

SIEMENS

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SOMATOM Force

Environmental Product Declaration



International version. Not for distribution in the US.

Ecological advantages of SOMATOM Force

- Average energy savings of 81% during standard thorax examinations*
- Average energy savings of 96% during cardiac examinations*
- No more lead used for counterweights
- > 70% less detector power consumption (1500 W down to < 450 W) with Stellar^{Infinity} detector
- RoHS compliant in accordance with EU directive 2011/65/EU
- 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
- CT systems and their components are taken back and are refurbished
- Product take-back in accordance with strict EU directives
- Up to 90% of the materials used in manufacture are recyclable
- Environmental product declaration is available for download online

* Compared to SOMATOM Definition



With SOMATOM Force you are two steps ahead in all clinical questions.

Since contrast media may have a nephrotoxic effect, less contrast media is better for the patient, especially for those with renal insufficiency or diabetes. SOMATOM Force may potentially scan using significantly less contrast media than previous scanners. Additionally, this can help saving time needed for pre- and after-care with those patients.

With these capabilities SOMATOM Force can be considered as the "kidney-friendly scanner".

SOMATOM Force consequently follows the ALARA (as low as reasonably achievable) principle. This can be seen for example in lung and colon exams, which are also used as early detection exams and thus preferably use very low dose.

In lung and colon exams good air-to-soft tissue contrast is very important. For these cases, SOMATOM Force can make use of two Tin Filters (Selective Photon Shields II).

These Tin Filters optimize the X-ray spectrum which increases the dose efficiency especially for applications with high air-to-soft tissue contrast.



SOMATOM Force

Two steps ahead

Two steps ahead in Preventive Care, allowing a whole new range of patients to benefit. From kidney-friendly scanning to low dose early detection.

Two steps ahead in Freezing Motion, helping to avoid preventable readmissions even in challenging situations. Introducing free-breathing CT imaging and the industry's fastest, most versatile scan mode.

Two steps ahead in Decision Making, boosting diagnostic confidence with 4D imaging at half the regular dose and precise Dual Energy quantification.

With SOMATOM Force, you are two steps ahead in all clinical questions. So stop trying to keep up – get two steps ahead with SOMATOM Force.

Since SOMATOM Force can exclusively apply scan modes with the Tin Filters it is especially suited for “low dose early detection”.

The inherent temporal resolution – the “native” temporal resolution acquired by the scanner – is highly important to freeze patient motion, e.g. in lung exams or in patients who cannot hold their breath long enough. This is also important, in pediatric CT where it also can help reducing the need for potentially harmful sedation.

With Siemens' unique Dual Source gantry SOMATOM Force is ideally designed: with its two sources and an outstanding rotation speed of 250 ms the heart-rate independent temporal resolution for example in cardiac imaging is 66 ms.

Since SOMATOM Force can apply this scan mode together with an extremely fast acquisition speed it allows “free-breathing CT imaging” in many cases.

The benefits of perfusion, or 4D imaging, have long been established. Many institutions have introduced perfusion examinations of the brain as standard care for stroke patients, supporting therapy decisions in these cases. But, when it comes to body perfusion, users are still reluctant to apply it in clinical practice. Even though it could be of great benefit, e.g. in oncology to evaluate the treatment response of expensive medications, it had drawbacks as it was considered a too high dose examination.

But now, with SOMATOM Force and its Adaptive 4D Spiral Plus, it will allow dynamic imaging at half the dose.

Environmental product design



Material supply: from natural resources to delivery of semi-finished products



Production/delivery: from production of components to operation start-up by the customer



Use/maintenance: includes daily use by our customers as well as maintenance



End of life: from disassembly at the customer through to material and energy recycling

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

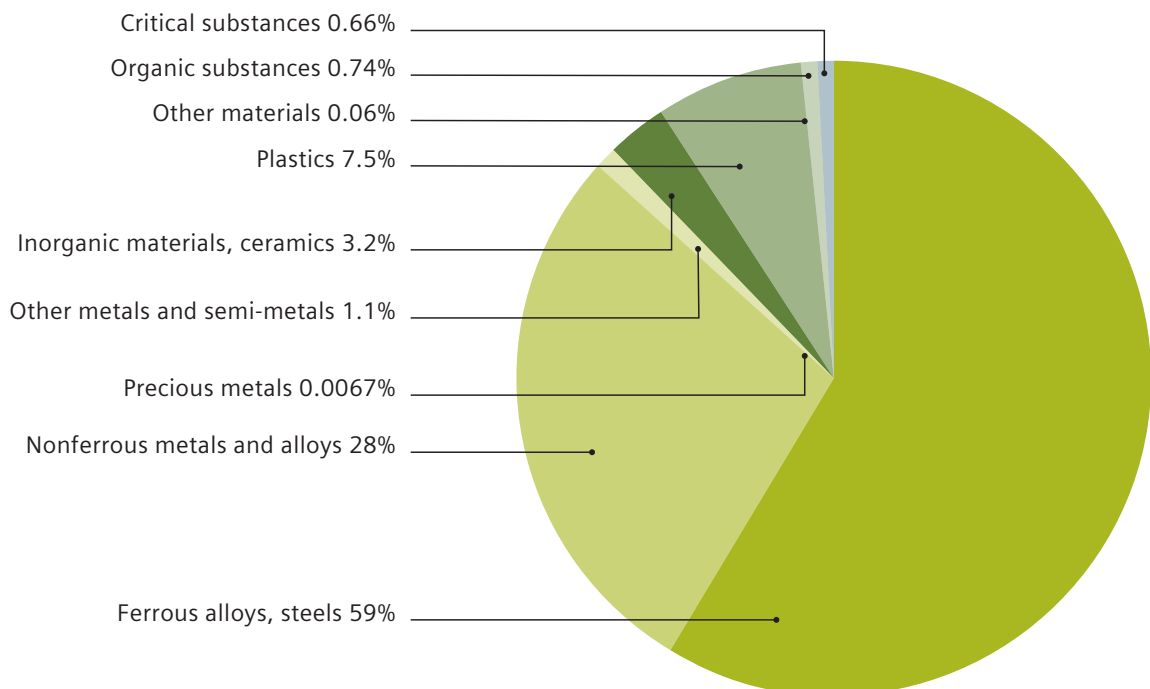
Our product design procedure fulfills the requirements of IEC60601-1-9:2007 "Environmental product design for medical electrical equipment".

