

SIEMENS

Artis
With PURE®

Artis Q

Artis Q

Visionary intervention

siemens.com/artis-q

Artis with
PURE®





Experience the future
of interventional imaging

Artis Q

Visionary in performance.
Visionary in precision.

The Artis Q product line for interventional imaging is a visionary breakthrough in X-ray generation and detection that takes **performance** and **precision** to the next level.

Artis Q offers unparalleled **performance** with the new powerful GIGALIX X-ray tube for high contrast resolution at any angle and any patient size while the high-dynamic range detector enables enhanced image quality in advanced 3D imaging.

In the fight against the most threatening diseases such as coronary artery disease, stroke, and tumors, Artis Q delivers innovative applications offering **precision** for enhanced guidance during interventional procedures in cardiology, radiology, and surgery.

Experience the future of interventional imaging.

Not all features shown are necessarily standard and available in all countries.

Artis with PURE[®]

Adding smooth to smart.

In angiography, many physicians do not get to experience the full capabilities of their modern interventional systems as both procedures and system interaction get increasingly complex. The new PURE[®] platform for Artis zee, Artis Q, and Artis Q.zen is changing this now: Adding smooth use to Siemens' smart technologies.

Increase your process efficiency in the angio suite, enable all your staff members to get the full potential of the system, and enhance your patient treatment outcomes – with an angio system that combines better ease of use, integrated expert therapy guidance, and tools providing better diagnostic information.

For a PURE[®] experience in angiography.



Artis with
PURE[®]

Smooth interaction

Save time during procedures. Fewer steps. More efficiency.

Smart performance

Expand your capabilities. More confidence. Better outcomes.



Experience PURE[®]
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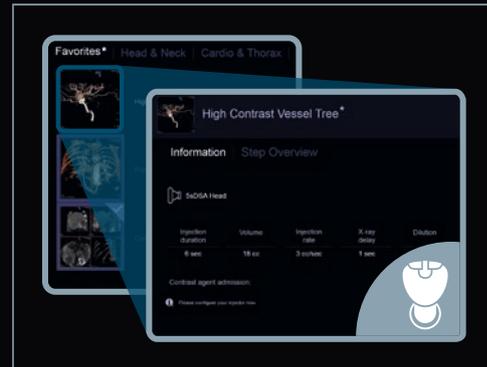
Some highlights of the PURE[®] platform:



syngo DynaCT SMART

Reduce metal artifacts to see the unseen

Important diagnostic information can be obscured by metal artifacts. Reduce these artifacts with *syngo*[®] DynaCT SMART. This helps you increase diagnostic confidence and increases the chance for visualizing complications such as bleedings close to metallic objects.



3D Wizard

Simplify 3D imaging with expert guidance

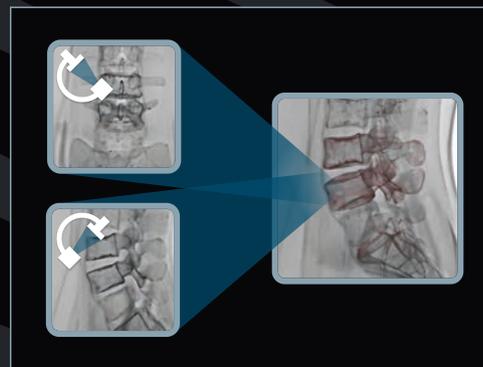
Choosing an optimal 3D protocol is not always easy. The 3D Wizard provides step-by-step expert guidance to achieve the desired imaging results. Increase your confidence when using 3D and get the full benefits from your system.



syngo Dyna4D

Welcome the 4th dimension to the angio suite

Direct 3D flow information was limited to CT, MRI and ultrasound – yesterday. With *syngo* Dyna4D, you can now see flow patterns in 3D, providing a virtually unlimited number of DSA runs at no additional dose and contrast media. *syngo* Dyna4D helps you expand your clinical capabilities in the angio suite by optimizing patient selection and individualized treatment strategies.



syngo 2D/3D Fusion

Save 99% dose when integrating pre-op volumes for live image guidance*

Pre-op CT, MR, or PET data is often available, but remains unused in the angio suite. With *syngo* 2D/3D Fusion, only two fluoro projections are required to easily fuse 3D volumes from other imaging modalities for live image guidance. Expand your capabilities while saving radiation dose and contrast media.

* This measurement was performed with an Alderson phantom using fluoroscopy with 10 images per 2D projection and a low-dose 6s DCT body program. Results in actual clinical practice may vary.

Visionary in ... performance

To see any device and anatomical structure in any patient and at any angulation is one of the main challenges in interventional imaging. For better performance and image quality, Artis Q provides enhanced visualization to see small devices. It offers high contrast resolution even at steep angulations. And it enables sharp images of moving objects such as coronary arteries while the optimized X-ray pulse helps to reduce radiation by up to 60%. The new large HDR detector offers high dynamic range for excellent soft-tissue resolution in 3D.





CARE + CLEAR

GIGALIX

Focused power

The GIGALIX X-ray tube has been designed around a unique flat emitter technology that generates powerful short pulses. Compared to filament technology, the higher maximum current of the flat emitter enables CLEARpulse and enhances image quality in challenging situations such as with obese patients or in steep angulations. The small square focal spots of the GIGALIX result in higher spatial resolution for all clinical applications and help to better visualize small devices and vessels.

