BAWERS

MEDICAL EQUIPMENT

# Bawers Angio BW30C

## Medical Angiography X-ray System

Contact Us:

# Bawers Angio BW30C

## Every innovation brings continuous change in the medical industry, Every breakthrough shows infinite care for doctors and patients.

With an aim to build a national brand of high-end DSA products, Bawers Medical brought together a large number of R&D talents in the industry and senior scientists worldwide in 2016. Through nearly three years' hard working and practicing, the first angiography system of Bawers series, Bawers Angio BW30C, has been launched recently. As the railless DRC 7-axis ceiling mounted DSA, Bawers Angio BW30C allows a wide range of flexible and fast projections. The innovative Bawers Platform integrates various low-dose technology, achieving a significant dose reduction. Full-featured clinical functions provides solutions in interventional neuroradiology, interventional cardiology, interven-tional oncology and comprehensive interventions, meeting various clinical needs.

**Railless 7-axis ceiling mounted gantry design**

**Integrating high-performance X-ray tube with digital FPD**

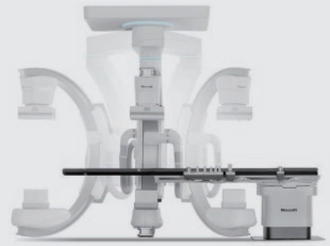
**Intelligent UI system and Glorious Platform**

**Total clinical solution for various interventional areas**

# Railless

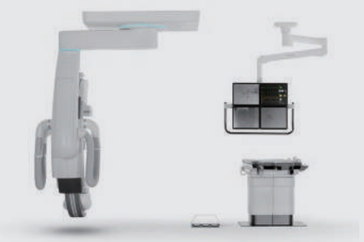
Railless 7-axis ceiling mounted design

- Railless gantry is easy to install and flexible for the layout of the catheter room
- Unique design avoids the interference to the laminar air flow system and other ceiling-mounted devices, which is more suitable for the hybrid OR
- Railless design eliminates the risk of noise and cleanliness of the rail on the ceiling, guaranteeing a quieter and more hygienic operating environment
- Dual rotational center (DRC) with 7-axis robotic structure easily achieves large-scale transverse and vertical movement and multi-angle projection
- Flexible and fast selection of multiple frequently-used working positions, brings great convenience to both doctors and patients



Wide-range Coverage

Cardiac Position



Surgical Position

Patient Transfer Position

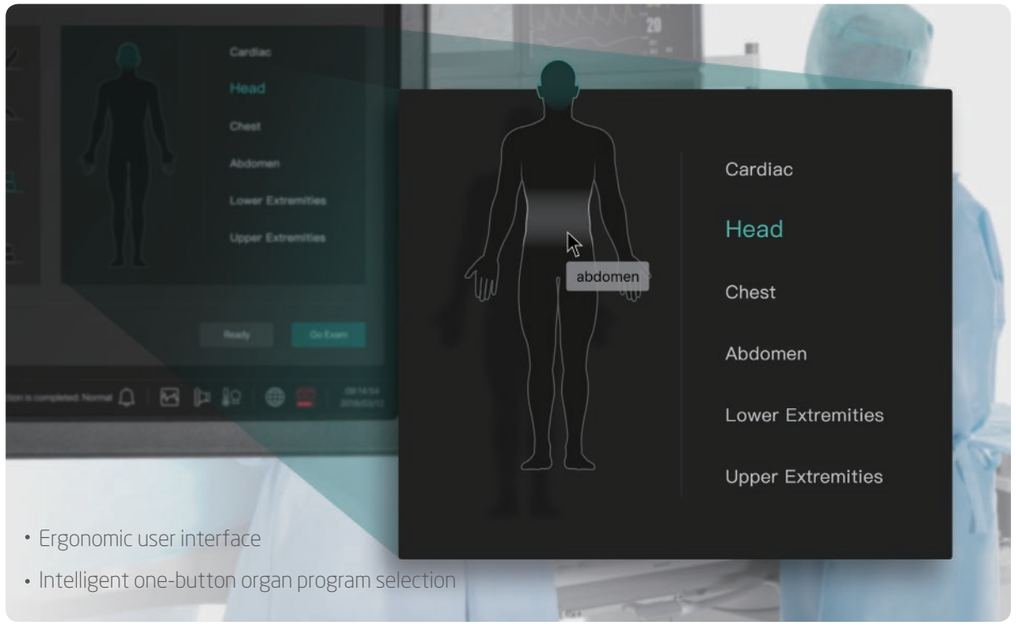
# Integration

Integrating high-per-formance X-ray tube with digital FPD

- Mute tube with liquid-metal bearing meets the requirements of long-time and complicated operations
- High-definition digital FPD with large dynamic range presents more details, making images sharper and clearer at low dose
- General digital FPD meets the coverage of all major parts of the body, which is both practical and flexible
- 2K full digital high-definition imaging ensures lossless image display
- Real-time tracing of collimator and digital FPD continuously ensures the upright display of clinical images

# Intelligence

## Intelligent UI system




- Ergonomic user interface
- Intelligent one-button organ program selection

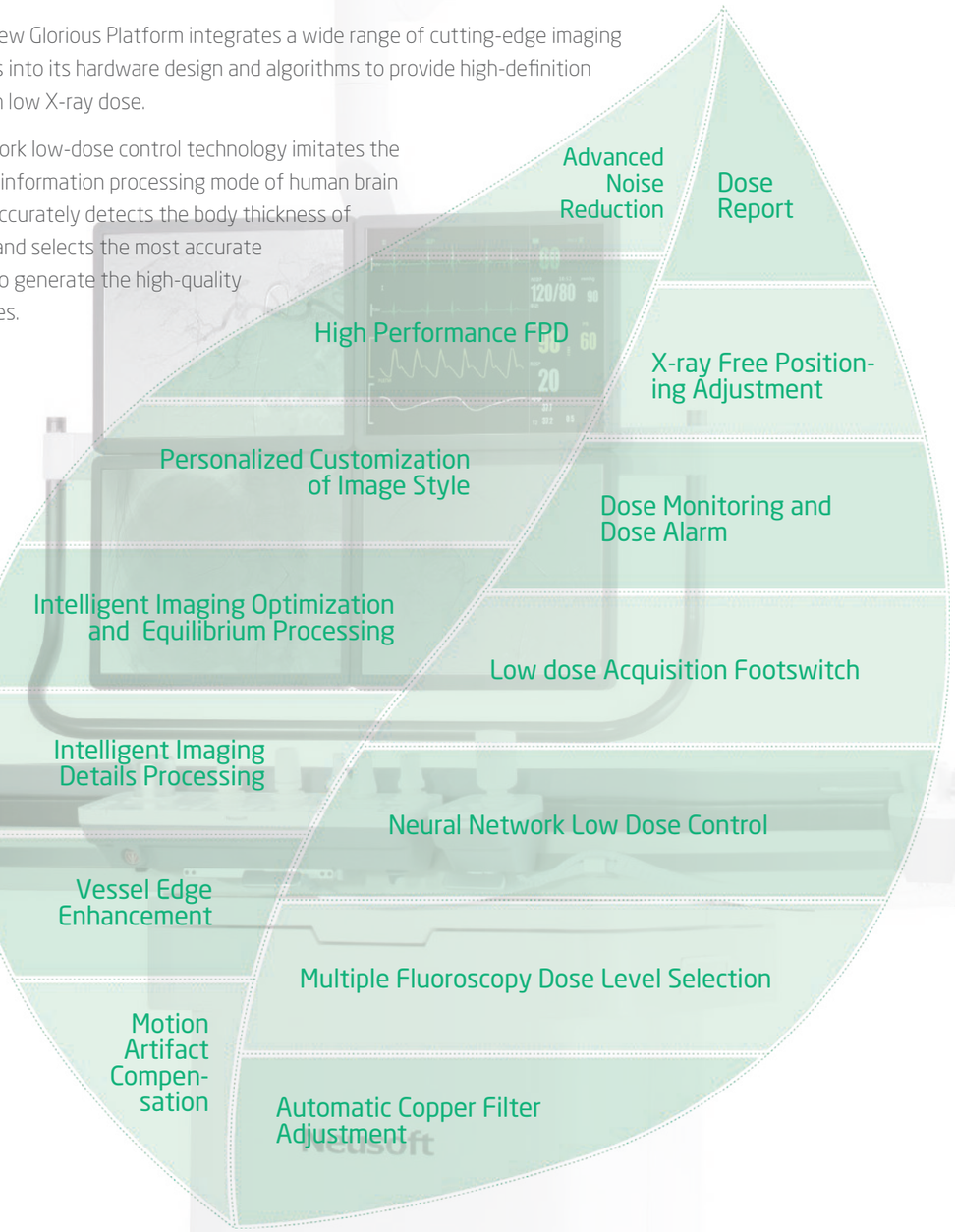
- Modular structure design of Table-side Control Module
- Multifunctional Control Joystick directly controls the function menu of the screen display

# Intelligence

Glorious high-quality imaging and low dose platform

The brand-new Glorious Platform integrates a wide range of cutting-edge imaging technologies into its hardware design and algorithms to provide high-definition imaging with low X-ray dose.

Neural network low-dose control technology imitates the multivariate information processing mode of human brain neurons. It accurately detects the body thickness of the patient and selects the most accurate X-ray dose to generate the high-quality clinical images.

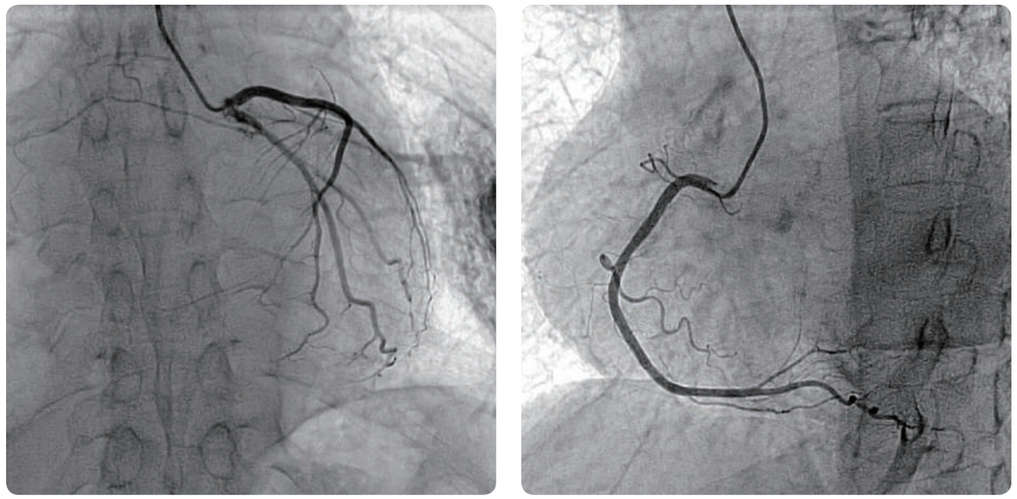


Equipped with various advanced post-processing functions, NeuAngio 30C provides a total solution in interventional neuroradiology, interventional cardiology, interventional oncology and comprehensive interventions, meeting various clinical needs.

