

**SIEMENS**

MAGNETOM Skyra  
A Tim+Dot System

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# MAGNETOM Skyra

Environmental Product Declaration

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# MAGNETOM Skyra

## Transforming 3T productivity.

MAGNETOM® Skyra is the world's first 3 Tesla, 70 cm Open Bore Tim+Dot system. Through the integration of groundbreaking Tim® 4G (Total imaging matrix) and Dot™ (Day optimizing throughput), MAGNETOM Skyra sets a new standard of efficiency, ease of use, and care, which will help harness a new level of productivity. The increased productivity enables higher patient throughput and optimized workflow, ultimately increasing the number of examinations that can be done with one system and thereby, increasing the energy efficiency.

MAGNETOM Skyra also has low operational costs and is easy to site. As the shortest 3T system on the market today, it fits into the footprint of most conventional 1.5T systems. There is no need for a large, dedicated computer room, because the all-digital Tim 4G technology is concentrated at the magnet.

Thanks to the Zero Helium boil-off technology, the system does not use any helium during normal operation, so this expensive and scarce resource does not need regular refill intervals. Additionally, with the new Green Cooling Package (option), customers can decrease their energy consumption for cooling by up to 50%\*.

Energy consumption during use accounts for over three-quarters of the environmental impact of medical products. Siemens strives to develop new solutions that are more energy efficient than their predecessor models.

## Key product features

- Greater patient access and comfort with 70 cm Open Bore design
- Ultra-light and short 3T system – easy to site and reduced cost of ownership
- Tim Dockable Table option – mobility done right
- Illumination MoodLight™ providing comfortable environment for patients



## Key differentiator

Dot is the most comprehensive MRI workflow solution. It helps take the complexity out of MRI, while enabling up to 50% higher productivity\*. This ultimately increases the number of examinations that can be done with one system – as a result, increasing the energy efficiency.

## Close-to-zero helium consumption

MAGNETOM Skyra uses a superconducting magnet. During operation, the magnet windings must be cooled below their critical temperature. That happens with liquid helium. Equipped with a Zero Helium boil-off technology, MAGNETOM Skyra requires no helium refill in normal clinical use. The only time maintenance minor helium loss may not be completely avoidable is during maintenance. The technology allowed Siemens to increase refill intervals of typically one year to over ten years for your MAGNETOM system without any increase in energy consumption for cooling. Depending on the frequency and type of applications used, overall savings of up to 1,300 liters of liquid helium per year are possible.

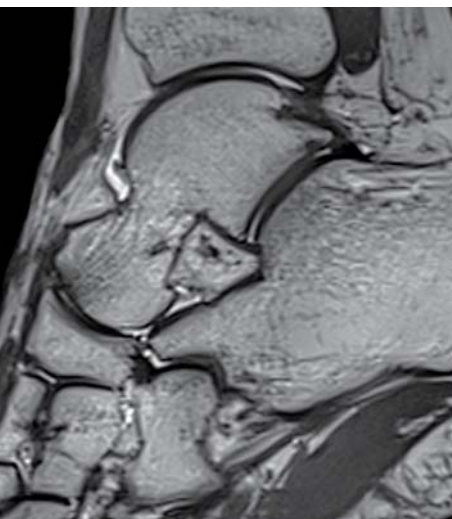
Helium is extracted from natural gas, which makes it of restricted availability. To achieve its cooling performance, it must be liquefied. If helium reaches the atmosphere, it will eventually escape to the universe due to its low weight and be lost forever.

## Environmental benefits

- Better energy efficiency with new workflow technology Dot and Tim 4G
- Zero Helium boil-off
- Green Cooling Package (optional) with automatic adaption to cooling requirements to decrease energy consumption for cooling by up to 50%\*

## Customer benefits

- Increased productivity through Tim 4G and Dot
- Reduced life-cycle costs by increased energy efficiency and no equipment room cooling costs
- Ultra-short and lightweight magnet technology requires a smaller installation area that fits into most 1.5T footprints
- Excellent patient comfort options allow for increased marketability and accomodation of more patients



\* Data on file; results may vary.

## Environmental Management System

Our management system for environmental protection, health and safety conforms to ISO14001, OHSAS18001 and BS8800 and helps us put our policy into practice. To find further information about our management system for environmental protection, health and safety, go to:

[siemens.com/healthcare-ehs](http://siemens.com/healthcare-ehs)

## 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 material and energy recycling

Siemens Healthcare 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".

