

Flash speed. Lowest dose.



Flash speed. Lowest dose.

SOMATOM Definition Flash

Answers for life.

SIEMENS

SOMATOM Definition Flash



Siemens CT Vision



Siemens CT Vision

The justification for the existence of the entire medical industry is, of course, better healthcare for all patients. But the realities of clinical routine often make this simple-to-understand goal quite difficult to realize: stay within budgets, reduce hospital stays, speed up time to diagnosis, and deal with personnel issues while maintaining high clinical standards and volume/throughput. At the same time, patients demand better and faster results.

Your benefits

In order to meet our share of responsibility in addressing these challenges, Siemens, from the earliest stages of research, product development and design, relies upon the advice and recommendations of external medical experts to determine our focus – and this focus has been on the needs and demands of our end users. In this way, our products have been able to make a welcome difference for you.

Leading innovation

In addition, Siemens has always been a visionary company believing that even the farthest technical horizons were

temporary and could be surpassed with consistent dedication to improved health care. This visionary approach, backed up by the largest R&D budgets in the healthcare industry, has made Siemens the undisputed innovation leader in CT over the last 30 years. The results are amazing innovative improvements such as Dual Source CT and Adaptive Scanning.

Leading patient care

Over 500 institutions worldwide have taken this opportunity to improve patient health care and push their clinical boundaries up to a higher level utilizing Dual Source CT. These installations have already proven themselves in speed and



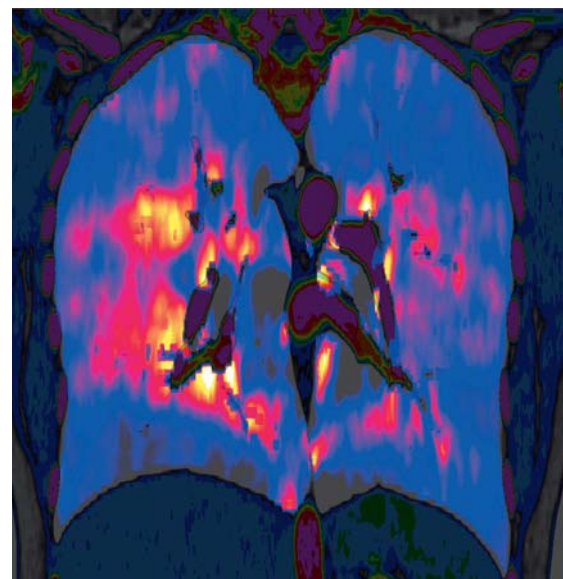
patient care – as well as excellent financial investments that will enjoy a long life in all clinical applications – especially in cardiac scanning.

Flash speed. Lowest dose.

Now, with the introduction of the SOMATOM Definition Flash, we took on CT's most pressing challenge and made dose reduction the centerpiece of our research. Its core innovation – the revolutionary Flash Spiral – can be summarized in four words: Flash speed. Lowest dose. The new SOMATOM Definition Flash was therefore designed specially to make CT exams much healthier for your patients.

| | |
|---------------------------------|----|
| Siemens CT Vision | 4 |
| SOMATOM Definition Flash | 8 |
| Split-second thorax | 10 |
| Sub-mSv heart | 18 |
| Single dose Dual Energy | 26 |
| Organ-sensitive dose protection | 34 |
| Workflow | 42 |
| Customer Care. Life. | 44 |







Flash speed

The SOMATOM Definition Flash opens a door to new levels of patient friendliness with the speed to cover the entire thorax in less than a second – if necessary even without a breath hold.

A whole body scan requires less than 5 seconds, while for perfusion or dynamic vascular imaging, long range scans become routine and gated chest CTs become sub-second procedures. Your patients will be off the table faster than ever before and can go back with positive feelings about their scan experience.

Now, even demanding patients, i.e. obese and trauma patients, restless children, etc. will hardly cause a ripple in your daily routine. All can be scanned quickly and efficiently.

Lowest dose

Maybe even more important – and impressive – is the incredible reduction in dose for all scans, resulting, e.g. in dose down to sub-mSv for cardiac imaging. In its second generation, Dual Energy automatically provides a second contrast for the best possible diagnosis without

extra dose. At the same time, X-CARE allows protecting individual organs and the most radiation-sensitive body regions – for example, female breasts – by accurately and efficiently minimizing exposure.



The image shows a close-up of a medical device control panel, specifically a CT scanner. The panel is light gray with horizontal ridges. On the left, there is a red emergency stop button and a small white icon. The text "SOMATOM Definition Flash" is printed on the panel. A large, semi-transparent white "Flash" is overlaid on the right side of the image, and the full name "SOMATOM Definition Flash" is written in blue at the bottom.

SOMATOM
Definition Flash

Flash

SOMATOM Definition Flash



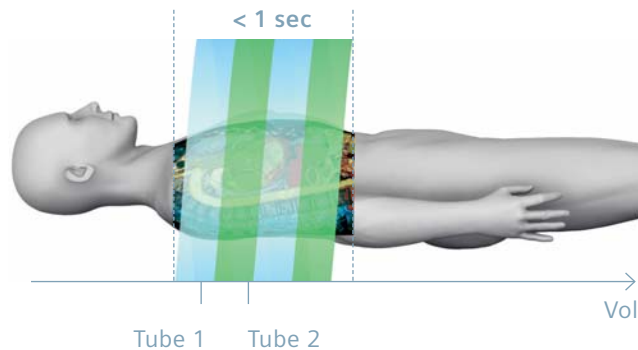


Split-second thorax

How often has your daily routine been interrupted or delayed by fragile, sick, or trauma patients who cannot hold their breath or become impatient with normal scan procedures? The answer to this question is what has motivated us to design the world's fastest CT, combining Dual Source capabilities with our patient-friendly Flash concept. Scan times are no longer a consideration. Whether routine patients, difficult adults or young children, the scan is complete in a flash.

Introduction

Split-second thorax



Body imaging

The SOMATOM Definition Flash speed makes possible an entire thorax scan performed in only 0.6 seconds, making the frequent problem of motion artifacts in the lower lobes, when performing PE studies, a thing of the past. And if the patient cannot hold the breath for even a moment, is intubated, or in critical condition, the scan speed is fast enough to image the thorax without any breath hold. As an added benefit, this amazing speed freezes the heart, offering crystal clear imaging of the coronary arteries with a true temporal resolution of 75 ms, thus enabling sub-second triple rule-out with 80% less dose.

Fastest trauma

For several years now, CT has been the ideal modality for trauma cases. However in the most severe cases, the time required to produce useful images often placed the patient at risk. In these cases the surgeons were often forced, in the patients best interest, to proceed without the assistance that CT could have provided.

But today, when every second counts, Flash trauma scanning without the need for a topogram makes a critical difference. Imagine scanning one meter in 2 seconds, or the whole body in 4–5 seconds.

With Flash speed, scan time is no longer an issue. In addition, the 78 cm bore allows almost unrestricted access to the patient and table options include a multi-purpose table with a dedicated trauma tabletop.

Long-range dynamic scanning

Previously, limited detector coverage was a major bottleneck in acquiring 4D information. Even the addition of increasing detector elements did not adequately solve this problem because imaging remained limited to the width of the detectors themselves. But today, the SOMATOM Definition Flash opens new dimensions for functional 4D imaging by combining the unique Adaptive 4D Spiral with Flash speed, introducing Adaptive 4D Spiral Plus for

long-range dynamic imaging of up to 48 cm. It enables the visualization and evaluation of the entire thoracic aorta in separate phases by capturing the arterial and venous phase in a single scan. So you're able to not only delineate aneurysms and other vascular diseases, but also to identify the source of bleedings or assess venous thrombosis. It provides full coverage of any organ in 4D, be it stroke assessment of the whole brain or perfusion studies of an entire organ – intelligent filtering with 4D Noise Reduction allows acquisition with up to 50% lower dose.

- ▶ Split-second thorax
- ▶ No breath hold required
- ▶ Sharp coronaries even in a fast thorax
- ▶ Triple rule-out with 80% less dose
- ▶ Whole body trauma < 5 sec
- ▶ Down to ½ dose perfusion imaging

How it works

Flash Spiral

Even the most advanced single source CTs are limited in their scan speed by the maximum table feed that can be used and still allow the acquisition of contiguous data. The SOMATOM Definition Flash breaks through this barrier primarily by simultaneously integrating data from a second source during the scan. By combining this Dual Source technology with fastest available hardware components including a gantry that rotates at 0.28 s, a patient table that can handle immense table feeds and ultra-fast data transmission technology makes possible the fastest scan mode in CT history.

