protocols and Roadmap functions simply by stepping on the pedal



**Optimize your image visualization with flexible ceiling suspension for your monitor**

- The display ceiling suspension (DCS) system can accommodate a live monitor, reference monitor, and two third-party monitors for endoscopy and additional signals
- The DCS removes the need for extra trolleys and cables, maximizing space around the patient table and making it easy for staff to position themselves

Invest with confidence



# Invest with confidence

Artis zee multi-purpose is a smart investment that combines three systems in one, so that you can do more with less and grow a future-proof angiography business.

Designed with versatility at its core, Artis zee multi-purpose is a 3-in-1 solution that allows you to cover angiography, radiography, fluoroscopy, and gastroenterology with a single system in a single room. In addition to saving valuable space, the intelligent system also addresses the challenge of the declining need for fluoro and the increasing demand for interventional procedures.

Artis zee multi-purpose helps you make the most of your angio suite by enabling multiple specialties to use and share the lab. This means you can invest confidently in a sustainable system that prepares you for the challenges that lie ahead.



---

## The 3-in-1 solution

provides imaging of three modalities in a single room of just 18 m<sup>2</sup>.

- Angiography
  - Fluoroscopy
  - Radiography
-



# Tailor your system

Choose from the following options and upgrades to customize your Artis zee multi-purpose system for shared use

#### **Lower-body radiation protection**

Protect yourself at any working position with removable upper lead shields for head-, left-, and right-side protection. Adjustable at the new lighter rail, these shields are easy to mount and move.

*“Radiation protection at the head and on both sides is an important decision-making criterion for gastroenterologists and other specialties (anesthesia, etc.). We decided on having both.”*

**Michael Repp, MD**  
Klinikum Altenburger Land,  
Altenburg, Germany



### Movable upper-body radiation protection

Reduce scattered radiation during interventions with femoral and radial access.

- Removable flexible lead strips
- Drape for placing near the wound field
- 90% less scattered radiation for operator and staff\*
- Improved head and eye protection for tall operators



### Optional accessory packages

Add accessories as required for additional support in phlebography, angiography, and urology. The premium urology package, for instance, includes the following:

- Shoulder belt
- Foot holder
- Tabletop extension
- Leg holder



### Artis Cockpit

Clear up your control room: Artis Cockpit offers more efficiency so you can focus on your procedures and patients.

- Streamlined setup and workflow
- Control up to nine systems from one workplace
- Reduce monitor and cabling clutter
- Choose one or two keyboards and monitors
- Adapt layout quickly with drag & drop

*\*Based on measurements and simulations performed by MAVIG*



# Technical specifications

## Key data

Installation	<ul style="list-style-type: none"> <li>• Right- or left-side suspension depending on clinical focus</li> <li>• Fits into rooms as small as 18 m<sup>2</sup></li> </ul>
C-arm with table	<ul style="list-style-type: none"> <li>• The C-arm and patient positioning table comprise one unit, which can be tilted and adjusted in height</li> <li>• Relative to the patient, the C-arm can be moved in cranialcaudal and orbital directions</li> <li>• Isocentric object positioning is made possible via independent height adjustment of the tabletop</li> </ul>
Detector	<ul style="list-style-type: none"> <li>• 30 x 40 amorphous silicon flat detector</li> <li>• High-resolution 2k* matrix (2,480 x 1,920) with 154 µm pixel size and 16-bit digitization depth</li> <li>• 60 fps readout for 3D and syngo acquisitions for short scan times</li> </ul>

X-ray tube	<ul style="list-style-type: none"> <li>• High-performance angiography X-ray tube MEGALIX Cat Plus (integrated in all Artis zee products)</li> <li>• 40 % greater fluoro power with flat emitter technology</li> <li>• Increased contrast during fluoroscopy, especially for examinations on obese patients</li> </ul>
Operating modes	<ul style="list-style-type: none"> <li>• Digital pulsed fluoroscopy at 0.5, 1, 2, 3, 4, 7.5, 10, 15, 30 p/s; acquisition at 7.5, 10, 15, and 30 fps</li> <li>• Acquisition, display, and storage in original matrix</li> <li>• 12-bit overlay fade, online superimposing of active fluoroand reference images</li> </ul>
Technologies	<ul style="list-style-type: none"> <li>• CARE+CLEAR for dose reduction and image quality</li> <li>• PURE® for a smoother workflow and better system performance</li> </ul>
Display	<ul style="list-style-type: none"> <li>• 19" Monochrome Flat Display</li> </ul>

\*2k matrix possible only with DR/DSA/PERIVISION or DYNAVISION mode up to 7.5 f/s



# Why Siemens Healthineers?

At Siemens Healthineers, our purpose is to enable healthcare providers to increase value by empowering them on their journey towards expanding precision medicine, transforming care delivery, and improving patient experience, all enabled by digitalizing healthcare.

An estimated 5 million patients globally everyday benefit from our innovative technologies and services in the areas of diagnostic and therapeutic imaging, laboratory diagnostics and molecular medicine, as well as digital health and enterprise services.

We are a leading medical technology company with over 170 years of experience and 18,000 patents globally. With more than 48,000 dedicated colleagues in 75 countries, we will continue to innovate and shape the future of healthcare.



Работайте с лучшими,  
всё остальное компромисс!

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