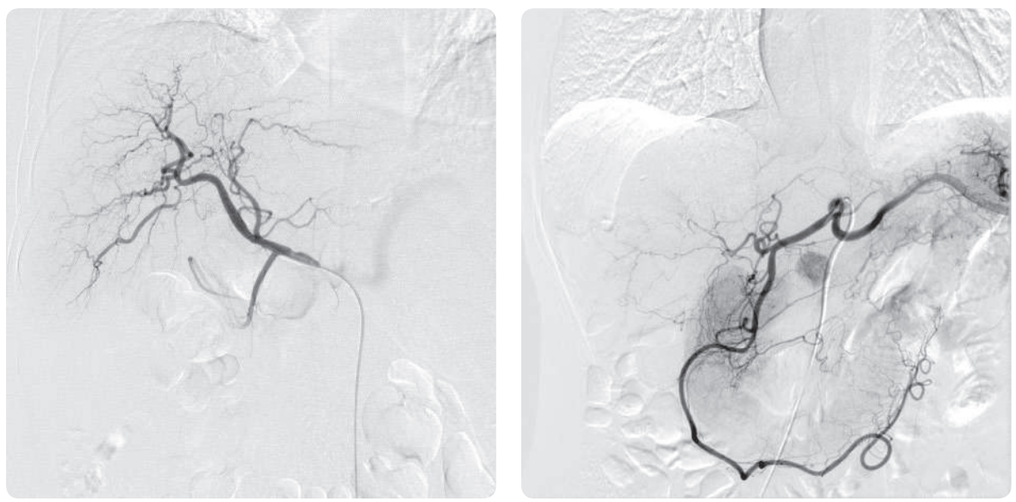
# Applicable

Total clinical solution for various interventional areas

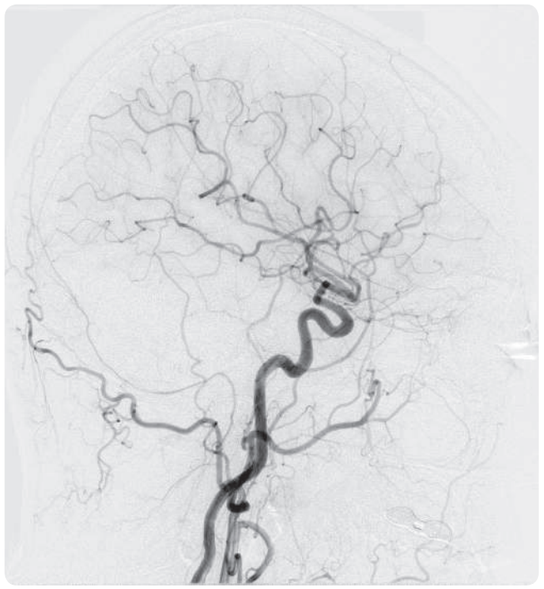
## Coronary Angiography



## Hepatic Arteriography

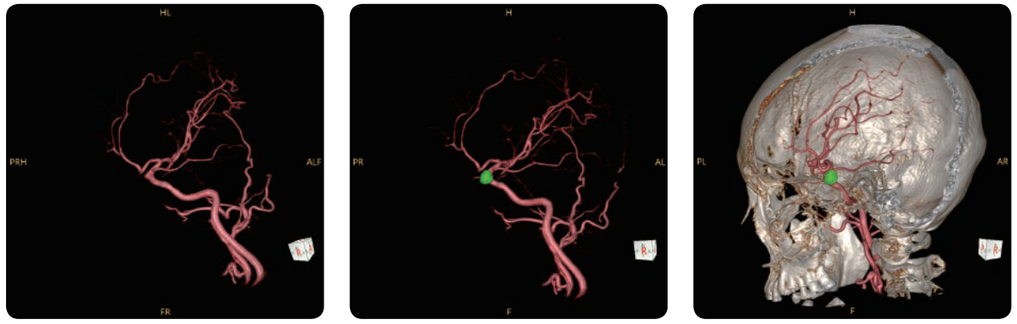


## Cerebral Angiography

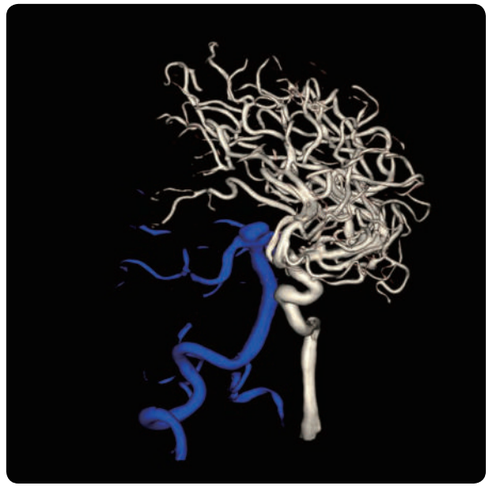


## Lower Limb Angiography

## 3D Image Reconstruction

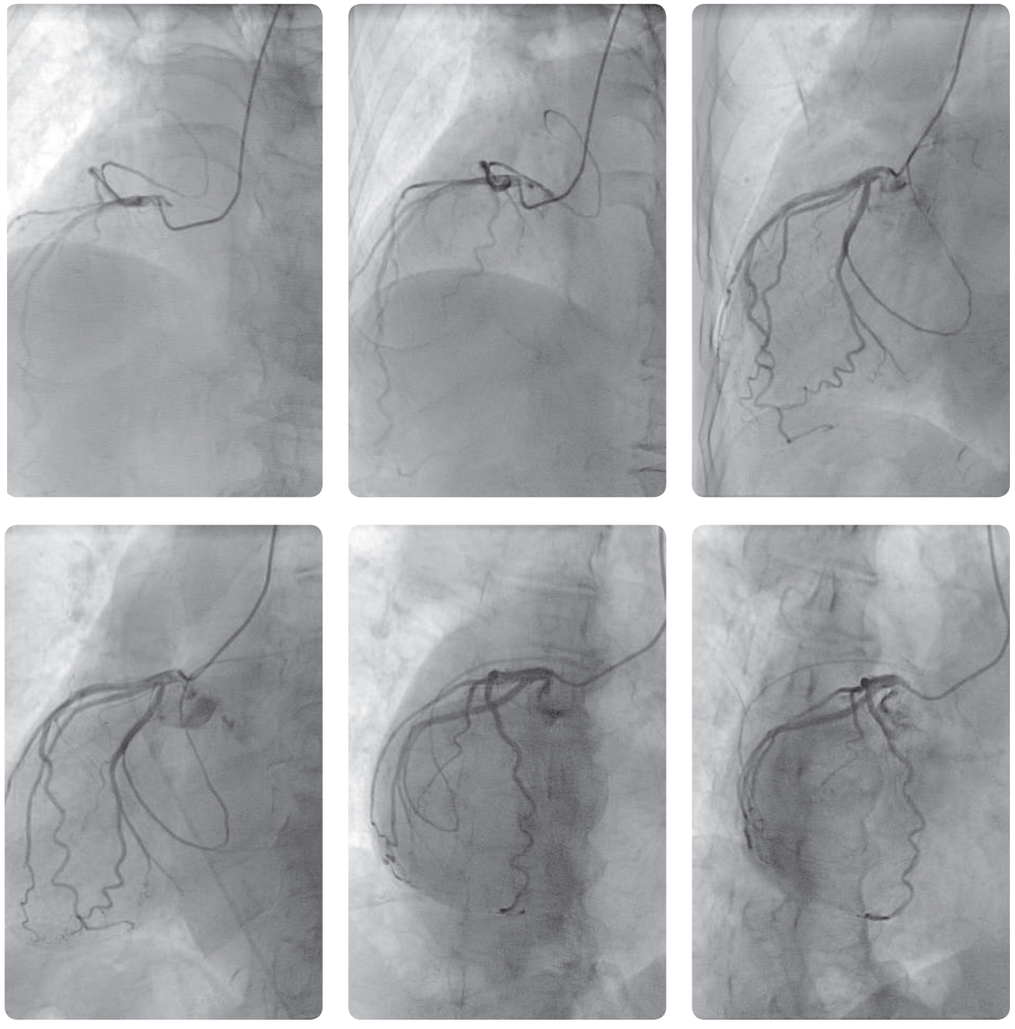



### Glorious Dual Vessel



### Glorious Fusion*

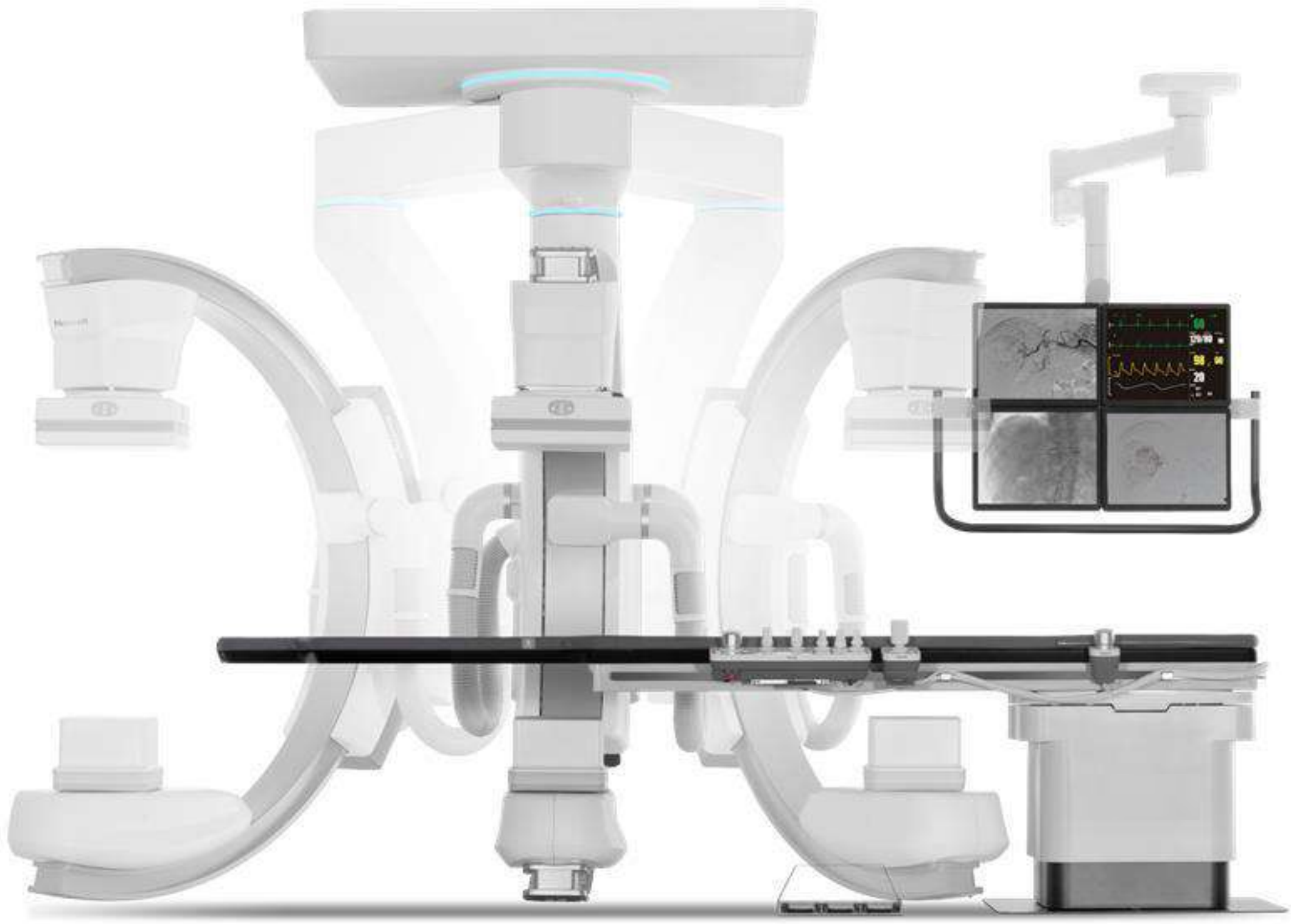
## Coronary Panorama Acquisition



* Optional only

# Bawers Angio BW30C Technical Brochure

*Equipment Image are for Demonstration Only, Actual Configuration May Differ



Bawers Angio BW30C comprises an innovative dual rotational center with seven-axis gantry design, liquid metal bearing tube, the third generation of FPD, innovative IDM Platform and various advanced applications, bringing the users a new clinical experience.

- **Excellent performance**: Dual rotational center with seven-axis gantry design achieves a wide range of transverse and longitudinal coverage. Cutting-edge imaging chain, X–ray tube with liquid-metal-bearing technology and digital flat detector with high density resolution, is equipped for long-term and stable operation.
- **Low dose**: Innovative IDM (InSighter, Defender, Master) Platform ensures the users to acquire high quality clinical images and optimize interventional procedures at very low doses.
- **Wide application**: Multi-clinical application solutions is provided for neurological, cardiac, oncological and peripheral interventional procedures.

CamScanner

Bawers Angio BW30C stand is a stable assembly of a C-arm and a ceiling mounted L-arm with two rotational axes. X-ray tube and detector are integrated into the C-arm. 30C could achieve maximal positioning flexibility and unrestricted access to the patient.

- **Gantry**

System supports automatic positioning to parking, patient transfer, surgical and other common clinical positions.

| | |
|---|---|
| Head position LAO/RAO | ±135º |
| Head position CRAN/CAUD | ±90º |
| Side position LAO/RAO | ±90º |
| Side position CRAN/CAUD | ±135º |
| Max. C-arm rotation speed (non 3D acquisition) | 27º/s |
| Max. C-arm rotation speed (3D acquisition) | 40º/s |
| Max. C-arm angulation speed | 27º/s |
| C-arm depth | 950 mm |
| Max. C-arm longitudinal movement | 2740 mm |
| Max. C-arm transverse movement | 2740 mm |
| C-arm longitudinal movement speed | 270 mm/s |
| C-arm transverse movement speed | 270 mm/s |
| L1 - arm rotation | ±135º |
| L2 - arm rotation | ±90º |
| Patient coverage (with tabletop movement) | 2250 mm |
| Focus-to-isocenter distance | 760 mm |
| Source image distance | 900 mm – 1200 mm |
| Detector lift speed | 100 mm/s |
| Detector rotation speed | 10º/s |
| Collimator rotation | ±95º |
| Isocenter-to-floor distance | 1050 mm |
| Programmable positioning | 2 x programmable direct positions<br>6 x system positions<br>94 x additional user-definable user positions |

## • Patient Table

Patient table provides super-light manual float movement, even for heavy patients. Long and wide design of the patient table is beneficial to the placement of the devices. The table top has a smaller width at the head end for better imaging results in neuro procedures.

| | |
|---|---|
| Longitudinal travel range | 0 mm – 1250 mm |
| Transverse travel range | -180 mm – +180 mm |
| Table rotation | -180º (right direction) – +90º (left direction) |
| Tabletop length | 3070 mm |
| Table length (tabletop + accessories rails) | 3098 mm |
| Tabletop width | Head 204 mm<br>Thorax 460 mm<br>Foot end 586 mm |
| Table height | 780 mm – 1060 mm |
| Lift speed | 20 mm/s |
| Max. unobstructed overhang | 2373 mm |
| Max. table load | 315kg (Incl. Patients and CPR) + 100kg Accessories. CPR @ Any Position |
| Al equivalent tabletop | ≤ 1.0 mm Al @ 100 kV |

## • Generator

Bawers Angio BW30C is equipped with an integrated high voltage generator, which uses high frequency conversion technology and is controlled by a microprocessor.

| Type | Polydoros A100 Plus |
|---|---|
| Multi-pulse converter frequency | 100 kHz |
| Tube voltage | 40 kV – 125 kV (with 0.1 kV steps ) |
| Tube current | 0.5 mA – 1000 mA (with 0.01 mA steps) |
| Max. generator power | 100 kW (1000 mA @ 100 kV, 100 ms) |
| Max. tube voltage | 125 kV @ 800 mA |
| Max. tube current | 1000 mA @ 100 kV |
| Pulse frequency | 0.5 p/s – 100 p/s |
| Pulse time | 0.5 ms – 800 ms |

## • Collimator

| Model | Collimator Angio rot-C |
|---|---|
| Additional filter | 0.0, 0.1, 0.2, 0.3, 0.6, 0.9 mm Cu |

- **X-Ray Tube**

Equipped with liquid-metal-bearing technology, working steadily with high heat dissipation efficiency.

| | |
|---|---|
| Model of X-ray tube assembly | MEGALIX Cat 125/15/40/80 – 122 GW |
| Tube type | Liquid metal bearing silent tube |
| Nominal X-ray tube voltage | 125 kV |
| Max. tube current in pulsed fluoroscopy | 250 mA |
| Focal spot | 0.3 mm<br>0.6 mm<br>1.0 mm |
| Target anode angle | 12.5º |
| Nominal anode input power | 15 kW<br>40 kW<br>80 kW |

| | |
|---|---|
| Nominal anode input power (calculated) (Anode equivalent average power = 0W) | 18 kW<br>52 kW<br>100 kW |
| Max. anode heat content | 2,220,000 J (3,000,000 HU) |
| Max. heat content of the X-ray tube assembly | 3,600,000 J (4,900,000 HU) |
| Max. anode heat dissipation | 300,000 J/min. (405,000 HU/min.) |
| Continuous heat dissipation of the tube assembly | 2900 W |
| Max. anode speed | 10800 rpm |
| Anode input power (continuous) | 10 min. 4000 W<br>20 min. 3000 W<br>> 30 min. 2500 W |
| Permanent filtration of the tube assembly (Al equivalent) | 1.5 mm Al @ 75 kV |
| Cooling medium | Water + oil |
| Weight | ≈ 36 kg |

- **Detector** The a-Si/CsI-based flat-panel detector could rotate ±95 degrees, has 2K*2K resolution and reach 77% of DQE.

| | |
|---|---|
| Model | PIXIUM 3030S |
| Type | CsI single A-Si digital flat detector |
| Cooling | Air cooling |
| Detector rotation | Yes |
| Outer diameter | 380 mm x 380 mm |
| Max. imaging area | 30 cm x 30cm |
| Spatial resolution | 3.25 lp/mm |
| Image matrix | 1956 x 1956 pixels |
| Pixel pitch | 154 µm |
| Digitization bit depth | 16 bits |
| DQE (detective quantum efficiency) | Typical 77% @RQ5, 0 lp/mm, 2µGy |

| | |
|---|---|
| FOV (cm) | 30x30<br>21x21<br>18x18<br>16x16<br>12x12 |
| MTF (modulation transfer function) | 1 lp/mm : typical 59% |

**16 bit** **65536 bit**

## • Main Monitor in Control Room

| LCD Color Monitor x1 | |
|---|---|
| Size (diagonal) | 611.32mm (24 inches) |
| Resolution | 1920 x 1200 pixels |
| Max. luminance | 600 cd/m² |
| Contrast ratio | 1000 : 1 |
| Viewing angle | 178° |
| Pixel pitch | 0.270 mm |

## • AVW Monitor in Control Room

| LCD Color Monitor x 1 | |
|---|---|
| Size (diagonal) | 482mm (19 inches) |
| Resolution | 1280 x 1024 pixels |
| Contrast ratio | 1000 : 1 |
| Viewing angle | 178° |
| Pixel pitch | 0.294 mm |

## • Image Acquisition

| | |
|---|---|
| Fluoroscopy frame rates | 3.75, 7.5, 15, 30 f/s<br>10 f/s under cardiac |
| DR, DSA acquisition frame rates | 0.5, 1, 2, 4, 7.5, 15, 30 f/s |
| Cardiac acquisition frame rates | 3.75, 7.5, 10, 15, 30 f/s |
| ECG triggered fluoroscopy & acquisition | |

## • Monochrome Monitor in Exam Room

| On-Screen Monitor x 1<br>Reference Monitor x 1 | |
|---|---|
| Size (diagonal) | 482 mm (19.0”) |
| Resolution | 1280x 1024 pixels |
| Max. luminance | 1400 cd/m² |
| Contrast ratio | 1000 : 1 |
| Viewing angle | 170° |
| Pixel pitch | 0.294 mm |

## • Color Monitor in Exam Room

| Monitor for 3D images x 1<br>Monitor for other signal x 1 | |
|---|---|
| Size (diagonal) | 482 mm (19.0”) |
| Resolution | 1280x 1024 pixels |
| Viewing angle | 178° |
| Pixel pitch | 0.294 mm (3D)<br>0.2928 (other signal) |

## • Applications

| | |
|---|---|
| Patient data management | Image brightness and contrast adjustment |
| Quick Positions Save/Recall | Last image hold |
| Preprogrammed Positions Save/Recall | Reference image storage |
| Landscape | DICOM functions |
| Fill Trace | Vesselmap |
| Invert Grayscale | |
| Zoom in 2 times | Roadmap |
| Storage capacity: 100,000 (1k x 1k) 25,000 (2 x 2k) | Automatch |
| | Images network transmission |

# IDM Platform

IDM (InSighter, Defender, Master) Platform brings doctors clearer image quality, lower radiation dose and a more efficient and convenient workflow.