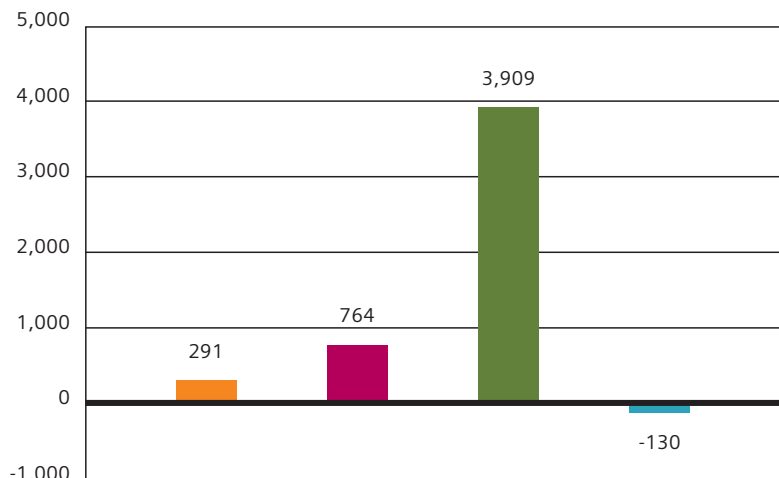
This standard supports the effort to improve the environmental performance of our products.

## Cumulative energy demand

Energy consumption is the most important environmental aspect of medical devices. This is why we use 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 130 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).

Primary Energy in MWh



Material supply

Production and transportation

Usage (per 10 years)

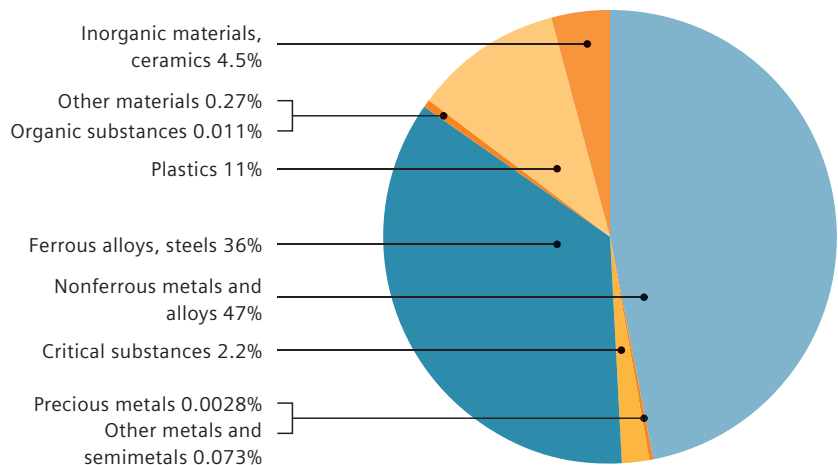
End of life

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## Identification of product materials

MAGNETOM Skyra is mainly built out of metals. This ensures a high recyclability.

Total weight: approx. 10,837 kg



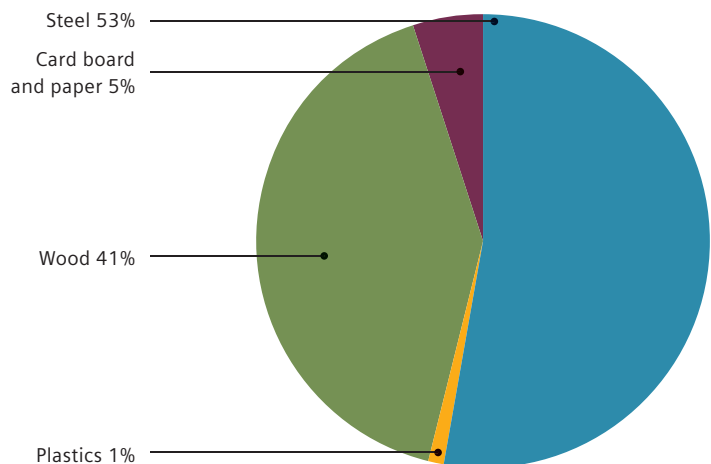
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## Packaging

Our magnetic resonance imaging systems are transported within Europe in open packaging. The magnet is only protected by a light dust protective cover. A closed packaging is required for oversea transports. Here, the magnet is delivered on a reusable steel pallet. The values shown on the chart are average values from these two kinds of packaging. The packaging reuse ratio is more than 50%. The rest is supplied to material recycling. Only an insignificant amount (< 1%) has to be recycled for energy.

Total weight:

- open packaging approx. 244 kg
- closed packaging approx. 2,450 kg



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## Product take back

Most of the materials used to produce MAGNETOM Skyra are recyclable. Around 92% (by weight) can be recycled for material content and 8% for energy.

