

SOMATOM go.Top

Environmental Product Declaration

siemens-healthineers.com/somatom-go-top



SIEMENS
Healthineers



Progress that is Impressive – Ecological Advantages of SOMATOM go.Top

- Average energy savings of 58% for standard examinations¹
- 48% less detector power consumption with Stellar detectors²
- No more lead used for counterweights and significantly reduced amount of lead for shielding of radiation
- 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 refurbished
- Product take-back according to strict EU directives
- Up to 99% of the materials used in the CT system are recyclables
- Environmental product declaration is available for download via internet
- Tin Filter allows to lower the dose whilst maintaining image quality for non-contrast scans
- Fast scanning with a full rotation in only 0.33 seconds

¹ Energy savings compared to SOMATOM Definition AS+ according to the COCIR calculation model for power consumption over a 24h day

² Compared to SOMATOM Perspective 128

SOMATOM go.Top

Make success your daily business

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.

We want to help you succeed day after day. This is why we developed the SOMATOM® go. platform. As a member of this family, SOMATOM go.Top supports all users to provide the best possible 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.

SOMATOM go.Top is built for personalization of processes and care, allowing every operator to optimally adapt to the individual patient and indication while interacting with patients in a more personalized way than ever before. Produce excellent results for the full clinical spectrum including Dual Energy imaging, and offer what others cannot – for a successful CT business.

SOMATOM go.Top: Reduction of Lead Content

Rotating components of CT-systems have to be balanced for a quiet running. The easiest way is the use of lead as counter balance. But lead is a toxic element. Therefore we abandoned the usage of lead as counter balance at the SOMATOM go.Top completely.

It was a challenge to further reduce energy consumption and dose compared to our successful predecessor models.

The following actions led to success: An adaptive dose shield mounted at the x-ray tube controls, that all unnecessary radiation is blocked from the patient. With this dose can be reduced significantly while image quality is maintained.¹

Detectors of modern CT-systems consist of many rows. So X-rays can be utilized better and absorbed radiation doses can be reduced. Increasing the number of detector rows generates average energy savings of 76% in comparison to SOMATOM Sensation 64-slice configuration.²

¹ Deak PD et al. Effects of adaptive section collimation on patient radiation dose in multisection spiral CT. *Radiology*. 2009 Jul;252(1):140-7.

² Energy savings according to the COCIR calculation model for power consumption over a 24h day

Environmental Management System

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

Across the globe, Siemens Healthineers 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, Siemens Healthineers is considered 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 site, 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.

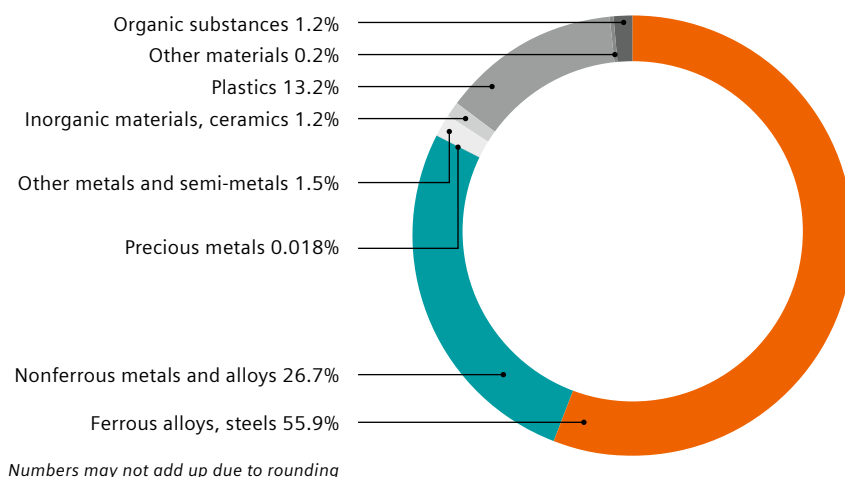
Our product design procedure fulfills the requirements of "IEC 60601-1-9:2007+A1:2013 "Environmental product design for medical electrical equipment".