## • InSighter

InSighter Platform mainly focuses on high quality image technologies. Through advanced hardware configuration and software algorithms, more image details can be seen under low dose.

| | |
|---|---|
| I-4K | 4K HD acquisition |
| I-Window | Image window width and window level adjustment |
| I-Sharp | Edge enhancement of blood vessels |
| I-Style | Image style customization |
| I-Denoising | Multiple denoising |
| I-Motion | Motion artifact removal |
| I-Bright | Maximum display brightness |

## • Defender

Defender Platform integrates multiple dose reduction technologies to protect interventional radiologists, nurses and patients as a security guard.

| **Dose Defense** | |
|---|---|
| D-Zero Dose Zone | Non ray beam limiter and semi permeable membrane adjustment |
| D-Zero Dose Position | Adjustment of non radiation rack and table |
| D-MultiPulse | Pulse exposure |
| D-5 Elements AEC | Automatic exposure control |
| D-Filters | Automatic real time adjustment of copper filter |
| D-Acquisition | Low dose acquisition |
| D-Fluoro | High, normal and low fluoro mode |
| D-Grid Move | Filter grid |
| D-Protection | Lead screen. lead curtain |

| **Dose Analysis** | |
|---|---|
| D-Report | Dose Report |
| **Dose Control** | |
| D-Monitor | Real time dose monitoring |
| D-Alarm | Cumulative dose alarm |

## • Master

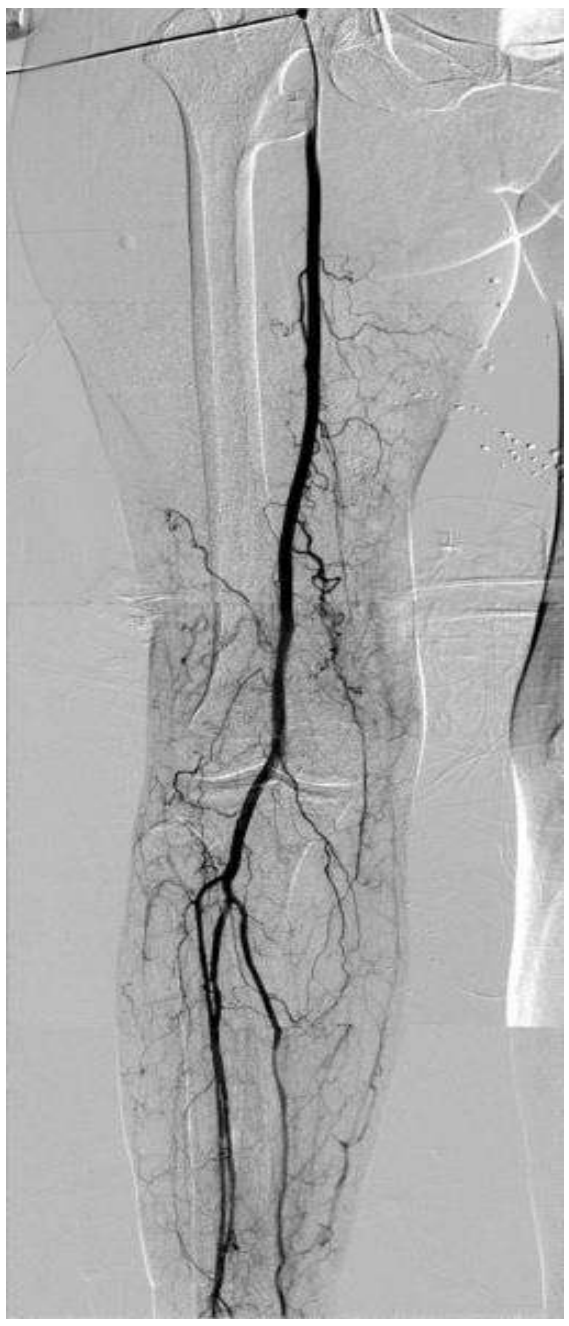
Master Platform not only saves the operation time, but also further reduces more radiation dose received by doctors and patients.

| | |
|---|---|
| M-Select | DSA mask replacement |
| M-Matching | Pixel displacement |
| M-Emergency | Emergency examination solutions |
| M-Assistant | Intelligent prompt system |
| M-ACP | Anti collision function |
| M-ParaRoadmap | Simultaneous display of subtraction and non subtraction |
| M-ParaDSA | Simultaneous display of subtraction |
| M-Large Storage | 100,000 (1k x 1k) and 25,000 (2k x 2k) image storage |
| M-ParaVision | Detector-collimator sync-rotation |
| M-Organ Choice | Organ protocol |
| M-Fluoro Saving | Table-side one-click fluoro storage |

## • Advanced clinical application

| |
|---|
| Stepping-Composing |
| Glorious Stent |
| Coronary Swing |
| Spin DSA/DR |
| High-speed DSA |
| Navi Pen (Marker) |
| Dose Stats |
| 3D Angle Recall |

### • Stepping-Composing

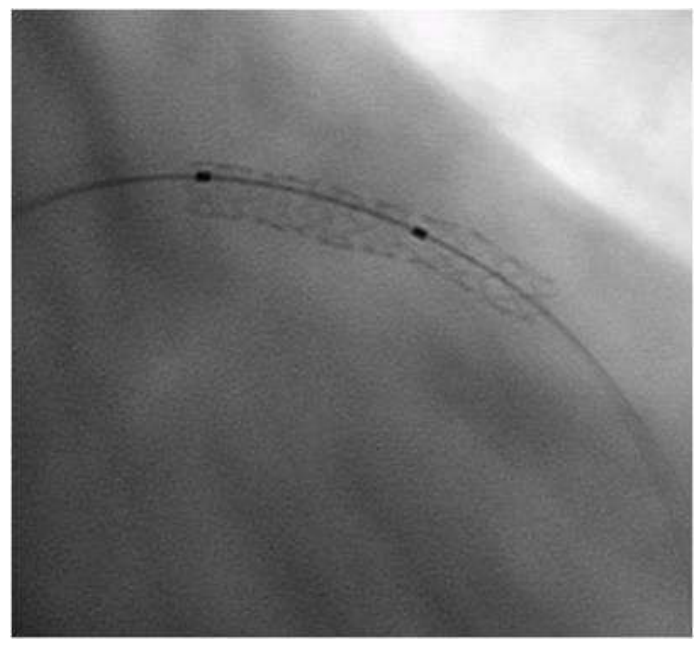


Stepping-Composing feature easily covers lower extremity vessels. Contrast injection automatically. After acquisition, all images are stored automatically. On-Screen Display and the monitor in Control Room could review the run acquired.

### • High-speed DSA

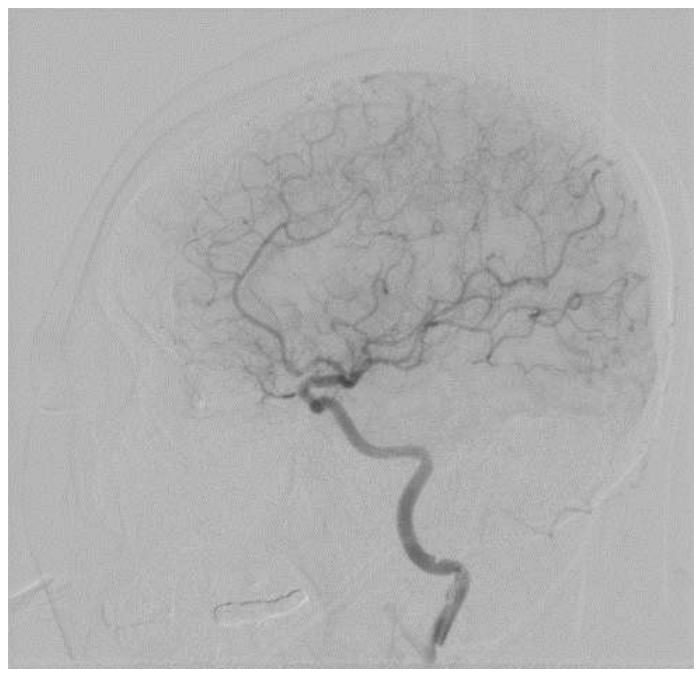
High-speed DSA could achieve a high-speed acquisition of up to 30fps under DSA mode.

### • Glorious Stent



Glorious stent enhances the visibility of the stent placed during PCI (Percutaneous Coronary Intervention) procedure, and helps the cardiologist to evaluate the right position and expanding of the stent in the vessels.

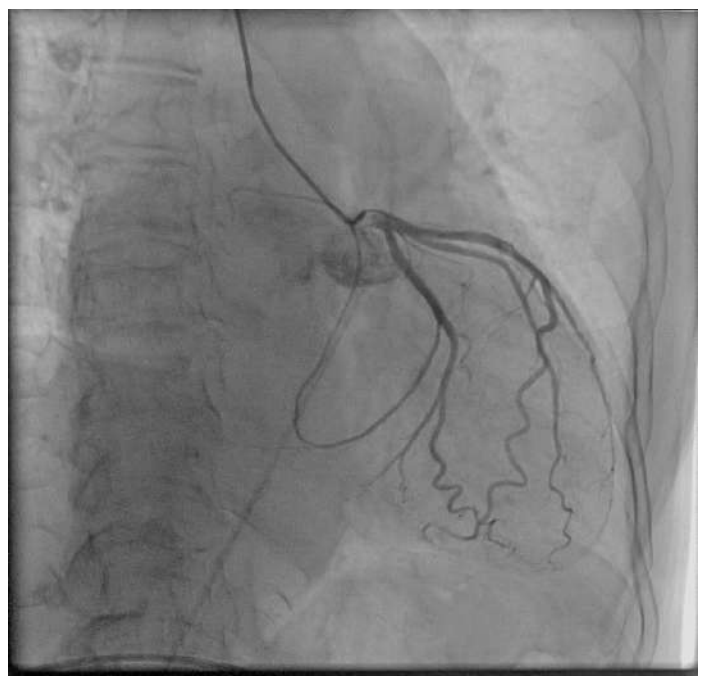
### • Spin DR/DSA



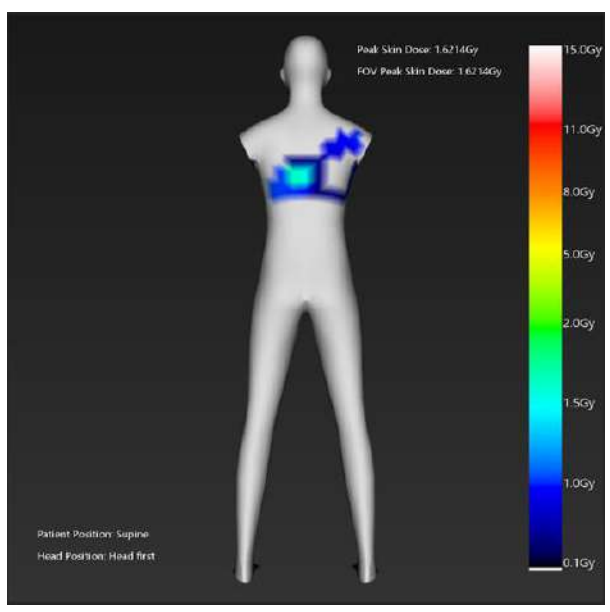
SpinDSA/DR feature acquires multiple projections without multi contrast injections via a real-time scan of the region of interest.
SpinDSA/DR saves considerable time, dose and contrast, while providing image detail required for diagnostic and therapeutic decisions.

### • Coronary Swing

All angles of coronary artery are acquired by a single injection of contrast agent.

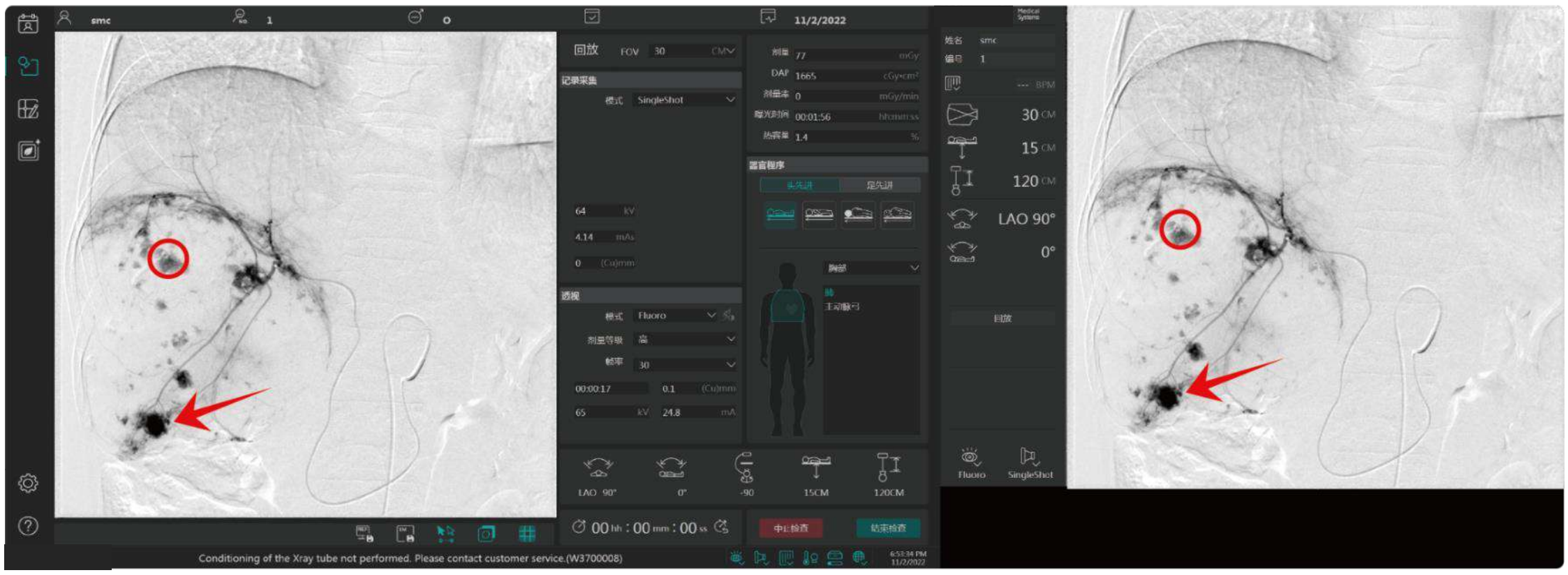


## • Dose Stats




Dose Stats is a valuable tool that monitors the X-ray absorbed dose on the patient's skin surface in real time. With this tool, the user could obtain the real-time virtual projection path of the X-ray and the corresponding peak of the X-ray absorbed dose on the patient's skin surface.
Peak Skin Dose and FOV Peak Skin Dose values are also displayed.