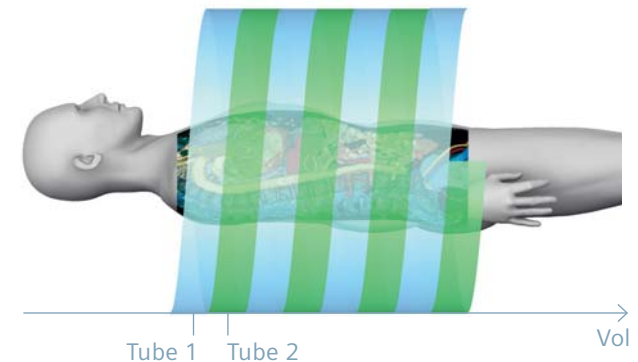
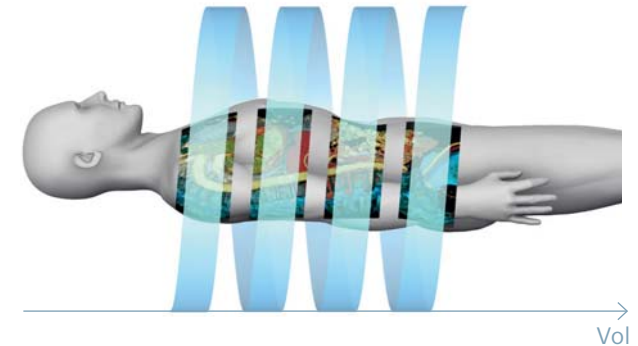
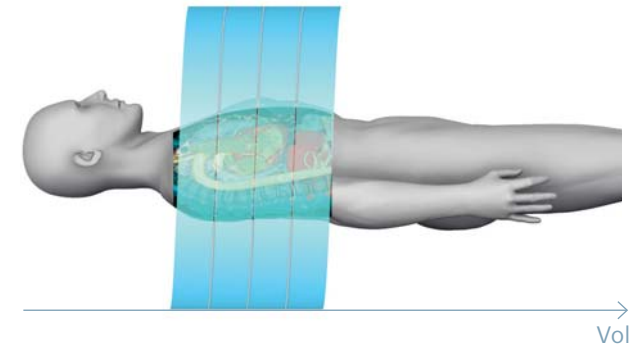
The result is an unprecedented scan speed of 458 mm/s, fast enough to cover an entire body in less than 5 seconds.

Increased patient friendliness

Difficult and/or uncooperative patients, whether obese or young children, are no longer a problem. Additional effects of this technology include increased patient care and comfort.

Single source CT requires slower table feeds to prevent gaps in the acquired volume (top, center).

Dual Source CT combines the data from 2 detectors for faster table feeds above a pitch of 3 (bottom).



How it works

Adaptive 4D Spiral Plus

In 2007, Siemens first introduced the revolutionary scan mode, Adaptive 4D Spiral, overcoming the then existing limitations of dynamic CT studies. With conventional CT and its restricted coverage, whole organ perfusion studies or long-range phase resolved CTA studies, were just not possible. The industry's initial attempts to conquer these limitations focused on detector size but made no significant progress in covering entire organs.

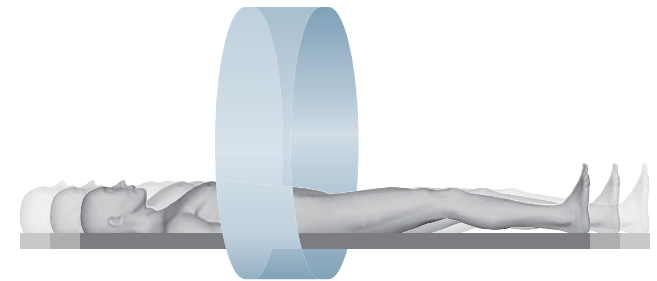
Up to 48 cm dynamic scanning

Today, through our innovative Adaptive 4D Spiral Plus, we apply a continuously repeated bi-directional table movement, moving the patient smoothly in and out of the gantry over the desired scan range. It's how we're able to overcome the coverage limitation of a static detector design.

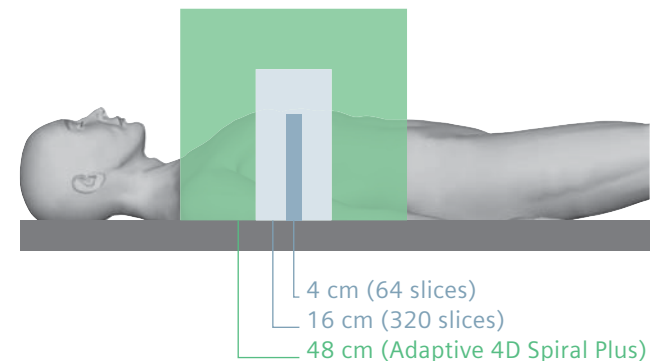
For example, the SOMATOM Definition Flash can perform a phase resolved CTA study over a length of 480 mm, providing a clear separation of arterial and venous phase.

4D Noise Reduction

Now for the first time in perfusion studies, you can cover virtually any organ in 4D, such as a complete stroke assessment of the entire brain. An exciting further development, 4D Noise Reduction, makes it possible to significantly improve image quality with no increase in dose or, alternately, reduce dose up to 50 % without compromising image quality.



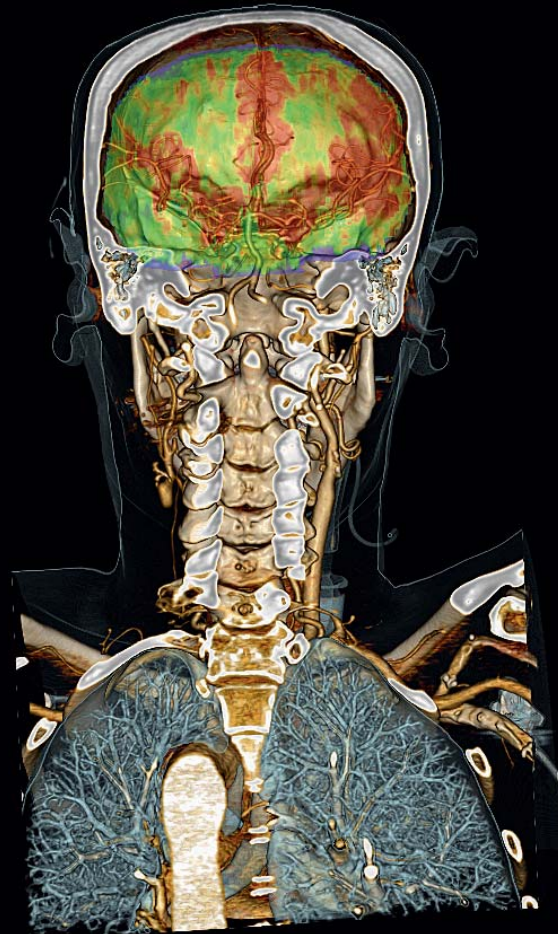
Repeated bi-directional table movement for smooth spiral shuttle scan.



Clinical Images



Flash Spiral scan for triple rule-out without breath hold
in less than one second – at a dose of only 1.9 mSv



See the entire disease and its root cause –
fusion of Brain Volume Perfusion and CTA



B 100 W 3118
O 56 C 920

Entire pediatric thorax in only 370 ms – confirm cystic fibrosis without the need for breath hold



Adaptive 4D Spiral Plus shows detailed status of vascular filling in presence of aortic dissection – both renal arteries are supplied by true lumen





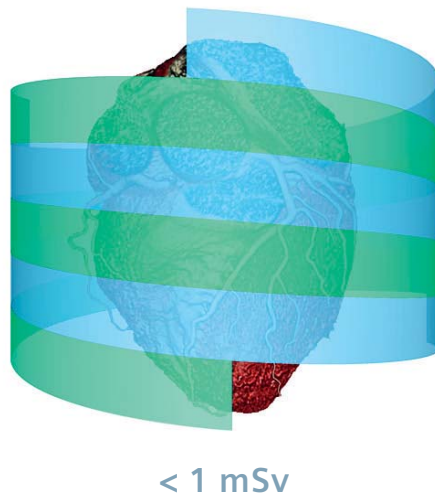
Sub-mSv heart

Under most frequent conditions, conventional single source cardiac CT depends upon high dose except with extremely stable and low heart rates. For routine cases, however, the dose required in less than ideal circumstances is significantly higher than cardiac cath, that normally requires at least 5 mSv for pure diagnostic procedures. Therefore, cardiac CT has been difficult to justify, especially for younger patients and females. Siemens introduction of Dual Source CT in 2005 has radically improved this situation by reducing dose requirements regardless of heart rate.

But, when Dual Source technology is combined with Flash speed, the possibilities for cardiac imaging become even more impressive. The power of two tubes allows the industry's fastest temporal resolution of 75 ms, in addition, a table speed of 458 mm/s makes scanning the heart instantaneous – if necessary even without breath hold. Most important, it allows reducing dose to an absolute minimum, minimizing dose-risk for the patient.

Introduction

Sub-mSv heart



Low dose cardiac imaging

With the SOMATOM Definition Flash, discussions regarding high dose versus low dose cardiac scanning will change, because even under unfavorable conditions the patient exposure with the SOMATOM Definition Flash is less than what is required for diagnostic cardiac cath. High dose cardiac CT no longer exists. With Flash Spiral, dose values down to under 1 mSv – especially important for the most dose sensitive patients – are now possible in every day's routine. Such low values can open realistic discussions about the use of CTA for early detection of coronary artery disease, taking advantage of its ability to scan the entire heart in only 250 ms ... at nearly quarter beat. And, for less favorable conditions, such as high heart rate or arrhythmia, the Flash Cardio Sequence

still allows dose below diagnostic cath and even provides ejection fraction.

