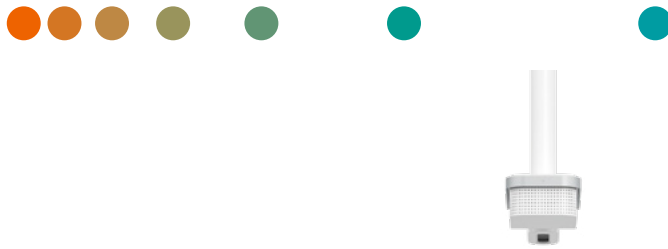


**Data sheet**

# SOMATOM go.Top

128-slice configuration  
*syngo* CT VA40

[siemens-healthineers.com/somatom-go-top](https://siemens-healthineers.com/somatom-go-top)



International version.  
Not for distribution or use in the U.S.

# Make success your daily business

## **The SOMATOM go. platform**

In a market characterized by intense competition, more selective patients, and reimbursement cuts, healthcare providers must find ways to leverage technological advancements and secure income and referrals. To keep the business running, it is crucial for CT departments to differentiate themselves and deliver excellent patient-centered care.

To help you succeed day after day, we developed the SOMATOM® go. platform. As a member of this family, SOMATOM go.Top supports all users to provide the best scan for every type of patient – no matter the clinical demands and challenges. The scanner features a unique tablet-based mobile workflow, user guidance with our GO technologies, and exclusive innovations such as Tin Filter low-dose technology.

# Stand out in advanced CT procedures

## **SOMATOM go.Top**

SOMATOM go.Top starts the era of intelligent CT imaging powered by myExam Companion. It enables you to confidently offer specialized CT procedures, including Dual Energy.

Combined with patient-centric technology and workflows to optimally adapt to each type of patient, all operators can turn challenging fields into routine.

With its unique holistic Dual Energy solution featuring TwinSpiral and TwinBeam<sup>1</sup> Dual Energy, SOMATOM go.Top brings spectral imaging into routine. Additionally, the GO technologies allow full workflow automation, while the powerful imaging chain enables fast scanning for reduced motion artifacts and outstanding cardiac imaging.

<sup>1</sup> Optional

# Highlights



## myExam Companion

SOMATOM go. platform starts the era of intelligent CT scanning with myExam Companion. With it, AI turns aggregated data into built-in expertise to automatically leverage the full potential of technologies – regardless of where, when, and by whom the results have been produced. This allows for reliable and reproducible results from day one. myExam Companion means performing all advanced CT examinations as perfectly and quickly as if they were routine, allowing even unexperienced users to find the best combination of parameters for every individual patient and procedure. Personalized imaging for precise dose and contrast media optimization, reduced unwarranted variations, and always consistent results for enhanced diagnostic experience.

## The new Mobile Workflow and GO technologies

A central element of optimizing performance and generating daily revenue is an entirely new approach to operating the scanner. Built around a new Mobile Workflow, the SOMATOM go.Top features a line-up of innovative solutions – tablet, remote control, camera, and a new workplace design – that bring an unparalleled level of flexibility and mobility to daily CT routines. The solutions also help to enhance patient comfort for potentially higher levels of patient satisfaction.

Additionally, SOMATOM go.Top features a holistic set of intuitive solutions that addresses your workflow not only at the scanner but also beyond. By reducing repetitive workflow steps, GO technologies help standardize and simplify all departmental processes – from patient setup to image distribution, archiving, and reading. You can therefore work more efficiently and focus on your patients – two factors key to running a successful business.



## myNeedle Companion

The work of interventional radiologists can be challenging. More and more biopsies, ablations, and related procedures need to be performed.<sup>1,2</sup> The fact that imaging modalities come with many different user interfaces and settings further complicates interventions. Therefore, it is time to increase workflow productivity. With the SOMATOM go. platform we are introducing myNeedle Companion<sup>3,4</sup>, the first Siemens Healthineers solution that harmonizes planning and guidance for percutaneous needle procedures across modalities. Workflow and user interface offer the same experience on both angiography and CT systems. In addition, the SOMATOM go. platform offers for CT-guided interventions a tablet-based in-room control with smartphone-like functions to easily interact with the CT scanner to stay close to the patient and to work independently aiming for improved efficiency.

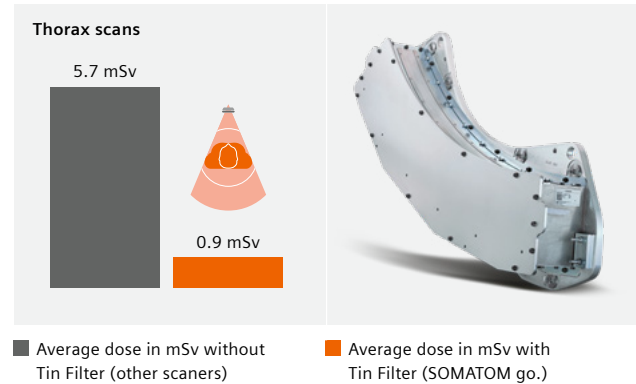
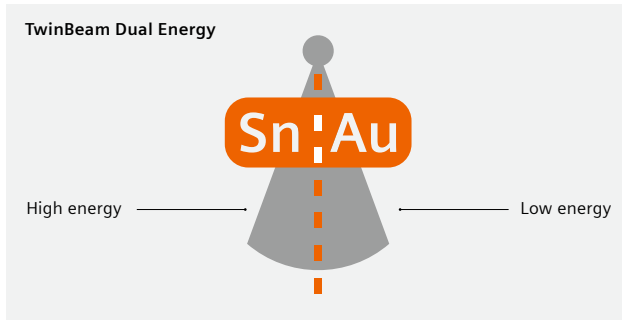
<sup>1</sup> Decision Resources Group Medtech 360. Market report created for Siemens Healthineers. Oct 2016

<sup>2</sup> Kwan et al. Radiology 2010; 256(3): 751–758

<sup>3</sup> Optional

<sup>4</sup> myNeedle Companion functionality is currently available for ARTIS VE2 as syngo Needle Guidance, laser crosshairs and applicable scan protocols

# Highlights



## Holistic Dual Energy solution

SOMATOM go.Top offers a holistic solution with two Dual Energy modes that makes DE routine ready for all patients and situations – completely neutral in dose and workflow. TwinSpiral offers the possibility to acquire two spiral data sets at different energies. Thanks to the spectral properties of the Tin Filter, Twin-Spiral DE allows a better spectral separation for non-contrast examinations, whereas TwinBeam Dual Energy<sup>1</sup> is especially useful for characterizing contrast media examinations since it acquires low and high-kV datasets in a single scan. By allowing you to characterize, highlight, and quantify different materials, Dual Energy gives you greater diagnostic confidence with virtually all patients. And combined with dedicated optional Spectral Viewing packages it allows for comprehensive assessment. No matter if you would like to do your postprocessing directly at the acquisition console or rather have it sent automatically to PACS by Recon&GO – it offers a solution for all clinical workflows.

## Tin Filter and Stellar detector

Inherited from high-end dual source scanners, the Tin Filter (Sn) cuts out lower energies to reduce dose and optimizes contrast between soft tissue and air. This has direct benefits in lung and colon imaging, for example. Clinical experience also shows that Tin Filter technology reduces beam-hardening artifacts and improves image quality in bony structures, making it extremely useful in orthopedic examinations.

One enabler for this high image quality in combination with ultra-low-dose is the Stellar detector with fully integrated components and an advanced 3D anti-scatter collimator. Being perfectly attuned with advanced iterative reconstruction from SAFIRE it keeps electronic noise low, increases dose efficiency, and improves spatial resolution. Providing excellent and homogeneous image quality, even in complex areas, such as the base of the skull, it becomes especially relevant for routine neuro imaging.

<sup>1</sup> Optional

# System Configuration

## Standard system hardware

- 0.5, 1.0 s rotation time
- Stellar detector based on Multislice UFC (Ultra Fast Ceramic)
- 70 cm bore size
- 75 kW; equivalent to 187 kW with SAFIRE<sup>1</sup>
- Athlon® X-ray tube
- Adaptive Dose Shield
- Tin Filter
- Ultra-FAST IRS
- CT patient table (227 kg / 500 lbs table load)
- Tablet (12" / 30.5 cm) for Mobile Workflow

## Hardware options

- 0.33 s rotation time
- FAST 3D Camera
- CT patient table (307 kg / 676 lbs table load)
- Patient table foot switch
- X-ray foot switch
- Dual 24" / 60 cm flat screen monitor with dual display functionality
- 24" or 32" ceiling mounted monitor with or without radiation protection support
- 24" monitor on cart
- myExam Satellite
- Integrated Injector Arm

## Mobile Workflow support<sup>2</sup>

- Additional tablets (up to 3 supported in total)
- Wall-mounted / desk docking stations as additional charging spots for the tablets and remote control

## Standard workplace

- 24" / 60 cm flat screen monitor
- External USB 3.0 disks support

## High Performance Package<sup>2</sup>

- High Power 70 & 80
- High-speed 0.33 s
- iMAR
- Basic cardio package including:
  - Physiological Measurement Module
  - ECG cable

- Cardio Spiral functionality
- Cardio BestPhase
- syngo.CT CaScoring
- Recon&GO including:
  - Inline Spine Ranges
  - Inline Radial and Parallel Rib Ranges
  - Inline CaScoring
- CARE Contrast

## Standard system software and applications

- syngo Examination
- syngo Archiving & Network
- SureView
- IVR (Interleaved Volume Reconstruction)
- Dynamic serio scan
- HD FOV
- Video Capture and Editing Tool
- Screen recorder
- Exam Designer
- WorkStream4D (direct 3D-recon)
- Adaptive Signal Boost
- syngo System Security

## myExam Companion

- myExam Compass
- myExam Cockpit<sup>2</sup>

## Standard GO technologies

- Scan&GO
- Check&GO incl. FAST ROI:
  - Coverage
  - Contrast media
  - Metal detection
- Recon&GO including:
  - Inline Anatomical ranges
  - Inline Table removal
  - Inline Bone removal
  - Inline Vessel Ranges (aorta, run-offs, carotid arteries)
  - Multi Recon
- CT View&GO including:
  - Vessel Extension
  - Spine Ranges
  - Endoscopic View
  - Lung Lesion Segmentation
  - Diameter / WHO area
  - ROI HU Threshold
  - 2D and 3D (MPR, MIP, VRT)
  - Evaluation tools
  - Filming

<sup>1</sup> In clinical practice, the use of SAFIRE may reduce CT patient dose depending on the clinical task, patient size, anatomical location, and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task. As determined from SOMATOM Definition Flash data, SAFIRE enables up to 60% dose reduction. Data on file.

