



MAGNETOM Terra

Environmental Product Declaration



7T research power into clinical care

MAGNETOM Terra is designed to let you explore new territories in MRI by enabling powerful 7T research and enhancing clinical care. Uncover a whole new world of clinical insights with double SNR for more precision. Our advanced ultra-high-field (UHF) technology will keep you at the cutting edge of MRI, to attract the brightest minds to your facility, sharpen your competitive edge and strengthen your reputation. It delivers a fertile platform for unlocking research capabilities, publishing new insights first, and setting the pace in diagnostic imaging. Welcome to an exclusive UHF community. Welcome to a whole new world in MRI. Welcome to clinical 7T.

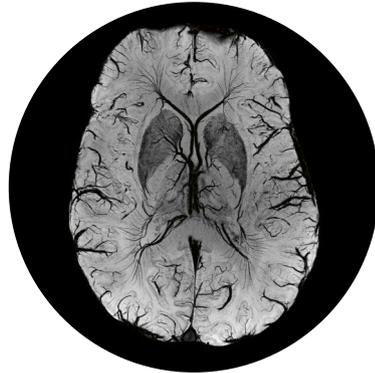
Key product features

- Unique Dual Mode functionality
- 80/200 gradients, 8-channel pTX and up to 64 channels
- 50% lighter 7T magnet technology
- Double SNR for more precision

MAGNETOM Terra

Key differentiator

The Siemens Healthineers’ manufactured 7T human magnet is the cornerstone technology of MAGNETOM Terra. Thanks to its light weight, the magnet can be shipped cold via airfreight for first time in the 7T history. This results in fast transportation and savings in helium supply. What’s more, there is a clear benefit from up to 50% faster installation time, resulting from magnet ramp-up time of 6 hours vs 7 days compared to previous 7T magnet generations. All these enable easier and faster integration in the clinical environment with reduced installation costs. Furthermore, Zero Helium boil-off translates into lower lifecycle costs and an improved eco-footprint. Another differentiator of MAGNETOM Terra, is the increased number of receive channels, so that MR scans can be substantially accelerated, which ultimately increases the number of examinations that can be done with one system – as a result, increasing the energy efficiency. Energy consumption during use accounts for over three-quarters of the environmental impact of medical products. Productivity is enhanced with the improved workflow of the MR exam with optimized 7T field strength specific protocols enabling to increase efficiency in every step. All this has the potential to enhance performance, lower resource consumption, improve sustainability.



Images courtesy: FAU, Erlangen, Germany

Zero Helium boil-off magnet technology

MAGNETOM Terra uses the most innovative magnet technology by Siemens Healthineers, which is a milestone in MR magnet technology. Its unique design and thermally balanced materials minimize physical interactions between core components. The result is 50% lighter than previous generations, with a higher structural stability and a greater fundamental stress capacity. As any 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 Terra magnet requires no helium refill in normal use, resulting in lower resource consumption and reduced operating costs. 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

- State-of-the-art Zero Helium boil-off technology
- Green Cooling Package (optional) with automatic adaption to cooling requirements to decrease energy consumption for cooling by up to 39%¹

Customer benefits

- Consistently high image quality with double SNR
- Reduced life-cycle costs by increased energy efficiency
- Easier and faster installation area enabled by lightweight magnet technology
- Increased productivity with the improved workflow of the MR exam based on optimized 7T field strength specific protocols

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 with ISO14001 and OHSAS18001

[siemens.com/healthcare-ehs](https://www.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 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

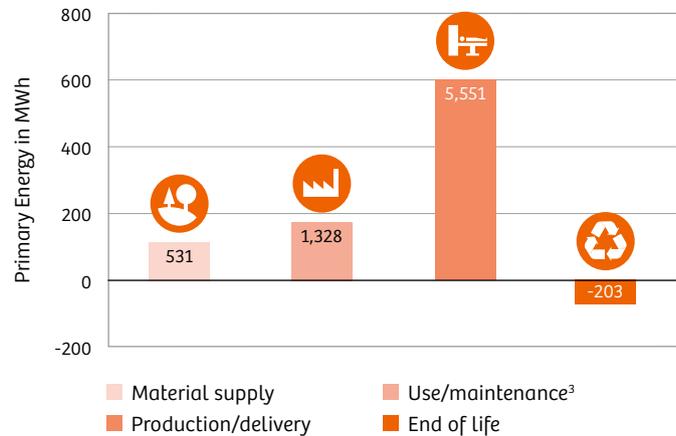
Siemens Healthineers considers environmental aspects in all phases of the product life cycle, including material supply, production/delivery, use/maintenance and end of life.

