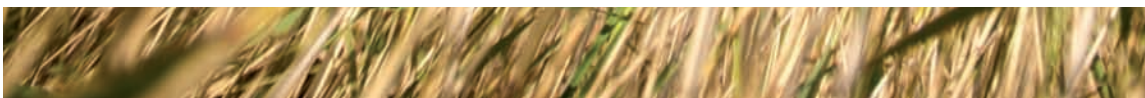
MAGNETOM Avanto/ MAGNETOM Espree

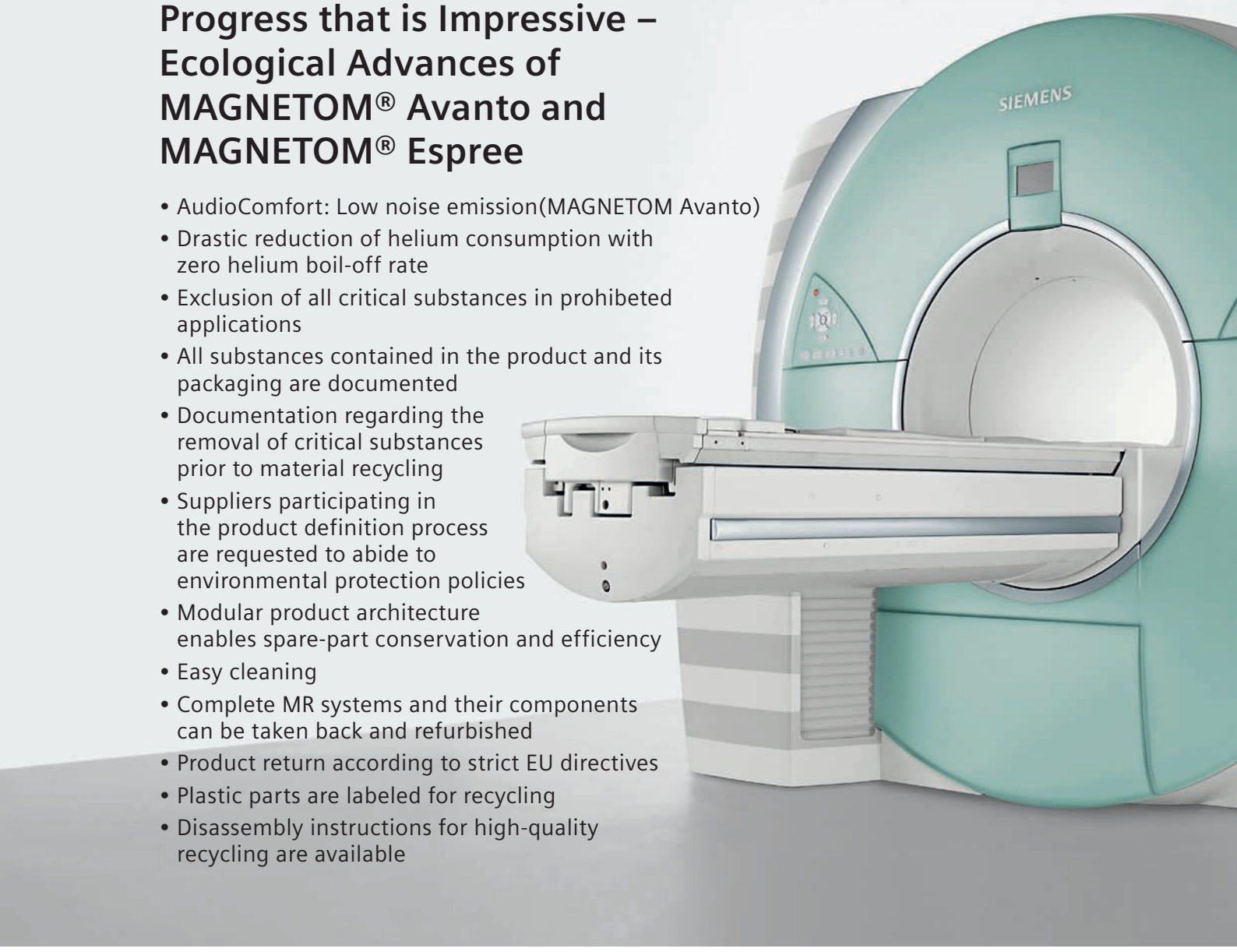
Environmental Product Declaration

Answers for life.