<sup>2</sup> Optional

# System Configuration

## Standard FAST technologies

- FAST Planning @ AWP
- FAST Planning @ Scan&GO tablet
- FAST ROI
- FAST Contact
- FAST Adjust

## FAST 3D Camera<sup>1</sup>

- FAST Isocentering
- FAST Range
- FAST Direction

## FAST computers<sup>1</sup>

- Ultra-FAST IRS II
- Ultra-FAST AWP II

## Standard CARE technologies

- CARE kV
- 10 kV Steps
- CARE Child
- CARE Dose4D
- CARE Topo
- CARE Profile
- CARE Filter
- Flex Dose Profile
- CARE Bolus CT
- CARE Test Bolus
- X-CARE
- SAFIRE® (Sinogram Affirmed Iterative Reconstruction)

## Optional CARE applications

- CARE Contrast
- ADMIRE® (Advanced Modeled Iterative Reconstruction)

## Optional system software and packages

- Flex 4D Spiral – Neuro & Body
- Neuro package
- Advanced Cardio package
- myNeedle Companion for CT-guided interventions
- Precision Matrix with 1024 x 1024 and 768 x 768 reconstructions<sup>2</sup>
- Lung CAD Package
- syngo.CT Dental
- Recon&GO Inline ASPECTS
- CT Osteo @ CT View&GO

## Emergency Imaging<sup>1</sup>

- Trauma Layouts
- Recon&GO – Inline Skull Unfolding
- Recon&GO – Inline Brain Hemorrhage

## Spectral imaging with Dual Energy

- TwinSpiral Dual Energy
- TwinBeam Dual Energy<sup>1</sup>
- TwinSpiral Spectral Viewing<sup>1</sup>
- TwinBeam Spectral Viewing<sup>1</sup>
- Recon&GO – Spectral Recon<sup>1,2</sup>
- Advanced Dual Energy packages<sup>1</sup>

## Applications for fleet management

- Shui® – the Siemens Healthineers Design System
- teamplay BASIC
- teamplay CORE<sup>1</sup>
- syngo Expert-i<sup>1</sup>
- syngo Virtual Cockpit<sup>1</sup>

## Standard software applications for Radiation Therapy

HD FOV

## Optional hardware and software applications for Radiation Therapy

- Radiation Therapy Basic
- Respiratory Motion Management
- FAST 4D
- Varian RGSC interface
- ANZAI interface
- Open interface
- DirectDensity
- Direct Laser Steering
- 227 kg Patient Table RT
- 227 kg Multi-index RTP overlay
- 307 kg Patient Table RT
- 307 kg Multi-index RTP overlay

<sup>1</sup> Optional

<sup>2</sup> Requires Ultra-FAST IRS II

# System Hardware

## Gantry

### Aperture

70 cm / 27.6"

### Depth

84 cm / 33"

### Distance scan plane to gantry cover

- 25 cm / 9.84"
- The short distance from the gantry front to the scan plane allows for easy operator access.

### Distance focal spot to isocenter

53.5 cm / 21.1"

### Distance focal spot to detector

97.6 cm / 38.4"

### Scan field

- 50 cm / 19.7"
- 70 cm / 27.5" with HD FOV<sup>1</sup>

### Physical tilt

Up to  $\pm 30^{\circ 2}$

### Rotation time

0.33<sup>3</sup> s, 0.5 s, 1.0 s

## Halo (incl. 2D Camera, Visual countdown, Mood Lighting)



Keep a close eye on the patient for the rest of the examination time. Its 90° viewing angle gives you a view of the tunnel on the stationary monitor. In addition to the camera, the Halo assembly includes ambient mood lighting and a digital visual countdown to help them comply with breath-hold times.

## Three laser light markers

Coronal, sagittal, transversal laser light showing the isocenter position of the scan plane

## Integrated injector arm<sup>4</sup>



While a traditional injector cart is often in the way, the injector arm makes for a neat and organized working environment and still lets you flexibly arrange the injector. With the flexible room concept and the integrated injector arm, you can also reduce installation costs as this can replace the ceiling-mounted injectors.

<sup>1</sup> The image quality for the area outside the 50 cm scan field of view does not meet the image quality of the area inside the 50 cm scan field of view. Image artefacts may appear, depending on the patient setup and anatomy scanned. HD FOV cannot be used for scan FOV smaller than 50 cm.

<sup>2</sup> Depending on configured patient table

<sup>3</sup> Optional

<sup>4</sup> Optional. Availability depends on country-specific regulatory approval and release.

# System Hardware

## Tube Assembly

### Tube

Athlon liquid metal bearing X-ray tube

### Tube current range

- 13–625 mA
- 13–825<sup>1</sup> mA
- Max. tube current equivalent to 1560/2060<sup>1</sup> mA utilizing SAFIRE

### Tube voltage

- 70–140 kV in 10 kV steps
- Sn100, Sn110, Sn120, Sn130, Sn140

### Tube anode heat storage capacity

- 7.0 MHU; equivalent to 17.5 MHU with SAFIRE
- With iterative reconstruction technology the same clinical results can be achieved with less dose at maintained image quality. Therefore when using less dose the heat storage fills up more slowly.

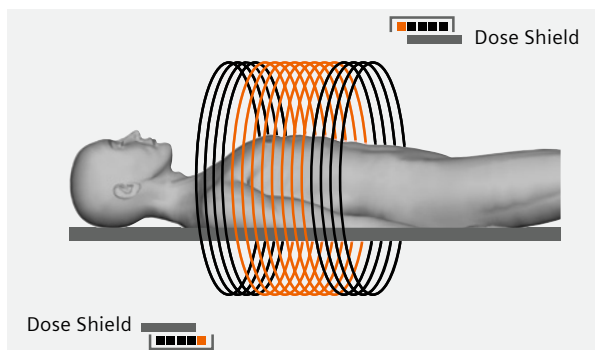
### Tube cooling rate

Up to 1700 kHU/min

### Focal spot size according to IEC 60336

- 0.8 x 0.8 / 7°
- 1.0 x 1.2 / 7°

## Adaptive Dose Shield



- Optimize safety in spiral CT imaging with technology that helps protect patients against unnecessary radiation during scans
- Helps protect patients from pre-/postspiral radiation that is not clinically relevant
- Most effective in short scan ranges; particularly in cardiac and pediatric scans
- Applicable to all standard spiral scan modes

<sup>1</sup> Optional

## Tin Filter



Inherited from high-end dual-source scanners, Tin Filter technology cuts out lower energies to reduce dose and optimizes contrast between soft tissue and air.

This has direct benefits for imaging areas such as the lungs, colon, and sinuses. In addition, clinical experience shows that Tin Filter technology reduces beam-hardening artifacts and improves image quality in bony structures, which means it is also extremely useful in orthopedic examinations. As a result, you get CT imaging at exceptionally low-dose levels, comparable to conventional X-ray.

Tin Filter technology protects you and your patients with ultra-low-doses during intervention. Factory protocols for low-dose lung cancer screening, colon and sinus employing the Tin Filter. Provide dose savings, even during the topogram. Only Siemens Healthineers CT scanners enable lung imaging powered by Tin Filter technology.

## Generator

### Max. power

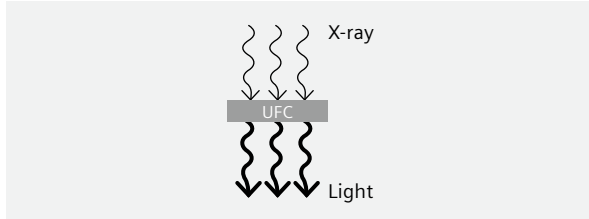
- 75 kW
- Equivalent to 187 kW with SAFIRE
- Equivalent to 93 kW with 78 cm gantry aperture



# System Hardware

## Data Measurement System

### UFC (Ultra Fast Ceramics)



The Stellar detector boosting an integrated circuit detector technology, where photodiode and electronics are integrated on one single integrated circuit. It has been shown in literature that this design allows superior imaging compared to conventional detector circuit designs, supporting:

- Superior objective and subjective image quality in head CTs
- Reduced image noise and streak artifacts, especially in low-dose or low-kV imaging or in high attenuation areas such as the shoulder and pelvis regions
- Improved image quality and low-contrast detectability in abdominal CT of overweight or obese patients
- Lower image noise and improved image quality in coronary CTA and coronary stent imaging
- Speed and efficiency based on Siemens Healthineers' proprietary scintillator material with ultra-short decay, extremely low afterglow and high absorption for optimized image quality and high dose efficiency

#### Max. number of slices/rotation

- 64 (acquired slices)
- 128 (with IVR)
- Max. 384 (reconstructed slices)

#### Number of detector rows

64

#### Number of detector elements

53,760

#### Number of detector channels per row (in-plane)

840

#### Number of projections 1 s/360°

1,536

#### Sequence acquisition modes

64 x 0.6 mm, Sn64 x 0.6 mm, Sn3 x 5 mm, 1 x 10 mm, 1 x 5 mm, 3 x 5 mm, 3 x 3 mm, Sn3 x 3 mm

#### Spiral acquisition modes

64 x 0.6 mm, Sn64 x 0.6 mm, AuSn64 x 0.6 mm

#### Adaptive Signal Boost

The Adaptive Signal Boost amplifies low signal areas of the CT data when high attenuation is present – such as when imaging obese patients or patients with metal implants or pediatric imaging at low kV.

## Patient table

#### Max. table load

- 227 kg / 500 lbs<sup>2,3</sup>
- 307 kg / 676 lbs<sup>1,4</sup>

#### Max. table feed speed

200 mm/s

#### Vertical table travel range

- 46–88.5 cm / 18"–35" (at table top)<sup>2</sup>
- 48.2–90.7 cm / 19"–35.7" (at table top)<sup>1,3</sup>
- 47.5–90 cm / 18.7"–35.4" (at table top)<sup>1,4</sup>

#### Vertical travel speed

28.3 mm/s

#### Scannable range

- 160 cm / 63" with patient table extension<sup>1,2,3</sup>
- 200 cm / 78.7" with patient table extension<sup>1,4</sup>

#### Patient table foot switch<sup>1</sup>

Foot Switch located on the bottom edge of the patient table allowing table positioning

#### X-ray foot switch<sup>1</sup>

Foot switch for triggering scans from the examination room

<sup>1</sup> Optional

<sup>2</sup> For CT patient table (227 kg)

<sup>3</sup> For RT patient table (227 kg)

<sup>4</sup> For CT and RT patient table (307 kg)

# myExam Companion

SOMATOM go. platform starts the era of intelligent CT imaging powered by myExam Companion. myExam Companion enhances consistency of CT procedures, independent of operator skills. It helps reduce the number of protocols and complexity of advanced examinations, by suggesting which settings are more appropriate for every patient. Based on the procedure

## myExam Compass

myExam Compass offers knowledge-based guidance at the hands of the technologist supporting individual patient characterization, based on patient input (size, age, sex, ECG) and interactive questions, adaptable by users, in their own clinical language (e.g., "does the patient have a metal implant?", "can the patient hold the breath longer than 5 sec?").

myExam Compass is based on expert use and condensed knowledge from thousands of exams in our installed base.

Enhance consistency and standardization of your CT procedures by sharing myExam Compass protocols across your institution or other peers through teamplay.

### Cardiac CT made easy independent of operator skills

Specially useful for users less experienced in CT Cardiac procedures, myExam Compass suggests which settings are more appropriate for every patient based on the procedure and patient characteristics, finding the optimal combination of acquisition and reconstruction parameters for excellent image quality, standardized results and always the right dose.

and patient characteristics it guides users to find the optimal combination of acquisition and reconstruction parameters, standardized results, and always the right dose. myExam Companion learns from your experience: establish your protocol preferences once and let it help you avoid repetitive tasks.

### Dual Energy is on when you need it

Especially useful for users less experienced with the DE technique, this holistic approach, powered by myExam Compass, suggests which DE settings are appropriate for which patient based on the procedure and patient characteristics to find the optimal combination of acquisition and reconstruction parameters for standardized results, and always the right examination.

If you are not sure when to use TwinSpiral or TwinBeam or which Recon&GO results to create, just rely on myExam Compass.

Depending on factors such as the patient size, how well they can comply with breathing instructions, or what the indication is, myExam Compass will adapt the protocol settings.

### Anticipate potential breathing artifacts

Anticipate potential breathing artifacts by proactively characterizing the patient's ability to comply with an acceptable breathhold. This breathhold characterization is utilized by myExam Compass to adapt scan parameters and optimize scan speed.

## myExam Cockpit<sup>1</sup>

The central engine of myExam Compass is driven by this cockpit: the central user interface for fast and intuitive protocol configuration. In this expert mode, users benefit from high flexibility in modifying predefined protocols and the option to integrate their knowledge into standardized protocols, and through myExam Compass, make them available for every user across your institution.