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.

Cumulative Energy Demand

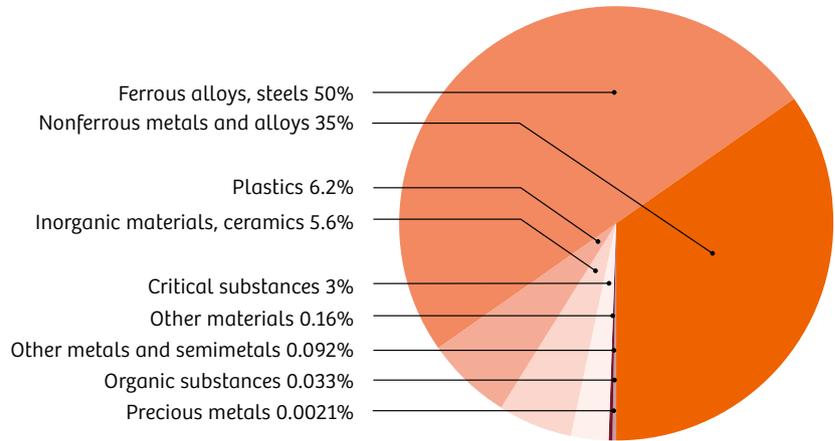
Energy consumption is the most important environmental characteristic of medical devices. This is why we use the Cumulative Energy Demand to assess environmental performance. Cumulative Energy Demand is the total primary energy² that is necessary to produce, use and dispose a device – including all transportation. 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 203 MWh in form of secondary raw materials or thermal energy to the economic cycle.



Product Materials

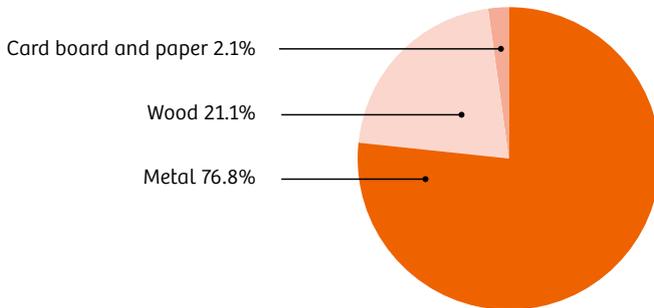
MAGNETOM Terra is mainly built out of metals. This ensures a high degree of recyclability.

Total weight: approx. 25,000 kg



Numbers may not add up due to rounding

Packaging Materials



Numbers may not add up due to rounding

The MAGNETOM Terra is delivered in 2 parts: System electronics and Magnet. Assembly of the system takes place at the customer side. Both, system electronics and magnet can be delivered by truck, air freight or sea shipments. The graph (on the left) shows the average percentages over all 3 delivery types and include both electronics and magnet. The magnet is delivered on a reusable steel pallet. In case of sea freight the components are additionally vacuum packed.

The packaging reuse ratio for packaging is more than 50%. The rest is supplied to material recycling.

Total weight:
packaging approx. 7,450 kg

Product Take Back

Most of the materials used to produce MAGNETOM Terra are recyclable. 97% (by weight) can be recycled for material content and 3% for energy.