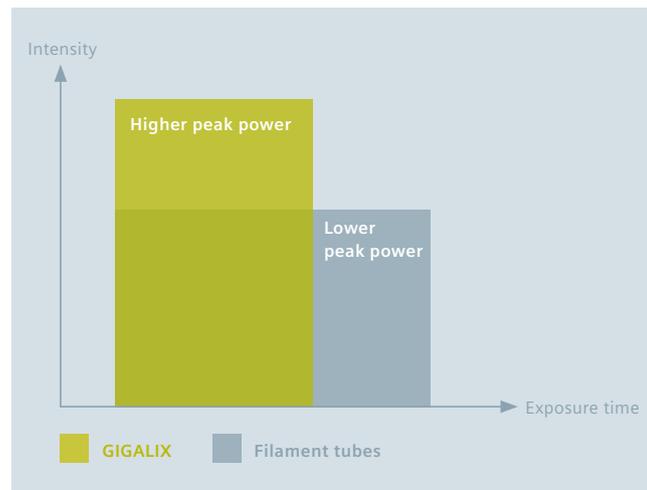
Together with the higher contrast resolution, this results in up to 70% better visibility of small devices.*

With CLEARpulse, the pulse length can be shortened. This allows visualizing moving objects such as coronary vessels more sharply.

CLEARpulse also optimizes the X-ray spectrum by lowering the required tube voltage and allowing for additional filtration.

Together with small focal spots, this generates equal image quality with up to 60% less dose*.

The GIGALIX X-ray tube in the Artis Q product line scores a double win: enhanced image quality at a significantly lower dose for both patients and staff.

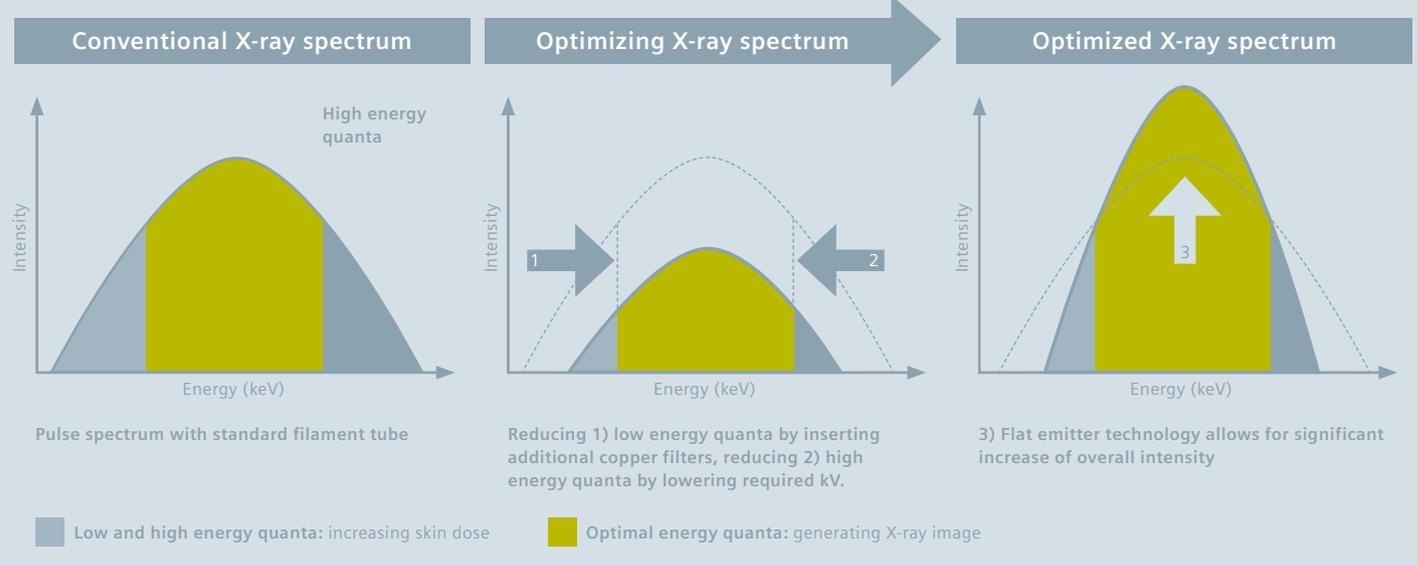


- Flat emitter technology for high contrast resolution even at steep angulations
- Small square focal spots for excellent spatial resolution to see more details
- CLEARpulse for sharp images and low dose

CLEARpulse – sharp images and low dose



How to optimize X-rays with the GIGALIX tube



Up to **70%** better visibility
of small vessels*

Up to **43%** shorter pulses
for better images and optimized dose*

* Compared to previous X-ray tube technology. Data on file.



- High dynamic range for enhanced soft-tissue resolution in 3D imaging
- High dose efficiency enables better image quality at less radiation
- Water cooling to meet the demands of high hygienic standards and to provide stable image quality

New large HDR detector

High dynamic range and dose efficiency

In addition to X-ray generation, X-ray detection is crucial for high image quality. The new large detector comprises a 16-bit read-out generating more than 65,000 gray scale values leading to enhanced soft-tissue contrast in 3D imaging, especially at image borders (e.g. close to bones like the skull).

Increased scintillator thickness enables higher detective quantum efficiency. This provides imaging excellence even in challenging situations and helps to reduce radiation.

