



SOMATOM Drive

Environmental Product Declaration

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



Progress that is Impressive – Ecological Advantages of SOMATOM Drive

- Dose reduction to less than 1 mSv for cardiac examinations
- Average energy savings of 45% during standard thorax examinations*
- Average energy savings of 85% during cardiac examinations*
- 70% less detector power consumption (down to 450 W) with Stellar^{Infinity} detectors
- No more lead used for counterweights
- All substances contained in the product and its packaging are documented
- Plastic parts are labeled for recycling
- Disassembly instructions for high-quality recycling are available
- Complete CT systems and their components are taken back and are refurbished
- Product take-back according to strict EU directives
- More than 97% of the materials used can be returned to the flow of recyclable materials
- Environmental product declaration is available for download via internet
- Dual Source CT technology allows to achieve precise dose and Superfast Scanning.
- Stellar^{Infinity} detectors with integrated iterative reconstruction create excellent image quality with reduced noise.
- CARE Screen with Tin Filters on both tubes, allows to lower the dose whilst maintaining image quality for non-contrast examinations.
- Straton[®] MX Sigma X-ray tubes enables low dose scanning, optimized for low kV imaging for contrast examinations and to reduce scan time for all types of examinations.
- Unique 10 kV Steps together with CARE kV allows a precise user independent kV selection.
- Superfast Scanning with a full rotation in only 0.28 seconds

* Compared to SOMATOM Definition

SOMATOM Drive

Regardless of who walks through the door, your medical imaging institution is constantly pressured to provide state-of-the-art CT imaging – every day, every night, and at every single moment. This is why Siemens Healthineers, with its unique Dual Source technology, is collaborating with you to expand technological possibilities, simplify complex procedures, and raise clinical standards. After all, patients don't always have an appointment, medical conditions often can't wait for specialized staff, and clinical trends are never constant. In today's world, you need to be prepared to aid your patients, to cope with your environment, and to meet your business needs – while driving precision every step of the way.

Reduction of Lead

The use of lead for balancing weight has been completely eliminated. Lead is now used only when necessary to protect patients from unnecessary radiation. And the amount of lead required in the radiation shield for this purpose has been reduced by 70% (from 5.26 to 1.45 kg) compared to SOMATOM Definition.

Progress that is Impressive

Compared to the SOMATOM Definition model, the SOMATOM Drive uses (depending on the type of examination required) 45%* to 85%** less energy during scanning. An additional success is the significant reduction of radiation dose in heart examinations by about 70% (< 1 mSv at 100 kV and <1.5 mSv at 120 kV) compared to SOMATOM Definition. Competitive systems generally utilize from 9 to 30 mSv for equivalent examinations.***



SOMATOM Drive provides reliable diagnostic results across clinical disciplines, as well as a new quality of patient care. Accept more patients than ever before and master urgent care. This will improve the CT experience for everybody involved.



SOMATOM Drive lets you standardize your institution's quality of care to unseen levels. Promote optimum performance at all times by simplifying routines and accelerating workflows.



SOMATOM Drive allows you to implement unprecedented system-management efficiency. Versatile and future-proof, this CT technology connects you to the CT practice of tomorrow, advancing new clinical fields and new technologies. SOMATOM Drive boosts your performance, empowers your routines, and expands your capabilities.

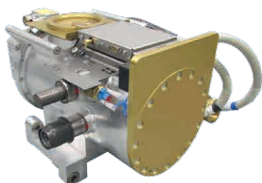
* Standard thorax examination

** Heart examinations

*** Jörg Hausleiter, et al, JAMA 02/2009

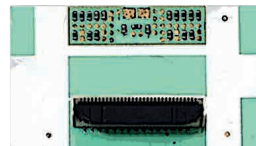
Straton® MX Sigma X-ray tubes and generators

The Straton® brand has been driving Siemens Healthineers' high-end CT scanners for a while, providing significant benefits in spatial resolution with its flying focal spot, its scan times, and its direct anode cooling. Straton® MX Sigma is a full redesign of the core aspects of this highly efficient and reliable tube. It boosts the power available at most kVs, maintains the focal spot size, and offers low-dose scanning with consistent image quality. The highly accurate Sigma generators provide the reliable kV input required to enable these features.



Stellar^{Infinity} detector modules

The Stellar^{Infinity} detector features the most modern integrated chip design in the Siemens Healthineers portfolio. In addition to using the unique Ultra Fast Ceramic (UFC) detector material and the successful integration process seen with the Stellar detector, the Stellar^{Infinity} detector goes one step further by miniturizing and integrating more components to significantly improve the efficiency of the detector system.



Environmental Management System

Siemens Healthcare gives high priority to achieving excellence in Environmental Protection, Health Management and Safety (EHS).