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 ⁴	
• System ready to measure ⁵	17.5 kW
• Scan ⁶	25.7 kW
Allowed ambient temperature ⁷	
	18°C–22°C
Allowed relative humidity	
	40–60%
Noise level	
• Basic load	≤ 56.7 dB (A) ⁸
• Full load	≤ 102.2 dB (A) ⁸
Power consumption ⁴	
• System off	9.8 kW
• System ready to measure ⁵	17.5 kW
• Scan ⁶	25.7 kW
Power-on time ⁹	
	≤ 6.30 min

Technical Specifications

Interface for heat recovery	Yes
Possible type of cooling	Water cooling
Complete switch-off is possible	No
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	Not applicable
Reduction compared to the limit value for patients	Not applicable

Electromagnetic Fields

Measures/techniques to minimize the exposure to electromagnetic fields	<ul style="list-style-type: none"> • actively shielded magnet • actively shielded gradients • if necessary magnetic shielding • RF-cabin with 90 dB damping
--	---

Replacement Parts and Consumables

Item	Life cycle ¹⁰
Adsorber	every 9 years
ERDU-battery	every 10 years
Cold head	approx. every 4–5 years
Vacuum pump filter	every 2 years
ECG-Electrodes	disposable material

Disposal / Substance Information

End of life concept	Yes
Recycling information	Yes
List of hazardous substances	Yes

Cleaning

The following classes of active agents in specific concentrations have been tested and are approved:

- Aldehydes
- Quaternary compounds
- Guanidine derivatives
- Peroxide compounds
- Pyridine derivatives
- Chloro derivatives
- Commercially available cleaning agents, detergent substances
- Alkylamine
- Organic acids

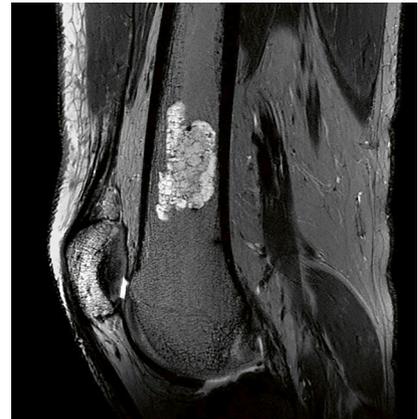
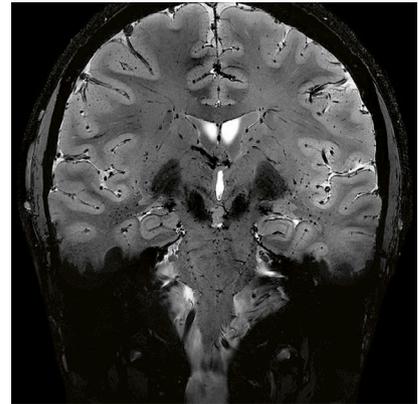
Suitability of the device for sterile areas	Not applicable
---	----------------

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 instruction are:

- | | |
|--|-----|
| • Recommendations for saving energy | Yes |
| • Recommendations for cleaning | Yes |
| • Recommendations for appropriate use of consumables | Yes |



Not for distribution in the USA. 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. Some products are still under development and not commercially available yet. Their future availability cannot be ensured.

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.

For accessories, please visit:
siemens.com/medical-accessories

- 1 *Based on climate dates for Munich. Data on file; results may vary*
- 2 *Primary energy is the energy contained in natural resources prior to undergoing any man made conversions (e.g. oil, solar)*
- 3 *Based on 10 patients per day, 30min scan time per patient, 10 years usage*
- 4 *All values are typical values, applicable for 400V/50Hz. The power consumption described herein is based on results that were achieved in a setting according to the COCIR methodology MRI - Measurement of the energy consumption (<http://www.cocir.org/site/index.php?id=46>). Since many variables impact power consumption (e.g. sequences used for scanning and sequence parameters, scan time), there can be no guarantee that each customer will achieve the same values*
- 5 *Device is in operation but no patient examination takes place*
- 6 *Average value for energy consumption during examination of patients*
- 7 *Within examination room*
- 8 *Measured according to NEMA in magnet room*
- 9 *From off-mode to operating state*
- 10 *Recommended exchange interval*

.....
Siemens Healthineers Headquarters

Siemens Healthcare GmbH
Henkestr. 127
91052 Erlangen, Germany
Phone: +49 9131 84-0
siemens-healthineers.com