<sup>1</sup> Optional

# New Workplace Design

Thanks to gantry-integrated computers, SOMATOM go.Top gives you complete flexibility over where you position the workstation. Depending on your needs and infrastructure, you can set it up in the same

room, outside the scan room, or in a separate control room. The optional workplace myExam Satellite brings additional workflow flexibility without interrupting the scanning program.

## Image Reconstruction

### Real-time display

- Real-time image display (512 x 512) during spiral acquisition on the workplace
- Wireless transfer of images for preview on the tablet. Transfer starts immediately after the end of scanning

### Slice thickness

0.6–10 mm

Wide range of freely selectable slice thickness for prospective and / or retrospective reconstruction

### Recon field<sup>1</sup>

5–50 cm / 1.9"–19.7"

5–70 cm / 1.9"–27.5" with HD FOV<sup>2</sup>

### Maximum reconstruction rate

- 23 fps for FBP, 20 fps for IR with Ultra-FAST IRS
- 40 fps for FBP, 29 fps for IR with Ultra-FAST IRS II<sup>3</sup>

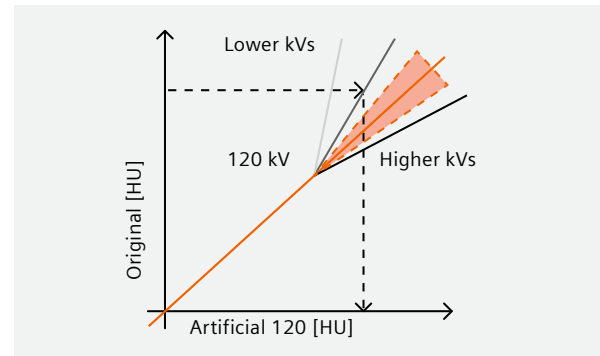
### Recon matrix

- 512 x 512
- 768 x 768<sup>3,4</sup>
- 1024 x 1024<sup>3,4</sup>

### HU scale

–8,192 to +57,343

## Advanced algorithms



- Iterative Beam Hardening Correction (IBHC) for reduction of beam hardening artifacts, e.g., in head images
- Any kV CaScoring enables you to choose any kV setting for your calcium scoring scan. Previously the setting was limited to 120 kV only. A specific reconstruction kernel (Sa36) is applied and allows to perform Agatston equivalent low-dose scores, even at lower kV settings.
- Large selection of reconstruction kernels to adapt to specific clinical needs

<sup>1</sup> 5–41.5 cm FOV with up to 1.5 pitch; above 41.5 cm FOV with up to 0.8 pitch

<sup>2</sup> The image quality for the area outside the 50 cm scan field of view does not meet the image quality of the area inside the 50 cm scan field of view. Image artefacts may appear, depending on the patient setup and anatomy scanned. HD FOV cannot be used for scan FOV smaller than 50 cm.

<sup>3</sup> Optional

<sup>4</sup> Requires Ultra-FAST IRS II

# New Workplace Design

## Acquisition Workplace (AWP)

### Computer integrated into the gantry

Hardware integrated into the gantry to:

- Enable Flexible Room Design (see Installation part)
- Minimize the elements of the new workplace design to a monitor, keyboard, mouse and the control box

### High performance computer CPU

Intel Xeon 3.5–4.0 GHz<sup>1</sup> with Turbo Boost Technology

### RAM

- 32 GB DDR4 RAM
- 96 GB DDR4 RAM<sup>2</sup>

### Graphics card

- Intel® HD Graphics P530<sup>1</sup>
- Nvidia Quadro P1000<sup>1,2</sup>

### Hard disk

- 720 GB SSD
- 1.2 TB SSD<sup>2</sup>

### Standard monitor

- 24" / 60 cm flat screen
- 1,920 x 1,080 resolution

### Additional monitor<sup>2</sup>

Yes

### Dual monitor<sup>2</sup>

Yes

### Image and patient data storage

- 300 GB, up to 600,000 images<sup>3</sup>
- 650 GB, up to 1,300,000 images<sup>2,3</sup>

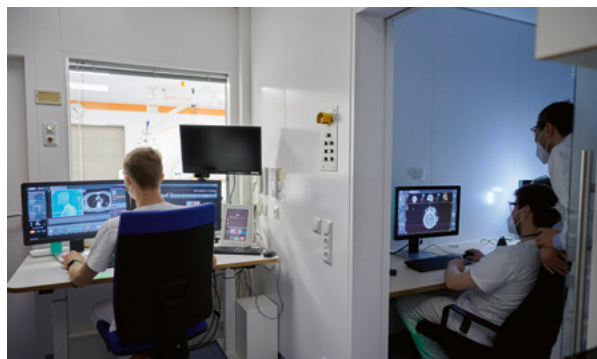
### Additional storage

External USB 3.0 disks for quick and easy raw data storage are supported

## myExam Satellite<sup>2,4</sup>

Additional workplace sharing database and applications with the main Acquisition Workplace for a more flexible workflow:

- While the AWP is being used for protocol preparation or scanning, myExam Satellite can be simultaneously used for filming, results creation or image interpretation.
- Results and postprocessing are simultaneously available at the AWP and myExam Satellite.
- Same applications available as at the AWP for different clinical cases, including Dual Energy<sup>2</sup> and Neuro Perfusion<sup>2</sup>



Courtesy of University Hospital Erlangen, Germany

<sup>1</sup> Or equivalent

<sup>2</sup> Optional

<sup>3</sup> Images include original data and inline results

<sup>4</sup> Requires Ultra-FAST AWP II

# Standard System Software and Applications

## syngo Examination

### Exam Designer

Easy and intuitive way to change and manage scan protocols

### Topogram

#### Length

- 128–1,680 mm / 5–66" with table extension<sup>1</sup>
- **128–2,080 mm<sup>1,4</sup> / 5–82" with table extension<sup>1</sup>**

#### Scan speed

200 mm/s

#### Scan times

- 1.36–8.76 s
- 1.36–10.76 s<sup>1</sup>

#### Views

a.p., p.a., lateral

Real-time topogram

Manual interruption possible once desired anatomy has been imaged

Topogram scan using Tin Filter for further dose reductions

### Patient Communication

#### Integrated patient intercom

#### Automatic Patient Instruction (API)

- Freely recordable
- 7 API text pairs for respective languages available
- Presets in 40 languages available

### Sequence Acquisition

#### Reconstructed slice widths

0.8, 1.0, 1.5, 2, 3, 4, 5, 6, 7, 8, 10 mm

#### Partial scan times (240°)

0.22<sup>1</sup>, 0.33, 0.67

#### Scan times (full scan)

0.33<sup>1</sup>, 0.5, 1.0 s

Acquisition with or without table feed

Dynamic Serio Scan

Automatic clustering of scans

### Multislice Spiral Acquisition

#### Reconstructed slice widths

0.6, 0.8, 1, 1.5, 2, 3, 4, 5, 6, 7, 8, 10 mm

#### Temporal resolution

- 165 ms<sup>1</sup>
- down to 83 ms<sup>1</sup> (bisegment)

#### Scan times full scan (360°)

**0.33<sup>1</sup>, 0.5, 1.0 s**

#### Reconstruction increment

Min. 0.1 mm

#### Pitch factor

- 0.15–1.5
- Down to 0.03  
(optional with Respiratory Motion Management)

#### Spiral scan time

Max. 300 s

#### Scan length

- Max. 160 cm / 63" with patient table extension<sup>1,2,3</sup>
- Max. 200 cm / 78.7" with patient table extension<sup>1,4</sup>

<sup>1</sup> Optional

<sup>2</sup> For CT patient table (227 kg)

<sup>3</sup> For RT patient table

<sup>4</sup> For CT patient table (307 kg)

# Standard System Software and Applications

## syngo Examination

### WorkStream4D

With WorkStream4D, thin slice data reconstruction is not required prior to the production of reformatted images.

This enhancement saves time when compared to alternative MPR techniques 4D workflow with direct generation of axial, sagittal, coronal, or double-oblique images from standard scanning protocols.

Elimination of manual reconstruction steps and reduction of data volume, since virtually all diagnostic information is captured in 3D slices

### Patient Registration

Direct input of patient information on the workplace immediately prior to scan

Pre-registration of patients at any time prior to scan

Special emergency patient registration (allows examination without entering patient data before scanning)

Transfer of patient information from HIS/RIS via DICOM Get Worklist

### IVR (Interleaved Volume Reconstruction)

IVR enables utilization of the measured data as effectively as possible. By using IVR, the system extracts the maximum amount of diagnostic information from measured data, thereby improving spatial sampling in z-direction, independent of pitch.

### HD FOV<sup>1</sup>

Designed to enable visualization of the human body parts and skin line located outside of the 50 cm standard scan field of view up to the bore size, based on the algorithmic complement of missing detector data outside of the 50 cm scan FOV.

### syngo System Security

Modern way of guarding against malware, viruses and malicious attacks, comprising a bundle of solutions:

- Provides functionality for user Management and flexible access control for patient data
- Improves IT security
- Avoids system breakdowns due to malware installations which results in higher system uptimes and reliability
- Reduces risk of unwanted software installations
- Supports local IT personnel
- Improves system performance and robustness
- Improves security for the use of external storage devices

<sup>1</sup> The image quality for the area outside the 50 cm scan field of view does not meet the image quality of the area inside the 50 cm scan field of view. Image artefacts may appear, depending on the patient setup and anatomy scanned. HD FOV cannot be used for scan FOV smaller than 50 cm.

# Standard System Software and Applications

## syngo Archiving & Networking

### Screen Recorder

Integrated solution for imaging and visualization of 4D information, allowing the generation and editing of video files for improved diagnoses, recording, and teaching. A wide range of multimedia formats are supported, e.g., AVI, Flash (SWF), GIF, QuickTime (MOV), streaming video.

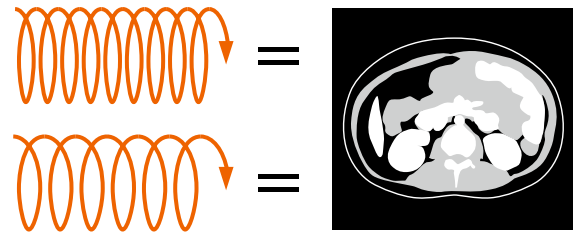
### Image Transfer/Networking

- Interface for transfer of medical images and information using the DICOM standard. Facilitates communication with devices from different manufacturer.

- **DICOM Storage (Send/Receive)**
- **DICOM Query/Retrieve**
- **DICOM Basic print**
- **DICOM Get Worklist (HIS/RIS)**
- **DICOM SR viewer**
- **DICOM Storage Commitment**
- **DICOM Viewer on CD/DVD**
- **DICOM MPPS**

### SureView: Siemens Healthineers' Patented Solution for Multislice CT Reconstruction

#### Pitch independent image quality



SureView ensures that image quality is kept constant for all scan speeds, independent of the selected volume pitch.

There is higher pitch accuracy with settings available in steps of 0.1, simplifying processes by handling complex parameter settings.

#### Auto Field of View Adaption

When positioning the scan range, the width of the range is automatically adapted to cover the whole body of the patient.

#### CINE Display

Display of image sequences

Automatic or interactive with mouse control  
Max. image rate: 30 frames/s

# Standard GO Technologies

## Scan&GO<sup>1</sup>



The operator can reduce walking time and potentially accelerate patient preparation and positioning with the Scan&GO tablet application. At the same time, they can stay close to the patient for most of the examination time.

Post the scan, the operator can preview images after the scan thanks to wireless image transfer to tablet. They can also finalize the exam and trigger pre-configured reconstruction tasks.