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

Product Materials

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

Total weight: ≤ 1700 kg



Reduction of Critical Substances

We made strides to reduce materials in our SOMATOM go.Top which are environmentally harmful and are not easily recyclable. As a first step we eliminated the usage of lead counter-weights and even for radiation shielding, where lead is still commonly used in medical engineering industry, we were able to reduce further by substitution

with alternative shielding materials. By all these measures we progressed to achieve a rate of recyclable substances in the SOMATOM go.Top of 99%, while the remaining 1% can be completely used for thermal energy recovery.

Sustainable use of Rare Earth Metals

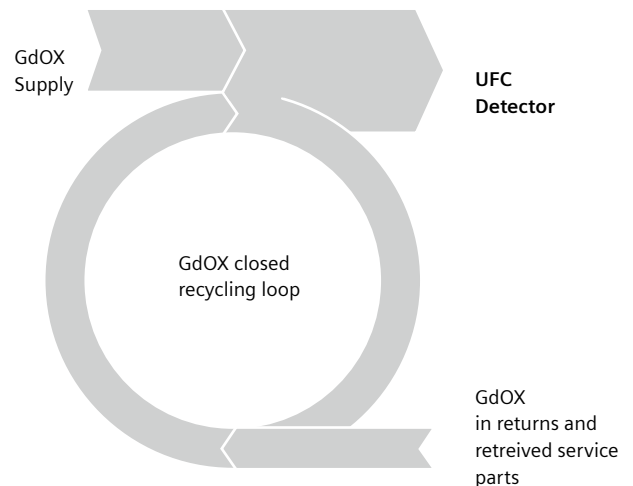
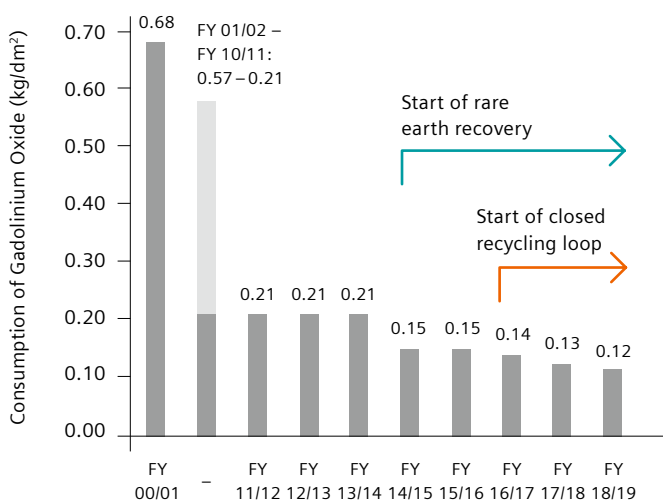
The consumption of rare earth material per unit area for CT detectors was reduced significantly. In fiscal year (FY) 18/19 we were able to reduce the supplied gadolinium oxide for production of a defined surface area of CT detector ceramics (UFC) by 82% in comparison to FY 00/01.

This is due to continuous improvements in our manufacturing technologies and processes.

Especially our measures in rare earth recovery which started in FY15 allowed for a further reduction. This could be even enhanced by introducing a closed recycling loop for the gadolinium oxide processing, which is unique in CT detector manufacturing worldwide.

Today, about 25% of the annually processed gadolinium oxide is utilized out of this closed and sustainable recycling loop.

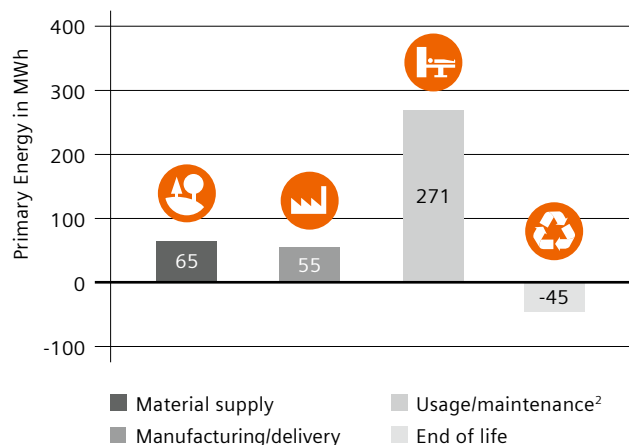
Reduction of virgin Gadolinium Oxide for production of CT detector ceramics



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 energy¹ 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 45 MWh in form of secondary raw materials or thermal energy to the economic cycle.



