

Artis zee with PURE®

Tackle every challenge

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SIEMENS

Artis





Ready for whatever comes your way

Every imaging system is an investment in the future. We believe that the best systems are those that grow with your needs. Systems that expand your possibilities now – and in the future. We, therefore, innovate with sustainability in mind. This is why Artis zee is designed for versatility and flexibility. In line with the growing demand in angiography, the system supports you in meeting all your challenges. And it allows you to upgrade the system as your requirements evolve.

Artis zee is a proven and reliable system that delivers optimal image quality at the lowest dose, enabling you to optimize your procedure mix and invest with confidence. It is equipped with industry-leading imaging technology, unique dose management tools, and an extensive application portfolio.

Both for routine and complex procedures, Artis zee gives you the flexibility and confidence you need to tackle an increasingly diverse case mix. It supports you in making the right decisions for individual patients and allows you to grow with future developments. Simply put, it is a system that prepares you for whatever comes your way.

Artis zee. Tackle every challenge.



Deliver optimal image quality

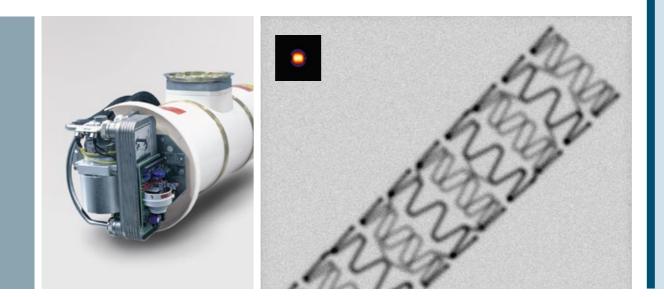
Regardless of the kind of patient you treat, regardless of procedure, Artis zee helps you address all clinical challenges with excellent image quality at lowest dose.

Procedures in interventional angiography are becoming increasingly diverse and complex. In order to provide optimal care, optimal image quality is more important than ever. It is essential that your system not only prepares you for a broad variety of patients and clinical challenges but also offers dedicated features for the ideal balance between image quality and dose. To this end, the Artis zee system supports you with automated dose management in combination with technology that delivers outstanding image quality. You profit from diagnostic confidence and excellent image quality both for everyday use and for complex cases. Industry-leading technology and unique dose management tools prepare you always to deliver optimal images – and tackle all challenges.

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 best equipped for larger patients and steeper angles. The unique **flat emitter technology**, which the MEGALIX Cat Plus tube provides on the small focus, gives you sharper images due to a smaller focal spot. Its quadratic shape makes it possible to obtain sharper images in all directions – for enhanced image quality even in challenging situations.



Tackle every challenge ...

"We are performing increasingly complex procedures: Patients are getting older, and the guidelines allow us to perform more complex procedures. So it's important to have the right software to ensure that such complex cases can be properly treated with suitably high image quality."

... with Artis zee

"With the Artis zee, image quality is truly outstanding. It's improved again significantly. The radiation dose is also considerably lower."



Prof. Matthias Pauschinger, MD

Medical Director of Cardiology, Nuremberg General Hospital, Germany

...and applications to take it further

Reduce dose but still maintain image quality

Every Artis system 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 continues Siemens' 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, thus 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 automatically enhances image brightness, and CLEARview reduces noise in low-dose images. Whether you want 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 during interventions.

"Within the last 10 years, Siemens has reduced the detector entrance dose for low-dose imaging significantly."

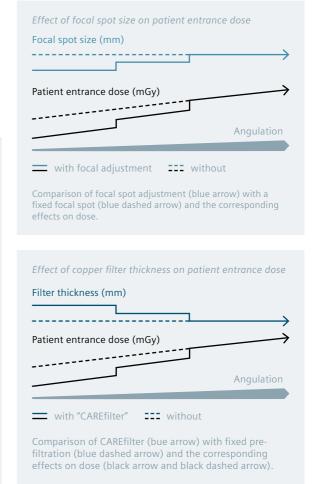
Source: Siemens White Paper "Low-dose imaging is becoming a clinical reality" (2014)



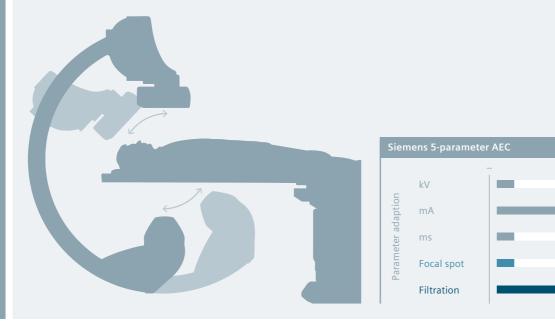
Intelligent dose optimization

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. This supports an optimal balance between image quality and dose – at all angulations. 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 the best possible spatial resolution and the lowest possible dose at any time and angle during the procedure.