Our product take back program ensures 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 <sup>1</sup>	13.9 kW
full load <sup>2</sup>	20.7 kW
<b>Allowed room temperature<sup>3</sup></b>	18°C - 22°C
<b>Allowed room humidity<sup>3</sup></b>	40 - 60%
Noise level	
basic load	≤ 50 dB (A) <sup>6</sup>
full load	≤ 110 dB (A) <sup>6</sup>
Energy consumption <sup>7</sup>	
during ramp up <sup>4</sup>	5.0 - 13.9 kW
basic load <sup>1</sup>	13.9 kW
full load <sup>2</sup>	20.7 kW
<b>Power-on time<sup>4</sup></b>	7 min
<b>Power-off time<sup>5</sup></b>	7 min

<sup>1</sup> Device is in operation but no patient examination takes place

<sup>2</sup> Average value for energy consumption at examination of patients

<sup>3</sup> Within examination room

<sup>4</sup> From off-mode to operating state

<sup>5</sup> From operating state to off-mode

<sup>6</sup> Measured according to NEMA in magnet room

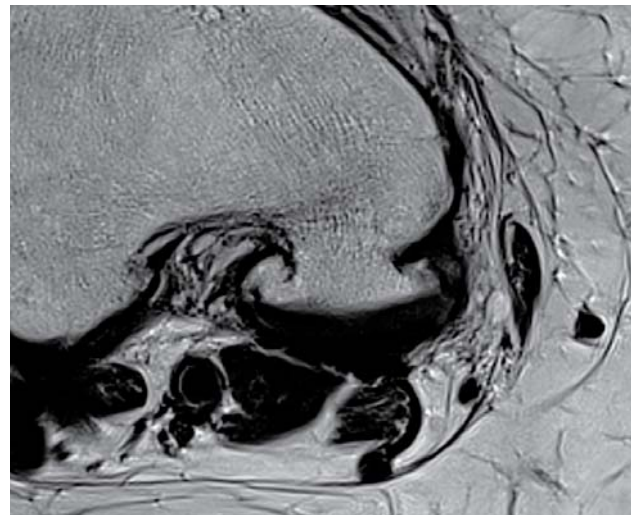
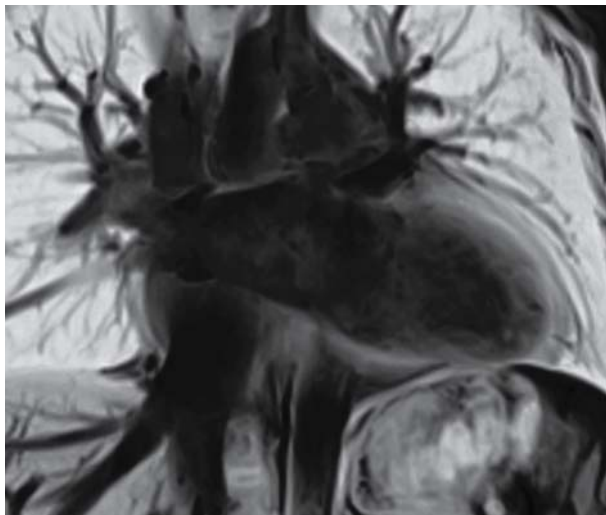
<sup>7</sup> All data incl. cold head compressor, without cooling

## Technical specifications

Interface for heat recovery	✓
Possible type of cooling	Water-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	not applicable
Minimization compared to the limit value for patients	not applicable
Measures/techniques to minimize ionizing radiation exposure to electromagnetic radiation	actively shielded magnet actively shielded gradients if necessary magnetic shielding HF-cabine with 90 dB damping
Minimization compared to the limit value for users	individual



## Replacement parts and consumables

Item	Life cycle*
Absorber	every 2 years
Accu (Patient trolley)	optional
ERDU-battery	every 2 years
Cold head	every 2 years
Vacuum pump filter	every 2 years
EKG-Electrodes	disposable material

\*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	⊗
restrictions for particular device components	⊗

### List of incompatible substance classes

total device	alcoholic/etheric disinfections
	sprays
	organic solvents
	scouring solvents
	products containing phenolalcyamin / lye
restrictions for particular device components	⊗

### Suitability of the device for sterile areas

Size of the surface to be cleaned*	approx. 5 m <sup>2</sup>
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\*Body Coil (inside), patient table overlay, local-coil, control element, console, keypad, intercom, mouse

## Further ecologically relevant information

### Elements of instruction are

recommendations for savings energy	✓
recommendations for efficient cleaning	⊗
recommendations for appropriate use of consumables	✓



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#### **Siemens Healthcare Headquarters**

Siemens Healthcare GmbH  
Henkestr. 127  
91052 Erlangen  
Germany  
Phone: +49 9131 84-0  
[siemens.com/healthcare](http://siemens.com/healthcare)