All heart rates

The capability of Dual Source CT to produce diagnostic outcomes, even in the presence of high heart rates and arrhythmia, has been repeatedly proven by a wide range of clinical studies. The SOMATOM Definition Flash brings this capability to the next level, but with unprecedented temporal resolution of 75 ms. This permits imaging the heart without the clinical, workflow and financial aspects of utilizing beta-blockers when using the Flash cardio sequence. The realities of healthcare today often do not permit the interruptions in workflow, longer patient preparation times and use of personnel required caused by the use of beta-blockers. Not to mention the fact that

some patients should not receive beta-blockers, e.g. in certain cases of pulmonary disease. All this makes the Flash Cardio Sequence the industry's most versatile low dose mode for cardiac imaging.

Heart Perfusion Scanning

The SOMATOM Definition Flash takes its temporal resolution beyond coronary imaging, by combining high speed and smart scan concepts without the need for ultra-wide detectors. It applies its fast temporal resolution to every single image when scanning the myocardium. This smart shuttle mode visualizes perfusion defects especially with high heart rates, strongly suggesting that the SOMATOM Definition Flash will offer its users the opportunity to perform stress perfusion studies.

Widest range in cardiac imaging

The SOMATOM Definition Flash assures today's widest range of cardiac imaging capabilities, while providing true temporal resolution of 75 ms. It covers functional imaging at high heart rates as well as low dose coronary scanning down to sub-mSv patient exposure. It opens the doors to patient-friendly cardiac imaging with the shortest possible breath hold, or even no breath hold at all, while applying the lowest known possible dose.

All this will make the SOMATOM Definition Flash the cornerstone of a successful cardiac CT program in your institution.

- ▶ Sub-mSv scan for early detection allows 92.5% dose reduction*
- ▶ 75 ms true temporal resolution
- ▶ All patients, all heart rates, no β -blocker
- ▶ Heart Perfusion Scanning

* compared to a mean dose of 12 mSv, as in Hausleiter et al, JAMA 2009 Feb 4;301(5):500-7

How it works

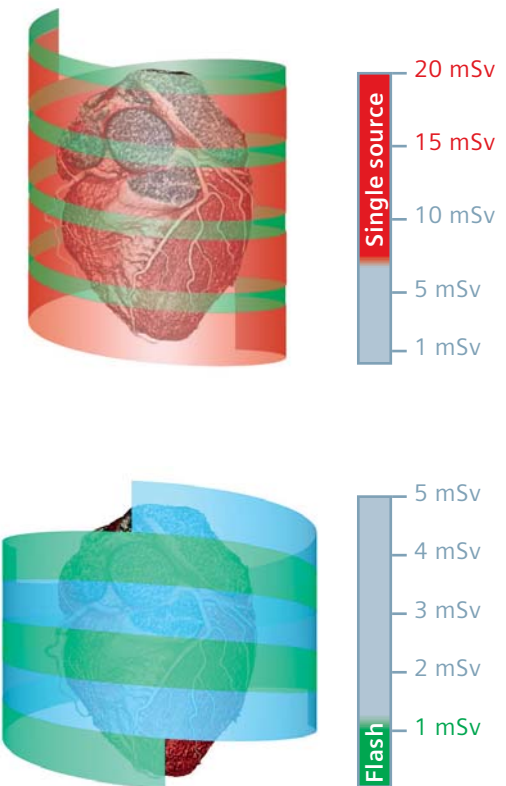
Flash Spiral Cardio

Our heartbeat-controlled, revolutionary scan mode Flash Spiral Cardio, collects data projections of the entire heart in ultrafast 250 ms within a single diastolic phase. This performance is a direct result of having 2 detectors, simultaneously collecting information. Combined with unprecedented table feeds of 458 mm/s, it achieves a true temporal resolution of 75 ms for each individual image, made possible also by the rotation speed of 0.28 s. This incredible table

speed used with single source scanners would create gaps in the data volume, making the complete dataset useless.

Dose down to below 1 mSv

On the other hand, by maximizing speed and thus minimizing overall exposure time, the SOMATOM Definition Flash can reduce dose down to an unprecedented 1 mSv or less.



Single source cardiac spiral scanning requires overlapping data acquisition, resulting in relatively high patient exposure (top).

Flash Spiral with Dual Source CT allows ultra-fast spiral acquisition for maximum dose efficiency (bottom).

How it works

Flash Cardio Sequence

When fully flexible X-ray pulsing meets 75 ms of temporal resolution, the result is the Flash Cardio Sequence, the most versatile low dose cardio scan on the market.

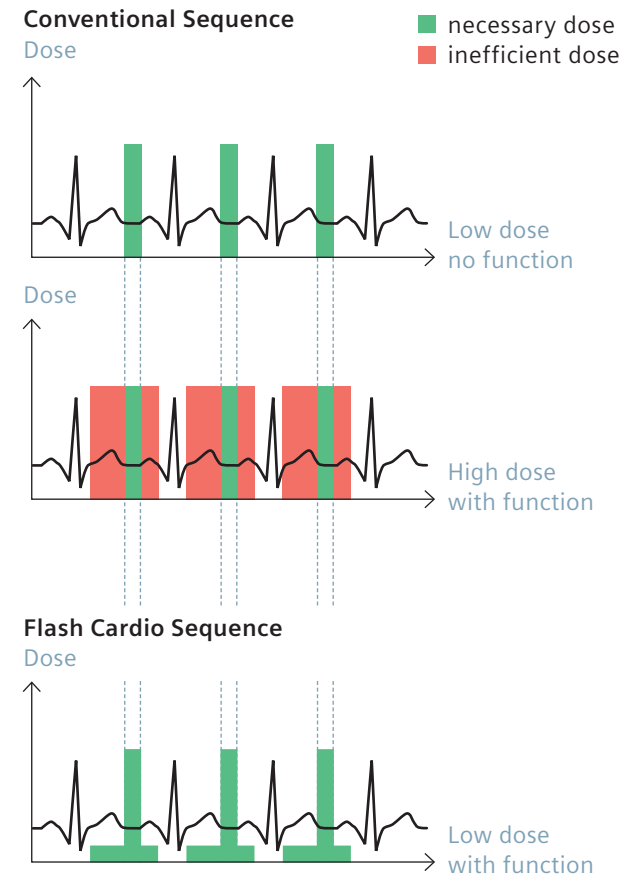
Low dose cardiac for all heart rates

It's an intelligently triggered sequence that shuts off radiation in the systolic phase when not required and dynamically reacts to irregularities during the ECG trace. The real-time ECG monitoring reacts instantly and stops the scan until the heart rate becomes stable again. This arrhythmia compensation method allows for high dose savings and an increased robustness of scan.

For the first time, a step and shoot mode is robust and fast enough to freeze the heart and visualize the coronary arteries even at high heart rates, thus allowing even low dose cardiac CT without the need for beta-blockers.