The water-cooled design meets high hygienic requirements, especially in hybrid operating rooms. In addition, it supports a stable image quality even in long-lasting procedures.

syngo DynaCT with large HDR detector – Increased soft-tissue resolution

syngo DynaCT (14 bit read-out)



syngo DynaCT with large HDR detector (16 bit read-out)



Enhanced soft-tissue resolution, especially close to the skull (phantom images using CATPHAN CTP 515 phantom)

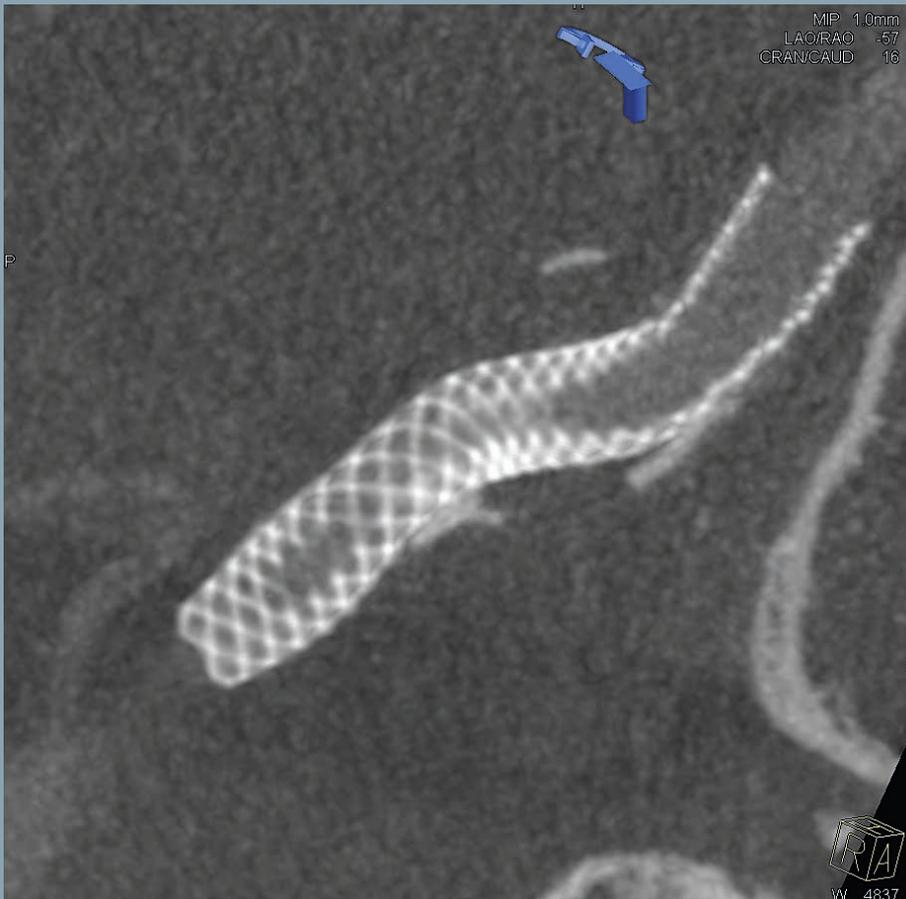




Visionary in ... precision

Precise guidance is needed to help improve clinical outcomes during interventions. Artis Q offers applications for cardiology, interventional radiology and image-guided surgery.

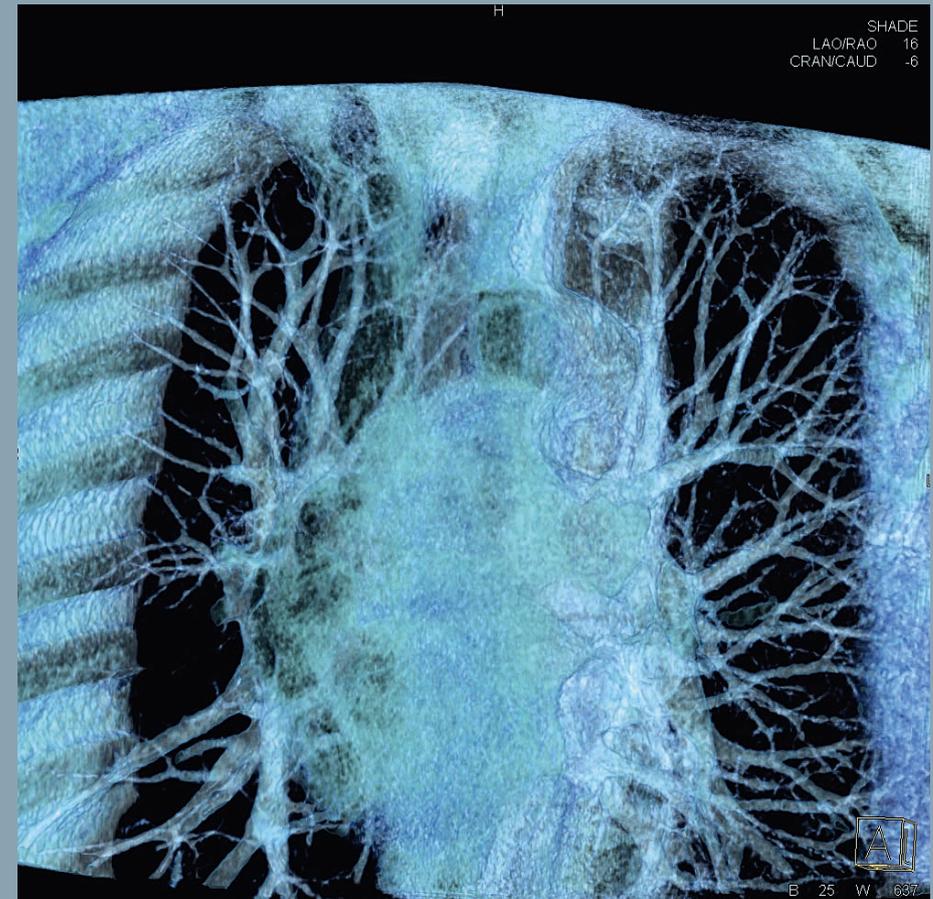
Applications for advanced interventional imaging