Across the globe, Siemens Healthcare has implemented a consistent EHS management system. It lays the foundation for the continuous improvement of our performance in these areas, and regular auditing assures our conformance.

As a result of this consistent approach, the entire Healthcare Sector is considered as one organization and is certified in accordance with ISO 14001 and OHSAS 18001.

Environmental Product Design



Material supply:

From natural resources to delivery of semi-finished products



Production/delivery:

From production of components to operation startup by the customer



Use/maintenance:

Includes daily use by our customers as well as maintenance



End of life:

From disassembly at the customer through material and energy recycling

Siemens Healthineers considers environmental aspects in all phases of the product life cycle, including material supply, production/delivery, use/maintenance and end of life.

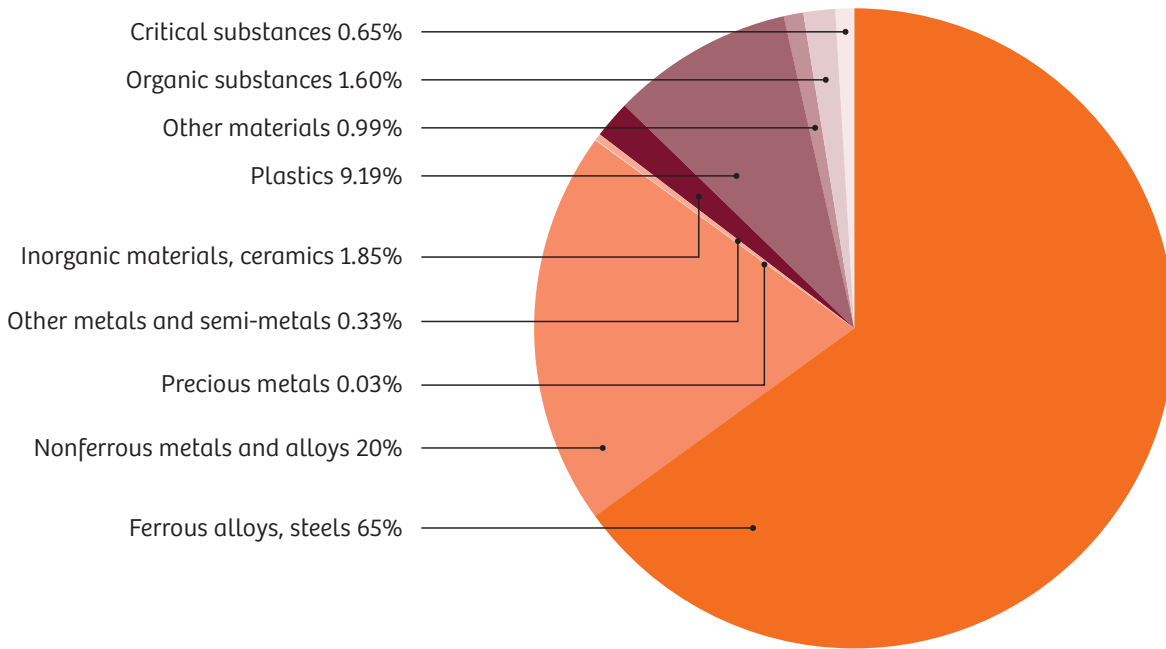
Our product design procedure fulfills the requirements of IEC60601-1-9:2007 "Environmental product design for medical electrical equipment".

This standard supports the effort to improve the environmental performance of our products.

Identification of Product Materials

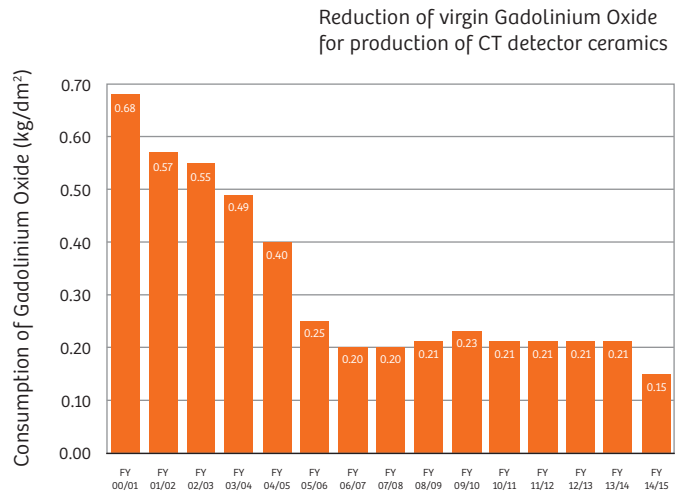
SOMATOM Drive is mainly built out of metals. This ensures a high degree of recyclability.