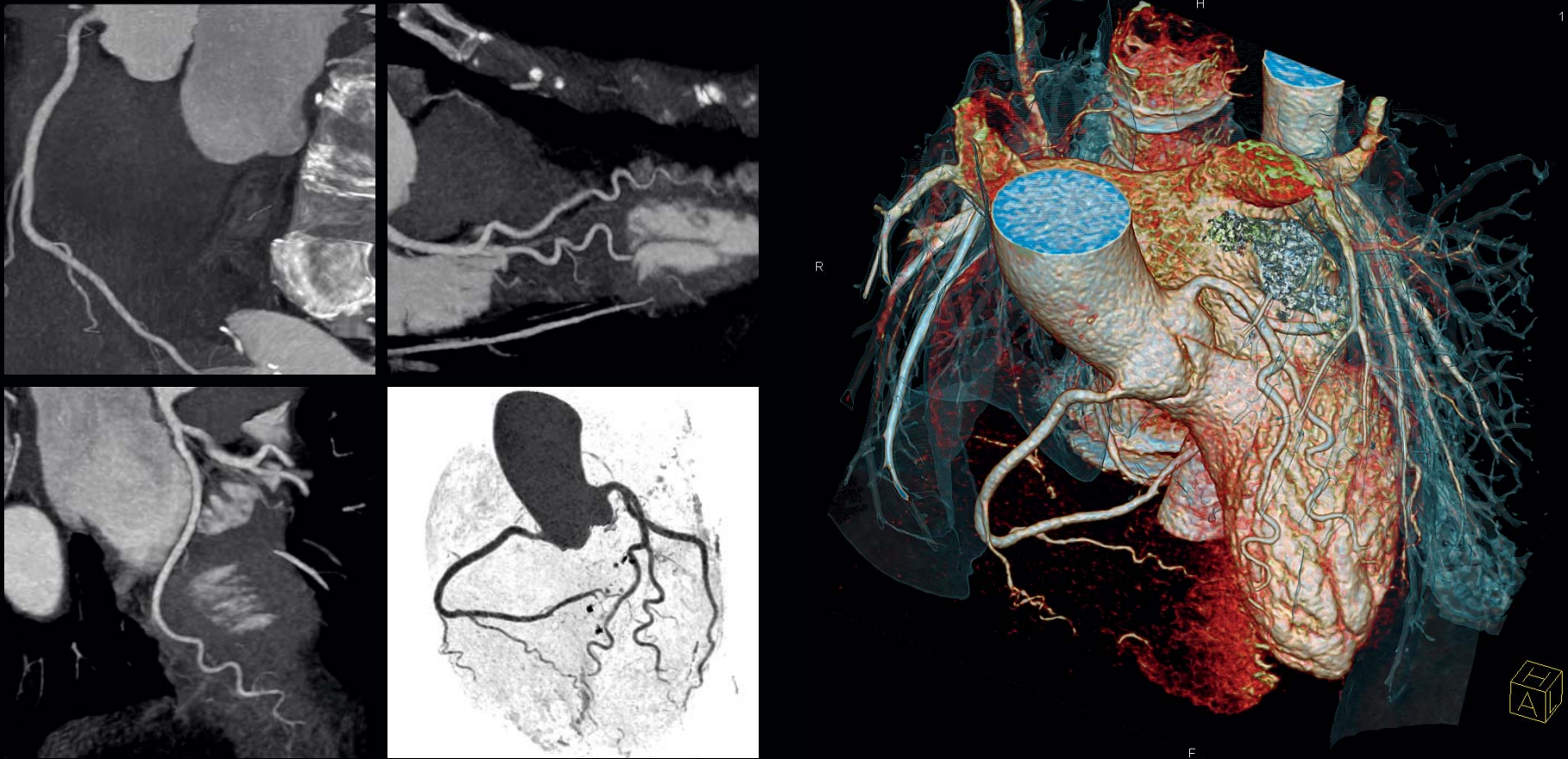
Functional information

And, finally, the Flash Cardio Sequence introduces the Siemens-only dual-step pulsing, that maintains a low dose level during the systolic phase to calculate ejection fraction in addition to coronary imaging. Therefore, the never before possible combination of low dose coronary imaging and functional information now becomes a reality.

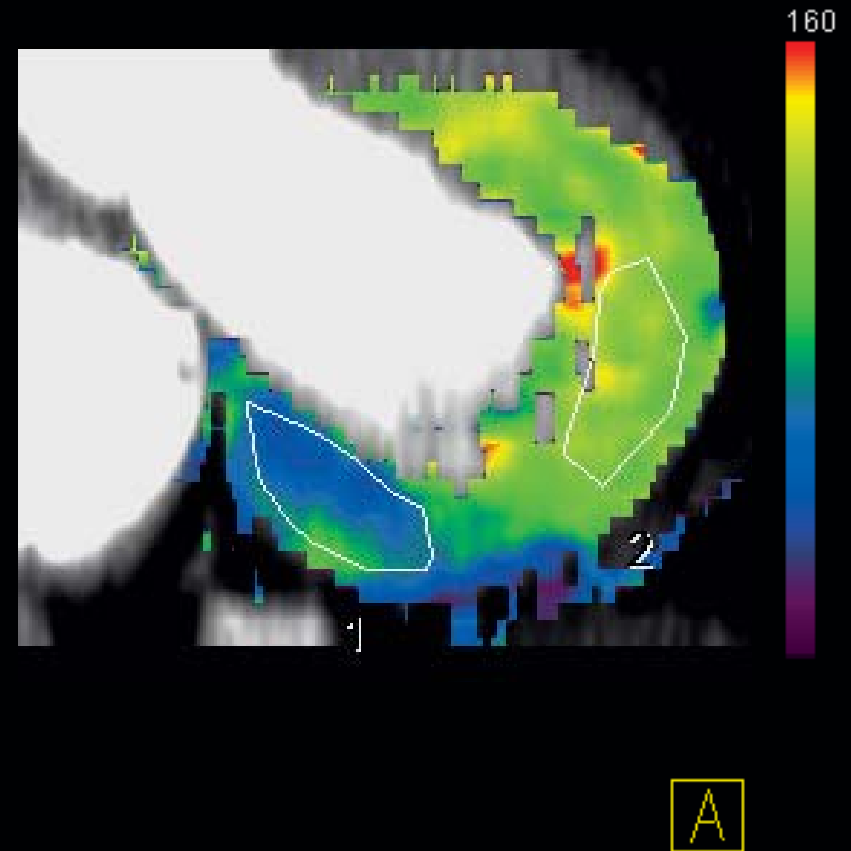
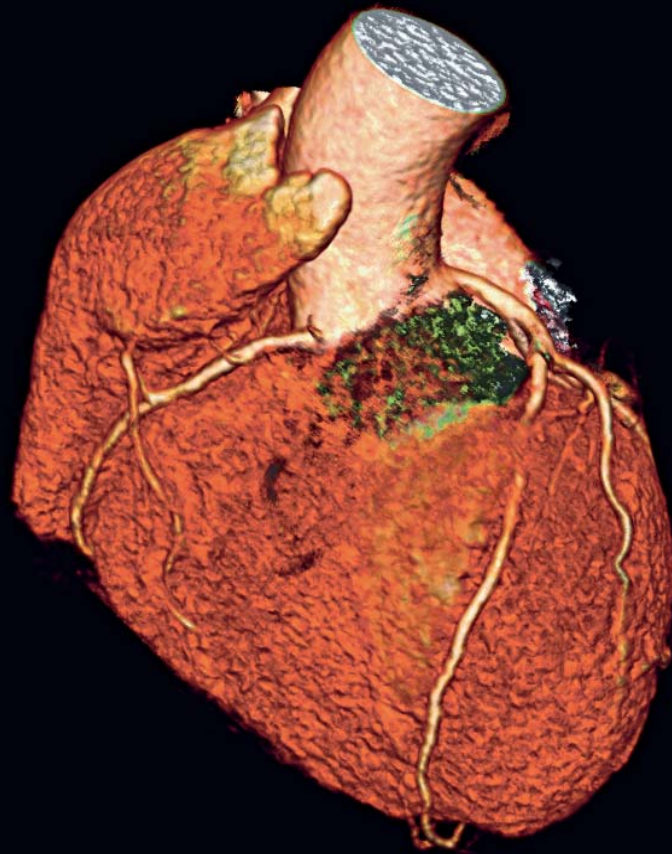


Conventional sequence scans cannot provide functional information while maintaining low dose (top, center). The Flash Cardio Sequence allows to add an additional low pulsing plateau to provide functional information even in low dose scans.

Clinical Images



Rule-out coronary artery disease for early detection and prevention – Flash Spiral CTA in 270 ms with 0.9 mSv



Flash Cardio Sequence scan with 3.44 mSv, heart rate 77-103 bpm – excellent display of all coronary segments, myocardial bridging in left anterior descending artery (LAD)

Systolic image of a triggered heart perfusion scan – hypoperfusion in myocardium with posterior wall defect





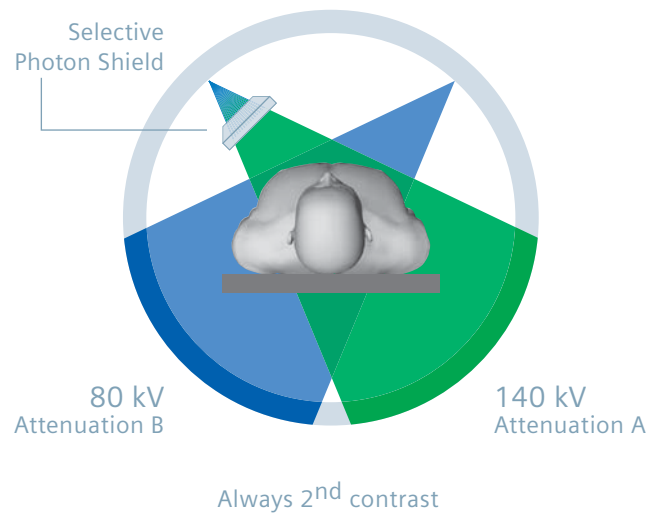
Single dose Dual Energy

Single source CT has always been limited to gray-scale imaging and thus to deliver pure morphological information. Siemens' introduction of Dual Source CT in 2005, represented a quantum development in Dual Energy CT, opening the door to a new world of characterization, visualizing the chemical composition of material, thereby significantly improving diagnostic accuracy and opening possibilities to completely new applications in CT.

The SOMATOM Definition Flash builds upon the same principle of spiral Dual Energy, utilizing two X-ray sources at two different kV levels simultaneously. We have incorporated the knowledge gained from nearly 500 Dual Source installations worldwide into the SOMATOM Definition Flash, the next generation of Siemens Dual Energy imaging. It now becomes possible to dramatically increase energy separation with complete dose neutrality.

Introduction

Single dose Dual Energy



Selective Photon Shield

An important factor in making dose neutrality viable is the development of our new Selective Photon Shield, that blocks unnecessary photons of the X-ray energy spectrum. The result is a much better separation of the 80 kV and 140 kV images, for example, increasing bone-iodine differentiation by up to 80 %. The SOMATOM Definition Flash also features an increased field of view on its second detector that is 25 % larger than was previously possible.

In effect, the Selective Photon Shield assures dose neutrality by avoiding unnecessary patient exposure. Thus it makes Dual Energy as dose-efficient as any single 120 kV scan. This means that all the diagnostic advantages of Dual Energy imaging are now available with the same dose as a single energy scan.

A second contrast in daily routine

Next to dose neutrality the SOMATOM Definition Flash also features the widest range of 12 FDA-cleared applications, bringing second contrast to your daily clinical routine. These applications range from Direct Angio with bone removal to the latest lung nodule characterization. One of many convincing examples is the ability to perform reliable bone and calcified plaque subtraction out of CTA volume data, so that aneurysms in close vicinity to the skull base are identified more easily.