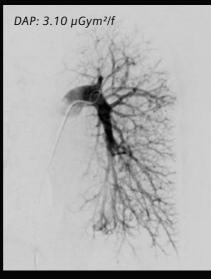




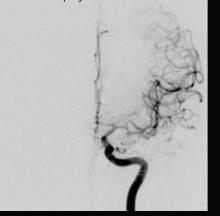
DSA of the lung. Courtesy of St. James's Hospital, Dublin, Ireland

Excellent low-dose results

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



DAP: 7.32 µGym²/f



Anterior communicating artery aneurysm afte treatment. Control DSA. Courtesy of University of Michigan Hospital, USA



DSA of the left renal artery. Courtesy of St. James's Hospital, Dublin, Ireland



DSA of the iliac arteries before uterine fibroid embolization. Courtesy of St. James's Hospital, Dublin, Ireland

Clearly better images

For angiographic and fluoroscopic procedures in neuro interventions or cardiology, CLEAR applications reduce noise, increase image sharpness, and compensate motion artifacts. From enhanced image quality in Roadmap and 2D guidance with Overlay Reference to real-time pixel shift, Artis zee systems equip you to achieve optimal image quality in 2D.



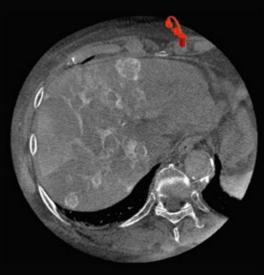
CLEARmatch compensates for patient movement with next-generation pixel shift in DSA and Roadmap. It retains the live image while pixel-shifting the mask image in real time. This delivers consistent image quality in Roadmap as well as sharper images and enhanced treatment even in challenging situations.

Clinical images courtesy of Alfried Krupp Hospital, Essen, Germany

CLEARmotion detects small moving objects, especially guidewires or fine vessels, and enhances the visibility of these structures. As a result, moving objects can be clearly visualized without motion artifacts.

Excellent soft tissue differentiation

With *syngo* DynaCT, an application from the company that first brought to market cone-beam CT (CBCT) in angiography, you can be sure to get state-of-the-art 3D imaging and soft tissue visualization. The exquisite 3D image quality and the high level of detail provided by *syngo* DynaCT allow you to tackle any challenge and increase your confidence in treatment decisions.

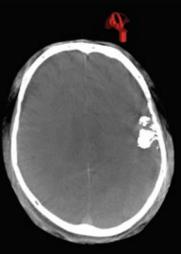




Without syngo DynaCT SMART

syngo DynaCT enables CT-like cross-sectional imaging. It can provide information not apparent in DSA and therefore supports sounder decision-making during interventions. Visualize soft tissue and high-contrast objects such as stents, clips, bones, and contrast-filled vessels.

Clinical images courtesy of Osaka City University Hospital, Japan *syngo* DynaCT SMART reduces metal artifacts. It visualizes the regions in close vicinity of metal coils or clips and thus helps reveal important diagnostic information, such as bleedings close to metallic



With syngo DynaCT SMART

objects. The improved information content of the images thus helps reduce the probability of erroneous decisions.

Clinical images courtesy of Alfried Krupp Hospital, Essen, Germany



Broaden your procedure mix

Thanks to Artis zee's extensive range of applications and positioning flexibility, you will be able to perform angiography procedures that may not have been possible before.