With the Scan&GO workflow, the operator can stay mobile and prepare the entire protocol next to the patient in time critical situations. They have the choice to leave the room only when triggering the radiation and spend the rest of the time with their patient.

## Check&GO

Check&GO is an intelligent algorithm, based on big data, that monitors and flags problems with scan coverage, contrast distribution or the presence of wearable metal objects as they occur, for immediate action or correction. This allows you to correct issues on the go, avoid subsequent errors as well as stop the archival sub-optimal images.

Quality-control images are sent wirelessly to the tablet, so you can review them directly.

Check&GO detects the center and the radius of the arteries, based on different landmarks depending on the scanned body region the arterial enhancement is measured at relevant locations.



Check&GO Metal Detection helps prevent mistakes and rescans by alerting the user when metallic objects such as keys, belts, chains, earrings are not removed and are present in the scan area after the topogram is done.

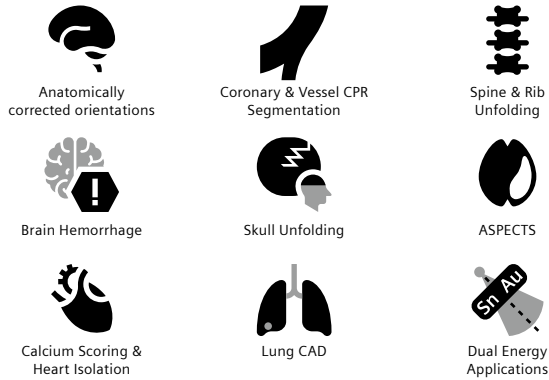
Check&GO including metal detection is available both on the AWP and on the Scan&GO tablet application.

<sup>1</sup> Availability depends on country-specific approval and release of the wireless devices



# Standard GO Technologies

## Recon&GO



Recon&GO enables the creation of Inline results, a set of fully automated advanced postprocessing applications as an alternative to the regular *syngo.via* algorithms.

This reduces postprocessing to zero-clicks with Recon&GO and its automatically corrected orientations.

Benefit from Recon&GO's standardized and consistent orientations, in typically challenging situations where patients can be mispositioned or uncooperative.

## Recon&GO including

### Multi-recon

Automatic generation of multiple series in different orientations (coronal/sagittal/axial) or image impressions (soft tissue/air/bone/...)

### Inline Anatomical Ranges

Automatic generation of radial and parallel ranges in any anatomical orientation and thickness. This automation saves time by avoiding manual workflow steps. Just configure your required results once and Recon&GO will always create them like a conventional reconstruction.

### Inline Table and Bone Removal

Zero-click bone-free VRT reconstruction that facilitates a precise vascular assessment by visualizing blood vessels without interfering anatomical structures

### Inline Vessel Ranges

Zero-click vessel centerline extraction and anatomical labeling of the main vessels (aorta, run-offs and carotids) with display of Curved Planar Reconstruction to simplify reporting of findings and stenosis assessment

# Standard GO Technologies

## CT View&GO



This viewing application available at the AWP provides you with intuitive and customizable cross-specialty tools for 3D visualization, filming and printing, as well as several post processing applications.

Customizable user interface, through a Favorite Toolbox

Automatic distribution and filming of images and results

Window width and center freely selectable

Single window

Multiple window settings for multi-image display

Organ-specific window settings, e.g., for soft tissue and bones

Image zoom and pan

### Evaluation Tools @ CT View&GO

**Parallel evaluation of more than 10 Regions of Interest**

- Circle
- Irregular
- Polygonal

**Statistical evaluation**

- Area / volume
- Standard deviation
- Mean value
- Min. / max. values

**Profile cuts**

- Horizontal
- Vertical
- Oblique

Distance measurement

Angle measurement

Online measurement of a 5 x 5 pixel size ROI

Freely selectable positioning of coordinate system

Crosshair

Image annotation and labeling

### Filming and Printing @ CT View&GO

**Filming**

- Digital film documentation, connection to a suitable digital camera
- Connection via DICOM Basic print
- Automatic filming
- Interactive virtual film sheet
- Customizable film formats with up to 64 images
- Filming parallel to other activities
- Independent scanning and documentation
- Freely selectable positioning of images onto film sheet
- Configurable image text

**Printing**

Documentation on postscript printer supported

# Standard GO Technologies

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## 3D Visualization @ CT View&GO

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### Real-time MPR

- Real-time multiplanar reformatting of secondary views
- Variable slice thickness (MPR thick, MPR thin) and distance with configurable default values
- Viewing perspectives
  - Sagittal
  - Coronal
  - Oblique
  - Double oblique
  - Freehand (curvilinear)

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### MIP and minIP

- MIP: Maximum Intensity Projection
- MinIP: Minimum Intensity Projection
- Thin MIP function for projection within a small slab to focus on particular vascular structure

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### syngo VRT (Volume Rendering Technique)

Advanced 3D application package for the optimal display and differentiation of different organs through independent control of color, opacity, and shading

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## Postprocessing applications @ CT View&GO

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### Table and Bone Removal

Fast accurate presentation of subtracted CT Angiographic data sets

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### Vessel Extension

- Set of tools and layouts for guided creation of CPR (Curved Planar Reconstructions) for enhanced vascular assessment
- Comprehensive length and diameter measurements

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### Spine Ranges

- Guided reconstructions of anatomically aligned spine Curved Planar Reconstructions (CPR)
- Automatic detection and labeling of vertebrae

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### Endoscopic View

Virtual Endoscopy software enabling visualization of airways and intestines

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### Diameter/WHO area

Longitudinal lesion measurements and WHO for enhanced clinical decisions in oncology

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### ROI HU Threshold

Evaluation and display of tissue densities within a certain HU range

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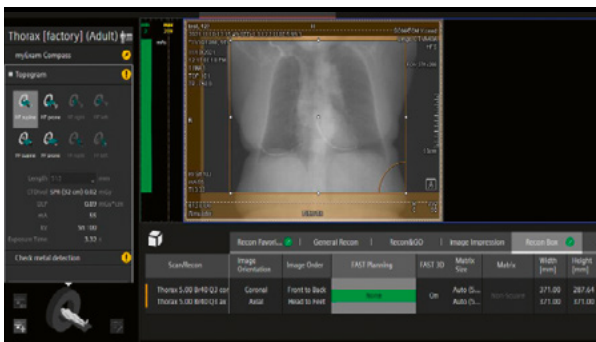
### Lung Lesion Segmentation

The Lung Lesion Segmentation tool in CT View&GO performs an automated segmentation of solid and subsolid lesions in lungs, providing the volume and diameter according to the LungRADS guidelines.

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# Standard FAST Applications

## FAST Planning @ AWP



Courtesy of Benson Radiology, Modbury, Australia

FAST Planning is an AI machine learning powered set of algorithms that allow fast, organ-based setting of scan and reconstruction ranges. This enables consistent and reproducible acquisitions in Single and Dual Energy scans. By automating the workflow, users increase efficiency due to reduced manual steps and effort in scan preparation.

This Machine learning algorithm is trained with several hundreds of patient datasets in order to overcome even the most challenging anatomies (e.g., bypass). Landmark detection technology recognizes known “human anatomy anchors” on the topogram and the scan range automatically snaps to the correct region.

It prevents the range from being set too short or too long, so no parts of the organ are cut off or over-radiated.

## FAST Planning @ Scan&GO tablet

In addition to the Acquisition Workplace (AWP), FAST Planning is also part of the Mobile Workflow as it is integrated in the Scan&GO tablet user interface including all described features above.

## FAST Contact<sup>1</sup>



FAST Contact is an easy way to contact our service experts directly from the scanner console for technical and clinical application support. teamplay Fleet – our fleet management tool – also tracks and archives service tickets generated with FAST Contact.

## FAST ROI

Automatic ROI identification for the aorta and the pulmonary trunk for optimal enhancement timing

## Ultra-FAST IRS

Powerful Image Reconstruction System that allows faster pre-processing and reconstructions of the CT data, with up to 23 images/second.

<sup>1</sup> teamplay Fleet and FAST Contact are subject to country specific availability.

# Optional FAST Applications

## FAST 3D Camera

The AI-powered FAST 3D Camera enables an automated workflow to safeguard precision and consistency in patient positioning – enabling high efficiency, increased image quality, and an optimized isocenter for an optimal dose, regardless of individual skills.

The algorithms of the FAST 3D Camera support accurate and reproducible positioning based on 3D image and infrared measurements, which even recognize body contours, for example, when people are wearing thicker clothes. The following specialized applications are included:

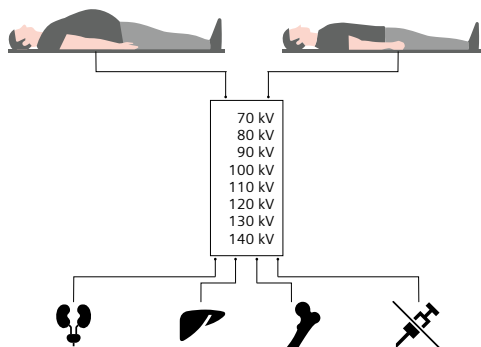
- FAST Isocentering, at the push of a button, provides the correct isocenter position, enabling the right dose modulation and consistent images.
- FAST Range supports scanning the correct body region with no cut-off – by aligning the automatically identified anatomical position with the protocol.
- FAST Direction helps safeguard the right scan direction, which is crucial when moving the table with infused patients.
- FAST Topo enables faster scan speeds in topograms, which prevents breathhold artifacts. It also has the potential to decrease the topogram dose.

The smart communication between the tablet and the FAST 3D Camera helps reduce mistakes even with non-cooperative patients between planning and scanning the topogram, thanks to reactive algorithms that will adapt the topogram planning even if patients move.



# Standard and Optional CARE Applications

## CARE kV



CARE kV automatically tailors tube voltage according to patient size and clinical task.

Simplify processes by automatically aligning mAs with the kV setting.

With the selection of optimal kV level between 70 and 140 kV, CARE kV minimizes dose. It further simplifies the process by automatically aligning the tube current with the selected kV.

## 10 kV Steps

Adapt your kV selection more precisely to reduce radiation dose at maintained image quality for a broad range of patient sizes.

Benefit from patient-specific and user-independent selection of the optimal kV setting with CARE kV in 10 kV steps.

More patient-specific dose management thanks to finer kV selection in 10 kV steps for individual dose management

## CARE Child

CARE Child offers scan parameters to be adapted to even small patient sizes. Dedicated pediatric protocols automatically set a low tube voltage – in most cases 70 kV – while CARE Dose4D optimizes dose distribution and offers special modulation curves.

## CARE Filter

Specially designed X-ray exposure filters installed at the tube and the collimator for protocol individual optimization of patient dose and image quality

### Permanent filtration of X-ray tube assembly

Equivalent to 5.5 mm Al @ 140 kV

### Tube collimator

- Equivalent to 0.5 mm Al in the isocenter
- 1 mm Al with cardio wedge

## CARE Bolus CT

Scan mode for contrast bolus triggered data acquisition

The procedure is based on repetitive low-dose monitoring scans at one slice level and analysis of the time density curve in an ROI (Region of Interest).

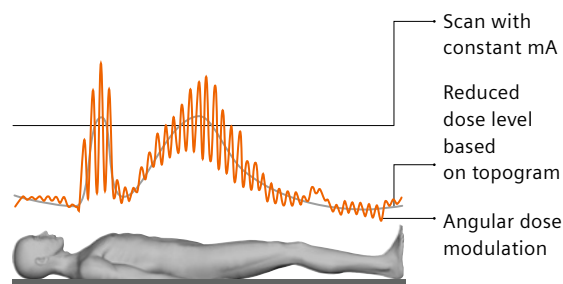
CARE Bolus CT allows the planning and the execution of contrast workflows within the Scan&GO user interface.