Based on one production site.

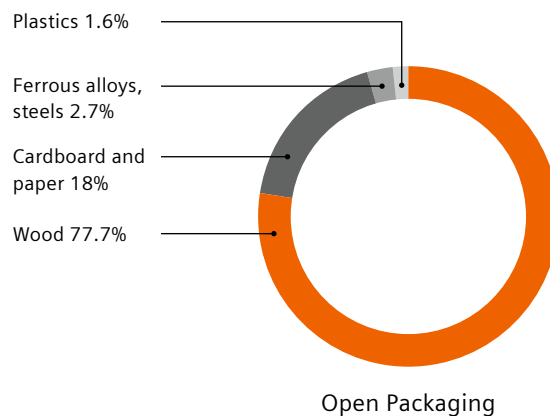
Packaging Materials

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

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

Total weight: open packaging: approx. 367 kg
closed packaging: approx. 446 kg



Numbers may not add up due to rounding

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.

¹ Primary energy is the energy contained in natural resources prior to undergoing any man made conversions (e.g. oil, solar).

² Based on COCIR definition of CT energy consumption, 10 years usage.

Siemens Environmental Portfolio

The Siemens Environmental Portfolio comprises of selected sustainable products characterized by i.a. outstanding energy efficiency – so does the SOMATOM go.Top. With our Environmental Portfolio, we make an important contribution to resource and climate protection and strengthen the competitiveness of our customers. As part of Siemens, we are proud to be top ranked within our peer group of the Dow Jones Sustainability Index for our sustainability strategy and performance, especially in the environmental area.

Material Compliance

Within the materials compliance program at Siemens Healthineers and through use of BOMcheck, an industrywide tool pioneered by Siemens, regulated and declarable substances are monitored. Chemicals of concern as listed on the materials declaration standards IEC 62474 and IPC 1752A (including RoHS and REACH substances) are systematically identified to ensure they are not present above permitted threshold limits in our products. SOMATOM go.Top conforms with Directive 2011/65/EU of the European Parliament on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Ecodesign Improvements

Siemens Healthineers is committed to contribute to the challenges for a greener and more sustainable world economy by developing new environmentally conscious technologies and concepts, while at the same time improving the clinical value of medical imaging and invitro diagnostic devices.

As a member of COCIR¹, Siemens Healthineers has proactively committed to the targets and objectives of the COCIR self-regulatory initiative (SRI) with the European Commission to reduce the environmental impact of medical imaging equipment, following the framework set by the Ecodesign Directive (2009/125/EC). A strong focus in the last years was on reducing the energy demand of our products. The results of the eco-design initiative are published by COCIR and regularly reviewed by the EU commission.

¹ European Coordination Committee or the Radiological, Electromedical and Healthcare IT Industry

Green Public Procurement (GPP)

The Green Public Procurement (GPP) initiative within the EU established environmental criteria for certain product categories, including for imaging devices. Although GPP is a voluntary instrument, Siemens Healthineers has evaluated the energy efficiency and performance criteria relevant for its e.g. imaging products, and has included requirements of GPP in its product development processes. The relevant GPP criteria addressed with SOMATOM go.Top include:

- Chemicals management system
- User instruction for green performance management
- Product longevity
- Training for energy efficiency and optimization
- Energy performance

Sustainability in the Supply Chain

Purchased products and services account for almost half the value of our total revenue. As our suppliers play a critical role in our sustainability-oriented value chain, Siemens expects them also to demonstrate their commitment towards these standards and principles which are summarized in the Code of Conduct.