syngo DynaCT Micro – Boosting the level of detail

- 40% increased spatial resolution compared to standard syngo DynaCT
- Better visualization of finest structures
- Enhanced evaluation of e.g. stents, flow diverters or stapes prosthesis

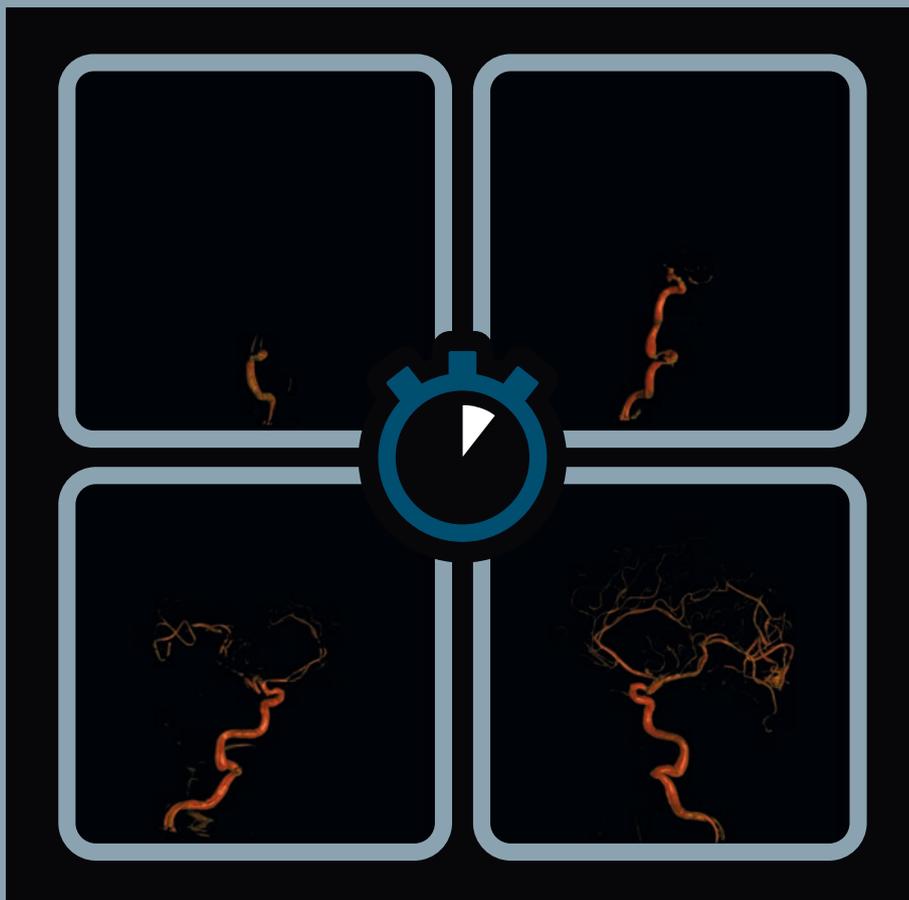
Courtesy: University Hospital Erlangen, Germany



syngo Dyna3D HighSpeed* – Freeze the motion for better treatment

- The fastest 3D protocol on the market – in less than 3 seconds
- Fewer motion artifacts, less contrast media
- Better visualization of moving organs

Courtesy: University Hospital Frankfurt, Germany



syngo Dyna4D –

Welcome the 4th dimension to the angio suite

- See flow patterns in 3D providing a virtually unlimited number of DSA runs at no additional dose
- No additional contrast media compared to standard 3D*
- Expand your clinical capabilities in the angio suite by optimizing patient selection and individualized treatment strategies

*This is the experience of individual users. Results may vary.