As interventional angiography is evolving and new procedures are gaining wider acceptance, the demands on angiography suites are increasing. A consequence of the rapidly expanding spectrum of clinical cases is not only a higher number of procedures per day, but also the need to accommodate multiple specialists in the room. This calls for a system that helps you optimize your procedure mix – a system that is versatile and easy to use. Artis zee prepares you with an extensive range of applications and increased positioning flexibility. This enables you to use the room for multiple procedures – with various working positions and optimal patient access. At the same time, Artis zee is equipped with optimized user guidance for smoother processes. For you, this means expanded capabilities, smoother procedures, and freedom of choice. Whether in Interventional Radiology, Interventional Cardiology, Neuroradiology, or Surgery, with Artis zee you are better prepared to tackle whatever challenge comes your way.

Adapt the system to your needs

Flexible positioning is key

A versatile system is not simply a broad application portfolio – the system itself needs to be flexible. Artis zee is therefore available with unique features that expand your flexibility (such as MULTISPACE.F, IsoTilt, or InFocus) and in several different configurations: floor-mounted, ceiling-mounted, and biplane. Depending on your needs, you can tailor your system for more working positions, optimal patient access, or room to accommodate extra staff such as an anesthetist (for more about the different setups, see pp. 20–25).

Ensuring upright images during radial access

StraightView enables the synchronous rotation of flat detector and X-ray collimator. For instance, you can view the patient's arm in upright orientation while exactly collimating the arm. StraightView has now been optimized for radial access: No matter how you position the C-arm or the patient table, StraightView automatically maintains images in the natural orientation.



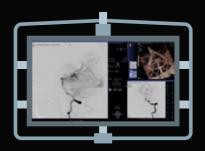
MULTISPACE.F: Additional system positions for Artis zee floor



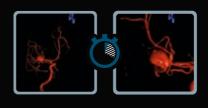
User guidance with PURE®

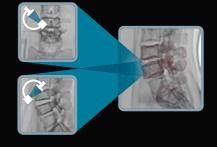
To expand your range of procedures and make them run more smoothly, Artis zee comes with optimized user guidance, especially for 3D. With PURE[®], you increase your process efficiency in the angio suite, enable all your staff members to get the full potential from the system, and enhance your patient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







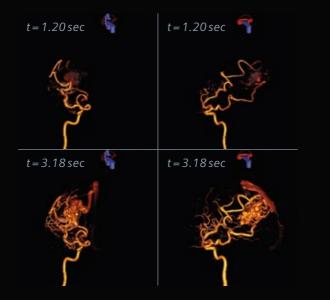




The **Heads-Up Display** helps keep the user's attention where it is needed. The context-sensitive on-screen menu allows intuitive interaction with the system – without the need to look down when manipulating 3D volumes. The **3D Wizard** offers step-by-step guidance to allow even non-experienced users 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 tableside with just one click. Just 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.

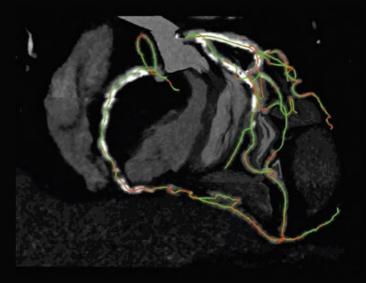
Develop your clinical scope

Whether you want to expand your procedure mix or speed up workflows, Artis zee offers a wide range of applications that give you the flexibility to meet different demands and challenges. Both for 2D and 3D, these applications provide relevant information and guidance that increase your confidence, especially in complex procedures.

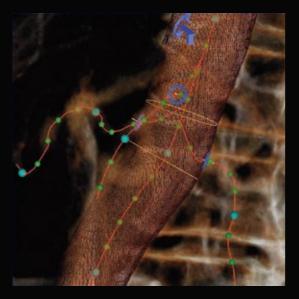


syngo Dyna4D lets you expand your angio suite's capabilities. It helps you see flow patterns in 3D, providing a virtually unlimited number of DSA runs at no additional dose or contrast media. Optimize patient selection and individualize treatment strategies.

Clinical images courtesy of University of Wisconsin School of Medicine and Public Health, USA



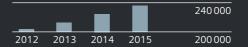
syngo CTO Guidance helps you plan the treatment of chronic total occlusions. It automatically segments CTAs and provides color-coded guidance during the procedure. Avoid foreshort-ening, enhance your planning, and treat more complex cases.



syngo EVAR Guidance automatically segments, marks, and labels the important vessels in a CT dataset. It calculates the vessel wall and places ostia rings on the main branching vessels for 3D image guidance during EVAR cases – typically in less than a minute. In addition, it suggests the optimal C-arm angulation for precise deployment. Reduce procedure time and save dose.