## CARE Topo

Real-time topogram

Manual interruption possible once desired anatomy has been imaged

## CARE Dose4D



Fully automated dose modulation solution. The algorithm automatically modulates tube current for optimum image quality.

This results in deduced dose levels, depending on patient size and anatomy, i.e. there is automatic patient- and organ-specific tube current adaption.

# Standard and Optional CARE Applications

## X-CARE

Provides organ dose reduction for radiation-sensitive peripheral organs e.g., eye lenses, while maintaining image quality

Keeps the average CTDI<sub>vol</sub> constant, i.e. with and without X-CARE

myExam Companion individualizes the utilization of X-CARE by considering the gender and breath-hold capability of the patient.

## Protocol Password Protection

Prevent unauthorized access to scan protocols and avoid unauthorized modifications.

## DICOM SR Dose Reports

DICOM structured file allows for the extraction of dose values (CTDI<sub>vol</sub>, DLP) to create transparency and document dose values.

## DoseLogs

Whenever the set reference dose levels are exceeded automatically a report is created on the system. The report can for example be used for audit purposes.

## Dose Notification

The software checks the dose values per chronicle entry. May help to protect from over-radiation and warn the operator in case set dose thresholds are exceeded.

## Dose Alerts

The software checks the accumulated dose per z-position. May help to protect from over-radiation and warn the operator in case set dose thresholds are exceeded.

## CARE Contrast<sup>1</sup>

CARE Contrast increases process efficiency and standardizes quality of care with technology that lets you synchronize and manage CT scan and contrast media injection, with the interchange of contrast injection protocols (including parameters like phase, flow, duration, volume).

Define and manage contrast media protocols on the scanner console.

Combined scan and contrast media protocols

Transfer contrast media protocols from the scanner console to the injector.

Transfer contrast media protocol to patient protocol.

Selected pre-defined factory protocols<sup>2</sup> including quantified parameterization of flow and concentration for the contrast media, calculated for the average patient

## Flex Dose Profile

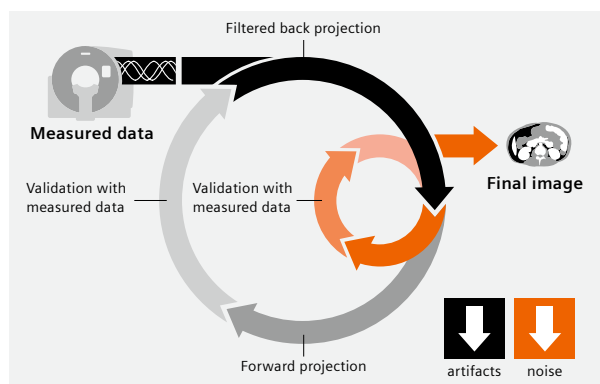
For long scan ranges, Flex Dose Profile works in combination with CARE Dose4D and FAST Planning to allow a more optimal modulation of the dose. In longer scans, some organs require more dose than the rest of the scan, i.e. there are different target dose levels needed for different anatomical regions, e.g., in regular thoracoabdominal examinations or in chest pain or TAVI procedures. FAST Planning automatically detects individual patient landmarks and anatomies, while Flex Dose Profile adjusts the tube currents for more personalized and accurate dose handling. Flex Dose Profile is displayed on the AWP and the Scan&GO tablet with the same visual logic as any other procedure, so users of any level of experience can utilize it right away.

<sup>1</sup> Optional

<sup>2</sup> The FDA does not endorse the default factory contrast protocols over the range of drug administration options provided in the drug label.

# Standard and Optional CARE Applications

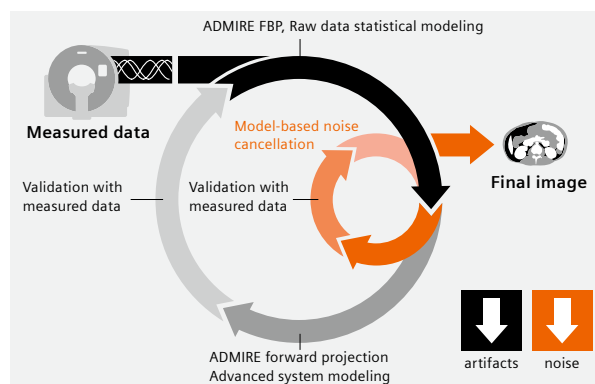
## SAFIRE (Sinogram Affirmed Iterative Reconstruction)



Equipped with SAFIRE, a model-based iterative reconstruction, SOMATOM go. scanners achieve up to 60% dose reduction while maintaining image quality and detail visualization combined with fast image reconstruction<sup>1</sup>. By this, equivalent results can be achieved at less dose, filling up the heat storage of the system more slowly and therefore, additionally, increasing the heat storage capacity.

The comprehensive iterative reconstruction method SAFIRE brings real model-based raw data based iterative reconstruction to the SOMATOM go. Dose reduction with CT has been limited by the currently used filtered back projection (FBP) reconstruction algorithm. When using this conventional reconstruction of acquired raw data into image data, a trade-off between spatial resolution and image noise has to be considered. Higher spatial resolution increases the ability to see small details; however, it is directly correlated with increased image noise in standard filtered back projection reconstructions as they are used in CT scanners today.

## ADMIRE (Advanced Modeled Iterative Reconstruction)<sup>2,3</sup>



With ADMIRE – Siemens Healthineers' Advanced Modeled Iterative Reconstruction – clinical images additionally benefit from higher resolution at organ borders and improved edge delineation. As demonstrated using SOMATOM Force CT data, ADMIRE may simultaneously enable<sup>3</sup>

- 80% to 85% dose reduction at the same image quality, and
- 73% to 77% image noise reduction at the reduced dose, and
- up to 42% improved high-contrast spatial resolution at reduced dose and reduced image noise compared to images reconstructed with WFBP<sup>4</sup>.

Alternatively, ADMIRE may enable<sup>3</sup>

- up to 150% improved low-contrast detectability (factor 2.5) at the same dose, or
- up to 90% image noise reduction at a constant dose, or
- up to 87% improved high-contrast spatial resolution at 85% reduced dose and constant image noise, or
- up to 38% improved high-contrast resolution at 90% reduced image noise and constant dose.

<sup>1</sup> In clinical practice, the use of SAFIRE may reduce CT patient dose depending on the clinical task, patient size, anatomical location, and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task. As determined from SOMATOM Definition Flash data, SAFIRE enables up to 60% dose reduction. Data on file.

<sup>2</sup> Optional

<sup>3</sup> Image quality as defined by low-contrast detectability using a model observer method for evaluation. As demonstrated using SOMATOM Force data, equivalent low-contrast detectability can be achieved with 80% to 85% less dose using ADMIRE at the highest strength level for thin (0.6 mm) reconstruction slices in measured and simulated body and head phantoms for low-contrast objects with different contrasts. In clinical practice, the use of ADMIRE may reduce CT patient dose depending on the clinical task, patient size, anatomical location, and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the particular clinical task. See ADMIRE data sheet for further information.

<sup>4</sup> Weighted Filtered Back Projection



# Optional High Performance Package

Benefit from additional operational and clinical flexibility by configuring your SOMATOM go.Top with the High Performance package, a bundle of software and hardware options to boost your performance.

## High Power 70 & 80

High Power 70 and the Athlon X-ray tube allow you to scan at 70 kV with the highest tube current of this CT class, up to 825 mA.

Scanning with low kV has the potential to lower the dose, improve image impression and reduce contrast media. Using less contrast media can reduce expenses for the hospital.

As demonstrated by phantom tests, the contrast of iodine achieved by scanning with low kV is higher than with other tube voltages. Image contrast is based on the mass attenuation coefficient. For lower photon energies, the mass attenuation coefficient of iodine increases, whereas soft tissue is less energy dependent. This means that the iodine-to-soft-tissue contrast in the CT image will increase at low-kV imaging and lower average photon energy. Publications have also shown a positive impact on contrast-enhanced studies.

## High-speed 0.33 s

This option provides a rotation speed of down to 0.33 sec per rotation, for very high scan speeds. Fast gantry rotation times are the prerequisite for highest temporal resolution and are therefore essential for motion free cardiovascular imaging. With the temporal resolution of 165 ms, this CT is especially suitable for cardiac examinations and fast scanning.

## CARE Contrast

CARE Contrast increases process efficiency and standardizes quality of care with technology that lets you synchronize and manage CT scan and contrast media injection, with the interchange of contrast injection protocols (including parameters like phase, flow, duration, volume).

Define and manage contrast media protocols on the scanner console.

Combined scan and contrast media protocols

Transfer contrast media protocols from the scanner console to the injector.

Transfer contrast media protocol to patient protocol.

Selected pre-defined factory protocols<sup>1</sup> including quantified parameterization of flow and concentration for the contrast media, calculated for the average patient.

## Basic Cardio Package

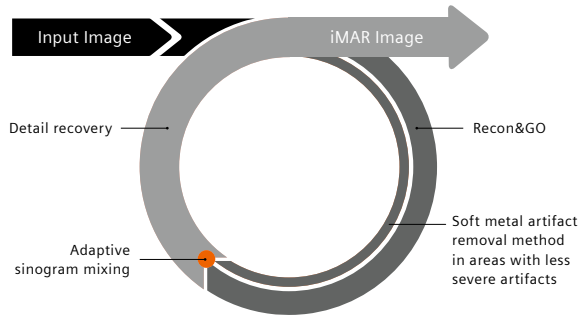
The SOMATOM go.Top with the High Performance Package is equipped with the basic cardio package boosted by myExam Compass. Based on patient characteristics such as e.g., heart rate and variability, myExam Compass suggests the most appropriate combination of acquisition and reconstruction parameters. Furthermore, it includes the adaptive Cardio Spiral and a new specific reconstruction kernel which enables Agatston equivalent scores even at lower kV settings. Together with the known GO Technologies this makes more advanced procedures like coronary CTAs easy. With real time feedback of ECG signal and electrode placement quality at the tablet, Scan&GO enables you to plan your entire scan close to the patient and also train the crucial breathing commands. Check&GO automatically checks for any removable metal, the correct organ coverage and contrast media distribution in real time. And Recon&GO inline CaScoring and syngo.CT Calcium Scoring provide you with total and relative Calcium Scoring including Coronary Age calculation – allowing you to include calcium scoring in every cardiac scan with almost no impact on workflow. The adaptive retrospective ECG-gated CT cardio spiral obtains CT images of the heart in defined phases of the cardiac cycle and let's you react flexibly to arrhythmia. Retrospective ECG gating also allows functional imaging of the heart and can be combined with ECG pulsing, reducing the dose beyond the regular dose plateau by ECG-based dose modulation.



<sup>1</sup> The FDA does not endorse the default factory contrast protocols over the range of drug administration options provided in the drug label.

# Optional High Performance Package

## iMAR



iMAR (iterative Metal Artifact Reduction) reduces metal artifacts for better image quality with no increase in dose.

The high-end algorithm can handle a wide variety of metal implants. By reducing metal artifacts, it improves visualization of soft tissue. It even allows you to address more challenging cases, such as those involving dental fillings, coils, implants, and pace-makers. Since metal can often be an issue in trauma cases, our iMAR algorithm is a key advantage for this clinical field too.

Diagnostic value can be further strengthened with the combination of iMAR with iterative reconstruction to further reduce dose. A strong imaging combination which is smoothly integrated into your daily orthopedic workflow. Reduce metal artifacts for higher image quality in trauma situations with iMAR.

iMAR is designed to yield images with a reduced level of metal artifacts compared to conventional reconstruction if the underlying CT data is distorted by metal being present in the scanned object. The exact amount of metal artifact reduction and the corresponding improvement in image quality achievable depends on a number of factors, including composition and size of the metal part within the object, the patient size, anatomical location and clinical practice. iMAR reconstructions should be performed and evaluated in combination with standard reconstructions. iMAR can be combined with TwinSpiral and TwinBeam Dual Energy acquisition.