## • Navi Pen (Marker)



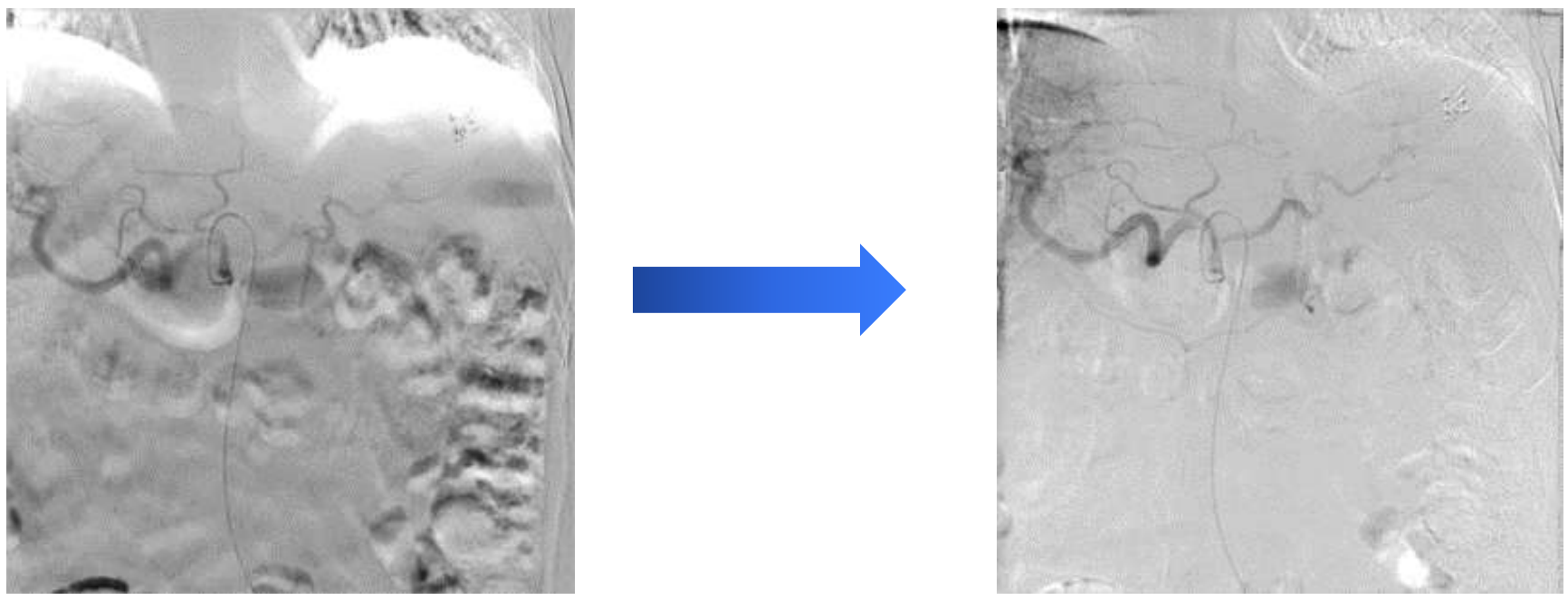

Navi Pen (Marker) is a function that enables the user to freely delineate to the target image on Procedure Management Screen and Image Management Screen of the control room monitor. It indicates the position, boundary and adjacent relationship of the region of interest. The On-screen monitor in the examination room displays the current information synchronously, so as to realize the real-time and accurate interactive communication between users in the control room and the examination room. Marker function is often used for the guidance and tutoring during the operation, procedure explanation and introduction during live conference, and remote operation guidance, etc.

## • 3D Angel Recall

Through rotating the VR image reconstructed on the post-processing workstation, 3D Angle Recall helps to select and transmit the best angle information for observing lesion location back to the 30C system. 3D Angle Recall allows the user to easily control the system to get to the target position without radiation and improve the operation efficiency as a result.

- **3D Angel Recall**

Through rotating the VR image reconstructed on the post-processing workstation, 3D Angle Recall helps to select and transmit the best angle information for observing lesion location back to the 30C system. 3D Angle Recall allows the user to easily control the system to get to the target position without radiation and improve the operation efficiency as a result.



**Quantum DSA Not Applied** **Quantum DSA Applied**

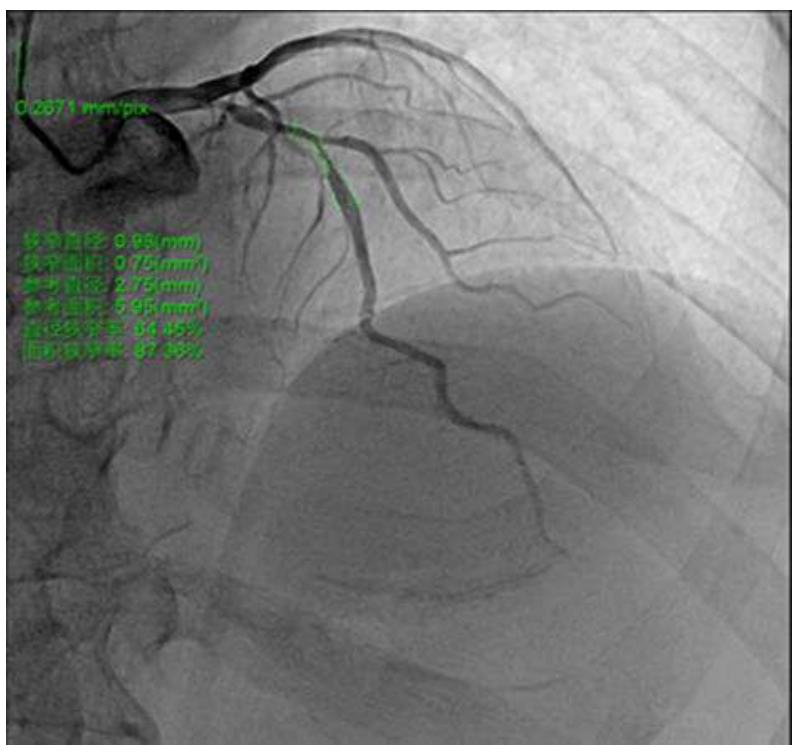
- **Quantum DSA**

Quantum DSA is an image processing function that automatically confirms and registers the optimal mask based on the contrast image during DSA exposure. It can suppress the appearance of artifacts caused by factors such as breathing and heartbeat. This function is mainly applied to the real-time subtraction acquisition process of the chest and abdomen, effectively avoiding unclear images and multiple acquisitions, significantly improving the success rate of intraoperative acquisition, thereby reducing X-ray radiation dose and contrast agent usage.

- **AVW post-processing workstation**

| |
|---|
| CVDSA |
| 3D |
| Glorious Dual Vessel |
| Glorious CT |
| MPR |
| Glorious Endo |

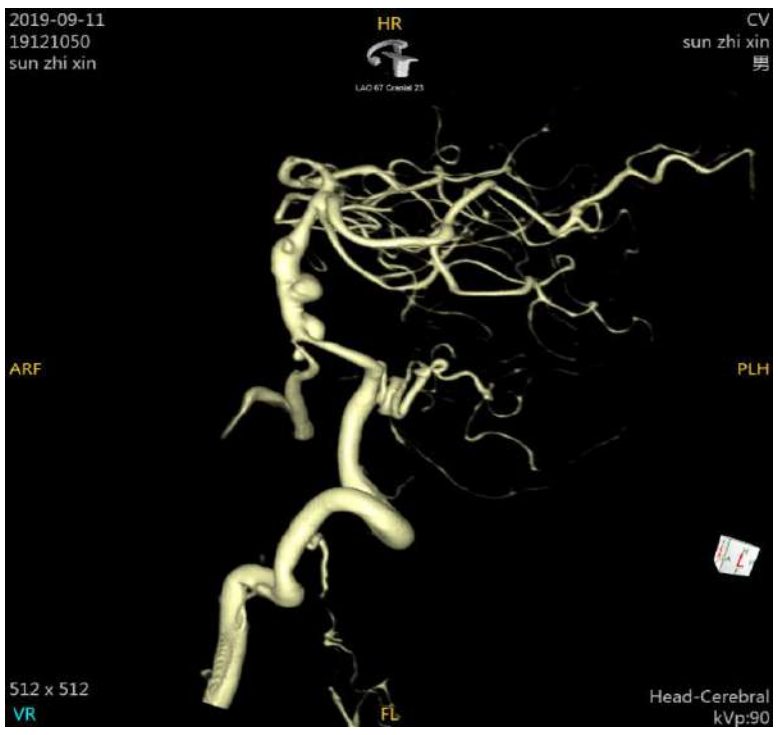
- **CVDSA**



Left Ventricular Quantification Analysis is used for the analysis of single plane Left Ventricular angiograms. It can calculate the LV volume and ejection fraction.
Functions:
- LV volume
- Ejection Fraction
- Cardiac Output
- Catheter calibration

Vascular Stenosis Quantitative Analysis
Functions:
- Catheter calibration
- Diameter measurement along the selected segment
- Stenosis information
- Cross sectional area
- Stenosis Percentage

- **3D**

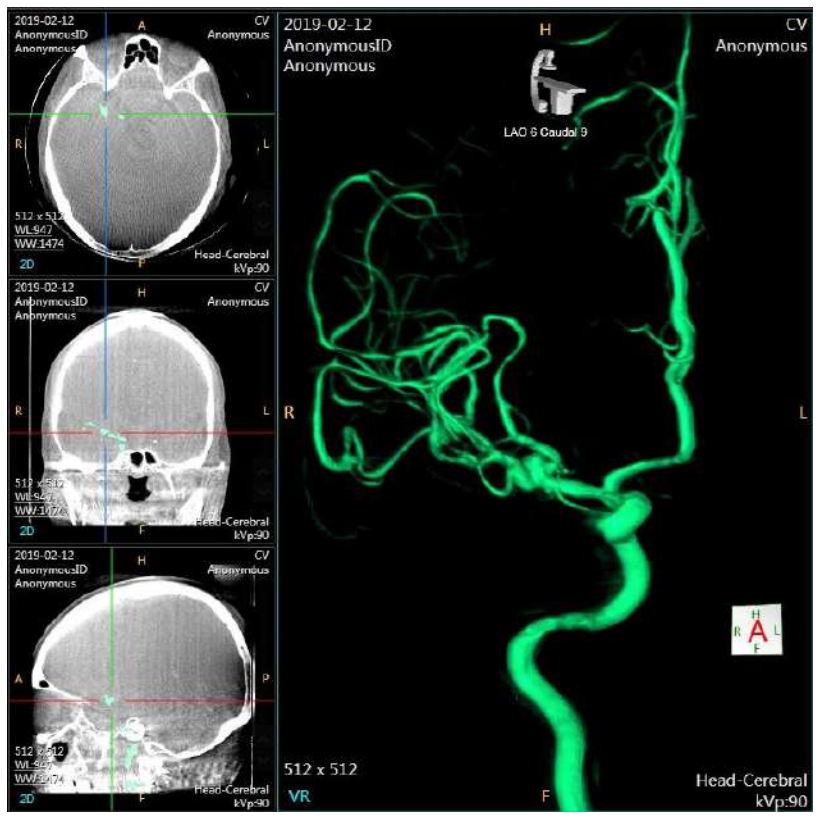



- 30F 3D Reconstruction assists physicians in decision making for treatment strategy in endovascular and non-vascular interventional procedures.
- 30F 3D Reconstruction reduces the number of DSA acquisitions and fluoroscopy time needed to perform an examination. This means less X-Ray dose to the patient and the medical staffs in a reduced contrast agents used, leading to reduced procedure costs.
- 30F 3D Reconstruction provides a wide range of communication facilities to export 3D images.

- **Glorious Dual Vessel**

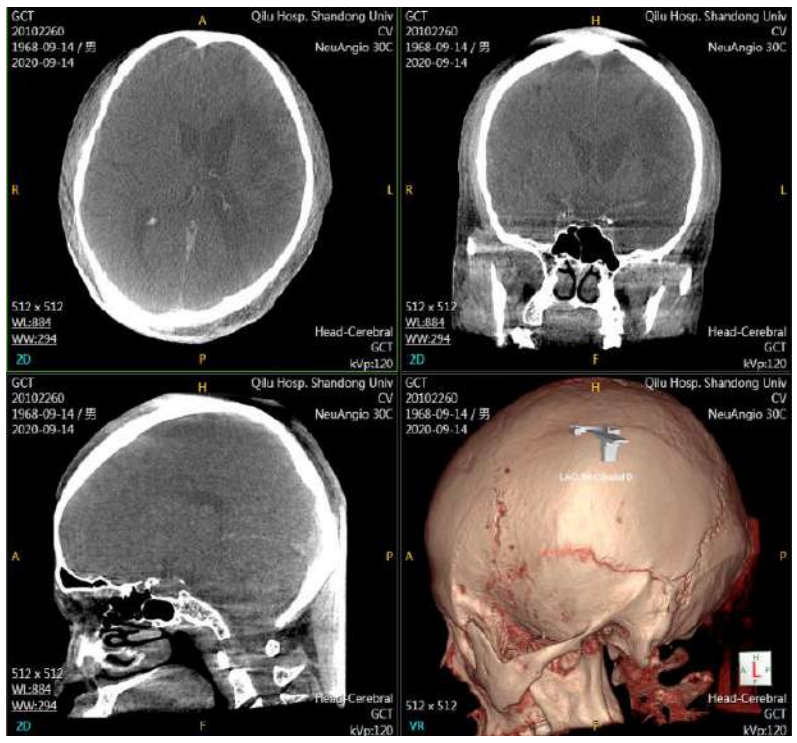
Through the accurate calibration and fusion of bilateral internal carotid artery, internal carotid artery and vertebrobasilar artery, the anatomical structure relationship of different vessels can be completely displayed in the same image.

- **Multi Planar Reconstruction (MPR)**



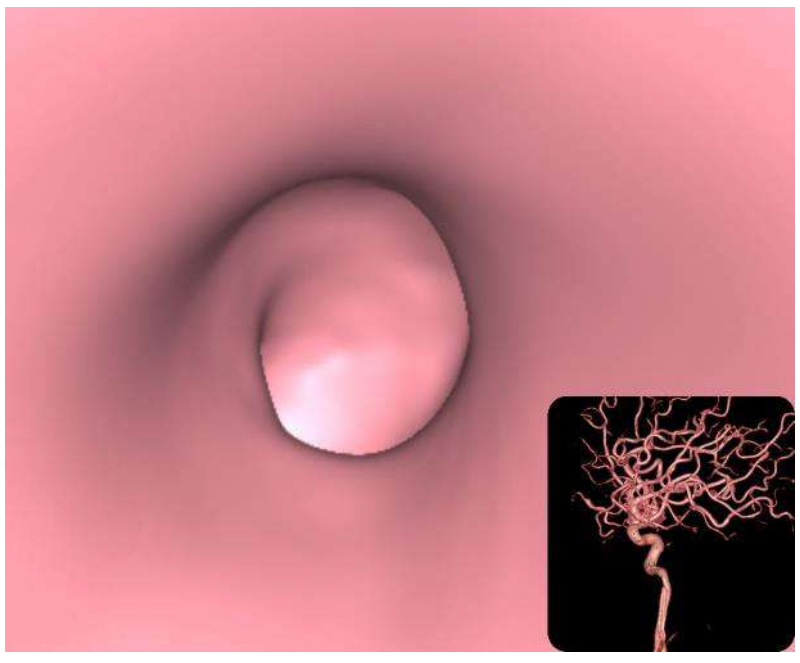

With axial reconstruction, coronal reconstruction and sagittal reconstruction, MPR enables clear imaging at any angle. It helps the user to evaluate lesions and provide important reference information for clinical treatment plan.