Another concrete example is the possibility to remove iodine content retrospectively, resulting in virtual non-contrast images. Therefore, it is possible to scan at any phase of contrast enhancement and generate non-contrast images afterwards. In many cases this eliminates the need for an initial non-contrast scan, thereby saving dose.

Even without the above-mentioned applications, Optimum Contrast automatically optimizes your images with Dual Energy second contrast and minimum noise, improving diagnostic confidence without additional efforts on your part.

Dual Energy Flash Cardio

Another CT first: the SOMATOM Definition Flash allows scanning the entire heart, and then evaluating the coronaries with a full temporal resolution of 75 ms as well as, in a second reconstruction, visualize perfusion defects in the myocardium, thus combining the maximum speed of Dual Source CT with Dual Energy imaging in a single scan. This has been made possible with our latest reconstruction technology, that allows achieving Dual Source temporal resolution from image components acquired at different energy levels. The result is the ability to enjoy the benefits of Dual Energy Flash Cardio

without the negative clinical, workflow, and financial aspects of utilizing beta-blockers.

Dual Energy workflow efficiencies

Next to unprecedented levels of image quality, Dual Energy imaging also has become faster than ever. With Dual Energy pre-processing, the most common post-processing steps are performed, automatically in the background, as soon as the scan is finished. So when you start your Dual Energy evaluation, typical routines, for example direct bone-removal, have already been completed, saving you time and effort. At the same time, by adding Dual Energy to our thin-client solution *syngo*® WebSpace, Dual Energy images become instantly available to you and your colleagues wherever you need them. To make a second contrast available throughout your entire institution.

- ▶ Always 2nd contrast in daily routine
- ▶ Optimum Contrast in every image
- ▶ No dose penalty
- ▶ Faster and more secure diagnosis
- ▶ Wide range of 12 FDA-cleared applications

How it works

Dual Energy

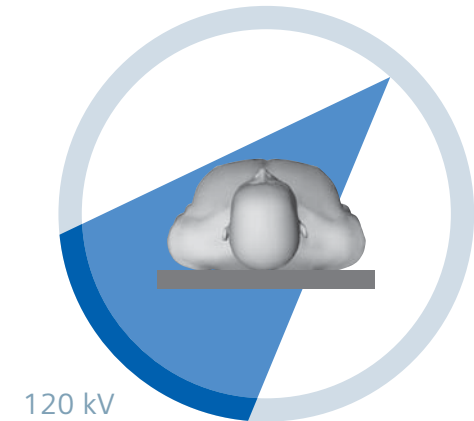
The X-ray tube's kilo voltage (kV) determines the average energy level of the X-ray beam. Changing the kV setting results in an alteration of photon energy and a corresponding attenuation modification of the materials scanned. In other words, X-ray absorption is energy dependent, e.g. scanning an object with 80 kV results in a different attenuation than with 140 kV. In addition, this attenuation depends also on the type of tissue scanned. Iodine, for instance, has its maximum attenuation at low energy, while its CT-value is only about half in high-energy scans. The attenuation of bones, on the other hand, changes much

less when exposed to low-energy scans compared to high-energy voltage examinations.

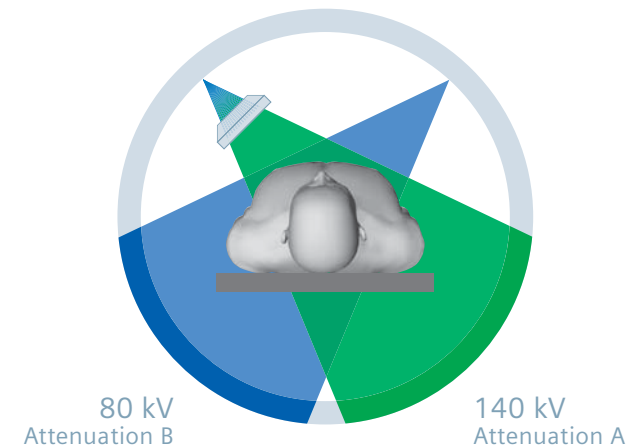
Spiral Dual Energy

Spiral Dual Energy exploits this effect: Two X-ray sources running simultaneously at different energies acquire two data sets showing different attenuation levels. In the resulting images, the material-specific difference in attenuation enables an easy classification of the elementary chemical composition of the scanned tissue. In addition, a fused image is provided for initial diagnosis.

Single source CT



Dual Source CT



Single source CT only provides one energy level for morphology imaging.

Two X-ray sources set to different kV levels allow to simultaneously acquire two data sets at different attenuation levels.

How it works

Selective Photon Shield

Single X-ray source approaches to simulating Dual Energy imaging are limited by using the same source for low and high kV imaging, thus not allowing simultaneous adjustment for the different mA requirements. The result is unavoidably a choice between inferior image quality or excessive dose.

Increased energy separation

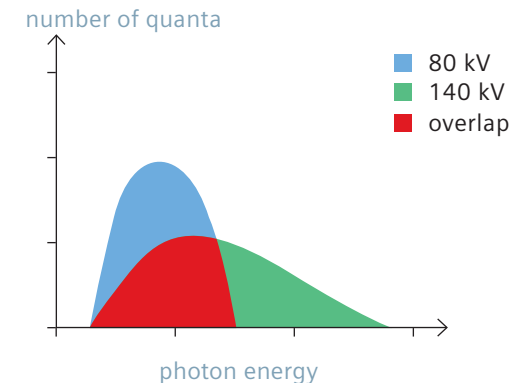
While Dual Source technology already overcomes this limitation, the all new Selective Photon Shield further increases dose efficiency by filtering out unnecessary photons of the high energy X-ray tube. The remaining photon spectrum is therefore better focused and more clearly separated from the photons emitted by the low energy tube. The result is a much better separation of the 80/140 kV images, increasing bone-

iodine differentiation by up to 80% while reducing overall dose. Therefore, 80/140 kV is ideal for head and extremities, especially CT angiographies.

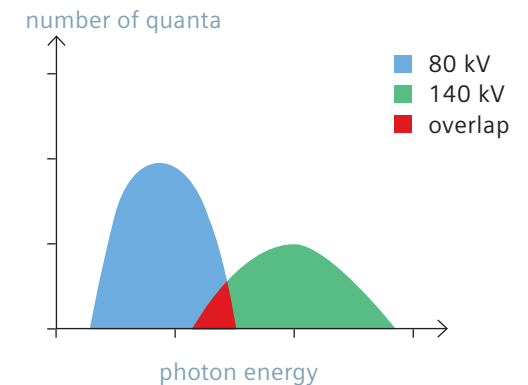
Better dose efficiency

The increased dose efficiency, on the other hand, opens the possibility to use 100/140 kV imaging with still 30% better bone-iodine contrast and more power reserves for cardio, abdomen, pelvis, and larger patients in general.

Without Selective Photon Shield

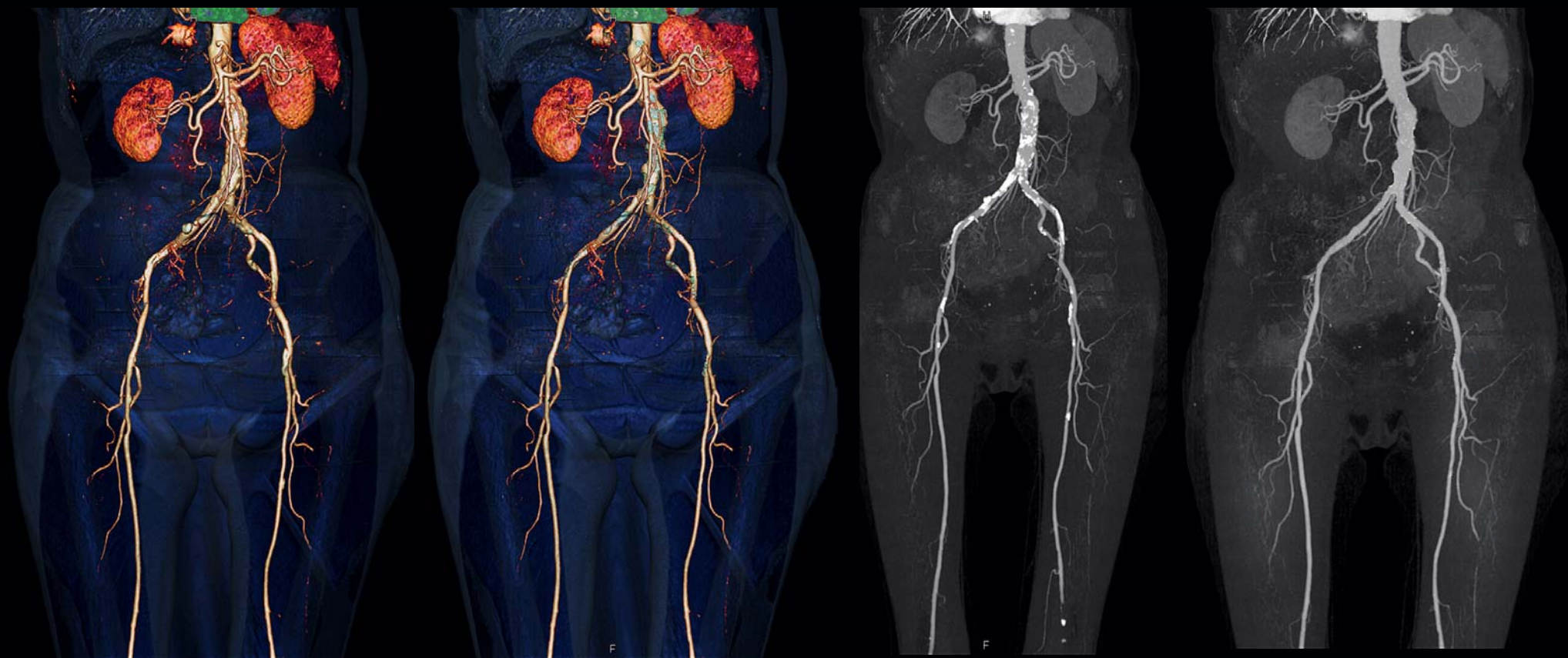


With Selective Photon Shield



The Selective Photon Shield increases energy separation and reduces unnecessary dose by blocking low energy photons out of the high energy X-ray tube's spectrum.