## Recon&GO

### Inline Spine Ranges

Zero-click reconstruction of anatomically aligned spine reconstructions. The software detects and labels vertebrae within a predetermined scan area, and calculates their position for anatomically correct image reconstructions.

### Inline Radial and Parallel Rib Ranges

- Zero-click reconstruction of radial and parallel rib specific visualization that adapts the rib cage anatomy displaying all ribs spread out in one plane
- Automated rib labelling and numbering

### Inline CaScoring

For the first time, Inline CaScoring makes the Calcium Score available as zero-click reconstruction. With the known functionality of Recon&GO, Inline CaScoring calculates automatically the total Agatston Score as well as the Coronary Age (based on trial data) and archives them directly in the PACS. Results can be opened in syngo.CT CaScoring directly at the AWP and further processed if needed.

# Optional System Software and Packages

## Neuro Imaging

### Flex 4D Spiral – Neuro<sup>1</sup>

- Continuously repeated bi-directional table movement during spiral acquisition enables an extended range for 4D information
- Facilitates volume perfusion studies in head applications for a perfusion range of up to 8.5 cm covering the entire supratentorial brain
- Facilitates dynamic angiographies for head and neck with a coverage of up to 26.5 cm
- These dynamic procedures are handled at the AWP with the same visual logic as any other procedures, so users of any level of experience can perform them right away

### Recon&GO Inline ASPECTS

Inline ASPECTS automatically calculates the ASPECT score of a non-contrast CT head scan and highlights the affected brain regions as an overlay on the CT image. The images and results are automatically calculated in the background and can be directly sent to PACS without any user interaction. This makes Inline ASPECTS routine ready by providing consistent results independent of the user and always available especially in urgent situations when time is a scarce resource.

### Neuro Package

**The Neuro Package of your SOMATOM go.Top provides you with tools for the full stroke assessment**

- Neuro DSA (Digital Subtraction Angiography) @ CT View&GO for bone-free evaluation of the neuro vasculature
- *syngo*.CT Neuro Perfusion for dynamic 4D quantification and visualization of perfusion data

In addition, Recon&GO automatically produces standardized orientations to overcome challenging situations where patients might be wrongly positioned or unable to cooperate.

### Neuro DSA @ CT View&GO

The Neuro DSA tool within CT View&GO provides a bone-free view of the cerebral vasculature based on the subtraction of an additional non-enhanced CT (NECT) scan that is three-dimensionally registered to the CTA data set.

<sup>1</sup> Requires 307 kg patient table and 0.33 sec rotation time

# Optional System Software and Packages

## 4D Imaging

### Flex 4D Spiral – Body<sup>1,2</sup>

- Continuously repeated bi-directional table movement during spiral acquisition enables an extended range for 4D information.
  - Facilitates volume perfusion studies in body applications for a perfusion range of up to 18.5 cm
  - Facilitates dynamic studies up to a scan range of 40 cm
  - These dynamic procedures are handled on the AWP with the same visual logic as any other procedure, so users of any level of experience can perform them right away
- 

## Cardio Imaging

### Advanced Cardio Package<sup>3</sup>

The Advanced Cardio Package allows for comprehensive cardiac assessment. Optimized, fully tablet-operated scan preparation, fast scanning, and standardized results enabled by the integrated GO technologies allow you to devote more time to your patient.

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#### It features:

- Adaptive Cardio Sequence for even more dose conscious cardiac scanning
  - Bi-segment Cardio Spiral for improving temporal resolution in case of higher heart rates
  - Inline cardio ranges with zero-click CPR creation, inline Heart Isolation and inline Coronary Tree with Recon&GO
  - Intuitive and straightforward reading of challenging cases with the Cardio Ranges functionality at the CT View&GO
- 

<sup>1</sup> Requires 307 kg patient table and 0.33 sec rotation time

<sup>2</sup> Recommended applications for evaluation in syngo.via: syngo.CT Body Perfusion and syngo.CT Dynamic Angio

<sup>3</sup> Requires High Performance Package

# Optional System Software and Hardware for CT-guided Interventions

## myNeedle Companion for CT-guided interventions

myNeedle Companion is the first Siemens Healthineers solution that harmonizes planning and guidance for percutaneous needle procedures across modalities. myNeedle Companion supports the interventionalist by utilizing the standard system tablet to interact with the system software and the images with touch-gestures from inside the examination room to stay close to the patient during a procedure. In addition the intervention user interface myNeedle Guide is displayed on a 24" or 32" in-room monitor<sup>1</sup> either mounted at the ceiling or on a cart. On the SOMATOM go.Top myNeedle Companion features:

### myNeedle Guide 2D<sup>2</sup>

Assists you in planning and guiding the needle during in-plane percutaneous CT-guided interventions. Dedicated tools support the planning of a needle path by providing distance and angle measurements from the target to the needle entry point in one or several axial CT slices. It includes i-Sequence scan mode referred to as FAST i-Sequence as it allows for quick scan repetitions, e.g. for dynamic monitoring of the needle.

### myNeedle Guide 3D<sup>2,3</sup>

Supports all kind of percutaneous procedures, from simple in-plane interventions, to complex, double-angulated procedures. myNeedle Guide 3D supports planning of multiple needle paths by measuring distances and angles from the target to the needle entry point on one or several axial CT slices and as well on Multi Planar Reconstructions.

#### It includes:

- i-Sequence scan mode referred to as FAST i-Sequence as it allows for quick scan repetitions, e.g., for dynamic monitoring of the needle
- i-Spiral mode for flexible volume coverage to adjust it to clinical scenarios and for a dose conscious approach standard dose reduction algorithm such as CARE Dose4D and CARE kV can be applied as well
- Dedicated i-Sequence mode covering the full detector width which allows 3D planning and guidance

### i-Fluoro<sup>4,5</sup>

Allows for real-time CT fluoroscopic image guidance. The scan mode i-Fluoro CT is completely integrated in the interventional workflow of myNeedle Guide. i-Fluoro lets you scan continuously, and view images in real time at up to 10 frames/s on an additional in-room monitor and as well on the second control room monitor. The acquired images have an image matrix of 512 x 512.

### HandCARE

For i-Fluoro scans HandCARE can be applied enabling real-time dose modulation to avoid direct X-ray exposure to the physician's hands. HandCARE switches off the x-ray exposure for a 100° angle between three user selectable positions (10:00, 12:00 and 2:00 o'clock).

### X-Ray foot switch

Foot switch for triggering scans from the examination room

### i-Joystick

The i-Joystick supports the table movement in z-direction (in and out of the gantry) directly from the table side. The i-Joystick can be flexibly mounted along both sides of the table designed for an ergonomic set-up during CT-guided minimal invasive procedures. It is connected via cable and can be mounted on both sides of the CT-table.

### Tablet dock for patient table

The tablet dock for the patient table is fully adjustable for an ergonomic independent in-room operation during minimal invasive procedures. Optionally the table dock can be plugged in for an uninterrupted power supply for long interventions.

### Tablet side rails long

Designed to flexibly mount the tablet dock and the i-Joystick along the patient table during percutaneous minimally invasive procedures.

<sup>1</sup> Optional

<sup>2</sup> Requires a second control-room monitor and a in-room monitor solution

<sup>3</sup> Requires Ultra-FAST AWP II

<sup>4</sup> Only available together with myNeedle Guide 2D or myNeedle Guide 3D

<sup>5</sup> X-Ray foot switch required

# Optional System Software and Packages

## Precision Matrix<sup>1</sup>

Reconstructions of images with matrix sizes of up to 1024 x 1024 and 768 x 768 pixels, useful to keep spatial resolution high even at full scan FOV

Powered by myExam Companion, the right image matrix size for axial and 3D reconstructions is automatically selected depending on FOV offering a balance between storage demand, reconstruction time and spatial resolution.

## Lung CAD Package

### Recon&GO

#### Inline Lung CAD

- Zero-click Lung CAD (Computer Aided Detection) series reconstruction, designed as second reader tool to assist radiologists in the detection of pulmonary nodules during review of CT examinations of the chest
- Designed to assist in the detection of solid pulmonary nodules

### CT View&GO

- Lung CAD (Computer Aided Detection) is a fully automated, computer assisted second reader tool, designed to assist radiologists in the detection of pulmonary nodules during review of CT examinations of the chest.
- Designed to assist in the detection of solid pulmonary nodules

## CT Dental

### syngo.CT Dental

Allows reformatting panoramic views and paraxial slices through the upper and lower jaw, and enables the display and measurement of mandibular bone structures (even on a 1:1 scale) as the basis for OR planning and oral surgery.

## CT Osteo

### CT View&GO

Non-invasive measurement of the bone mineral density of the lumbar spine to help early diagnosis of osteopenia and osteoporosis, and to assess the effectiveness of treatment. Osteo CT measurements are standardized to the ESP Phantom (ESP: European Spine Phantom). Includes table mat and reference phantom for Osteo CT studies.

## Emergency Imaging

This package includes dedicated CT View&GO and Recon&GO applications to speed up the workflow in emergency procedures.

### Recon&GO

#### Inline Brain Hemorrhage

Automatic detection and PACS notification of suspected intracranial hemorrhage

#### Inline Skull Unfolding

Automatic curved MIP images of skull and brain surface to support detection of skull fractures and thin surface hematoma

Results can be automatically sent to PACS

### CT View&GO

#### Trauma layouts

Predefined layouts are automatically loaded and filled with corresponding data for head, neck, thorax and abdomen and pelvis. Data from Skull Unfolding and Brain Hemorrhage are automatically displayed within the layouts.

<sup>1</sup> Requires Ultra-FAST IRS II

# Optional System Software and Packages

## Spectral imaging with Dual Energy

By allowing you to characterize, highlight, and quantify different materials this produces rich diagnostic information that a conventional single source scan cannot deliver. It does this without dose penalty in comparison to a standard 120 kV scan, and even allows you to further minimize radiation with any of our existing dose-reduction technologies.

Dual Energy procedures are handled at the AWP or at the Scan&GO tablet with the same visual logic and automation as any other procedures, so users of any level of experience can perform them right away.

Specially useful for users less experienced with the DE technique, this holistic approach, powered by the new myExam Compass, suggests which DE settings are more appropriate for every patient based on the procedure and patient characteristics, finding the optimal combination of acquisition and reconstruction parameters for excellent image quality, standardized results and always the right dose.

### TwinSpiral Dual Energy<sup>1</sup>

A new holistic solution for spectral imaging is introduced. The TwinSpiral scan mode offers the possibility to acquire two consecutive spiral data sets at different energies used for non-contrast scans and the two different kV levels with independent mAs modulation deliver a combination of both morphological and functional information within one examination.

The robustness of the spectral separation is a key factor for the quality of the final images. The spectral properties of the Tin Filter lead to better spectral separation and therefore, amongst other benefits, potentially results in better tissue characterization. Leverage the power of the Mobile Workflow with end-to-end Spectral imaging protocols running from the tablet. Now users of any level of experience can perform spectral imaging examinations with dual energy from the tablet right away, as the TwinSpiral protocols offer a holistic approach which starts from the scanning part and extends to the automatic way of generating the results. The new TwinSpiral workflow feels like a single scan. The patient experiences virtually zero inter-scan delay between the scans. Empowered by such a holistic approach, overall protocol execution time is expected to be reduced.