- **Glorious CT**



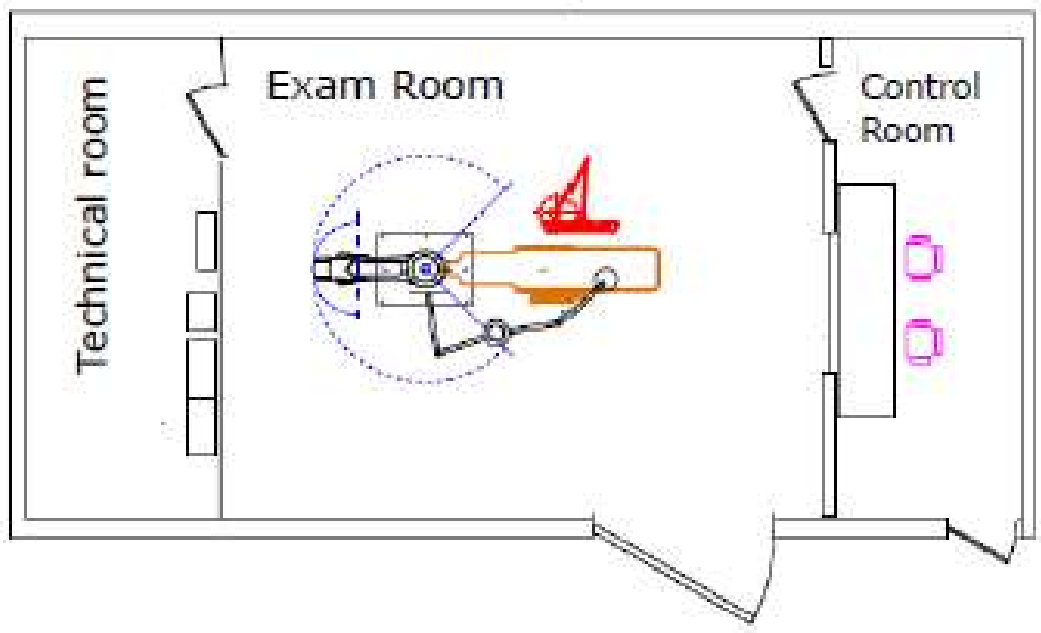

Glorious CT helps doctors to develop treatment plans in vascular and non-vascular interventions. It reduces the number of DSA acquisitions and fluoroscopy time i.e. reduces radiation exposure to patients and healthcare professionals, while reducing the amount of contrast agent used, lowering costs and providing multiple output options for 3D images.

- **Glorious Endo**

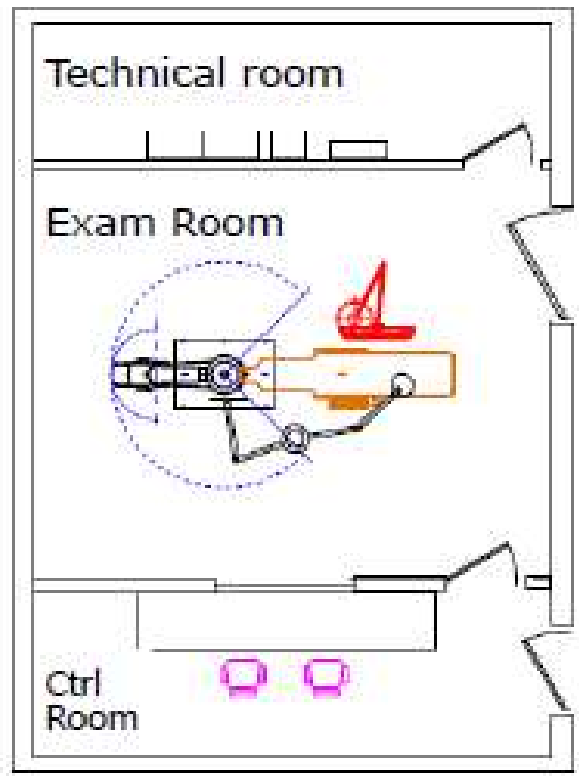


Glorious Endo is conducted based on VR images reconstructed using 3DDSA, and key cross-sectional display and real-time roaming technologies are utilized to observe the internal structure of blood vessels and abnormal anatomical information, assisting doctors in diagnosis.

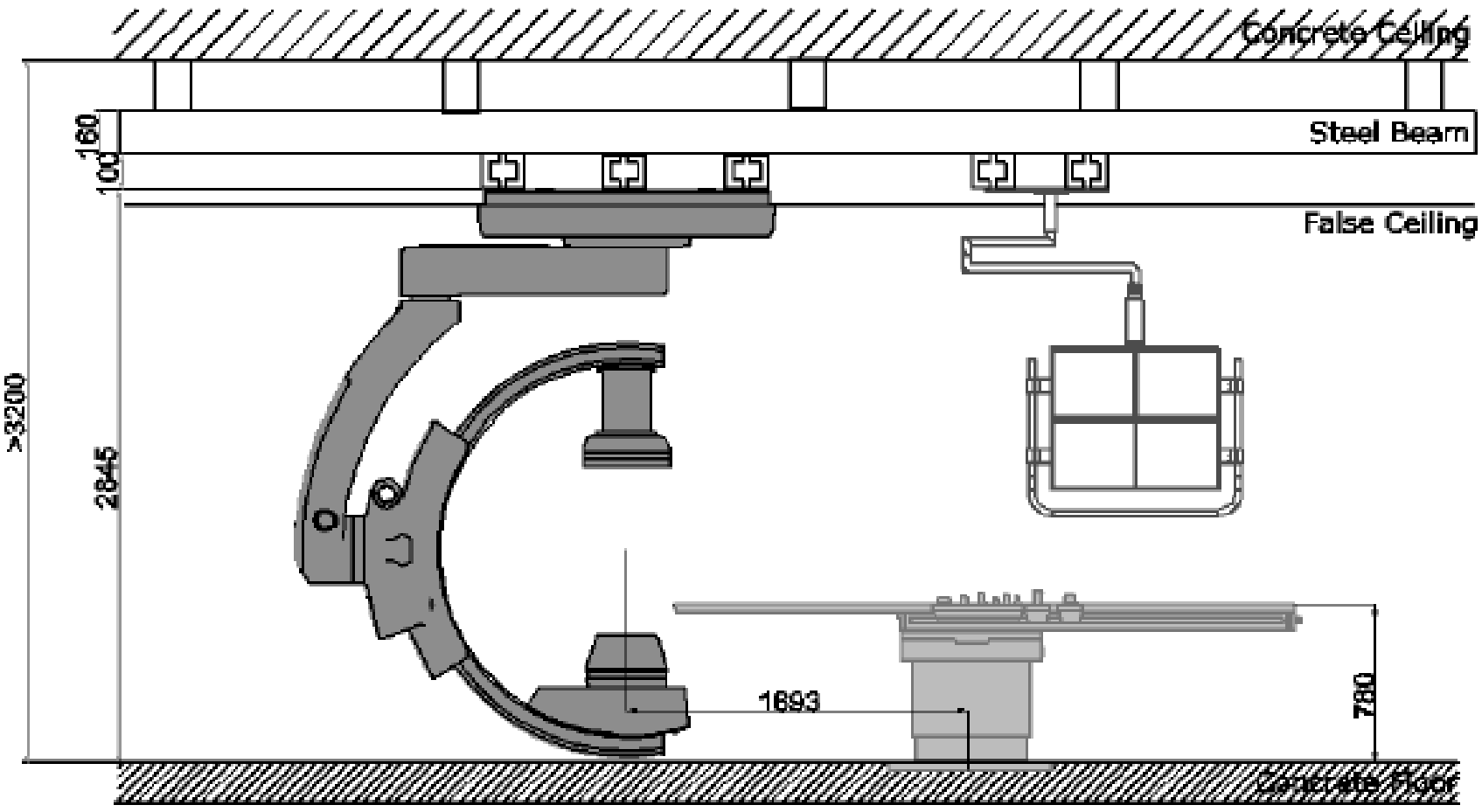
# Cath Lab Layout Requirements




Room Layout 1




Room Layout 2




# Component Size and Weight

| Gantry, Monitor Suspension Size and Weight | |
|---|---|
| Gantry Size | 2,320mm x 1,126mm x 2,020mm |
| Gantry Weight | 1035Kg |
| Suspension Size | 1,530mm × 500mm × 1,690mm |
| Suspension Weight | 100kg |

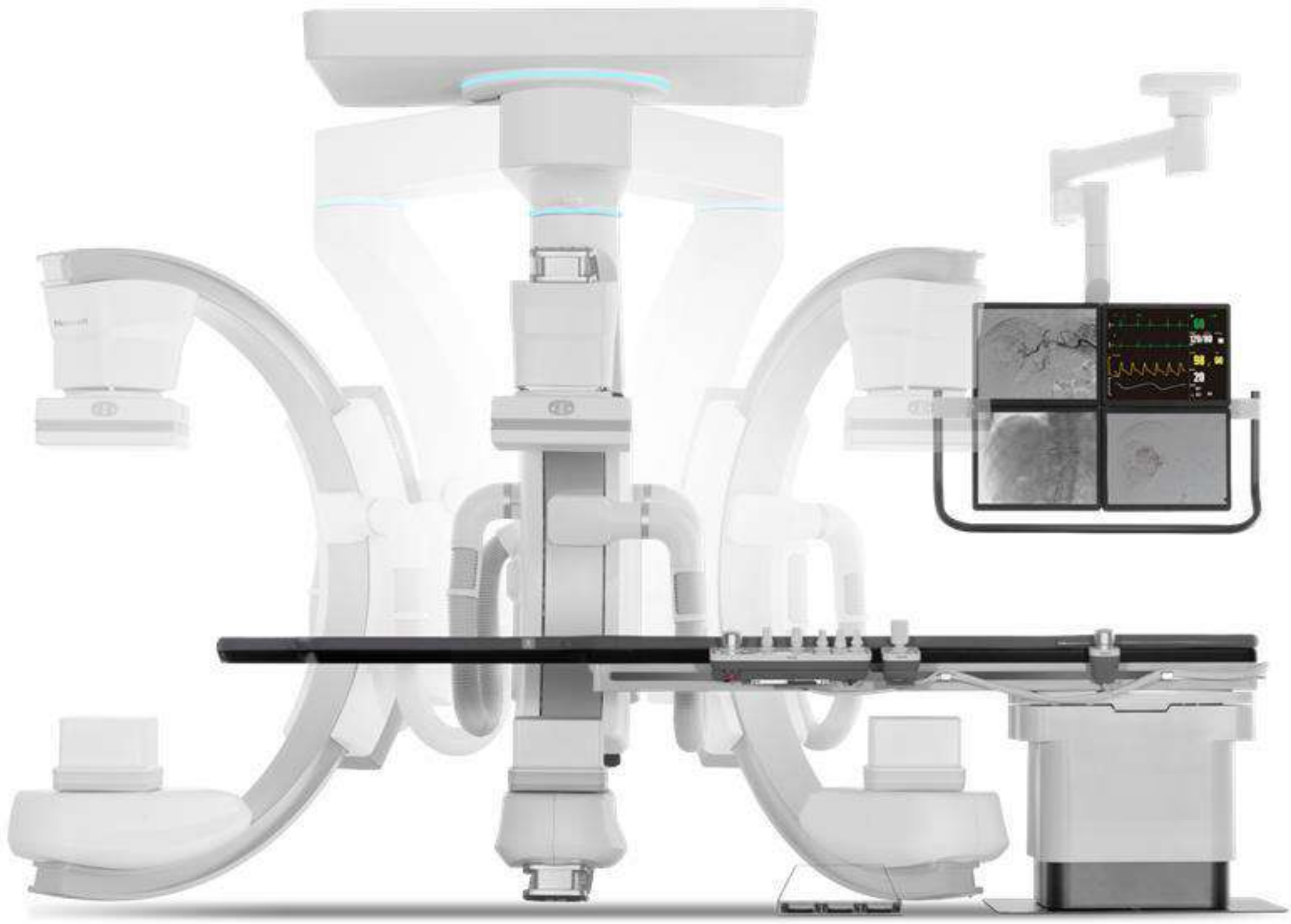
| Table, Tube Cooler Size and Weight | |
|---|---|
| Table Size | 3,100mm x 700mm x 830mm |
| Table Weight | 597kg |
| Tube Cooler Size | 480mm × 400mm × 490mm |
| Tube Cooler Weight | 38.5kg |

| Installation Size | |
|---|---|
| Height of the system installation surface to the ground | 2845(+10/-0)mm |
| Thickness of the table base steel plate | 35mm |

| Recommended Exam Room and Control Room Size | |
|---|---|
| Exam Room | 7,500mm x 6,000mm x 3,600mm |
| Control Room | 3,000mm x 6,000mm x 3,600mm |

# Bawers Angio BW30C Technical Brochure

*Equipment Image are for Demonstration Only, Actual Configuration May Differ



Bawers Angio BW30C comprises an innovative dual rotational center with seven-axis gantry design, liquid metal bearing tube, the third generation of FPD, innovative IDM Platform and various advanced applications, bringing the users a new clinical experience.

- **Excellent performance**: Dual rotational center with seven-axis gantry design achieves a wide range of transverse and longitudinal coverage. Cutting-edge imaging chain, X–ray tube with liquid-metal-bearing technology and digital flat detector with high density resolution, is equipped for long-term and stable operation.
- **Low dose**: Innovative IDM (InSighter, Defender, Master) Platform ensures the users to acquire high quality clinical images and optimize interventional procedures at very low doses.
- **Wide application**: Multi-clinical application solutions is provided for neurological, cardiac, oncological and peripheral interventional procedures.

CamScanner

Bawers Angio BW30C stand is a stable assembly of a C-arm and a ceiling mounted L-arm with two rotational axes. X-ray tube and detector are integrated into the C-arm. 30C could achieve maximal positioning flexibility and unrestricted access to the patient.