Total weight: approx. 4,400 kg



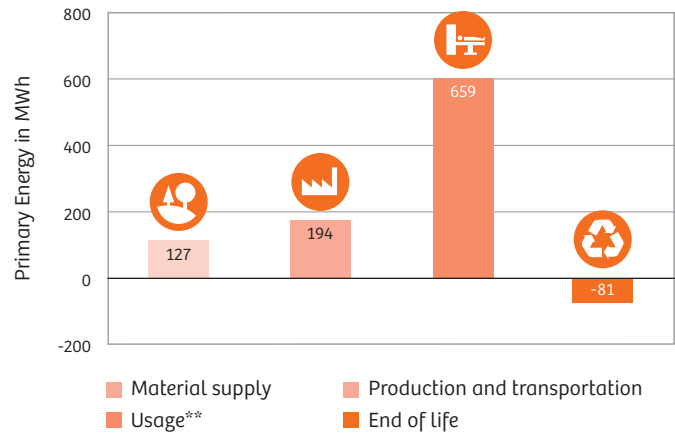
Reduction of Critical Substances

The consumption of material per unit area for CT detectors was reduced significantly. In fiscal year (FY) 14/15 we were able to reduce gadolinium oxide consumption for production of a defined surface area of CT detector ceramics by 78% in comparison to FY 00/01.



Cumulative Energy Demand

Energy consumption is the most important environmental characteristic of medical devices. This is why we use the Cumulative Energy Demand to assess environmental performance. Cumulative Energy Demand is the total primary energy* that is necessary to produce, use and dispose a device – including all transportation. Our medical devices can be recycled almost completely for materials or energy. With an appropriate end of life treatment it is possible to return up to 81 MWh in form of secondary raw materials or thermal energy to the economic cycle.



* Primary energy is the energy contained in natural resources prior to undergoing any man made conversions (e.g. oil, solar).

** Based on 70 patients per day, 10 sec scan time, 10 years usage

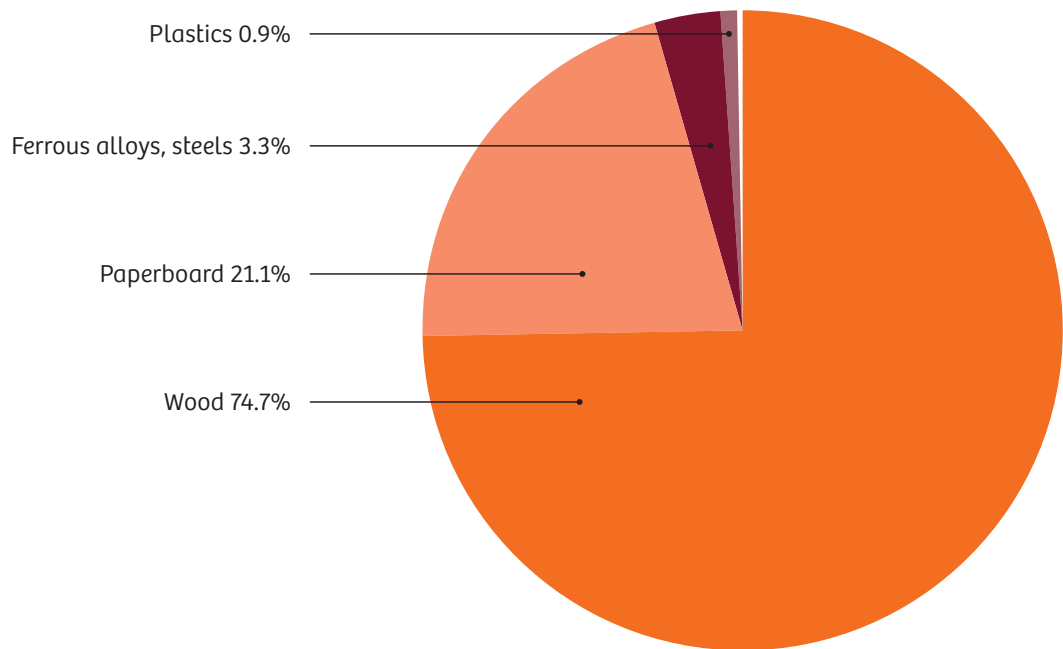
Identification of Packaging Materials

It is our concern to minimize our packaging material and reduce the packaging waste by reusing and recycling it.

The SOMATOM Drive system is transported within Europe in open packaging, the CT Gantry is only protected by a light dust protective cover. A closed packaging is required for e.g. oversea transports.

The values shown on the chart are average values from the different kinds of packaging types of the SOMATOM Drive. The packaging materials consist of almost entirely wood and cardboard all of which can be recycled.