Code of Conduct is based to a great extent on the principles of the UN Global Compact relating to human rights, labor standards, environmental protection and anticorruption initiatives. These principles are derived from the Universal Declaration of Human Rights, the Declaration on Fundamental Principles and Rights at Work of the International Labor Organization (ILO) and the principles of the Rio Declaration on Environment and Development. We ensure sustainability in the supply chain with various programs, such as:

External Sustainability Audits

External Sustainability Audits are extensive on-site inspections to check generally accepted sustainability standards. They are conducted on a risk-based approach by external specialists. The audits refer solely to the supplier's conformance and performance in relation to the six categories of the Code of Conduct for Siemens Suppliers. The assessments will be further tailored to the type of facility under assessment and only relevant sections are covered.

Responsible Minerals Sourcing Initiative

We have rolled out a uniform and enterprise-wide process to determine the use, source and origin of the relevant minerals in our supply chain ("Supply Chain Due Diligence") including "Responsible Minerals Assurance Process" (RMAP) as part of the "Responsible Minerals Initiative" (former "Conflict Free Sourcing Initiative"). We work closely with our direct suppliers to support us in carrying out these steps.



Operating Data

Heat emissions of the device

- Basic load¹ ≤ 1.6 kW
- Full load² ≤ 7.4 kW

Allowed ambient temperature³ 18–30 °C / 64.4–86 °F

Allowed relative humidity 20–75%

Noise level³

- Standby 55 dB(A)
- Peak 67 dB(A)

Energy consumption

- Basic load¹ ≤ 3 kVA
- Full load² ≤ 10.6 kVA
- Maximum load ≤ 115 kVA
≤ 100 kVA with Cos Phi Inductor (optional)

Power-on time⁴ ≤ 3 min

Power-off time⁵ ≤ 2 min

The SOMATOM go. platform features a new intuitive user interface with a new usability concept. With a clear emphasis on visual logic using specific features such as e.g. a timeline the user is guided easily through the entire procedure – from acquisition all the way to reconstruction.

This accelerates your examinations and focuses on standardization independent of the level of expertise.

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

Technical Specifications

Interface for heat recovery	Yes
Possible type of cooling	Standard: air/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

Power consumption according to COCIR and GPP

Use scenario 24-hour power consumption ¹	
Off ²	16.6 kWh
Low power ³	17.5 kWh
Idle	32.4 kWh

Radiation

Measures/techniques to minimize Ionizing radiation exposure	<ul style="list-style-type: none"> • Stellar detectors and iterative reconstruction create excellent image quality with reduced noise. • Tin Filter allows to lower the dose whilst maintaining image quality for non-contrast examinations • Athlon™ tubes enable low dose scanning thanks to 10 kV steps and reduce scan time for all types of examinations • CARE kV allows a precise user independent kV selection • Superfast Scanning with a full rotation in only 0.33 seconds
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Electromagnetic fields

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

¹ Values may vary approx. +/-3% due to specific system conditions, for example of UPS, etc.

² With wall switch

³ System off

Replacement Parts and Consumables

Item	Life cycle ¹
• 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	Yes

Cleaning

Incompatible cleaning processes:

Total device

- Sprays
- Abrasive cleaning liquids
- Organic solvents, such as aldehyde, acetone, stain remover, cleaner's naphtha, benzine or alcohol
- Agents that release ammonia when they are dissolved or decomposed (Ammonia has a corrosive effect.)
- Agents containing silicone (Silicone decays over time and can form sticky deposits that interfere with electrical contacts.)
- Disinfectants based on substituted phenols or disinfectants that release chlorine

Suitability of device for sterile areas	Not applicable
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Size of the surface to be cleaned ²	Approx. 3 m ²
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Please refer to the dedicated operator manuals for system and components for a detailed list of approved and not approved cleaning substances and further instructions.

Further Ecologically Relevant Information

Elements of instructions are:

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

¹ Recommended exchange interval

² Gantry-tunnel (inside), patient table overlay, control elements, console, keypad, intercom, mouse

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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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The statements by Siemens Healthineers' 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.

Not for distribution or use in countries that issue country-specific environmental product declarations. Please check with your local Siemens Healthineers representative if there is a country-specific version of this environmental product declaration.

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