- **Gantry**

System supports automatic positioning to parking, patient transfer, surgical and other common clinical positions.

| | |
|---|---|
| Head position LAO/RAO | ±135º |
| Head position CRAN/CAUD | ±90º |
| Side position LAO/RAO | ±90º |
| Side position CRAN/CAUD | ±135º |
| Max. C-arm rotation speed (non 3D acquisition) | 27º/s |
| Max. C-arm rotation speed (3D acquisition) | 40º/s |
| Max. C-arm angulation speed | 27º/s |
| C-arm depth | 950 mm |
| Max. C-arm longitudinal movement | 2740 mm |
| Max. C-arm transverse movement | 2740 mm |
| C-arm longitudinal movement speed | 270 mm/s |
| C-arm transverse movement speed | 270 mm/s |
| L1 - arm rotation | ±135º |
| L2 - arm rotation | ±90º |
| Patient coverage (with tabletop movement) | 2250 mm |
| Focus-to-isocenter distance | 760 mm |
| Source image distance | 900 mm – 1200 mm |
| Detector lift speed | 100 mm/s |
| Detector rotation speed | 10º/s |
| Collimator rotation | ±95º |
| Isocenter-to-floor distance | 1050 mm |
| Programmable positioning | 2 x programmable direct positions<br>6 x system positions<br>94 x additional user-definable user positions |

## • Patient Table

Patient table provides super-light manual float movement, even for heavy patients. Long and wide design of the patient table is beneficial to the placement of the devices. The table top has a smaller width at the head end for better imaging results in neuro procedures.

| | |
|---|---|
| Longitudinal travel range | 0 mm – 1250 mm |
| Transverse travel range | -180 mm – +180 mm |
| Table rotation | -180º (right direction) – +90º (left direction) |
| Tabletop length | 3070 mm |
| Table length (tabletop + accessories rails) | 3098 mm |
| Tabletop width | Head 204 mm<br>Thorax 460 mm<br>Foot end 586 mm |
| Table height | 780 mm – 1060 mm |
| Lift speed | 20 mm/s |
| Max. unobstructed overhang | 2373 mm |
| Max. table load | 315kg (Incl. Patients and CPR) + 100kg Accessories. CPR @ Any Position |
| Al equivalent tabletop | ≤ 1.0 mm Al @ 100 kV |

## • Generator

Bawers Angio BW30C is equipped with an integrated high voltage generator, which uses high frequency conversion technology and is controlled by a microprocessor.

| Type | Polydoros A100 Plus |
|---|---|
| Multi-pulse converter frequency | 100 kHz |
| Tube voltage | 40 kV – 125 kV (with 0.1 kV steps ) |
| Tube current | 0.5 mA – 1000 mA (with 0.01 mA steps) |
| Max. generator power | 100 kW (1000 mA @ 100 kV, 100 ms) |
| Max. tube voltage | 125 kV @ 800 mA |
| Max. tube current | 1000 mA @ 100 kV |
| Pulse frequency | 0.5 p/s – 100 p/s |
| Pulse time | 0.5 ms – 800 ms |

## • Collimator

| Model | Collimator Angio rot-C |
|---|---|
| Additional filter | 0.0, 0.1, 0.2, 0.3, 0.6, 0.9 mm Cu |

- **X-Ray Tube**

Equipped with liquid-metal-bearing technology, working steadily with high heat dissipation efficiency.

| | |
|---|---|
| Model of X-ray tube assembly | MEGALIX Cat 125/15/40/80 – 122 GW |
| Tube type | Liquid metal bearing silent tube |
| Nominal X-ray tube voltage | 125 kV |
| Max. tube current in pulsed fluoroscopy | 250 mA |
| Focal spot | 0.3 mm<br>0.6 mm<br>1.0 mm |
| Target anode angle | 12.5º |
| Nominal anode input power | 15 kW<br>40 kW<br>80 kW |

| | |
|---|---|
| Nominal anode input power (calculated) (Anode equivalent average power = 0W) | 18 kW<br>52 kW<br>100 kW |
| Max. anode heat content | 2,220,000 J (3,000,000 HU) |
| Max. heat content of the X-ray tube assembly | 3,600,000 J (4,900,000 HU) |
| Max. anode heat dissipation | 300,000 J/min. (405,000 HU/min.) |
| Continuous heat dissipation of the tube assembly | 2900 W |
| Max. anode speed | 10800 rpm |
| Anode input power (continuous) | 10 min. 4000 W<br>20 min. 3000 W<br>> 30 min. 2500 W |
| Permanent filtration of the tube assembly (Al equivalent) | 1.5 mm Al @ 75 kV |
| Cooling medium | Water + oil |
| Weight | ≈ 36 kg |

- **Detector** The a-Si/CsI-based flat-panel detector could rotate ±95 degrees, has 2K*2K resolution and reach 77% of DQE.

| | |
|---|---|
| Model | PIXIUM 3030S |
| Type | CsI single A-Si digital flat detector |
| Cooling | Air cooling |
| Detector rotation | Yes |
| Outer diameter | 380 mm x 380 mm |
| Max. imaging area | 30 cm x 30cm |
| Spatial resolution | 3.25 lp/mm |
| Image matrix | 1956 x 1956 pixels |
| Pixel pitch | 154 µm |
| Digitization bit depth | 16 bits |
| DQE (detective quantum efficiency) | Typical 77% @RQ5, 0 lp/mm, 2µGy |

| | |
|---|---|
| FOV (cm) | 30x30<br>21x21<br>18x18<br>16x16<br>12x12 |
| MTF (modulation transfer function) | 1 lp/mm : typical 59% |

**16 bit** **65536 bit**

## • Main Monitor in Control Room

| LCD Color Monitor x1 | |
|---|---|
| Size (diagonal) | 611.32mm (24 inches) |
| Resolution | 1920 x 1200 pixels |
| Max. luminance | 600 cd/m² |
| Contrast ratio | 1000 : 1 |
| Viewing angle | 178° |
| Pixel pitch | 0.270 mm |

## • AVW Monitor in Control Room

| LCD Color Monitor x 1 | |
|---|---|
| Size (diagonal) | 482mm (19 inches) |
| Resolution | 1280 x 1024 pixels |
| Contrast ratio | 1000 : 1 |
| Viewing angle | 178° |
| Pixel pitch | 0.294 mm |

## • Image Acquisition

| | |
|---|---|
| Fluoroscopy frame rates | 3.75, 7.5, 15, 30 f/s<br>10 f/s under cardiac |
| DR, DSA acquisition frame rates | 0.5, 1, 2, 4, 7.5, 15, 30 f/s |
| Cardiac acquisition frame rates | 3.75, 7.5, 10, 15, 30 f/s |
| ECG triggered fluoroscopy & acquisition | |

## • Monochrome Monitor in Exam Room

| On-Screen Monitor x 1<br>Reference Monitor x 1 | |
|---|---|
| Size (diagonal) | 482 mm (19.0”) |
| Resolution | 1280x 1024 pixels |
| Max. luminance | 1400 cd/m² |
| Contrast ratio | 1000 : 1 |
| Viewing angle | 170° |
| Pixel pitch | 0.294 mm |

## • Color Monitor in Exam Room

| Monitor for 3D images x 1<br>Monitor for other signal x 1 | |
|---|---|
| Size (diagonal) | 482 mm (19.0”) |
| Resolution | 1280x 1024 pixels |
| Viewing angle | 178° |
| Pixel pitch | 0.294 mm (3D)<br>0.2928 (other signal) |

## • Applications

| | |
|---|---|
| Patient data management | Image brightness and contrast adjustment |
| Quick Positions Save/Recall | Last image hold |
| Preprogrammed Positions Save/Recall | Reference image storage |
| Landscape | DICOM functions |
| Fill Trace | Vesselmap |
| Invert Grayscale | |
| Zoom in 2 times | Roadmap |
| Storage capacity: 100,000 (1k x 1k) 25,000 (2 x 2k) | Automatch |
| | Images network transmission |

# IDM Platform

IDM (InSighter, Defender, Master) Platform brings doctors clearer image quality, lower radiation dose and a more efficient and convenient workflow.

## • InSighter

InSighter Platform mainly focuses on high quality image technologies. Through advanced hardware configuration and software algorithms, more image details can be seen under low dose.

| | |
|---|---|
| I-4K | 4K HD acquisition |
| I-Window | Image window width and window level adjustment |
| I-Sharp | Edge enhancement of blood vessels |
| I-Style | Image style customization |
| I-Denoising | Multiple denoising |
| I-Motion | Motion artifact removal |
| I-Bright | Maximum display brightness |

## • Defender

Defender Platform integrates multiple dose reduction technologies to protect interventional radiologists, nurses and patients as a security guard.

| **Dose Defense** | |
|---|---|
| D-Zero Dose Zone | Non ray beam limiter and semi permeable membrane adjustment |
| D-Zero Dose Position | Adjustment of non radiation rack and table |
| D-MultiPulse | Pulse exposure |
| D-5 Elements AEC | Automatic exposure control |
| D-Filters | Automatic real time adjustment of copper filter |
| D-Acquisition | Low dose acquisition |
| D-Fluoro | High, normal and low fluoro mode |
| D-Grid Move | Filter grid |
| D-Protection | Lead screen. lead curtain |

| **Dose Analysis** | |
|---|---|
| D-Report | Dose Report |
| **Dose Control** | |
| D-Monitor | Real time dose monitoring |
| D-Alarm | Cumulative dose alarm |

## • Master

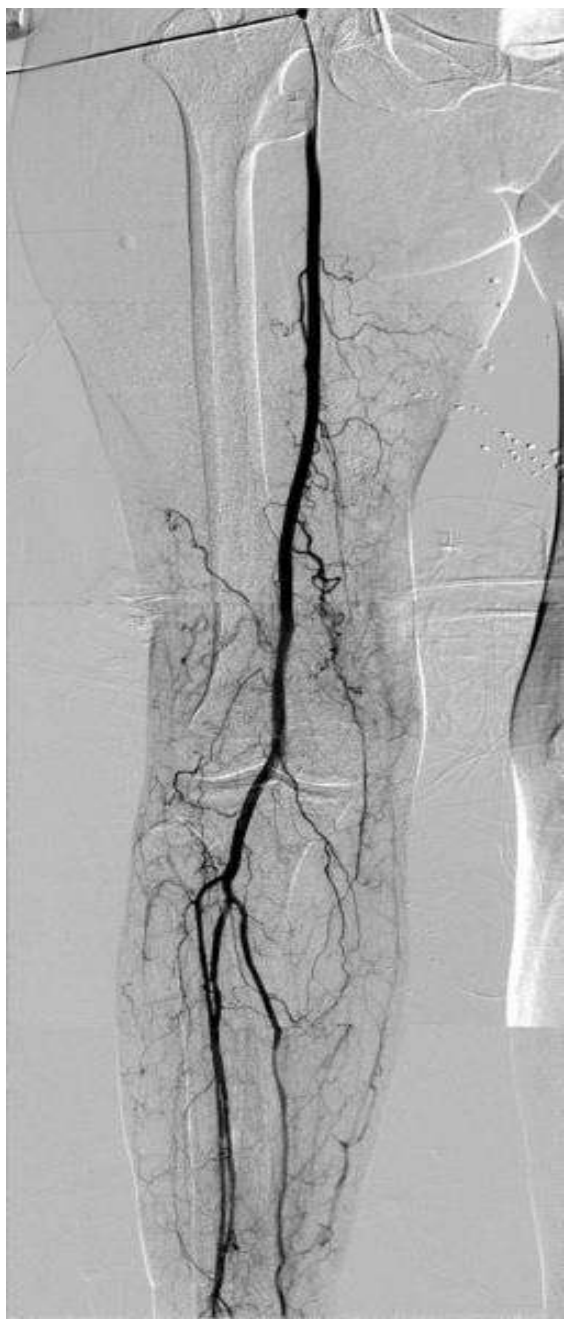
Master Platform not only saves the operation time, but also further reduces more radiation dose received by doctors and patients.

| | |
|---|---|
| M-Select | DSA mask replacement |
| M-Matching | Pixel displacement |
| M-Emergency | Emergency examination solutions |
| M-Assistant | Intelligent prompt system |
| M-ACP | Anti collision function |
| M-ParaRoadmap | Simultaneous display of subtraction and non subtraction |
| M-ParaDSA | Simultaneous display of subtraction |
| M-Large Storage | 100,000 (1k x 1k) and 25,000 (2k x 2k) image storage |
| M-ParaVision | Detector-collimator sync-rotation |
| M-Organ Choice | Organ protocol |
| M-Fluoro Saving | Table-side one-click fluoro storage |

## • Advanced clinical application

| |
|---|
| Stepping-Composing |
| Glorious Stent |
| Coronary Swing |
| Spin DSA/DR |
| High-speed DSA |
| Navi Pen (Marker) |
| Dose Stats |
| 3D Angle Recall |

### • Stepping-Composing

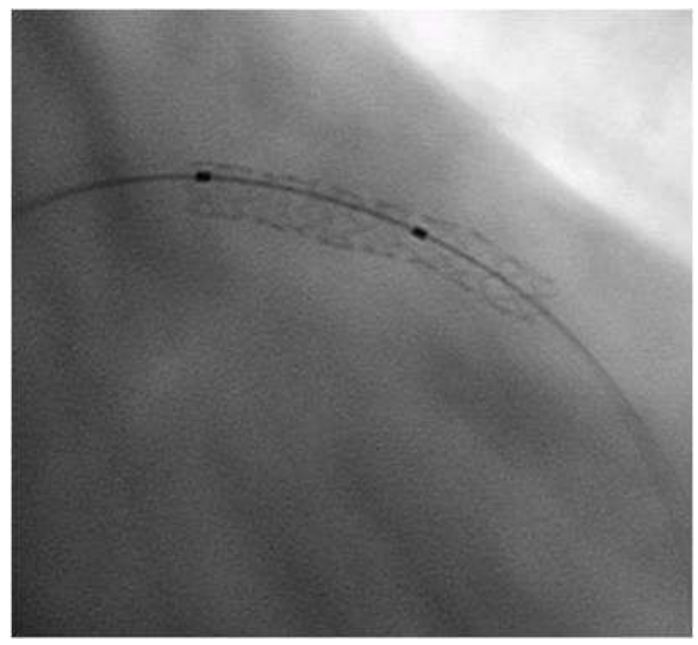


Stepping-Composing feature easily covers lower extremity vessels. Contrast injection automatically. After acquisition, all images are stored automatically. On-Screen Display and the monitor in Control Room could review the run acquired.

### • High-speed DSA

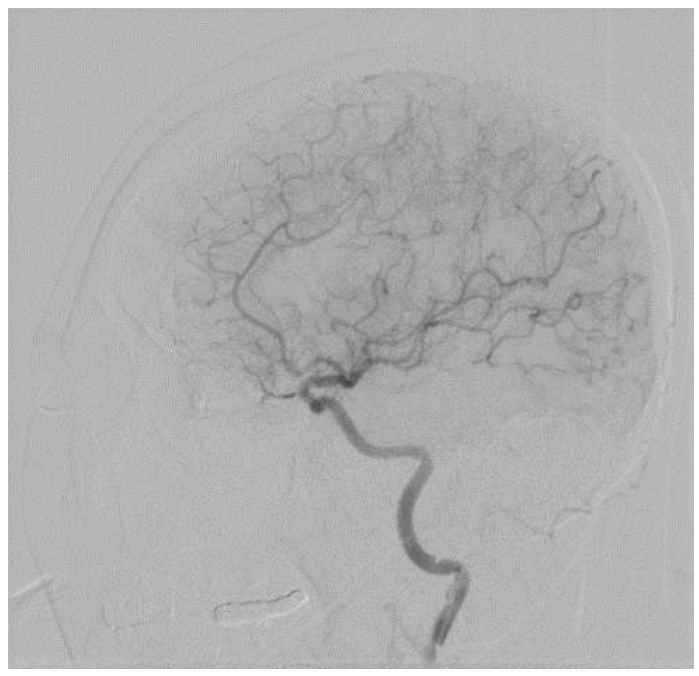
High-speed DSA could achieve a high-speed acquisition of up to 30fps under DSA mode.

### • Glorious Stent



Glorious stent enhances the visibility of the stent placed during PCI (Percutaneous Coronary Intervention) procedure, and helps the cardiologist to evaluate the right position and expanding of the stent in the vessels.