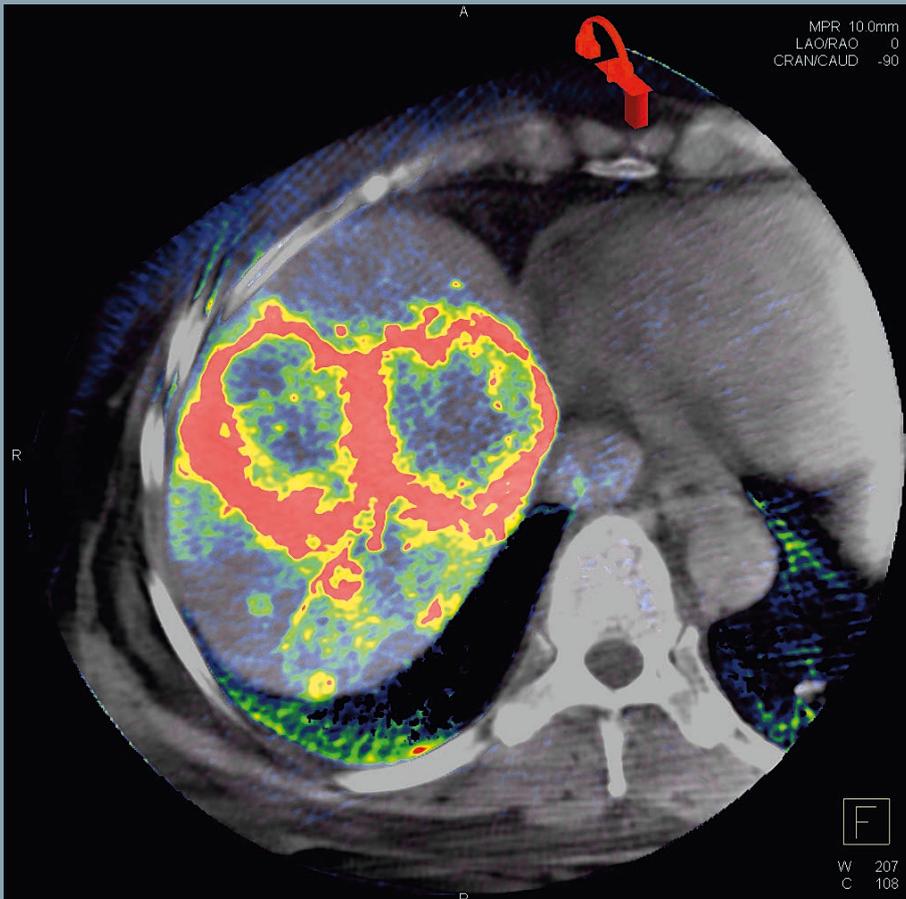


syngo DynaCT SMART –

Reduce metal artifacts to see the unseen

- Reduce artifacts from dense objects using the iterative *syngo* DynaCT SMART volume reconstruction
- Make relevant aspects in soft tissue visible even close to e.g. coil packages or glue for sounder decision-making during interventions

Applications for advanced interventional imaging



syngo DynaPBV Body – Evaluate perfusion for personalized therapy

- Provides physiological information about lesions directly in the angio-suite
- Supports endpoint determination during embolization
- Potential to identify non-responders directly after interventional therapy

Courtesy: University Hospital Frankfurt, Germany



syngo DynaCT with new large HDR detector – Increasing soft-tissue resolution

- 4 times the gray-value information
- Enhanced soft-tissue resolution
- Homogeneous image quality

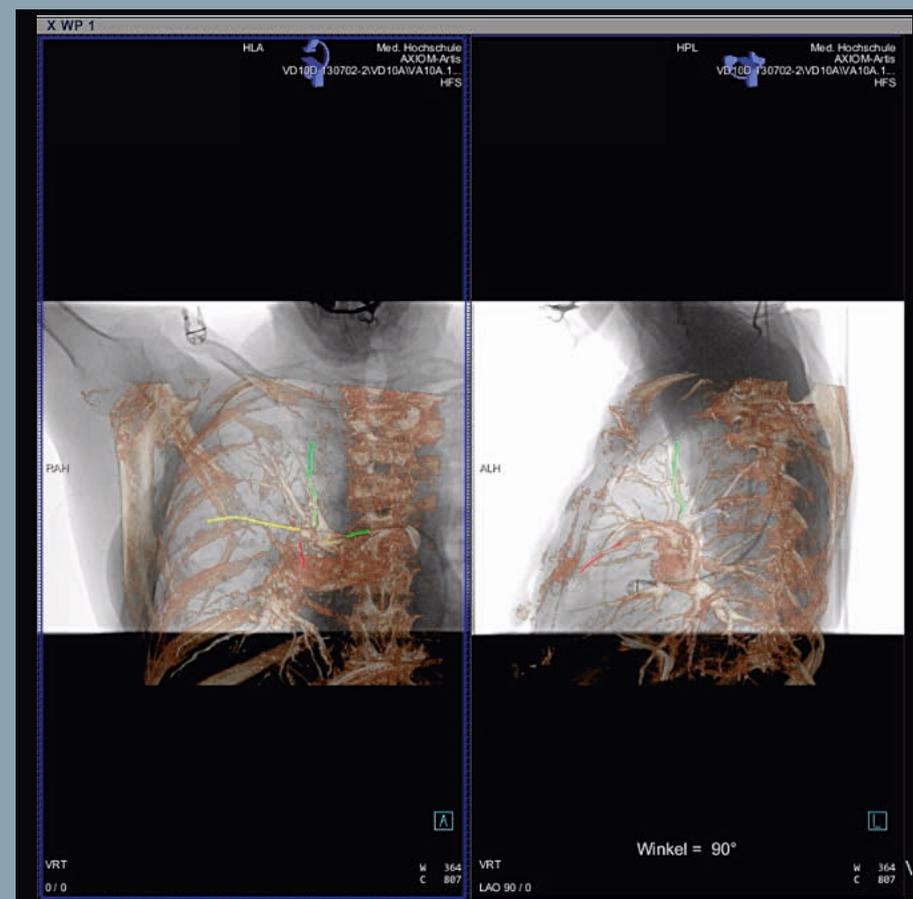
Courtesy: University of Magdeburg, Germany