- Total weight:
- open packaging approx. 530 kg
 - closed packaging approx. 1,050 kg



Product Take Back

The high-performance X-ray tube assemblies are designed the way that as much parts as possible may be reused. At the end of life the tube assemblies are taken back and are refurbished. Quality is guaranteed by compliance to standard IEC 62309. Under optimal conditions up to 40% of a tube assembly may consist of reused parts.

Our product take back program ensures that we address the environmental aspects of our products – even at the end of life. As part of this program, we refurbish systems and reuse components and replacement parts whenever possible through our Refurbished Systems business. We reuse components and subsystems for non-medical products. We also recycle for material or energy value. Disassembly instructions for disposal and recycling are available for our products.



syngo®, the ergonomic and user-friendly user interface supports the clinical workflow. The intelligent automation functions accelerate your examination and make a smooth, efficient workflow for all modalities, departments and people possible. With *syngo* your workplace is prepared for your mode of operation perfectly.

Operating data

Heat emissions of the device	
• Basic load ¹	< 4.5 kW
• Scanning	< 20 kW
Allowed ambient temperature ³	18°C–28°C
Allowed relative humidity	20–75%
Noise level	≤ 70 dB(A)
Energy consumption	
• Basic load ¹	< 4.5 kW
• Full load ²	~ 20 kW
• Maximum load	< 250 kW
Power-on time ⁴	< 5 min
Power-off time ⁵	< 5 min

Technical Specifications

Interface for heat recovery	Yes
Possible type of cooling	Standard: water/water Optional: water/air
Complete switch-off is possible	Yes
Device is adjustable for the user in terms of height	Yes
Uniform operating symbols for device families	Yes

Radiation

Measures/techniques to minimize ionizing radiation exposure	<ul style="list-style-type: none"> • Stellar^{Infinity} detectors with integrated iterative reconstruction create excellent image quality with reduced noise • CARE Screen with Tin Filters on both tubes, allows to lower the dose whilst maintaining image quality for non-contrast examinations • Straton® MX Sigma X-ray tubes enable low dose scanning, optimized for low kV imaging for contrast examinations and to reduce scan time for all types of examinations • Unique 10 kV steps together with CARE kV allows a precise user independent kV selection • Superfast Scanning with a full rotation in only 0.28 seconds
---	---

Reduction compared to the limit value for patients	Reduction in %: ⁶
	Organ:
	Head - 0.7%
	Sinus - 67.8%
	Thorax - 66.3%
	Abdomen - 41.0%
	Upper Abdomen - 43.3%
	Pelvis - 48.2%
	Spine - 52.6%

Measures/techniques to minimize the exposure to electromagnetic radiation	Not applicable
Reduction compared to the limit value for users	Not applicable

Replacement Parts and Consumables

Item	Life cycle ⁷
X-ray tube	1 year warranty
UPS-battery	24 months

Disposal / Substance Information

End of life concept	Yes
Recycling information	Yes
List of hazardous substances (not contained in the device)	Yes

Cleaning

Incompatible cleaning processes	
• Total device	Sprays Chlorine releasing agents Substituted phenols based agents Scouring cleaning agents Organic solvents Ammonia releasing agents
• Restrictions for particular device components	Not applicable
Suitability of the device for sterile areas	Not applicable
Size of the surface to be cleaned ¹ user in terms of height	Approx. 2.5 m ²

Further Ecologically Relevant Information

Elements of instruction are:

• Recommendations for saving energy	Yes
• Recommendations for efficient cleaning	Not applicable
• Recommendations for appropriate use of consumables	Yes



¹ Device is in operation but no patient examination takes place

² Average value at examination of patients (abdomen routine mode)

³ Within examination room

⁴ From off-mode to operating state

⁵ From operating state to off-mode

⁶ Further reduction possible when using IRIS protocols

⁷ Recommended exchange interval

⁸ Gantry-tunnel (inside), patient tabel overlay, control elements, console, keypad, intercom, mouse

On account of certain regional limitations of sales rights and service availability, we cannot guarantee that all products included in this brochure are available through the Siemens sales organization worldwide. Availability and packaging may vary by country and is subject to change without prior notice. Some/All of the features and products described herein may not be available in the United States.

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.

Siemens reserves the right to modify the design, packaging, specifications and options described herein without prior notice. Please contact your local Siemens sales representative for the most current information.

Note: Any technical data contained in this document may vary within defined tolerances. Original images always lose a certain amount of detail when reproduced.

The statements by Siemens' customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.

.....

Siemens Healthineers Headquarters

Siemens Healthcare GmbH
Henkestr. 127
91052 Erlangen, Germany
Phone: +49 913184-0
siemens.com/healthineers