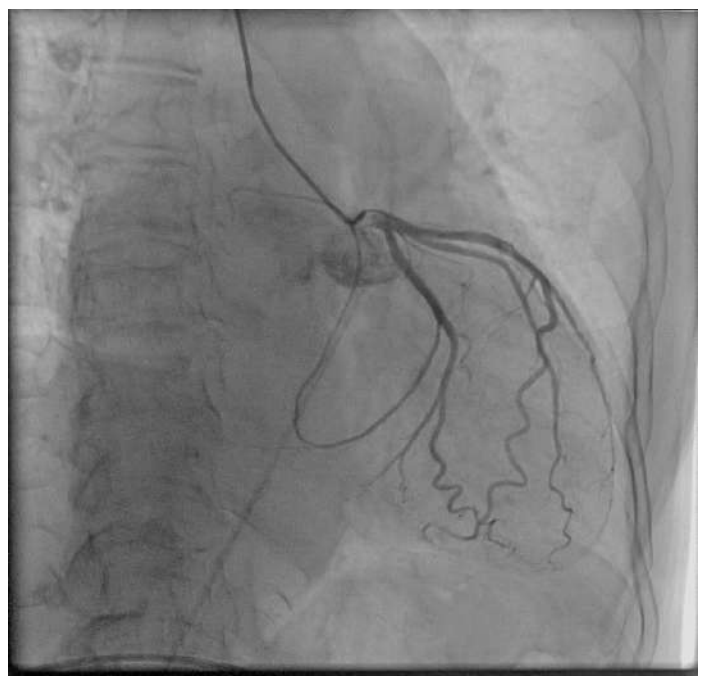
### • Spin DR/DSA



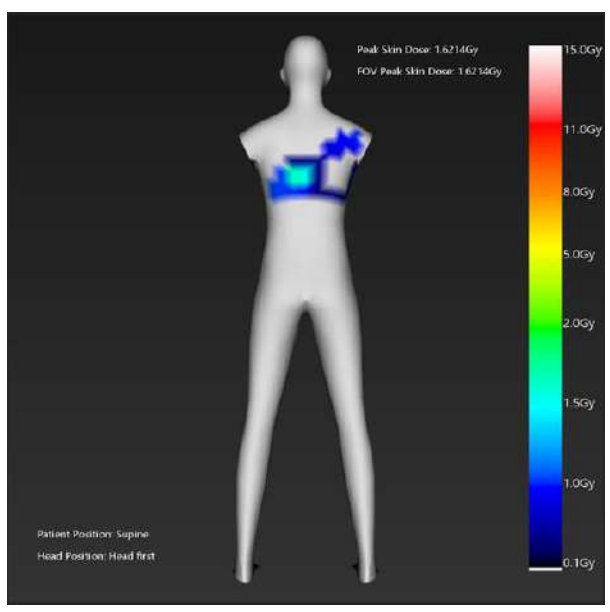
SpinDSA/DR feature acquires multiple projections without multi contrast injections via a real-time scan of the region of interest.
SpinDSA/DR saves considerable time, dose and contrast, while providing image detail required for diagnostic and therapeutic decisions.

### • Coronary Swing

All angles of coronary artery are acquired by a single injection of contrast agent.

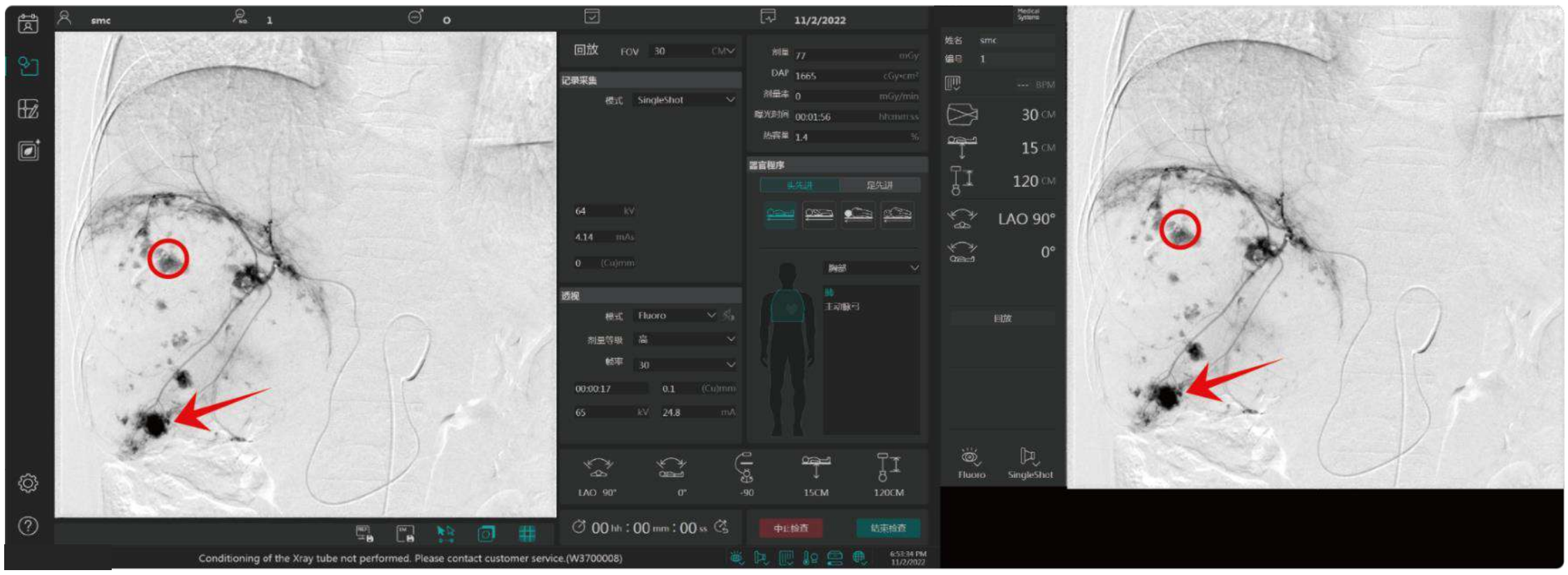


## • Dose Stats




Dose Stats is a valuable tool that monitors the X-ray absorbed dose on the patient's skin surface in real time. With this tool, the user could obtain the real-time virtual projection path of the X-ray and the corresponding peak of the X-ray absorbed dose on the patient's skin surface.
Peak Skin Dose and FOV Peak Skin Dose values are also displayed.

## • Navi Pen (Marker)



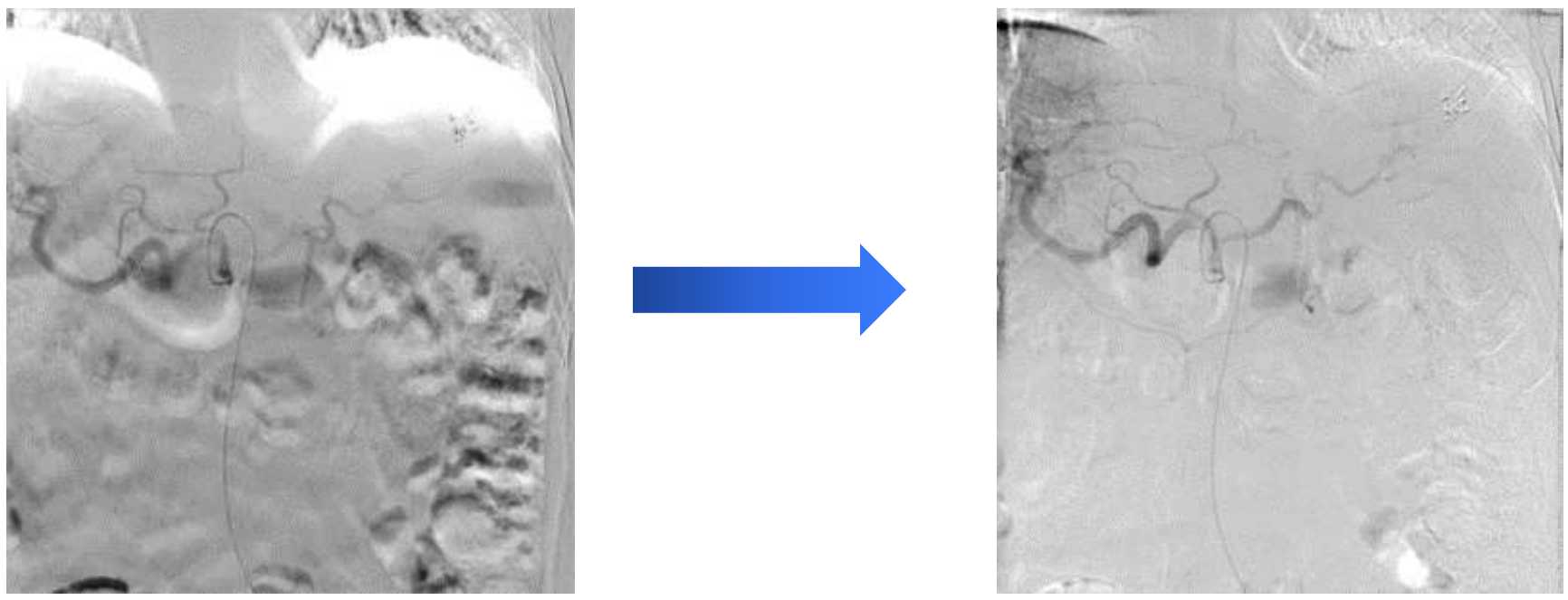

Navi Pen (Marker) is a function that enables the user to freely delineate to the target image on Procedure Management Screen and Image Management Screen of the control room monitor. It indicates the position, boundary and adjacent relationship of the region of interest. The On-screen monitor in the examination room displays the current information synchronously, so as to realize the real-time and accurate interactive communication between users in the control room and the examination room. Marker function is often used for the guidance and tutoring during the operation, procedure explanation and introduction during live conference, and remote operation guidance, etc.

## • 3D Angel Recall

Through rotating the VR image reconstructed on the post-processing workstation, 3D Angle Recall helps to select and transmit the best angle information for observing lesion location back to the 30C system. 3D Angle Recall allows the user to easily control the system to get to the target position without radiation and improve the operation efficiency as a result.

- **3D Angel Recall**

Through rotating the VR image reconstructed on the post-processing workstation, 3D Angle Recall helps to select and transmit the best angle information for observing lesion location back to the 30C system. 3D Angle Recall allows the user to easily control the system to get to the target position without radiation and improve the operation efficiency as a result.



**Quantum DSA Not Applied** **Quantum DSA Applied**

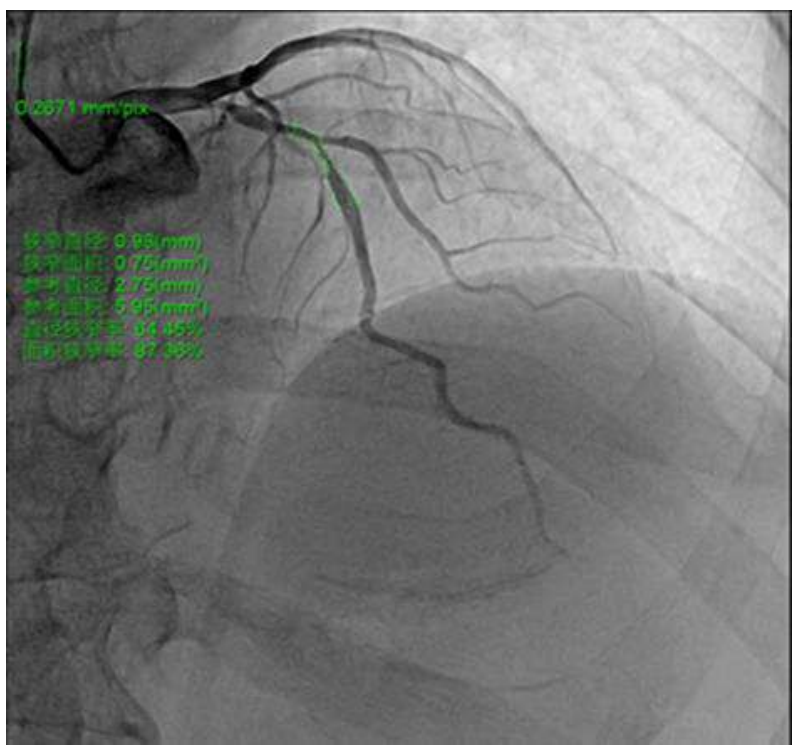
- **Quantum DSA**

Quantum DSA is an image processing function that automatically confirms and registers the optimal mask based on the contrast image during DSA exposure. It can suppress the appearance of artifacts caused by factors such as breathing and heartbeat. This function is mainly applied to the real-time subtraction acquisition process of the chest and abdomen, effectively avoiding unclear images and multiple acquisitions, significantly improving the success rate of intraoperative acquisition, thereby reducing X-ray radiation dose and contrast agent usage.

- **AVW post-processing workstation**

| |
|---|
| CVDSA |
| 3D |
| Glorious Dual Vessel |
| Glorious CT |
| MPR |
| Glorious Endo |

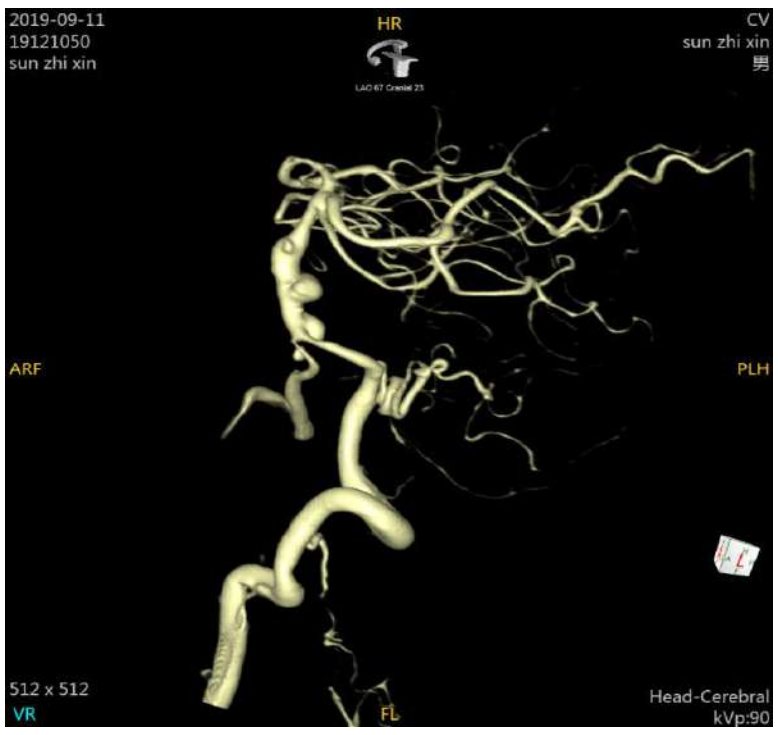
- **CVDSA**



Left Ventricular Quantification Analysis is used for the analysis of single plane Left Ventricular angiograms. It can calculate the LV volume and ejection fraction.
Functions:
- LV volume
- Ejection Fraction
- Cardiac Output
- Catheter calibration

Vascular Stenosis Quantitative Analysis
Functions:
- Catheter calibration
- Diameter measurement along the selected segment
- Stenosis information
- Cross sectional area
- Stenosis Percentage