CLEARStent Live – Real-time stent enhancement software

- Support of complex procedures
- Real-time verification of stent positioning while moving the device
- Potential to speed up procedures and to save contrast agent

Courtesy: AZ Maria Middelaers, Ghent, Belgium



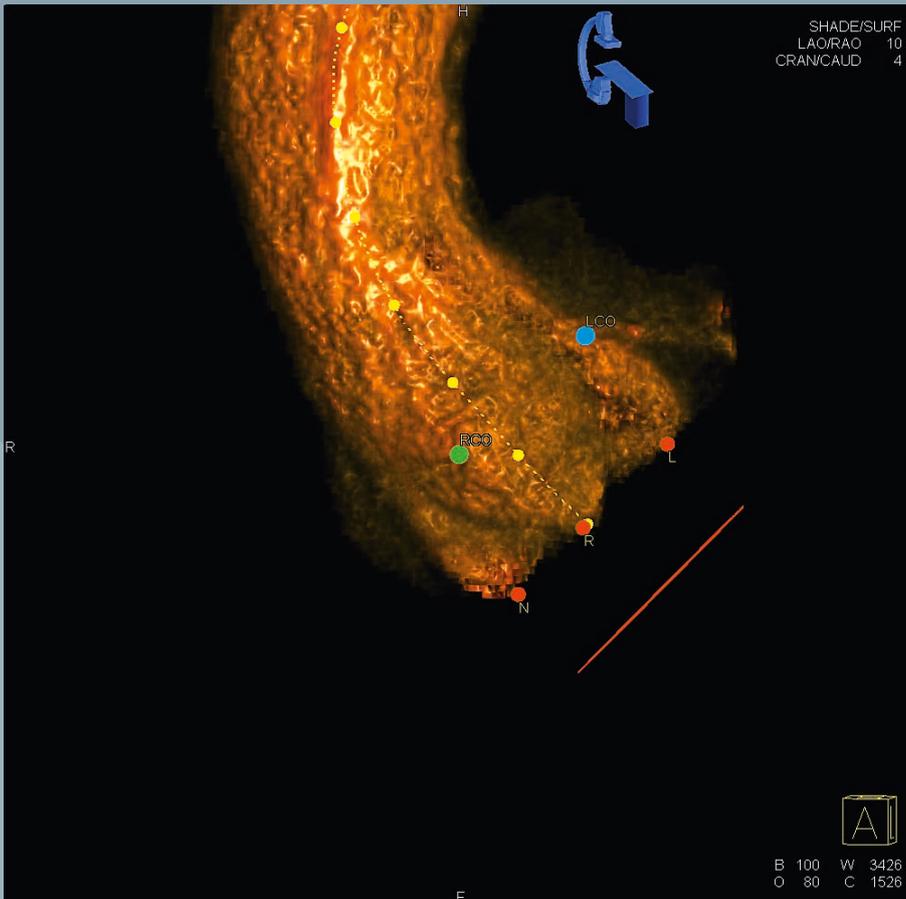
syngo Fusion Package –

Integrate the unique information of MRI, CT or PET-CT into your angio image using *syngo* Fusion Package

- Select between *syngo* 3D/3D Fusion, or *syngo* 2D/3D Fusion for easy multi-modality integration, which does not require an intraprocedural 3D scan
- Overlay information from other modalities using *syngo* 3D Roadmap or utilize applications like *syngo* Toolbox with existing three-dimensional datasets

Courtesy: Hanover Medical School, Germany

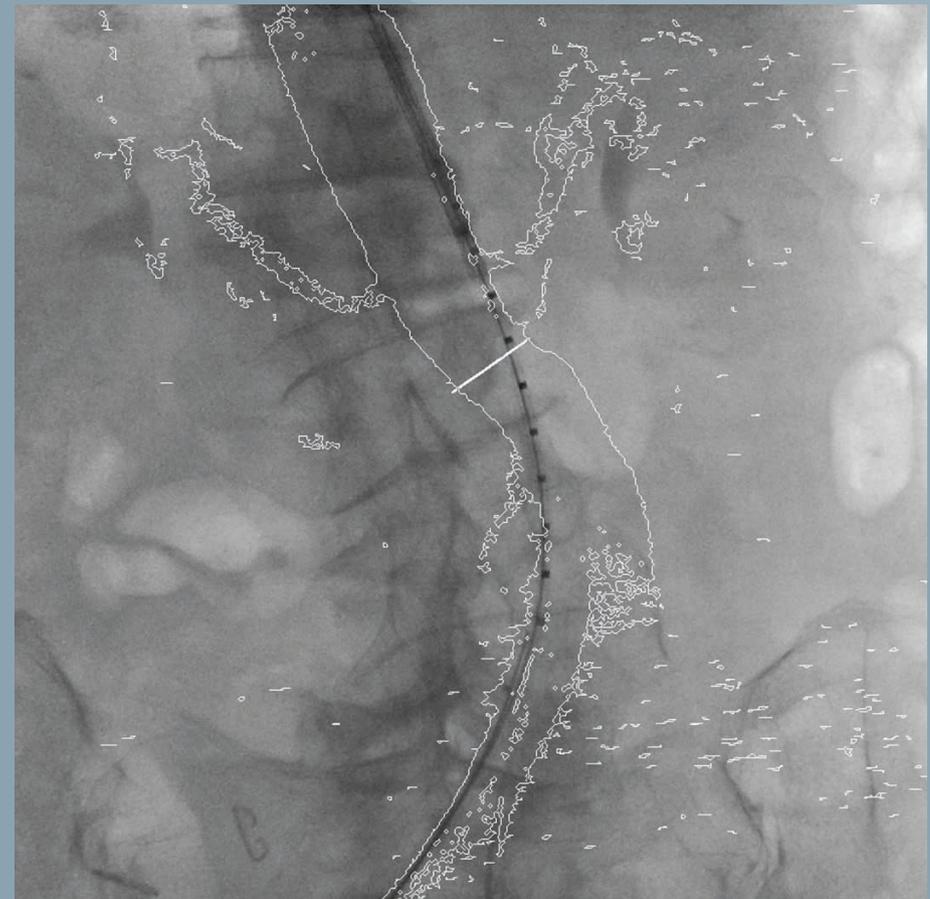
Applications for advanced interventional imaging