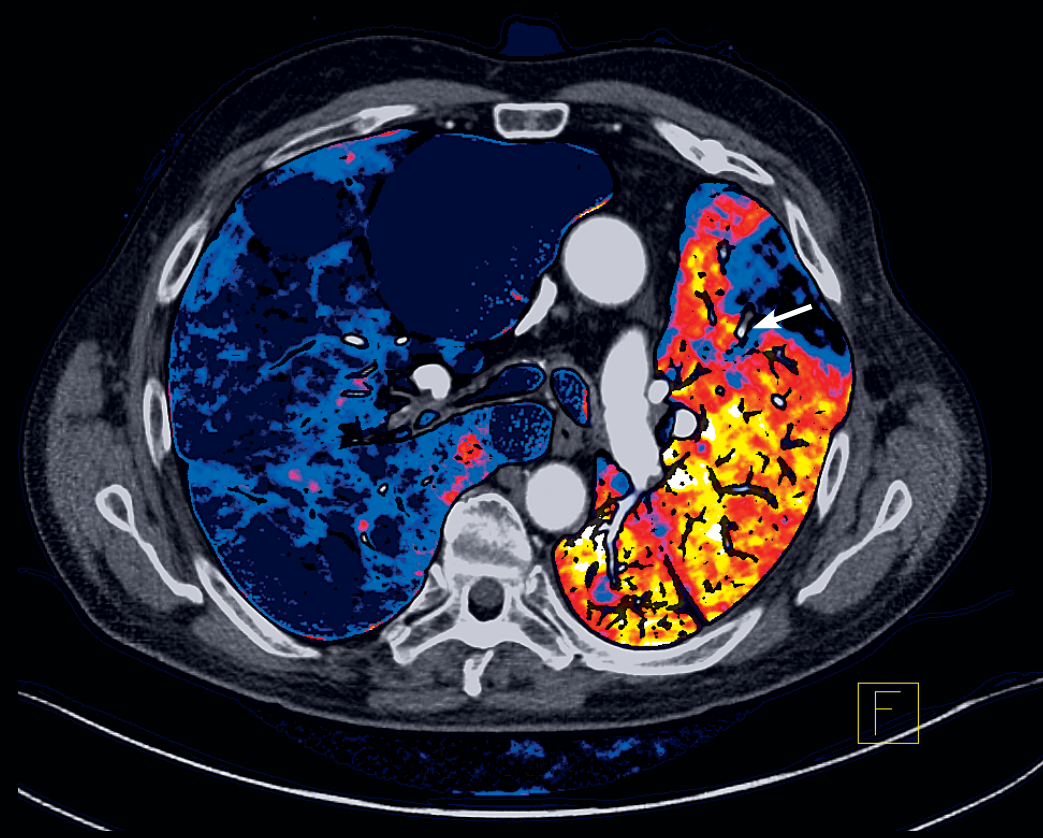
Clinical Images



Fast and reliable removal of calcifications in the entire vasculature with *syngo* Dual Energy Direct Angio (left: VRT image, right: MIP image)



Patient with bilateral polycystic kidneys – Dual Energy CT color coded display shows absent enhancement in multiple hyperdense renal masses. No evidence of malignancy. Improved diagnostic confidence with dual energy CT.



Massive emphysema in right lung, combined with perfusion defect caused by pulmonary embolism in left lung (arrow)





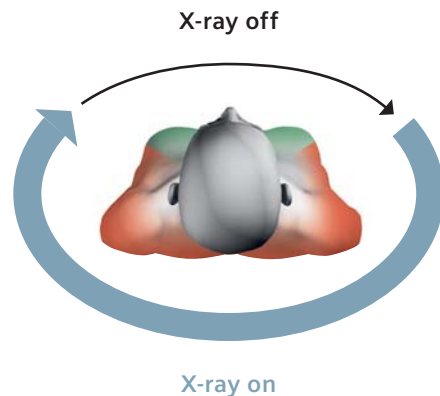
Organ-sensitive dose protection

Increasing patient awareness and safety requirements in the application of X-ray exposure make it necessary when selecting a CT scanner to consider not only the technical features as they exist today, but also developing conditions for the future. Above all, the subject of dose is moving rapidly to the foreground in the decision making process. Dose management is therefore important to both you and your patients. For this reason, Siemens has always set new benchmarks in dose management and reduction.

The cumulative results of our efforts over the years are best reflected in the SOMATOM Definition Flash. Its Adaptive Dose Shield prevents clinically irrelevant dose for spiral examinations and is now supplemented by organ-sensitive dose reduction with X-CARE, as well as unrivaled thorax and cardiac dose efficiency with Flash Spiral.

Introduction

Organ-sensitive dose protection



Specific dose reduction

Previous attempts at dose reduction were very successful but did not specifically take into consideration highly dose-sensitive areas such as women's breasts. Now, the SOMATOM Definition Flash can selectively reduce sensitive-area exposure up to 40% without loss of image quality. This is accomplished by turning off the X-ray tube during those parts of the rotation that would result in the most direct exposure for these areas. We consider this simple and effective solution to be only a first step to solving the

problem of unnecessary over-radiation. For example, abdominal imaging, as a very common examination, is receiving considerable attention.

Adaptive Dose Shield

Introduced in 2007, the Adaptive Dose Shield is our answer to the problem of over-radiation created by the continuous demand for more coverage and the corresponding increase of detector size. Its ability to dynamically block clinically irrelevant pre- and post-spiral dose significantly reduces the possibility of over-radiation. This simply was not possible before. But through the innovative technology of the Adaptive

Dose Shield, we ensure that the only dose applied to the patient is the dose that is clinically relevant. Finally, you use only what you clinically need, with no compromise in image quality.

Iterative reconstruction

One of the most promising approaches for the future of CT presents itself with iterative reconstruction. This method uses multiple iteration steps in the reconstruction of CT data, with every step further eliminating image noise and artifacts. In doing so, the reconstruction

outcome can achieve significantly increased image quality, reduce dose by starting with raw data acquired at lower dose – or a reasonable balance of both. The SOMATOM Definition Flash is ready for the first application of this technology, permitting significant overall improvements in image quality and reduced dose.

- ▶ Lowest dose in all organs
- ▶ Protect radiation-sensitive organs
- ▶ Avoid unnecessary dose
- ▶ Real-time dose modulation
- ▶ Future-proof with iterative reconstruction

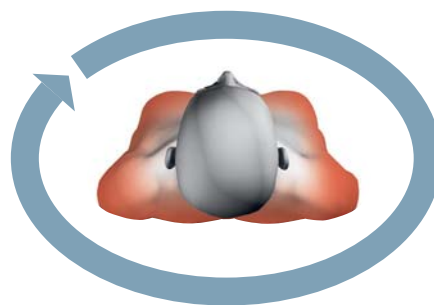
How it works

X-CARE

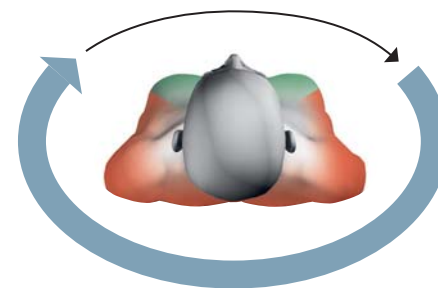
Siemens has recognized the importance of dose-sensitive scanning, especially for female patients, but also when directly radiating the eye lens or the thyroid gland. A simple but effective approach to lower dose for the most dose-sensitive body regions is partial CT scanning, that has been integrated into dedicated protocols of the SOMATOM Definition Flash. It protects these areas from direct X-ray exposure by switching the X-ray tube off for a certain range of projections, while automatically adjusting tube currents for the remaining projections to prevent deteriorating image quality.

Dose reduction up to 40 %

The result is reduced sensitive-area exposure up to 40 % without loss of image quality.



Conventional scanning applies radiation permanently during the full rotation, thus resulting in direct exposure e.g. for the breasts.



X-CARE switches the tube current off within a certain range of projections, minimizing direct exposure for highly dose-sensitive body regions.