Tackle every challenge ...

The number of abdominal and thoracic aortic repair procedures is constantly increasing at a growth rate of 5.2% per year. More and more often, clinicians perform complex fenestrated aortic stent graft placements in their daily routine.



Abdominal and thoracic aortic repair procedures: world estimates 2012–2015

... with Artis zee

Artis zee offers dedicated applications to support clinicians in complex procedures: *syngo* EVAR Guidance, for instance, is a complete automated workflow for endovascular aortic repair. Not only does it make the procedure easier, it is also more precise and saves time, contrast medium, and dose.

Source: Millenium Research Group, Frost & Sullivan



Invest with confidence

Artis zee is a smart investment that grows with your requirements. Whether you are looking for a rapid return on investment, shared use, access to latest clinical applications, or future upgradability – Artis zee is ready.

Simply put, healthcare today faces a predicament: 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 for many years to come. Designed for this purpose, Artis zee is a proven and reliable system that achieves sustainable performance. With unique and pioneering features, over 8 years of experience, it provides an uptime of up to 99%. But Artis zee is more: it is upgradable whenever you want, giving you access to the latest technology for optimal care to your patients. Artis zee is a smart investment that grows with your needs. It helps you minimize downtime, stay on top of technological developments, and effectively utilize the angio suite, as the flexibility of the system allows many specialties to use and share the lab. Invest confidently in a sustainable system that prepares you for the challenges that lie ahead.

Customize it

Optimize your angio lab for shared use

Artis zee supports a broad range of applications for cardiac, interventional radiology, neuro, and surgical procedures. In order to accommodate various clinical disciplines in one room, a high degree of flexibility is needed. Artis zee is therefore available as a floor, ceiling, or biplane system (in combination with either a large or small detector) and also as a multipurpose system (with a large detector). In addition, Artis zee works with three different angio tables and a breakable OR table from Trumpf*. Artis zee offers the perfect configuration to optimize your procedure mix.

Customize and upgrade your system

The Artis PURE[®] platform is just one example of the innovations available for the Artis zee product family. To maximize your versatility and flexibility, Artis zee is individually customizable and can be upgraded with the latest Siemens software available. The system can grow with your needs and gives you access to evolving technology.

*Artis zee ceiling only



Value-based healthcare Volume-based fee for service 2010 2013 2016 2019 2022

Tackle every challenge ...

Despite decades of cost containment and

operational improvement, healthcare costs

continue to rise, putting unrelenting pres-

sure on hospital budgets. Strategic organi-

greater healthcare value to differentiate

themselves from their peers.

zations focus on better health outcomes and

... with Artis zee

Artis zee is key to increasing the value of your interventional services. It takes the pressure off your budget and allows you to grow your angiography services as your business grows.

Source: HHS Press Release, January 26, 2015

Rely on it

Up to 99% uptime with Siemens service

With thousands of angiography systems in use around the world, Siemens is known as a provider of top-quality products and global support. An investment in Siemens is an investment in proven reliability for years to come. Depending on your chosen contract, we can deliver up to 99% uptime.

A broad portfolio of service contracts with different levels of coverage helps you protect and maintain your investment. With a Siemens service contract, you will be connected to the Siemens Service Center via **Siemens Remote Service**, our efficient and comprehensive infrastructure for the complete spectrum of remote support. Many services, updates, and even immediate repairs that previously required on-site visits are now performed remotely.

Our **Siemens Guardian Program™**, for example, provides real-time remote system monitoring to detect and resolve system errors before malfunctions occur. Should a spare part be needed, we are able to deliver 97% of all parts within 24 hours.

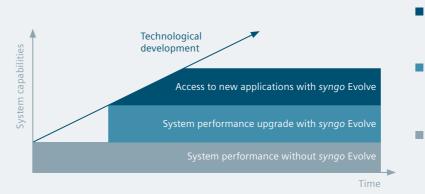
Maximize uptime and minimize downtime with syngo Evolve for Artis zee

Innovation cycles keep getting shorter – and efficiency and performance of modern systems are expected to grow over time. *syngo* Evolve for Artis zee gives customers the ability to participate in future technological developments. With *syngo* Evolve, you can count on a planned upgrade of your Artis zee system about three years after system delivery.