### CT View&GO – Dual Energy ROI

Basic evaluation of the behavior of different tissues at different energies as an indication of their atomic composition

### TwinSpiral Spectral Viewing

TwinSpiral Spectral Viewing allows for comprehensive assessment of non-contrast Dual Energy acquisitions with the most common applications. No matter if you would like to do your postprocessing directly at the AWP or rather have it sent automatically to PACS by Recon&GO – it offers a solution for all clinical workflows.

### Recon&GO – Inline DE results for Mixed and Monoenergetic Plus<sup>2</sup>

Standardize results by automatically generating Mixed and Monoenergetic Plus Inline results in any required orientation, thickness or keV level e.g., for metal artifact reduction.

### CT View&GO – Interactive Spectral Imaging for Mixed and Monoenergetic Plus<sup>2</sup>

- Start your postprocessing directly at the scanner within CT View&GO by the click of one button.
- Interact with Dual Energy information and select the energy level at which implants, clamps or screws have small impact on image quality.

### syngo.CT Dual Energy – Advanced applications for AWP

Take advantage of advanced DE postprocessing directly at the scanner.

syngo.CT Dual Energy:

- Preparing and viewing of Dual Energy data
- Monoenergetic

syngo.CT DE Monoenergetic Plus<sup>2</sup>:

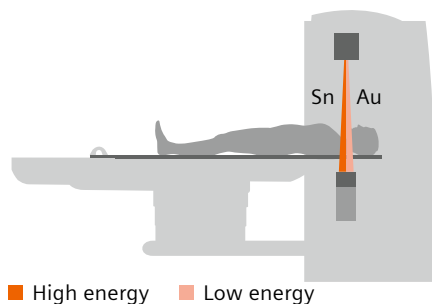
Compare lesions and tissues by displaying multiple ROIs and associated attenuation curves.

<sup>1</sup> Included in the standard configuration

<sup>2</sup> In combination with TwinSpiral not for visualization of iodine, only for metal artifact reduction

# Optional System Software and Packages

## TwinBeam Dual Energy



TwinBeam Dual Energy is an innovative, high-end approach that allows simultaneous acquisition of high and low kV spectra in a single spiral scan mode – with no dose penalty.

All dose reduction technologies such as CARE kV, CARE Dose4D and iterative reconstruction apply. Additionally, further dose may be saved with the elimination of non-contrast scans.

To create two X-ray spectra (high and low) simultaneously from one tube, the powerful Athlon tube assembly generates a prefiltered X-ray beam before it reaches the patient. Spectral separation is achieved with the integrated gold and tin filter.

Image acquisition is possible for all rotation times. High and low energy image series are reconstructed separately. Composed reconstruction delivers a single energy image dataset using the full information by directly combining the low and high energy data from the detector. With the full number of projections available for both spectra, there is no compromise on image quality.

## TwinBeam Spectral Viewing<sup>1</sup>

TwinBeam Spectral Viewing extends your Dual Energy assessment to contrast media enhanced acquisitions. With the same work flow freedom as the TwinSpiral Spectral Viewing package, it presents you with a thorough solution for your oncological assessment. In addition it offers you:

**Recon&GO – Inline DE results for Virtual Unenhanced (incl. iodine map)/Liver VNC/Fat map**  
Standardize results by automatically generating non-contrast images optimized for the respective organ tissue, iodine maps and fat maps and use Monoenergetic Plus also for further contrast enhancement.

**CT View&GO – Interactive Spectral Imaging for Virtual Unenhanced (incl. iodine map)/Liver VNC/Fat map**

- Expand the interaction with Dual Energy information to contrast media enhanced scans
- Toggle easily between different postprocessing visualizations and answer your clinical questions in just one work flow directly at the scanner

**syngo.CT Dual Energy – Advanced applications for AWP**

Take advantage of advanced DE postprocessing directly at the scanner.

syngo.CT Dual Energy:

- Mixed image calculation
- Optimum Contrast

syngo.CT DE Virtual Unenhanced:

- Iodine uptake quantification
- Calculation of virtual unenhanced images (incl. Liver VNC)
- Calculation of fat map in the liver

## Recon&GO – Spectral Recon<sup>2</sup>

- Benefit from the speed of Spectral Imaging reconstructions calculated directly at the IRS based on the spectral information available in the raw data, while reducing the amount of data and transfer times to PACS.
- Handle Spectral Imaging results seamlessly, evaluate and manipulate these volumetric data in 3D, create additional reconstructions or measurements, as in any other standard series.
- Full freedom for further multiplanar reconstructions and quantification of DE related parameters
- Spectral Recon includes:
  - Mixed
  - Monoenergetic Plus
  - VNC (Virtual Non-Contrast)
  - Iodine map

<sup>1</sup> Requires TwinBeam Dual Energy

<sup>2</sup> Requires Ultra-FAST IRS II



# Optional System Software and Packages

## Dual Energy Gout

Conventional methods of diagnosing gout, e.g., the aspiration of the joint are limited to feasibility especially in acute cases where the joint is inflamed and painful. In these cases an aspiration may not be performable. Amongst this gout can be difficult to diagnose, as there are various forms of arthritis that have similar symptoms.

Dual Energy Gout is overcoming these limitations allowing you visualize deposits of uric-acid crystals in peripheral extremities or periarticular soft tissue (e.g., tendons and ligaments) non-invasively – even in areas that cannot be reached with a conventional aspiration using:

- Zero-click PACS ready Recon&GO DE Gout
- Advanced syngo.CT DE Gout application directly at the AWP

## Dual Energy Calculi Characterization

Identify and characterize different kinds of kidney stones with Dual Energy Calculi Characterization. Visualize and characterize kidney stones using:

- Zero-click PACS ready Recon&GO DE Calculi Characterization
- Advanced syngo.CT DE Calculi Characterization application directly at the AWP

## Dual Energy Brain Hemorrhage<sup>1,2</sup>

Dual Energy Brain Hemorrhage helps to distinguish between contrast agent and hemorrhage lesions show significant iodine uptake, while hemorrhages do not enhance and are only visible in the virtual non-contrast image.

- Zero-click PACS ready Recon&GO DE Brain Hemorrhage
- Advanced syngo.CT DE Brain Hemorrhage application directly at the AWP

## Dual Energy Bone Marrow<sup>1</sup>

Bone marrow can be affected by various pathologies, such as bone bruises after trauma and diffuse tumor infiltrations. Dual Energy Bone Marrow allows for the segmentation and color-coded visualization of bone marrow based on a material decomposition into bone marrow and calcium and by that helps to visualize e.g., edema.

- Zero-click PACS ready Recon&GO DE Bone Marrow
- Advanced syngo.CT DE Bone Marrow application directly at the AWP

## Dual Energy Direct Angio<sup>3</sup>

Use Dual Energy to provide a bone free view of the vessel system on CT angiography (CTA) datasets by suppressing bone structures, e.g., at the base of the skull where CTA's can be difficult to interpret. Furthermore, it enables the visualization and evaluation of vessel stenosis or occlusion.

- Zero-click PACS ready Recon&GO DE Direct Angio
- Advanced syngo.CT DE Direct Angio application directly at the AWP

## Dual Energy Lung Analysis<sup>3</sup>

Broaden your Dual Energy assessment and use the help of dedicated applications to detect pulmonary embolism and its related lung perfusion defects with:

- Zero-click PACS ready Recon&GO DE Lung Analysis
- Advanced syngo.CT DE Lung Analysis application directly at the AWP

## Dual Energy Rho/Z<sup>4</sup>

One factor for the attenuation of X-rays is the electron density and the effective atomic number. Obtain the chemical characterization of different materials by:

- Zero-click PACS ready Recon&GO DE Rho/Z
- Advanced syngo.CT DE Rho/Z application directly at the AWP

<sup>1</sup> Only in combination with TwinSpiral Dual Energy and TwinSpiral Spectral Viewing

<sup>2</sup> Only for visualization of static iodine enhancement after interventional procedures (not for CTA)

<sup>3</sup> Only in combination with TwinBeam Dual Energy and TwinBeam Spectral Imaging

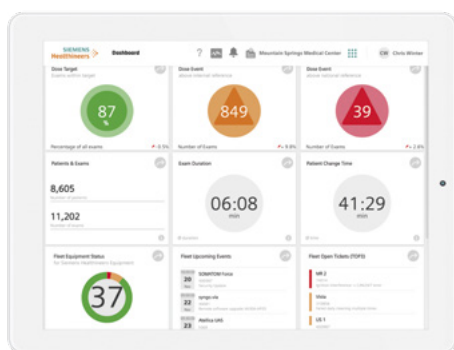
<sup>4</sup> Not cleared for use as a basis for radiation therapy planning, but for visualization only

# Fleet Management Applications

## Shui® – the Siemens Healthineers Design System

Shui® is the new framework for all digital user interfaces in the Siemens Healthineers product and service portfolio, creating a coherent brand perception and user experience while making it easy to learn how to use, operate, and switch between multiple modalities.

## teamply performance management applications



teamply applications for performance management in healthcare help you make quick and well-informed decisions by offering a clear overview of your clinical and operational performance data. The set of teamply performance management applications gives you instant, centralized access to operational, technical and clinical data to help you optimize your operations and to deliver higher quality of care. Smart connections between the applications amplify the data insights and provide a seamless user experience.

### teamply Dose

teamply Dose is an enterprise-wide radiation dose management solution providing you with easy access to dose data, supporting the quality assurance process for monitoring imaging radiation dosage. teamply Dose displays data for continuous dose performance evaluation, no matter which modality or vendor<sup>1</sup> is used.

Perform efficient dose data analysis and get an overview of the scan protocols used by type and target region. Monitor the applied radiation over time by displaying the accumulated dose for each individual patient. And compare your outcomes among peers using global benchmarking<sup>2</sup> with teamply Dose.

### teamply Usage

teamply Usage provides you with a transparent view of your radiology department as well as in-depth insights into workflow and clinical processes. Our vendor neutral<sup>1</sup> solution displays key performance indicators (KPIs) for imaging device utilization. Smart filter settings support you in locating the data of interest. Patient change time, exam duration, and table occupancy are performance indicators that help you to understand your workflow and increase efficiency. Figures such as “exams per patient” or “total patients” can give you an insight into the financial side of your department.

### teamply Protocols

Identify best-practice scan protocols for imaging devices and use them for the optimization of your radiology workflow with teamply Protocols<sup>3</sup>. Keep track of recent protocol changes and improvements – simply explore the version history of your protocols and add annotations for later reference. View all deviations from all your CT scan protocols at a glance – even across scanners or institutions. Save time and resources in your fleet network by distributing protocols remotely to compatible scanners.<sup>4</sup>

### teamply Insights<sup>1</sup>

With teamply Insights, you get broad access to your radiology department data to discover insights you could not have found before. Build highly flexible, personalized, and interactive data visualization boards for both a monitoring view of your radiology department as well as for a deep dive analysis in specific use cases. Create trackers to check and report whether you will reach your set goals. Analyze and better understand numbers of no-shows and requirement patterns for priority cases. Take deep dives into your dose data to help better understand reasons behind dose outliers, and then decide on measure to be taken to remedy said outliers. Or, find out what the busiest times are to schedule enough staff. With this knowledge at hand you can take well-informed decisions to improve resource utilization. Maximize your insights, optimize your value.

<sup>1</sup> Optional feature

<sup>2</sup> Availability of benchmarking option depends on a minimum number of considered subscribers to guarantee customer anonymity and data protection.

<sup>3</sup> teamply Protocols supports selected Siemens scanners. Please contact your Siemens Healthineers representative for more details.

<sup>4</sup> Optional feature. Selected Siemens Healthineers scanners support distribution and receiving of protocols. Availability depends on scanner software version. Please contact your Siemens Healthineers representative for more details.

# Radiation Therapy System Software and Hardware

## HD FOV

Designed to enable visualization of the human body parts and skin line located outside of the 50 cm scan field of view up to the bore size, based on an algorithmic complement of missing detector data outside of the 50 cm scan FOV.