- **3D**

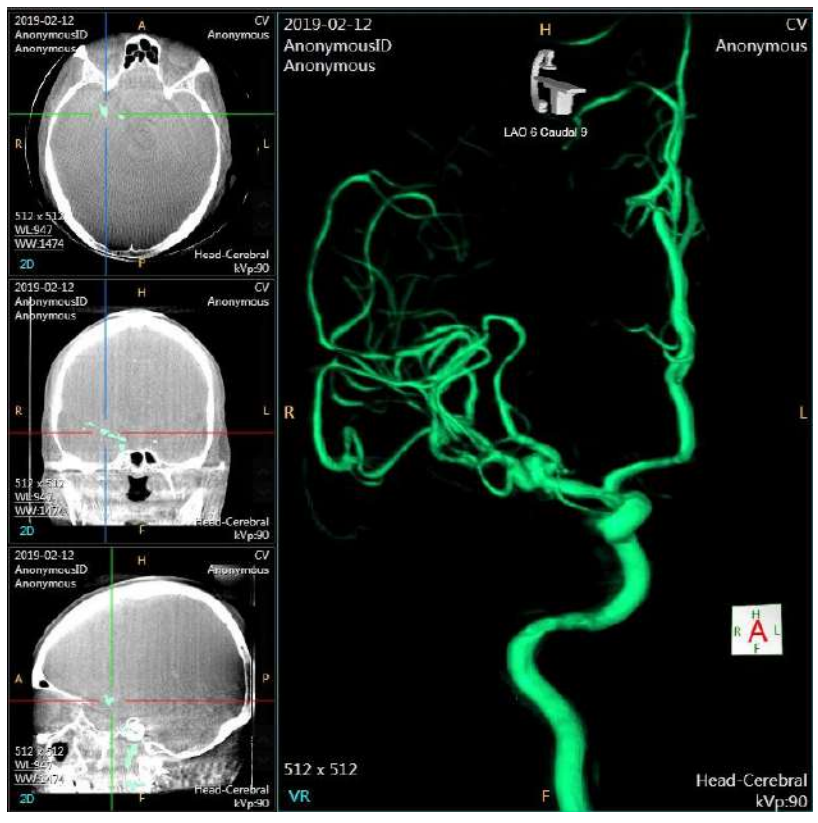



- 30F 3D Reconstruction assists physicians in decision making for treatment strategy in endovascular and non-vascular interventional procedures.
- 30F 3D Reconstruction reduces the number of DSA acquisitions and fluoroscopy time needed to perform an examination. This means less X-Ray dose to the patient and the medical staffs in a reduced contrast agents used, leading to reduced procedure costs.
- 30F 3D Reconstruction provides a wide range of communication facilities to export 3D images.

- **Glorious Dual Vessel**

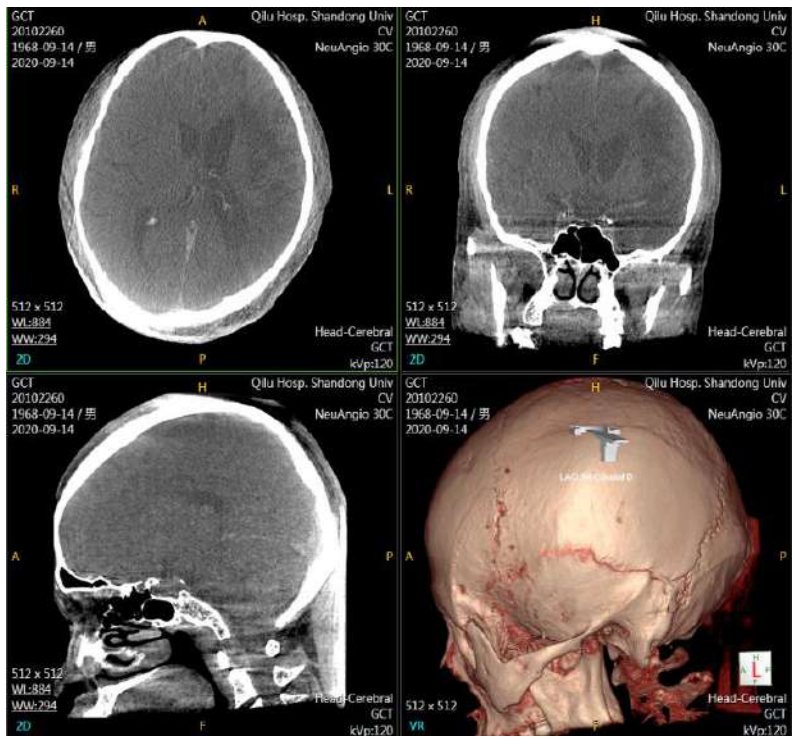
Through the accurate calibration and fusion of bilateral internal carotid artery, internal carotid artery and vertebrobasilar artery, the anatomical structure relationship of different vessels can be completely displayed in the same image.

- **Multi Planar Reconstruction (MPR)**



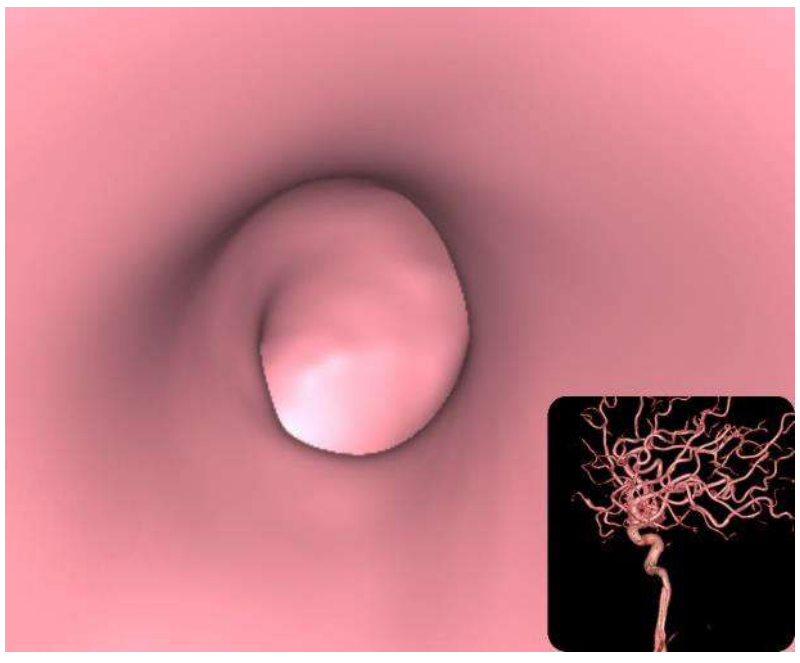

With axial reconstruction, coronal reconstruction and sagittal reconstruction, MPR enables clear imaging at any angle. It helps the user to evaluate lesions and provide important reference information for clinical treatment plan.

- **Glorious CT**



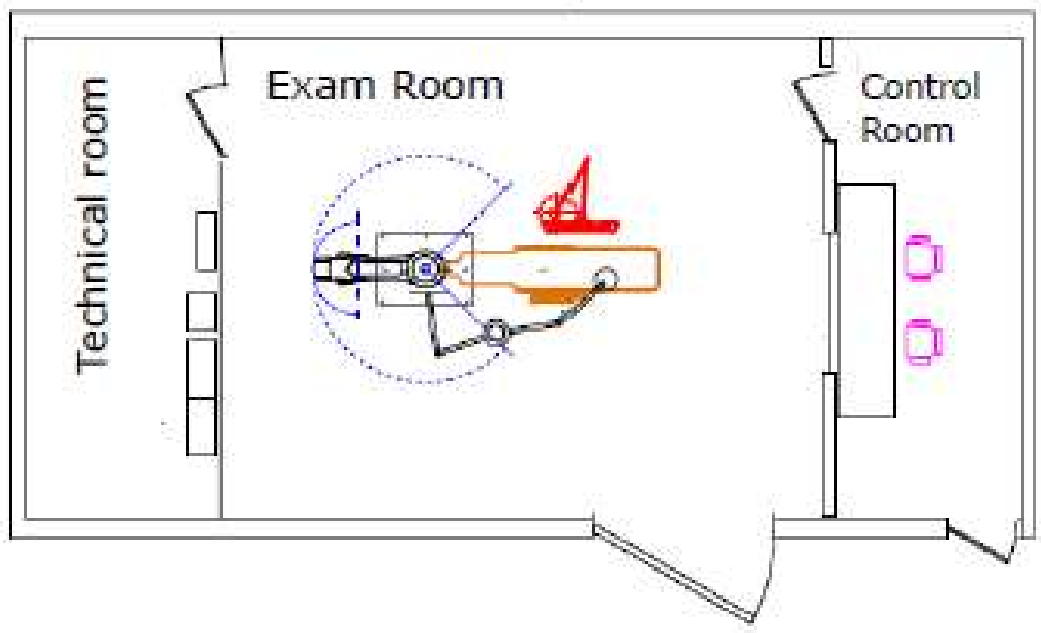

Glorious CT helps doctors to develop treatment plans in vascular and non-vascular interventions. It reduces the number of DSA acquisitions and fluoroscopy time i.e. reduces radiation exposure to patients and healthcare professionals, while reducing the amount of contrast agent used, lowering costs and providing multiple output options for 3D images.

- **Glorious Endo**

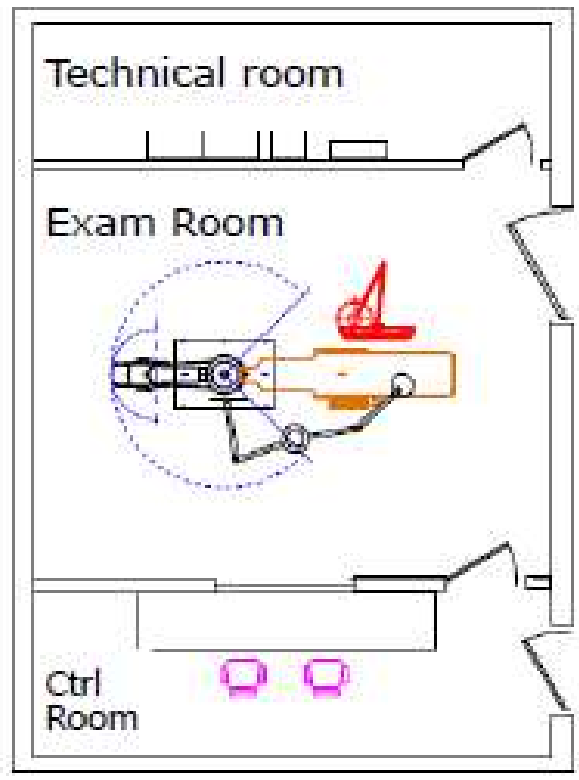


Glorious Endo is conducted based on VR images reconstructed using 3DDSA, and key cross-sectional display and real-time roaming technologies are utilized to observe the internal structure of blood vessels and abnormal anatomical information, assisting doctors in diagnosis.

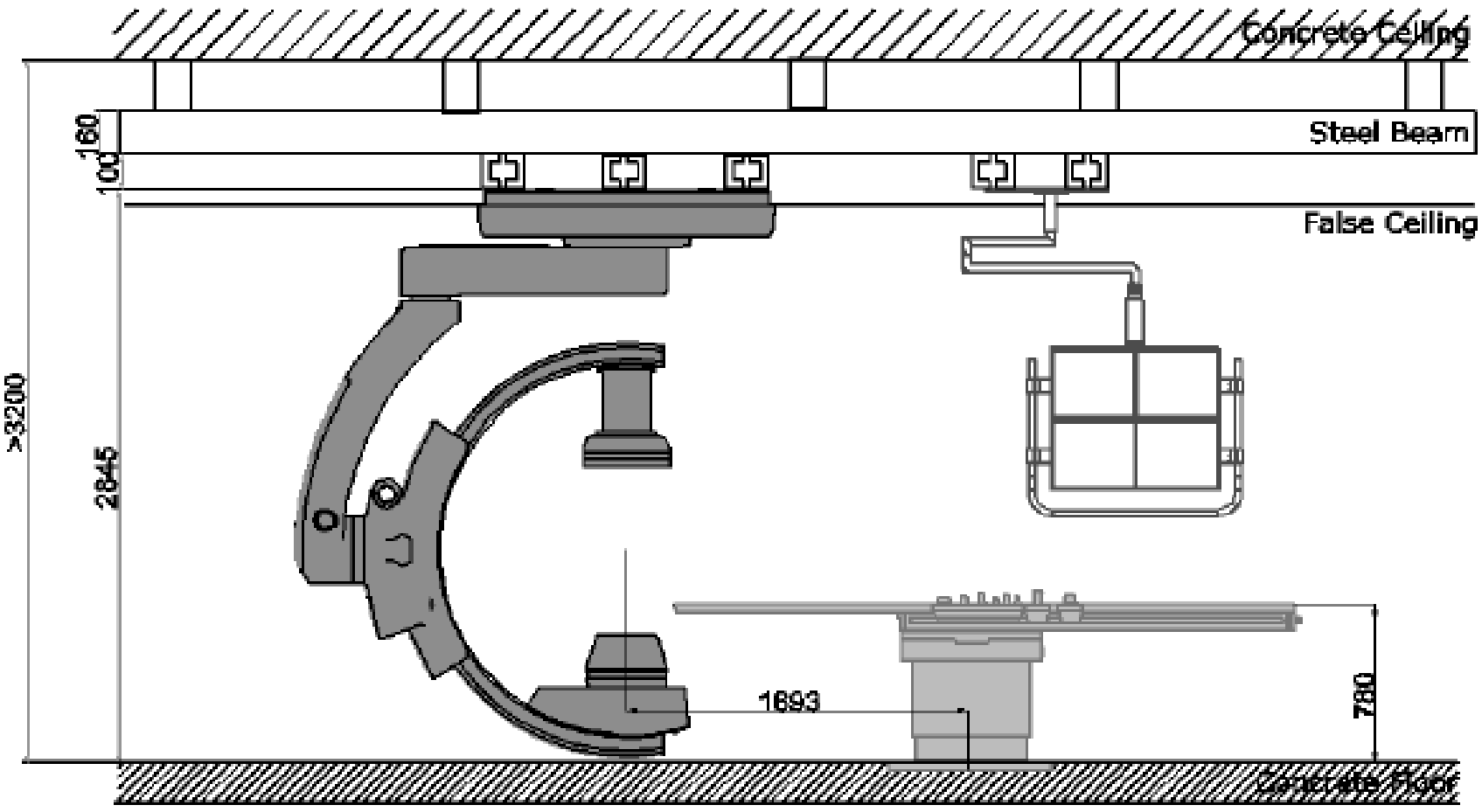
# Cath Lab Layout Requirements




Room Layout 1




Room Layout 2




# Component Size and Weight

| Gantry, Monitor Suspension Size and Weight | |
|---|---|
| Gantry Size | 2,320mm x 1,126mm x 2,020mm |
| Gantry Weight | 1035Kg |
| Suspension Size | 1,530mm × 500mm × 1,690mm |
| Suspension Weight | 100kg |

| Table, Tube Cooler Size and Weight | |
|---|---|
| Table Size | 3,100mm x 700mm x 830mm |
| Table Weight | 597kg |
| Tube Cooler Size | 480mm × 400mm × 490mm |
| Tube Cooler Weight | 38.5kg |

| Installation Size | |
|---|---|
| Height of the system installation surface to the ground | 2845(+10/-0)mm |
| Thickness of the table base steel plate | 35mm |

| Recommended Exam Room and Control Room Size | |
|---|---|
| Exam Room | 7,500mm x 6,000mm x 3,600mm |
| Control Room | 3,000mm x 6,000mm x 3,600mm |