"We chose Artis zee for its good image quality, reliability, and its intuitive platform that allows us to take complete advantage of the system."



Martha Elizalde, MD Chief of Radiology, Star Medica Infantil Privado, Mexico City



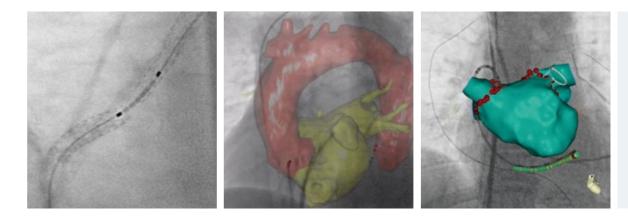
- With syngo Evolve, you get access to innovative applications to expand the capabilities of your system.
- A well-planned software and hardware upgrade with *syngo* Evolve will bring your system to the next level of performance.
- Without syngo Evolve, your system remains at the same performance level over its entire life cycle.

Artis zee in Cardiology

Artis zee is a versatile solution for routine and complex procedures, helping you tackle every challenge.

Cardiology is not only expanding, it is also changing. There is a continuous influx of new procedures and devices, resulting, of course, in ever-changing workflows. Meanwhile, the demands are consistently high: Patients and staff want the lowest possible dose during procedures as well as steady improvement of clinical outcomes, while costs should be kept as low as possible.

In this increasingly competitive environment, you need versatile solutions that help you deliver better, faster, and more effective care – both in complex procedures and in your daily routine. The versatile Artis zee family combined with dedicated applications such as CLEARstent and CLEARstent Live or IVUSmap help you tackle the toughest challenges in treating coronary artery disease. In cases of structural heart disease, *syngo* DynaCT Cardiac and *syngo* Aortic Valve Guidance seamlessly fit into your workflow.



CLEARstent Live: Real-time verification of stent positioning while moving the device, eliminating cardiac movement.

Clinical image courtesy of University Hospital Erlangen, Germany syngo LA Segmentation: Acquisition of anatomical data of the left atrium with one step on the footswitch. High-quality 3D results within seconds.

Clinical image courtesy of University of Insurbia, Varese, Italia

Integration with EP Mapping systems: Artis zee is compatible with EP mapping systems from Biosense Webster and from St. Jude Medical.



Floor-mounted system

The **floor-mounted** Artis zee is the ideal solution for routine Interventional Cardiology, providing fast movement and steep angulations for all cardiac exams. Its C-arm can be conveniently positioned around the table – for head-to-toe coverage of the patient: right-side for pacemaker implantation, head-side for abdominal procedures, and left-side for standard peripheral procedures. Its compact and slimline C-arm design has a small footprint, requires minimal room preparation work, and can fit into an examination room size of only 25 m².



Artis zee biplane with large display for electrophysiology

For electrophysiology, Artis zee biplane offers integrated solutions for enhanced patient care – covering everything from imaging to 3D guidance and co-registration. Profit from the latest mapping and navigation systems and low-dose imaging for highly complex procedures.

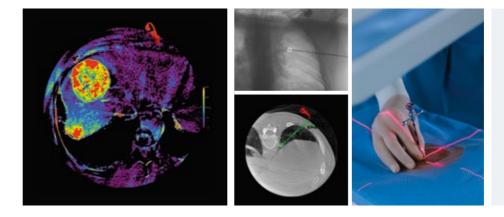


Artis zee in Interventional Radiology

Artis zee systems support your specific needs for interventional procedures: convenient positioning and uncompromised imaging.

Interventional Radiology is rapidly becoming an integral part of patient treatment. Interventional radiologists help in fight the most threatening diseases, prolong patients' lives, and improve their quality of life. Fundamental to all procedures – from routine to innovative endovascular and percutaneous treatments – are efficient imaging techniques.

With the Artis zee product line, Siemens offers the most extensive system portfolio to support your specific needs in the angio suite. Profit from a broad scope of dedicated innovative applications and workflows – for example, *syngo* DynaPBV Body and *syngo* Needle Guidance.



syngo DynaPBV Body: 3D functional imaging application to check distribution of blood in lesions and surrounding tissue. Personalize therapy and control the optimal endpoint of interventions.

