No breath hold required with Dual Source CT

Redefining standards in pediatrics

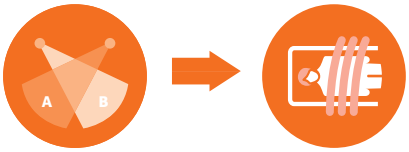
"Children really are the ultimate test of a good CT machine. They are small…and the rapid heart rates and faster breathing in children cause motion artifacts, and older children may be uncooperative. In a child, it is not uncommon to see a heart rate of 150–180 bpm."

Catherine Owens, MD
Great Ormond Street Hospital for Children (GOSH), London, UK

siemens-healthineers.us/dual-source-ct

SIEMENS Healthineers

Potential for a sedation-free workflow



Dual Source CT enables Superfast (Turbo) Flash scanning

66 ms temporal resolution

737 mm/s volume coverage

Speed up your workflow
by saving resources when no anesthesiologist is needed[1]

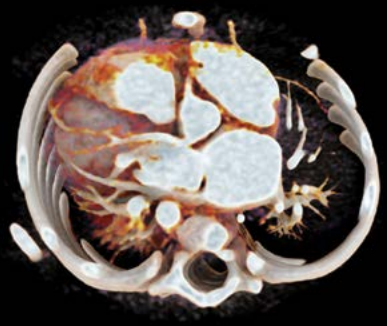
Potentially reduce risk
Anesthesia increases risk for complications e.g., for congenital heart disease[1]

Patient-friendly and increased patient comfort
When sedation is not used, parents may be able to take their child home right after the scan is finished[2]

Reduction of unnecessary repeat scans due to failed sedation
Inadequate sedation – rescans necessary in 29% of conventional examinations[1]

[1]*Malviya S., et al. British Journal of Anaesthesia. 2000;84(6):743-8.*

[2]*Arlachov Y, et al. The British Journal of Radiology. 2012;85:1019.*



Scan time: 0.61 s
Scan length: 79 mm
70 kV @ 0.33 mSv

By combining ultra-fast scanning and the industry's unprecedented temporal resolution, the SOMATOM Force scanned the heart at 130 bpm and with a very low dose while still providing an image suitable for pediatric coronary evaluation.

Courtesy of Astrid Lindgrens Children's Hospital, Karolinska University, Stockholm, Sweden

Sub-second imaging beyond detector width

- Ultra-fast acquisition with Turbo Flash mode (737 mm/sec) for imaging covering Chest, Abdomen, Pelvis in < 1 second
- Unlimited Z-axis coverage

No exclusion cardiovascular imaging

- Single beat, <1mSv cardiac imaging since 2008 with dual source from Siemens Healthineers
- Industry-leading 66 ms native temporal resolution to minimize motion artifacts, enabling cardiac imaging for newborns with HRs typically from 100-160 bpm
- No heart rate exclusions including arrhythmias

Scan time: 0.46 s
Scan length: 344 mm
Sn100 kV @ 0.14 mSv

Low dose lung scan of a 14-year-old boy with cystic fibrosis.

Precise diagnostic support with ultra-low dose at highest image quality for monitoring chronic diseases.