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

Identification of product materials

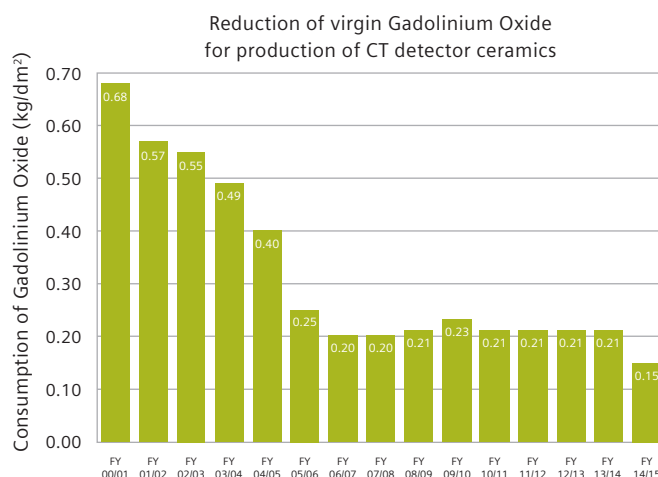
SOMATOM Force is mainly built out of metals. This allows for a high degree of recyclability.

Total weight: approx. 4.750 kg (including gantry, patient table, operators console, image reconstruction system)



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.



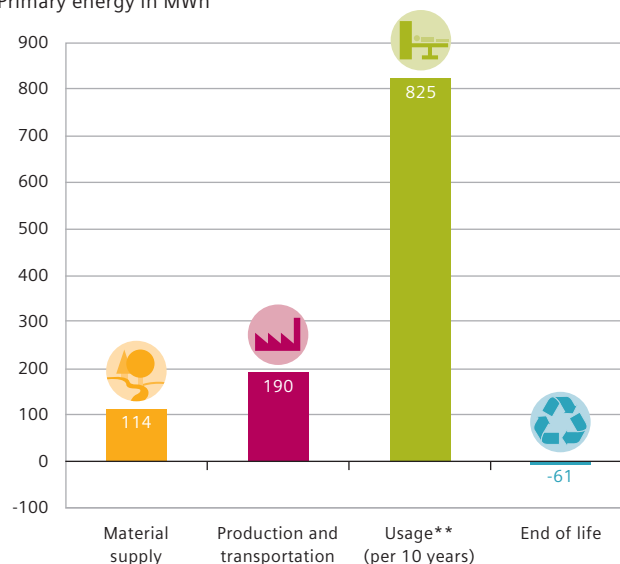
Cumulative energy demand

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 of 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 61 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 s scan time, 10 years usage

Primary energy in MWh



Product take-back

The high-performance X-ray tube assemblies are designed so that as many parts as possible may be reused. At the end of life the tube assemblies are taken back and are refurbished. Quality is guaranteed through compliance with standard IEC 62309. Under optimal conditions, up to 40% of a tube assembly may consist of reused parts depending on local regulations.

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.

Operating data

Heat emissions of the device	
– basic load	< 4.0 kW
– scanning	< 20 kW
Ambient temperature allowed	18°C–28°C
Relative humidity allowed	20–75%
Noise level	≤ 70 dB(A)
Energy consumption	
– basic load	< 4.0 kW
– full load	~ 20 kW
– maximum load	< 300 kW
Power-on time	< 5 min
Power-off time	< 5 min

Technical specifications

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

Radiation

Measures/techniques to minimize ionizing radiation exposure	Ultra Fast Ceramic (UFC) detectors CARE Dose4D™
Measures/techniques to minimize the exposure to electromagnetic radiation	not applicable
Minimization compared with the limit value for users	not applicable

Replacement parts and consumables

Item	Life cycle ¹
X-ray tube	1 year warranty
UPS (battery inside)	24 months

¹ Recommended exchange interval

Disposal/Substance information

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



Cleaning

Incompatible cleaning processes

- | | |
|-------------------------------------------------|----------------|
| – total device | not applicable |
| – restrictions for particular device components | not applicable |

List of incompatible substance classes

- | | |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| – 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 device for sterile areas

Size of the surface to be cleaned¹ approx. 2.5 m²
user in terms of height

¹ Gantry-tunnel (inside), patient table overlay, control elements, console, keypad, intercom, mouse

Further ecologically relevant information

Elements of instruction are:

- | | |
|------------------------------------------------------|----------------|
| – recommendations for saving energy | ✓ |
| – recommendations for appropriate use of consumables | ✓ |
| – recommendations for efficient cleaning | not applicable |



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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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Please find fitting accessories:
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