syngo Aortic Valve Guidance – A new level of valve positioning convenience

- Automated aortic root segmentation and visualization of anatomical landmarks in seconds
- Automated C-arm positioning to orthogonal view without fluoroscopy allowing for dose and contrast medium savings
- Improved guidance through overlay of aortic contour and landmarks onto live 2D image

Courtesy: Oulu University Hospital, Finland



syngo Toolbox and *syngo* 3D Roadmap – New comfort for precise graft deployment

- Segmentation of aortic aneurysm and marking of anatomical landmarks like renal arteries
- Automated C-arm positioning to orthogonal view without fluoroscopy allowing for dose and contrast medium savings
- Improved guidance through overlay of aortic contour and landmarks onto live 2D image

Courtesy: Onze-Lieve-Vrouw Hospital, Aalst, Belgium

When **VISION** becomes **reality** ...

Experience the future of interventional imaging and learn more about Artis Q system configurations and options.



SIEMENS

Artis Q



Artis Q

Floor-mounted system

The Artis Q floor-mounted system offers high positioning flexibility on a very small footprint.

The C-arm features a floor rotation point with motorized swivel – from the head-end position to a left-side position. This ensures optimum access to the patient's head as well as extensive coverage from head to toe.

Flexible positioning of the C-arm relative to the table is possible, e.g. allowing access to the patient's left side for pacemaker implantations.

A special orthogonal position with rotated table enables easy access to the patient's head and sides for hybrid procedures.

StraightView maintains upright images for all C-arm and table positions.

The compact and slimline C-arm design has a small footprint requiring an examination room size of only 25 m².



- High positioning flexibility on a very small footprint
- Excellent access to the patient's head for complex procedures under anesthesia
- Extensive coverage from head to toe





Artis Q

Ceiling-mounted system

The Artis Q ceiling-mounted system offers high positioning flexibility for the C-arm at any angle.

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. The longitudinal ceiling travel offers maximum coverage from head to toe as well as easy parking away from the table.

For increased imaging accuracy, InFocus maintains the projection angle during stand rotation, IsoTilt the projection angle

during table tilting, and StraightView upright images for all positions of the C-arm and table.

In addition, the system provides the uncompromised image quality of *syngo* DynaCT in the lateral position.

Not only the Artis tables, but also surgery tables from Maquet and Trumpf can be integrated into the system.

- High positioning flexibility of the C-arm at any angle
- Easy parking away from the table
- Maximum patient coverage from head to toe
- High 3D image quality also in lateral acquisition





Artis Q

Biplane system

The Artis Q biplane system offers high positioning flexibility and excellent patient access for biplane imaging.

The Artis Q biplane system combines high performance and positioning flexibility. It supports two isocentric imaging positions enabled by the floor rotation point with motorized swivel from head end to left side. This allows optimum access to the patient's head as well as extensive coverage from head to toe in biplane imaging mode.

In single plane mode, the table and stand rotation allows access even to the patient's left side. A special orthogonal position with rotated table enables easy access to the patient's head for complex procedures under anesthesia. For increased imaging accuracy, IsoTilt maintains the projection angle during table tilting and Artis StraightView upright images for all C-arm and table positions.

- Two isocentric imaging positions enabling access to the patient's head for anesthesia in biplane mode
- Synchronized movements of both planes
- Extensive coverage from head to toe



Artis zeego

Artis zeego offers unparalleled positioning flexibility with a variable isocenter.

The unique multiple-axis design of Artis zeego enables unparalleled positioning flexibility and makes it the optimal system for hybrid operating rooms and all procedures where coverage and advanced 3D imaging are key.

3D rotational imaging can be performed from five different system positions: at the patient's left, right, and head, and with the table rotated to the left or right. Artis zeego offers unique 3D imaging protocols such as *syngo* DynaCT 360 and *syngo* Dyna3D HighSpeed.

Thanks to its unique variable isocenter, the working height of the Artis zeego system can be adjusted to a comfortable level according to user height.

Flexible parking positions provide operators with ample work space around the table when imaging is not required.

Artis zeego meets the highest hygienic standards in the OR, allowing laminar air flow and maintaining sterility requirements.



- Variable Isocenter for comfortable working height
- Enables 3D rotational imaging from five different system positions
- Meets the highest hygienic standards in the OR



The broadest portfolio of surgical tables on the market

With the Artis OR table and integrated surgical tables from Maquet and Trumpf, Siemens gives you the broadest choice of table systems for your hybrid and operating rooms.