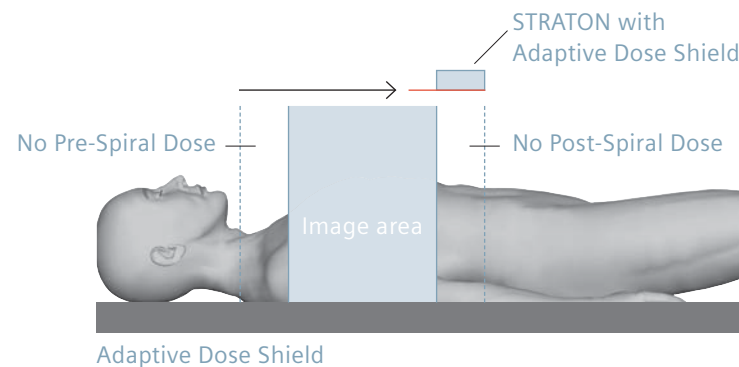
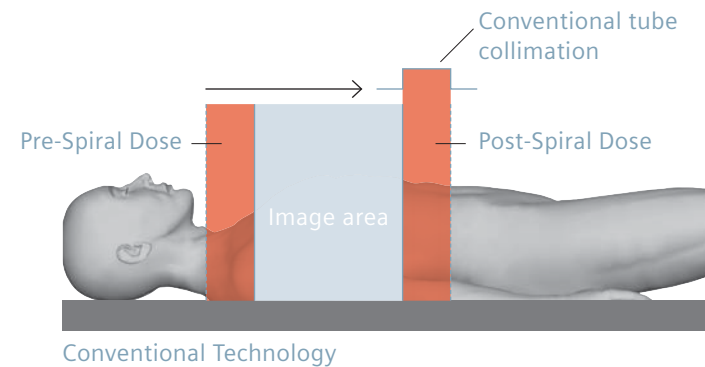
How it works

Adaptive Dose Shield

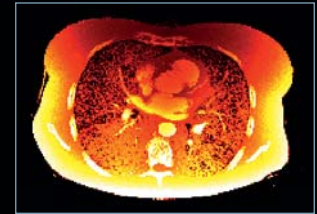
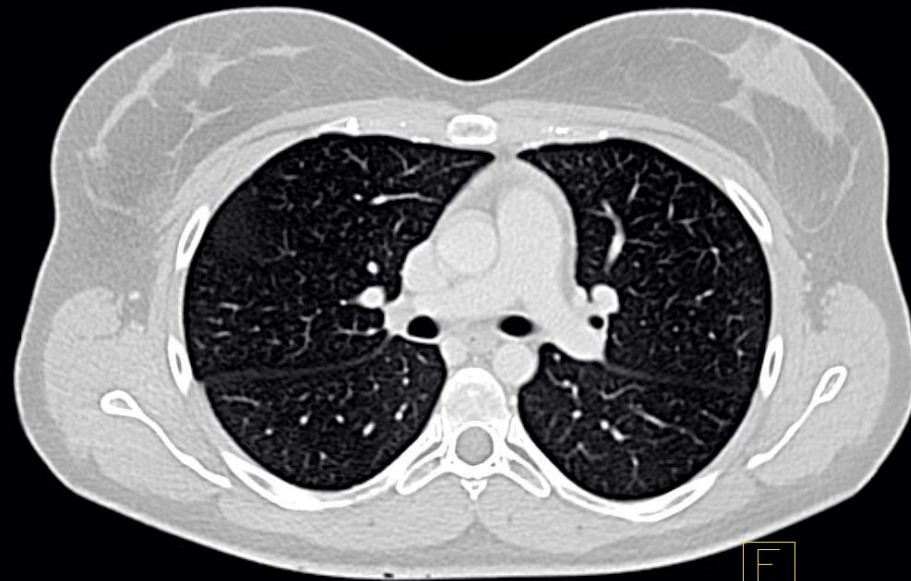
The SOMATOM Definition Flash eliminates pre- and post-spiral over-radiation (marked in red). The Adaptive Dose Shield, which is unique in the CT industry, is part of the innovative STRATON® X-ray tube design. It automatically moves shields into place to block unnecessary dose. The Adaptive Dose Shield dynamically opens at the beginning of a spiral range and then dynamically closes at the end.

Dose reduction up to 25%

Now all clinically irrelevant dose is eliminated, not only for dedicated applications, but for all standard spiral acquisitions. Giving you the ability to save up to an additional 25% of dose in routine exams.



Clinical Images

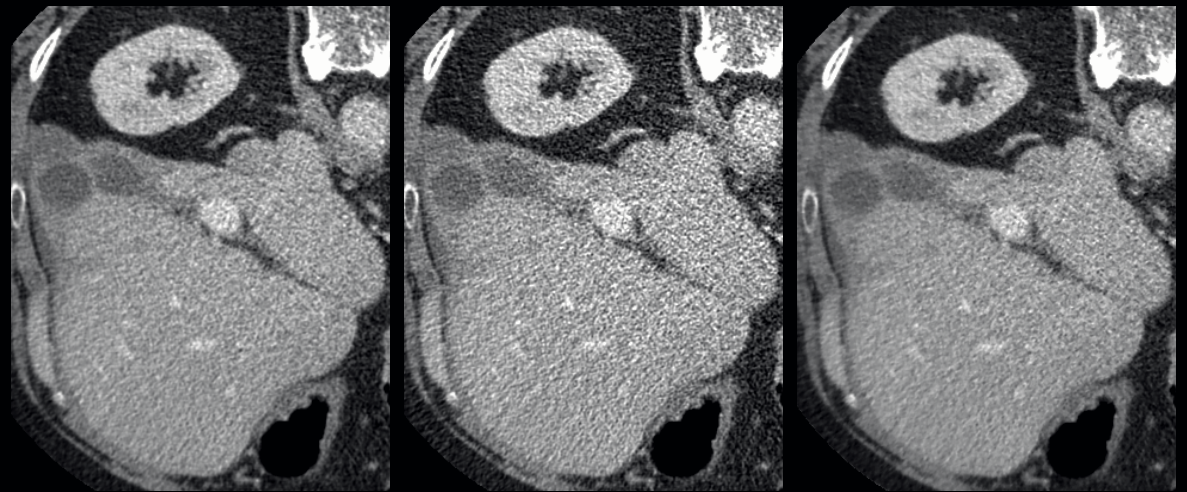


X-CARE reduces direct exposure of dose sensitive organs, e.g. minus 40% for breast tissue – while maintaining a homogeneous image quality over the entire scan field of view

X-CARE dose distribution showing lower dose levels for the breast tissue in red colour



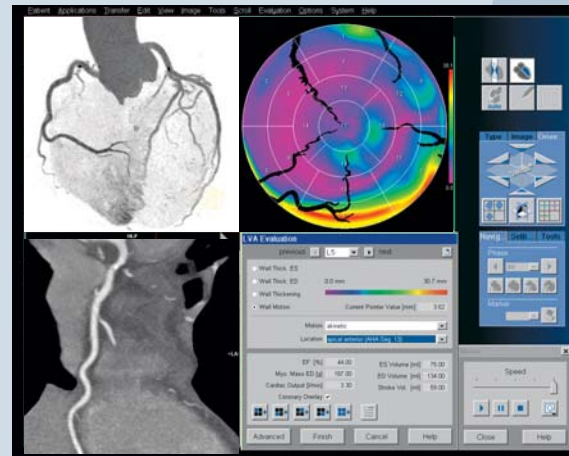
Preserving excellent neuro image quality while reducing dose up to 25% by eliminating unnecessary pre- and post-spiral radiation with the Adaptive Dose Shield



Iterative reconstruction helps to lower the dose at highest image quality. The left image shows the original image. The center image would result on conventional CTs if scanned at 60% lower dose without iterative reconstruction. The right image shows how iterative reconstruction can improve image quality at 60% lower dose.

Integration and teamwork

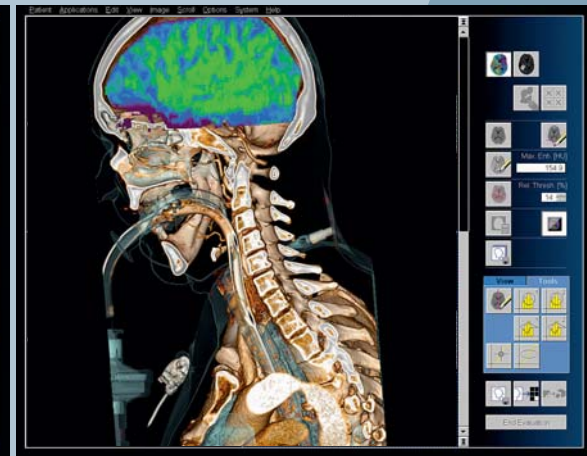
CT Clinical Workplaces



CT Cardiac Engine

From risk assessment to functional analysis.

Synergizing the SOMATOM Definition Flash with the CT Cardiac Engine leads to unmatched speed and accuracy in diagnostic Cardiology. Make use of the automatic data reconstruction and detection of the cardiac phase with the least motion. Perform myocardial perfusion scans even for high heart rates. Benefit from fast, reliable and reproducible QCA and LVA-24/7.



CT Neuro Engine

From dynamic CTA to whole brain perfusion.

Complemented with the CT Neuro Engine the SOMATOM Definition Flash helps to determine a complete status of vascular structures and brain tissue – from scanning to diagnose in less than 10 minutes. Adaptive 4D Spiral Plus allows for 3D Perfusion and a time-resolved 3D Angio in one scan. 4D perfusion studies of the entire brain now can even be applied during night shifts. Everything integrated in a highly automated workflow that you can concentrate on diagnose only.