Clinical image courtesy of Hacettepe University School of Medicine, Ankara, Turkey **syngo Needle Guidance:** Unique integrated cross-hair laser light visualizes skin-entry point and allows for radiation-free needle advancement for easy needle positioning.

Clinical images courtesy of Hôpital européen Georges-Pompidou, Paris, France

Ceiling-mounted system

Ideally suited for body Interventional Radiology, Artis zee **ceiling-mounted** systems provide the highest positioning flexibility with the largest patient coverage. The C-arm can be conveniently positioned around the patient's left-, right-, or head-side – and any angle in between. This enables optimum patient access. Siemens' unique InFocus and IsoTilt maintain the projection angle during stand rotation and during table tilting. In addition, the system provides the uncompromised soft-tissue imaging of *syngo* DynaCT from the left-side to also cover the patient's lower abdomen.



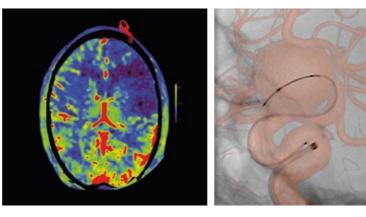
Artis zee multi-purpose – your Diagnostic Radiology solution

The Artis zee multi-purpose system features flexible architecture with versatile clinical applications for angiography and fluoroscopy examinations.

Artis zee in Neuro Interventions

Artis zee offers an ideal solution for your neuroradiological imaging needs, enabling optimal patient access and extensive coverage.

The introduction of new techniques and devices in neuro interventions not only opens up more possibilities for physicians – it also creates new challenges. With the Artis zee family, Siemens has set the bar in interventional imaging and prepares you for whatever challenge comes your way. Its cutting-edge technology, such as flat-emitter X-ray tubes, and innovative features such as *syngo* DynaPBV Neuro and *syngo* Dyna4D enable you to shape the future of Neuroradiology.



syngo DynaPBV Neuro: Visualizes the parenchymal blood volume of the entire brain in one acquisition. It helps you monitor the functional state during, for example, endovascular stroke treatment.

Clinical image courtesy of Hacettepe University School of Medicine, Ankara, Turkey

syngo 3D Roadmap: Provides visualization and fading between the live 2D fluoro image and the matching 3D dataset – for effective guidance during interventional procedures.



Biplane system

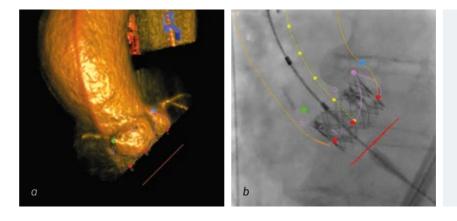
The Artis zee **biplane** system is the ideal system for your neuro interventions. Combining high performance and positioning flexibility, it supports two isocentric imaging positions. This is made possible by a floor rotation point with motorized swivel from head-end to left-side. The result is optimum access to the patient's head as well as extensive coverage from head to toe in biplane imaging mode.

Depending on your intended use, the Artis zee biplane system is also available with a small detector.