The image quality for the area outside the 50 cm scan field of view does not meet the image quality of the area inside the 50 cm scan field of view. Image artefacts may appear, depending on the patient setup and anatomy scanned. HD FOV cannot be used for scan FOV smaller than 50 cm.

## Radiation Therapy Basic<sup>1</sup>

Radiation Therapy Basic is a dedicated virtual simulation tool designed for RT available under the CT View&GO platform. Contain Sim&GO.

### General features

- Concurrent display of up to a total of 2 image series (1 single or 1 fused series)
- Data pre-fetching from DICOM nodes and imaging devices, simple import from CDs and DVDs, patient data reconciliation
- Image preview function
- Drag&Drop image loading
- Automatic data transfer to TPS configuration
- DICOM, HL7 and IHE-RO standard compliance
- Create annotations and measurements and share them

### Patient Marking

- Single or multiple reference points or isocenters
- Absolute and relative patient marking
- Automatic marking of structure centroids
- Direct Laser Steering for compatible lasers<sup>2</sup>
- DICOM and text file data exchange with lasers
- Virtual Laser View for display of laser lines on 3D patient model (VRT)
- Patient marking on any supported image type
- One-click breast isocenter placement with automated contouring

### Contouring Features

- User configurable organ templates based on a subset of the FMA (Foundation Model of Anatomy) for interoperability between IT systems
- Parallel contouring: contouring performed on any image is reflected on all other images
- Semi-automatic freehand contouring 2D, 3D
- Smart 2D/3D Nudge
- Contour on any arbitrary plane including oblique planes
- Organ algebra (union, intersection, exclusion)
- Symmetric and asymmetric structure growth or contraction
- Multiple structure set support (1 per image series)
- Molecular imaging data such as PET, thresholdbased and skin, gray value-based segmentation
- Visualization of previously drawn structures on the current image series

### 4D data management

- 4D phase splitting
- tMinIP, tMIP, AverageCT generation
- Cine-loop
- ITV generation
- Quantitative assessment of 3D tumor trajectory and amplitude and semi-automatic calculation of the midventilation phase
- Control the patient marking workflow with the RT dedicated tablet and avoid unnecessary switching between different interfaces to enter laser coordinates.

### Beam Placement

- Beam Placement including DRR, Source to Distance and beam templates
- Automated beam shaping based on RT structure

<sup>1</sup> Optional

<sup>2</sup> Available for following LAP lasers: DORADO 1, 3, 4, DORADOnova 1, 3, 5

# Radiation Therapy System Software and Hardware

## DirectDensity<sup>1,2</sup>

DirectDensity images enable kV-independent dose calculation on the treatment planning system. Personalize your scan and benefit from a patient-specific kV selection with improved soft-tissue contrast while keeping a standardized workflow without the need for additional calibration curves.

## RT table and overlay<sup>1</sup>

- 227 kg patient table RT with 227 kg multi-index RTP overlay
  - Multi-indexing with Varian and Elekta indexing
  - Light weight overlay
  - TG-66 compliant
- 
- 307 kg patient table RT with 307 kg multi-index RTP overlay
  - Multi-indexing with Varian and Elekta indexing
  - Light weight overlay
  - TG-66 compliant

## Respiratory Motion Management<sup>1, 3</sup>

- Various acquisition modes and protocols accommodate for a wide range of respiratory patterns and workflows.
- Extended scan time capabilities up to 300 seconds
- Supports retrospective modes including phase and amplitude reconstructions
- Supports the automatic creation of temporal MiniIP (tMinIP), temporal MaxIP (tMaxIP) and the easy generation via reconstruction of an Average CT, to evaluate respiratory motion
- Ability to automatically detect synchronization points
- User-selectable number and placement of reconstruction bins up to 1% recon
- Quantitative 4D assessment of 3D tumor trajectory and amplitude and semi-automatic calculation of the midventilation phase for RT available under CT View&GO platform.

## FAST 4D<sup>1, 4</sup>

FAST 4D streamlines your 4D CT workflow by automatically setting the optimal scan parameters based on the patient's breathing rate. The direct online connection between the CT and a gating device over the Varian RGSC online interface or the ANZAI interface allows to display and analyze the breathing rate in real time.

## Gating interfaces<sup>1</sup>

### Varian RGSC interface

The online mode allows for retrospective gating

### ANZAI interface

The online mode allows for retrospective gating

### Open interface

For retrospective gating with a number of supported gating systems

<sup>1</sup> Optional

<sup>2</sup> DirectDensity reconstruction is designed for use in Radiation Therapy Planning (RTP) only. DirectDensity reconstruction is not intended to be used for diagnostic imaging.

<sup>3</sup> Requires an interface to connect to one of the many compatible third-party gating devices, like VARIAN RGSC or ANZAI.

<sup>4</sup> Requires online mode and Respiratory Motion Management

# Image Quality

## Low-contrast Resolution

Low-contrast resolution is the ability to see ...

- a small object
- with a certain contrast difference
- on a particular phantom
- with a particular dose (CTDI<sub>vol</sub>)

## Phantom CATPHAN (20 cm)

### Object size

5 mm

### Contrast difference

3 HU

### CTDI<sub>vol</sub> (32 cm)

10.75 mGy

### Technique

1.0 s, 10 mm, 120 kV

## Isotropic Resolution

Isotropic voxels using Siemens Healthineers' proprietary SureView technology

### Isotropic resolution

0.33 mm

## High-contrast Resolution

- 2% MTF 15.1 lp/cm ( $\pm 10\%$ )
- 10% MTF 14.6 lp/cm ( $\pm 10\%$ )
- 50% MTF 12.0 lp/cm ( $\pm 10\%$ )

### Technique

- Tungsten wire in air
- 160 mA, 120 kV, 1 s, 5 mm

## Homogeneity

Cross-field uniformity in a 20 cm water phantom

- Max.  $\pm 4$  HU<sup>1</sup>
- Typ.  $\pm 2$  HU

Phantom positioned near center of rotation

## Dose, CTDI<sub>100</sub> Values mGy/100 mAs

Phantom		kV	kV	kV	kV
Ø		70	80	110	140
16 cm	A	3.8	5.9	14.6	25.8
	B	4.3	6.4	15.3	26.6
32 cm	A	0.9	1.5	4.3	8.3
	B	2.2	3.3	8.5	15.3

A: at enter

B: 1 cm below surface

### Technique

- PMMA-Phantom
- Absorbed dose for reference material air
- Expected deviation:
  - $\pm 10\%$  without Split Filter
  - $\pm 20\%$  with Split Filter
- Max. deviation:
  - $\pm 20\%$  without Split Filter
  - $\pm 30\%$  with Split Filter

The actual exposure values, such as CTDI<sub>100</sub>, CTDI<sub>w</sub>, CTDI<sub>vol</sub>, and DLP, may deviate from the values displayed at the scanner and from the values stated here.

The linearity of the radiation output (linearity of measured dose related to displayed mAs) is  $\pm 10\%$

<sup>1</sup> Max. HU value also for 30 cm phantom

# Installation

## Components

Dimensions	Height (mm/inch)	Width (mm/inch)	Length (mm/inch)	Weight (kg/lbs)
Gantry	≤ 1,860/73.2	≤ 2,250/88.6	≤ 840/33.1	≤ 1,400/3,086
CT patient table (227 kg)	≤ 950/37.4	≤ 700/27.6	≤ 2,480/97.6	≤ 500/1,102
CT patient table (307 kg) <sup>1</sup>	≤ 950/37.4	≤ 700/27.6	≤ 2,560/100.8	≤ 500/1,102
RT patient table <sup>1</sup>	≤ 950/37.4	≤ 700/27.6	≤ 2,480/97.6	≤ 500/1,102

### Power Supply

**Nominal voltage ± 10%**  
380–480 V

**Nominal line frequency ± 10%**  
50; 60 Hz

### Power Consumption

**Max. power consumption**

- ≤ 115 kVA
- ≤ 100 kVA with Cos Phi Inductor<sup>1</sup>

**Standby**  
≤ 3 kVA

### Power Consumption according to COCIR and GPP

Use scenario 24-hour power consumption<sup>4</sup>

**Off<sup>2</sup>**  
16.6 kWh

**Low power<sup>3</sup>**  
17.5 kWh

**Idle (stand-by)**  
32.4 kWh

### Protection Against Input Power Instability

**Controllers**  
20 ms

**syngo Acquisition Workplace**  
3 min, with UPS<sup>1</sup>

**Frequency stability**  
± 5% at 50 and 60 Hz

### Sound Design

**Standby**  
55 dB(A)

**Peak**  
67 dB(A)

### Electromagnetic Compatibility

This product is in compliance with IEC 60601-1-2 and fulfills CISPR 11 Class A.

### Room Environment

**Temperature range**  
18–30°C / 64.4–86°F

**Relative air humidity without condensation**  
20–75%

**Heat dissipation  
(gantry, table and integrated computers)**  
≤ 7.4 kW scanning

### Surface Area for Installation<sup>2</sup>

**System footprint (surface area covered by gantry and moving table top)**  
4 m<sup>2</sup> / 43 ft<sup>2</sup>

**Flexible room design minimum requirement**  
12 m<sup>2</sup> / 130 ft<sup>2</sup>

<sup>1</sup> Optional

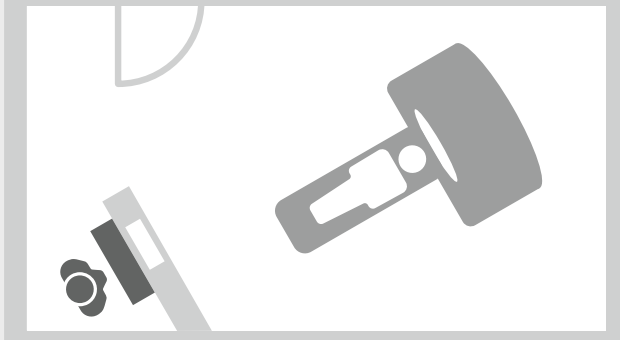
<sup>2</sup> With wall-switch

<sup>3</sup> System off


<sup>4</sup> Values may vary approx. +/- 3% due to specific system conditions, for example of UPS, etc.

# Installation

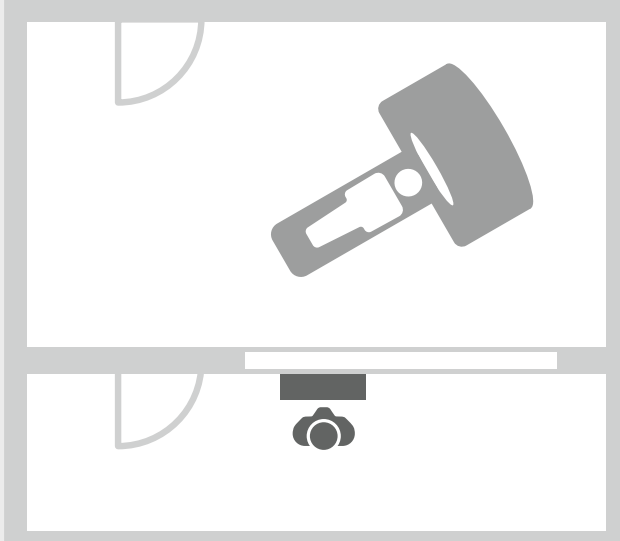
## Flexible Room Concepts<sup>1</sup>



Follow the "niche" concept to work in the examination room.



Position the workstation outside the room, e.g., in the corridor.



Minimize the room requirements of a separate control room.

<sup>1</sup> Subject to local regulations. Safety distances must be checked according to country specific requirements..

**International version.**

**Not for distribution or use in the U.S.**

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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.

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