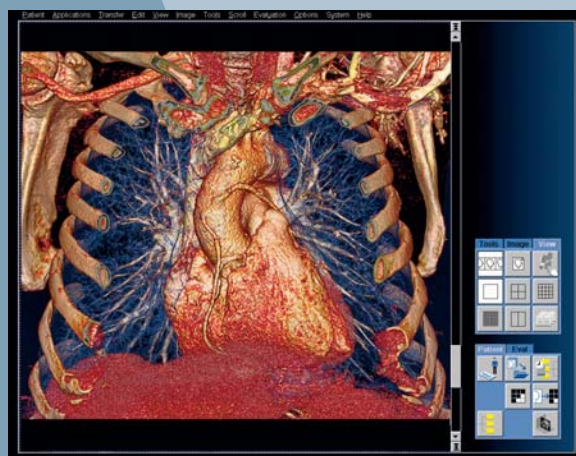
Client Server Access

For multiple users at the same time.

The SOMATOM Definition Flash delivers unprecedented diagnostic information. With syngo WebSpace you can instantaneously utilize it from any workplace in the department or at home. It is fully integrated into your workflow and can be used by multiple users at the same time. Experience a new dimension of integration and teamwork.



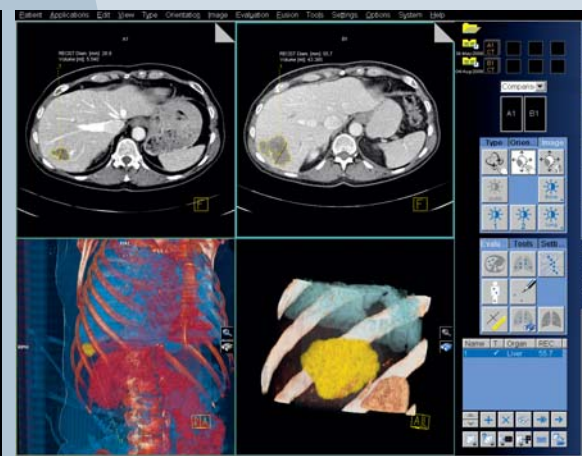
syngo WebSpace



CT Acute Care Engine

Diagnostic information within seconds.

In emergency imaging every second counts. SOMATOM Definition Flash provides one-stop diagnoses regardless of size, condition, and heart rate of the patient, saving precious time and money in acute care. The CT Acute Care Engine includes the CT Cardiac and Neuro Engine. It provides a complete clinical portfolio for examining emergency patients from head to toe. Using fast, direct 3D reconstruction, you will be reviewing images – from any place – before the patient is off the table.



CT Oncology Engine

From tumor detection to whole organ tumor perfusion.

The CT Oncology Engine provides all clinical functionality that is needed to detect, evaluate, and to do follow-ups for tumors. With the SOMATOM Definition Flash dynamic evaluations of whole organs can be performed in ranges up to 48 cm. The clinically proven CAD software automatically detects suspicious lesions. Volume-based 3D measurement or the RECIST or WHO based calculations provide an accurate evaluation of the lesions. Later they automatically can be matched and monitored in follow-up exams.

Customer Care. Life.

Dedicated to Your Success

Remain one step ahead and tap the full potential of your Siemens CT system with our customer care program Life. As a worldwide innovation leader in medical imaging, Siemens has gained deep understanding and knowledge in Computed Tomography. You can profit from excellent CT systems and innovative, flexible and comprehensive service solutions that enable you to concentrate on what is most important for you: patient care. The customer care program Life is the unique solution from Siemens that helps you to maximize the return on investment throughout the entire life cycle of your system.

Upgrades and migration

Stay competitive with up-to-date systems.

Due to increasing healthcare demands you have to stay on the cutting edge to be competitive. We will help you to keep your solutions up-to-date and to keep pace with the latest technological advancements.

Services and support

Feel confident with our proactive service solutions.

High system availability, diagnostic confidence, optimized workflow – to meet your performance expectations, we systematically focus on being proactive. Based on real-time system monitoring we detect system errors and alert you before problems can happen. The Siemens Guardian Program™ including TubeGuard helps to make unplanned downtime a thing of the past.

Education and training

Broaden your knowledge and expertise.

Know-how is the key to success. With our extensive portfolio of education and training programs you can deepen your knowledge and clinical expertise. We show you how to maximize the benefits of advanced technology. This will help you to optimize workflows. So you can offer an even higher quality of care for your patients.

Information and communication

Be informed – get connected.

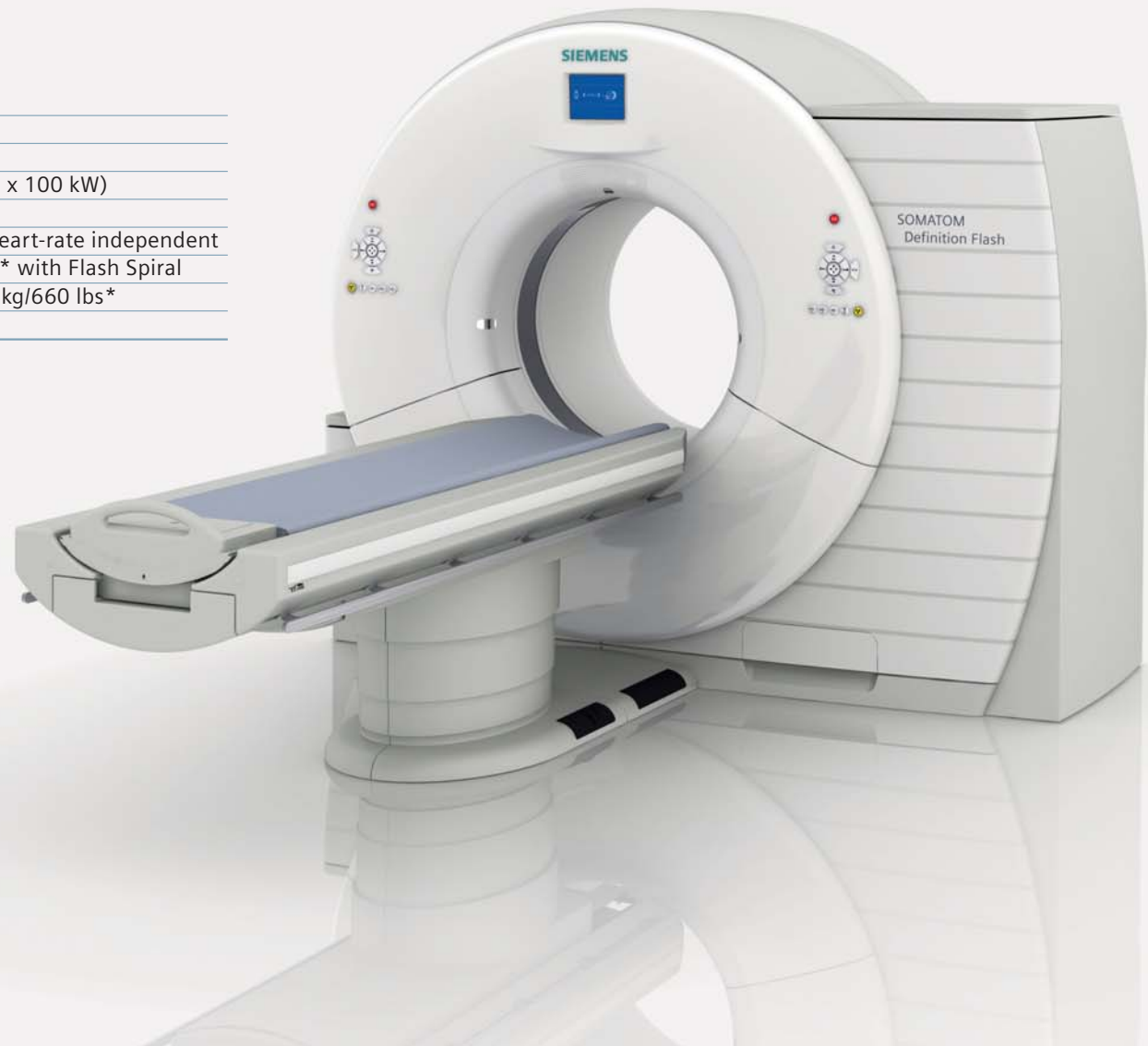
To ensure you are always up-to-date on what is happening in the CT world, we offer you a variety of information services – easily accessible information portals, monthly newsletters, our customer magazine SOMATOM Sessions, and the SOMATOM World Summit, our scientific user conference.



Configuration Overview

SOMATOM Definition Flash

| | |
|----------------------|--------------------------------|
| Rotation time | 0.28 s* |
| Number of slices | 2 x 128 |
| Generator | 200 kW (2 x 100 kW) |
| Isotropic resolution | 0.33 mm |
| Temporal resolution | 75 ms*, heart-rate independent |
| Max. scan speed | 458 mm/s* with Flash Spiral |
| Table load | up to 300 kg/660 lbs* |
| Gantry opening | 78 cm |



*optional

In the event that upgrades require FDA approval, Siemens cannot predict whether or when the FDA will issue its approval. Therefore, if regulatory clearance is obtained and is applicable to this package, it will be made available according to the terms of this offer.

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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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