Artis 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 with tilt and cradle functionality. Featuring a radiolucent free-floating tabletop that allows for

artifact-free 3D imaging, it is particularly well suited for procedures in cardiac and vascular surgery. This is the table of choice, particularly if the room is shared with interventionalists.



- Available with the entire Artis family
- Suitable for 3D imaging
- Free floating
- Tilt and cradle functionality $\pm 15^\circ$
- Overhang 224 cm (102.36")
- Maximum weight 200 kg (440.9 lbs)

Artis OR table



Trumpf TruSystem 7500



Maquet Magnus

Trumpf TruSystem7500 and Maquet Magnus

These surgery tables come with one-piece carbon or with segmented, radiolucent tabletops. These breakable tabletops are highly flexible and the segments are partially motorized. Shuttling allows convenient use of whichever tabletop best matches the requirements of a procedure. Therefore, the integrated surgery tables are optimally suited for multidisciplinary use or rooms with a high percentage of open surgical procedures. Most surgical disciplines require sophisticated

patient positioning, i.e. neurosurgery, urology, trauma surgery, orthopedic surgery, abdominal surgery, and thoracic surgery. These integrated surgery tables provide the flexibility necessary.

Artis Large Display

It's time to see the whole picture on one monitor.

With the Artis Large Display, 9, 18, or 24 video signals can be connected to the screen. The screen layout can be changed from the tableside.

With its built-in backup concept, additional back-up monitors are no

longer necessary. Also, a special algorithm ensures sharp display of ECG signals in zoomed formats, which is especially important to precisely visualize intracardiac ECG signals.



- Scalable from 9 to 24 inputs
- Tableside control
- Special ECG signal optimization algorithm



- Control up to 9 systems from one workplace and clean up your control room
- Configure the Cockpit to your needs with one or two keyboards and monitors

Artis Cockpit

It's time to clean up the control room.

Stop running from one system to the next – let the Artis Cockpit consolidate all your information in one workplace. The 30-inch medical-grade monitor offers 4 megapixel resolution and high brightness for excellent image display. Up to 9 inputs can be simultaneously displayed and controlled, with a choice of four different layouts. The position of the system inputs on the screen

can be easily rearranged using the unique drag & drop functionality.

Artis Cockpit offers one single workplace that can be equipped with one or two keyboards and monitors. With so much more efficiency in the control room, you can focus on your procedure and your patient.

CARE & CLEAR

Artis Q includes the CARE and CLEAR packages to complement the imaging chain for optimized post-processing and dose reduction. The CARE package helps reduce radiation for the operator and patient. The CLEAR package offers a comprehensive range of applications to enhance image quality. CARE and CLEAR are standard with all Artis Q systems.

We think beyond technical hardware improvements. Introduced in 1994, our ever growing CARE portfolio (Combined Applications to Reduce Radiation Exposure) continues to reduce radiation dose for patients and clinical staff while maintaining high image quality for diagnostic confidence.

Dose saving

- **CAREvision** provides variable fluoroscopy frame rates, pulse frequencies can be adapted to clinical needs
- **CAREfilter** is a specially designed copper prefiltration system that automatically adjusts the filter to the patient's anatomy
- **CAREprofile** allows radiation-free collimator and semitransparent filter

adjustment using the last image hold (LIH) position as reference

- **CAREposition** enables radiation-free object positioning, i.e. allows the table or C-arm position to pan without using fluoroscopy
- **Low-Dose Acquisition**, a dedicated acquisition protocol, helps to achieve dose reductions
- **Low-Dose syngo DynaCT** provides 3D images at the lowest possible dose levels

Dose monitoring

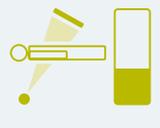
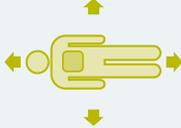
- **CAREguard** allows three threshold values to be defined for the accumulated skin dose and signals when a skin dose level is exceeded

- **CAREwatch** displays the dose area product and dose rate at the interventional reference point on the live display in the examination and control rooms

- **CAREmonitor** shows in real-time the accumulated peak skin dose according to the current projection in the form of a fill indicator on the live monitor

Dose reporting

- **CAREreport** is a DICOM-structured radiation report containing all patient demographic, procedure, and dose information
- **CARE Analytics** is a stand-alone tool for installation on any PC in the hospital network, allowing evaluation of DICOM dose structured reports

1994	1994	1998	2001	2001	2009	2009	2009	2010
								
CAREvision	CAREfilter	CAREprofile	CAREwatch	CAREposition	Low-dose syngo DynaCT	CAREreport	Low-dose Acquisition	CAREguard



CLEAR offers a comprehensive range of applications with real-time processing to enhance image quality – without increasing the dose.

- **CLEARpulse** shortens the pulse length and optimizes the X-ray spectrum, which leads to overall image quality improvements
- **CLEARcontrol** enhances the image creation process with a unique histogram analysis and optimizes image brightness and contrast

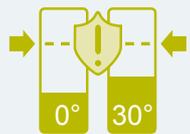
- **CLEARview** enhances overall image quality, especially when using low-dose imaging protocols with dose-adaptive noise reduction
- **CLEARmotion** helps detect small structures and efficiently compensates for motion artifacts
- **CLEARchoice** enables preferred image quality selection during application

2011



CARE Analytics

2011



CAREmonitor

Almost 20 years of Siemens innovations to reduce, monitor, and report dose in angiography

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