Courtesy of University Hospital Tuebingen, Tuebingen, Germany

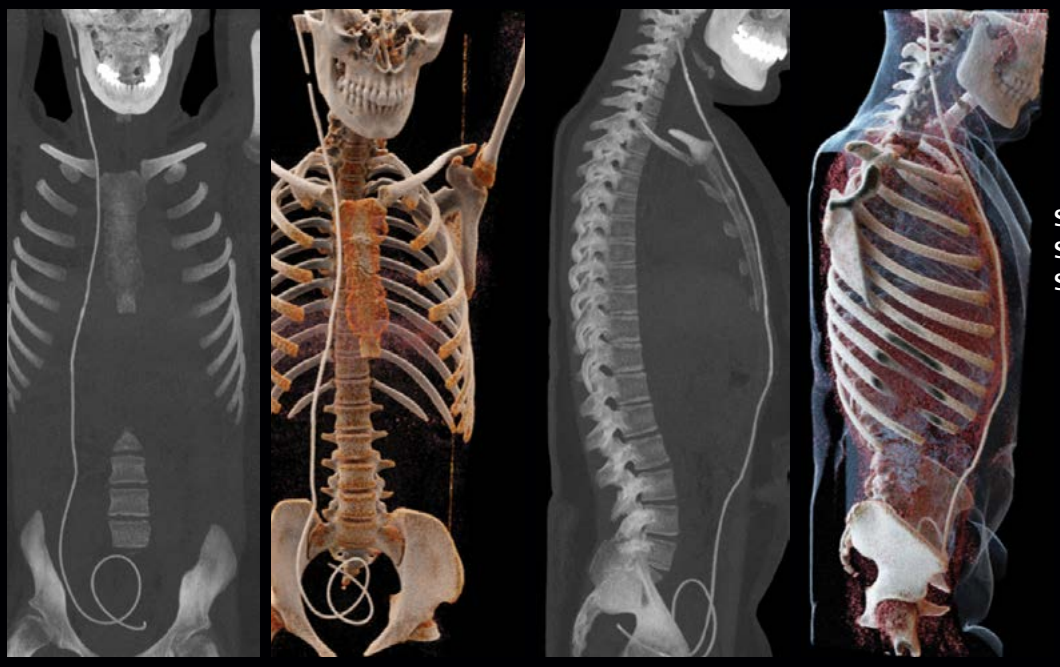
ALARA – as low as reasonably achievable

Child-size the kV and mA

Low dose innovation

- **ADMIRE*** – Third-generation, model-based iterative reconstruction
- **Stellar**^{Infinity} **Detector** – Integrated electronics design reduces electronic noise, significantly improving SNR for optimal dose efficiency and image quality
- **CARE kV** – automated selection of optimal kV setting
- Real-time 4D mA modulation with **CARE Dose 4D**
- **X-CARE** – organ-based dose modulation
- **CARE Child** – 70 kV for newborn- to adult-sized pediatric patient protocols
- **CARE Dashboard** – for easy visualization of all dose reduction features active for the exam
- **Tin (Sn) Filtration** – Acquisition of ultra-low dose non-contrast scans

*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.



Scan time: 5.42 s
Scan length: 749 mm
Sn100 kV @ 0.44 mSv

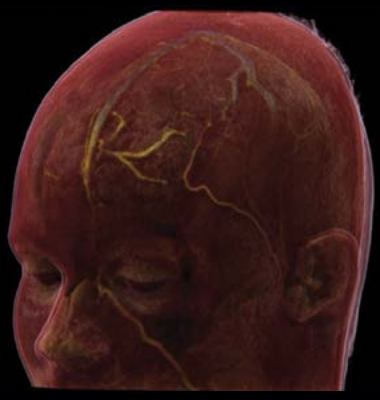
Courtesy of Astrid Lindgrens Children's Hospital, Karolinska University, Stockholm, Sweden

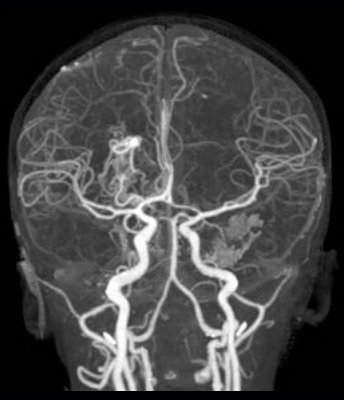
Tin Filter technology

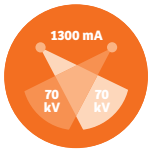
- Reduced radiation dose in non-enhanced CT scans
- Ideal for ultra-low dose topogram, lung, MSK, sinus, spine, thorax, colon, skeletal survey for child abuse
- Detailed images even at extremely low dose levels
- Tin Filter allows for imaging with never-seen low dose levels

You get all the benefits of dual energy free (of additional radiation!)

Automated bone removal with Direct Angio for easy visualization of an AVM.



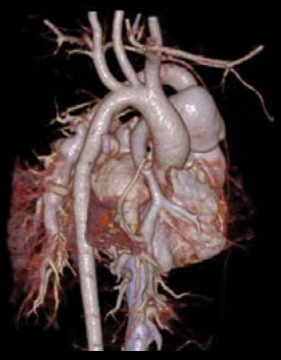




Routine Dual Energy (DE) imaging

- **Dose-Neutral Dual Energy** with real-time Dose Modulation and Tin Filtration for optimized filtration of X-ray spectrum
- Dual Energy Apps: Direct Angio, Lung Analysis, Monoenergetic+, Virtual Unenhanced, Bone Marrow, etc.

Coronary CTA
Scan time: 0.17 s
Scan length: 126 mm
70 kV @ 0.58 mSv



Dynamic Airway
Scan time: 3.25 s
Scan length: 56 mm
70 kV @ 1.4 mSv

CTA and dynamic airway study – pediatric patient (4 months old) with overinflated right lung and collapsed bronchus.

Courtesy of Lady Cilento Children's Hospital, Brisbane, Australia

Patient experience

- Unique interior and exterior gantry illumination lighting to enhance the pediatric/parent experience
- Open 78-cm bore with temperature independent—low noise operation due to water cooling approach

Dynamic imaging

- Adaptive 4D Spiral with up to 80 cm of dynamic CTA coverage, e.g., phase-resolved vascular mapping
- Complete visualization of dynamic 4D airway imaging
- 70 kV low dose acquisitions with variable sampling rates

At Siemens Healthineers, our purpose is to enable healthcare providers to increase value by empowering them on their journey toward expanding precision medicine, transforming care delivery, and improving patient experience, all enabled by digitalizing healthcare.

An estimated 5 million patients globally benefit every day from our innovative technologies and services in the areas of diagnostic and therapeutic imaging, laboratory diagnostics, and molecular medicine, as well as digital health and enterprise services.

We're a leading medical technology company with over 120 years of experience and 18,500 patents globally. With about 50,000 dedicated colleagues in over 70 countries, we'll continue to innovate and shape the future of healthcare.

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