Artis zee in Image-Guided Surgery

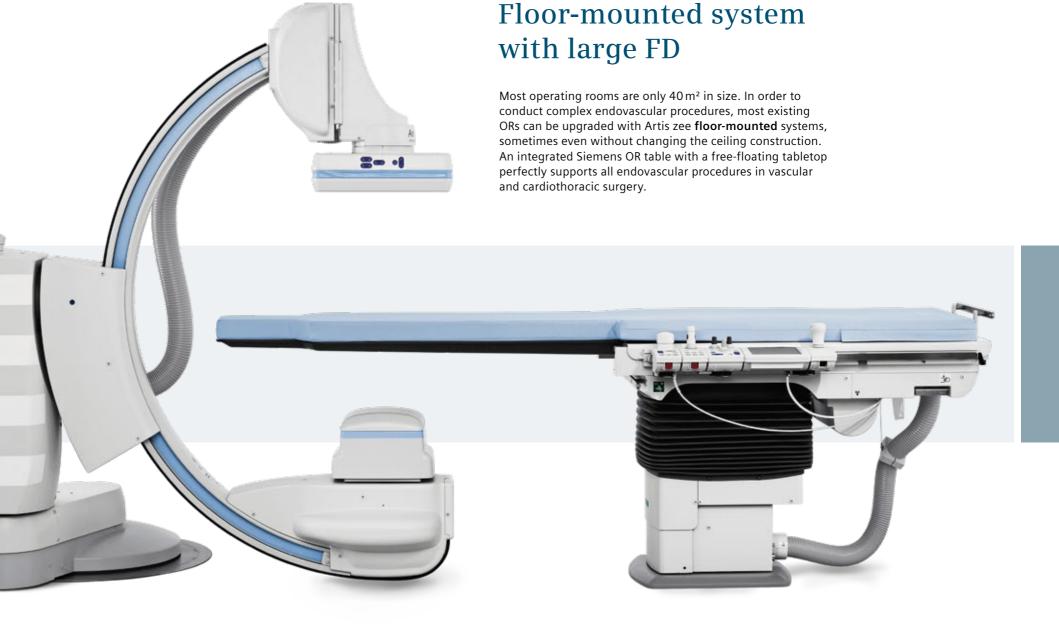
Artis zee also supports surgery in hybrid operating rooms: 3D guidance and excellent image quality for complex procedures.

Worldwide, demographic change is marked by increased life expectancy. This results in an aging population with a higher prevalence for complex aortic diseases. A significant percentage of patients also suffers from renal insufficiency and obesity. Hybrid operating rooms (OR) help to treat these patients with greater confidence. Compared to a conventional operating room with a mobile C-arm, the advanced imaging capabilities of fixed systems allow 3D guidance and excellent image quality at low dose levels. Advanced workflow capabilities in the hybrid OR make complex endovascular procedures possible at reduced procedure times.



syngo Aortic Valve Guidance: a) Segments the aortic root and color-codes landmarks for the coronary ostia or the valve commissures.
b) In combination with syngo 3D Roadmap, the 3D valve image can be overlaid on live fluoroscopy either in solid or in contour mode.

Clinical image courtesy of Herz- und Kreislaufzentrum, Rotenburg a. d. Fulda, Germany Clinical image courtesy of Kerckhoff-Klinik Bad Nauheim, Germany



The floor-mounted system is available with both a small and a large detector.

Tailor your system

Choose from the following options and upgrades to customize your Artis zee system even further – to help you tackle your specific challenges.



Tables

Choose the table that works best for you. Our selection of free-floating tables have easily exchangeable tabletops, so they can be conveniently adapted to the different needs of clinical procedures within minutes. Users can also switch table accessories.

- Standard table: Free-floating tabletop with customizable tableside control module and rotation up to 120°.
- **Tilting table:** Additional tilting capability, which is useful for increasing patient blood pressure.
- **OR Table:** Designed for easy patient access, superb positioning, and total body coverage, the integrated Artis OR table is a proven and reliable interventional table which is motorized in all directions and provides tilt and cradle functionality.

Artis Large Display

See the whole picture on one monitor. Seeing more can increase diagnostic and therapeutic confidence. Our Artis Large Display features a full-color 55or 60-inch medical-grade screen that gives you a view of multiple inputs simultaneously.

- High-definition consolidated display
- Customized views

- Optimal resolution in any window size
- Fast, intuitive handling, tableside control
- Integrated emergency backup



Artis Cockpit

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

- Streamlined setup and workflow
- Control up to nine systems from one single workplace
- Reduce monitor and cabling clutter in the control room

- Configure the Artis Cockpit to your needs with one or two keyboards and monitors
- Customize layout quickly with drag & drop

Sensis

Sensis is an integrated recording and information system that can serve as your central point of data handling – from patient registration to reporting. Bidirectional communication with your Artis zee system allows automatic exchange of demographic patient data.

- One-stop patient registration and comprehensive reporting
- Seamless amplifier integration

- Flexible handling with tableside control
- Excellent signal quality for hemodynamic and electrophysiology application
- Investment confidence due to scalability

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The information in this document contains general technical descriptions of specifications and options as well as standard and optional features which do not always have to be present in individual cases.

The relative statement "Tackle every challenge" assumes typical treatment and patient morphology and refers to procedures within the scope of the cleared intended use. The statements by Siemens' customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption), there can be no guarantee that other customers will achieve the same results.

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