SIEMENS



Progress that is Impressive – Ecological Advances of MAGNETOM® Avanto and MAGNETOM® Espree



- AudioComfort: Low noise emission(MAGNETOM Avanto)
- Drastic reduction of helium consumption with zero helium boil-off rate
- Exclusion of all critical substances in prohibeted applications
- All substances contained in the product and its packaging are documented
- Documentation regarding the removal of critical substances prior to material recycling
- Suppliers participating in the product definition process are requested to abide to environmental protection policies
- Modular product architecture enables spare-part conservation and efficiency
- Easy cleaning
- Complete MR systems and their components can be taken back and refurbished
- Product return according to strict EU directives
- Plastic parts are labeled for recycling
- Disassembly instructions for high-quality recycling are available

EMAS
VALIDATED INFORMATION
D-158-00011

Validated information according to EMAS is marked by a grey background and the statement EMAS: validated information.

MAGNETOM Avanto: Reduction of Noise Emission

With AudioComfort, noise development is reduced by up to 30 dB (A) as compared to conventional systems. This corresponds to a 97% reduction in noise level.

MAGNETOM Avanto is one of the most efficient and low-noise universal 1.5 T high performance systems.
Almost all clinical applications operate below a noise level of 99 dB (A). This eliminates the mandatory requirement of ear protection for patients. We recommend, however, that headphones or ear plugs are worn at all times during highly sophisticated applications as well as by children or the elderly. Patient comfort increased considerably as compared to previous systems. In the course of 8 hours, the average noise level in the examination room is considerably less than 85 dB (A). As a result, personnel and accompanying persons are able to remain in the examination room without ear protection.

EMAS: validated information – Environmental declaration 2004

MAGNETOM Avanto
MRI Excellence in 1.5T

For ultra-fast image acquisition. For a dramatic reduction in acoustic noise without compromising gradient performance. For one of the most comprehensive application ranges available today. For fast return of investment. For truly seamless workflow automation. MAGNETOM Avanto.
From a clinical, business, and patient perspective, it looks different. It sounds different. And it works differently. Welcome to MRI Excellence in 1.5T.

MAGNETOM Espree
The first Open-Bore MRI

Welcome to your equation for patient comfort, superior high-quality images, and effortless workflow. The MAGNETOM® Espree is, quite simply, the best selling Open-Bore MRI on the market today. With it, you'll experience revolutionary performance, increased patient satisfaction, and a broad array of applications enabling you to do more than you ever thought possible. Its 70-cm internal bore, short 125-cm system length, high 1.5T field strength, and innovative Tim™ technology will widen your clinical capabilities and open the door to a broader patient referral base, improved throughput, and better profitability.

Reduction of Helium Consumption

MAGNETOM Avanto and MAGNETOM Espree are equipped with a zero helium boil-off technology. Only during coldhead maintenance minor helium loss may not completely avoidable.
It allowed us to increase refill intervals of typically 1 year for our previous systems to over 10 years for new systems operating under normal conditions.

Depending on the frequency and type of applications used, overall savings amount to between 700 and 1300 liters of liquid helium per year. Helium is extracted from natural gas which makes it of restricted availability. If helium reaches the atmosphere, it will eventually escape to the universe due to its low weight and be lost forever. To achieve its cooling performance, it must be liquefied at high energy consumption.

EMAS: validated information – Environmental declaration 2004

Environmental Management System

Our environmental, health and safety management system conforms to ISO 14001 and aids us in putting our policy into practice. Our German manufacturing facilities were among the first to be validated for EMAS (Environmental Management and Audit Scheme).
For further information about our environmental, health and safety management system, go to 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 start-up at the customer site

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 during all phases of the product life cycle, including material supply, production/delivery, use/maintenance and end of life.

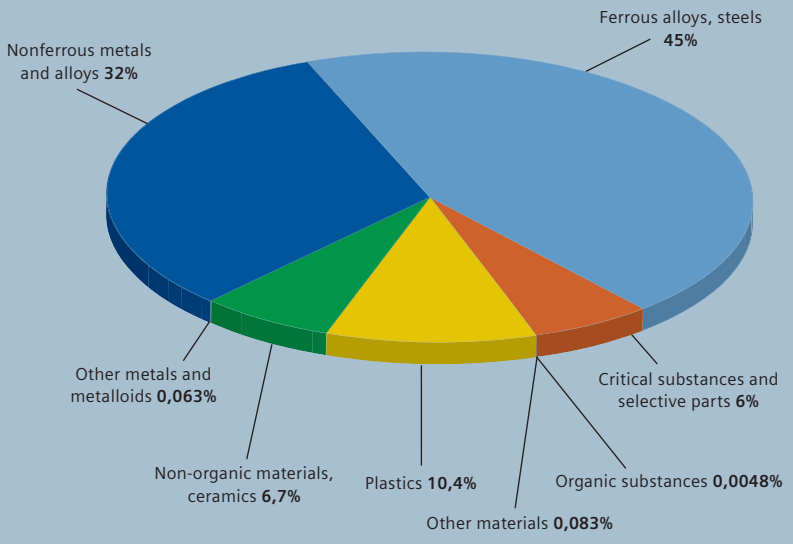
Our product design procedure fulfills the requirements of IEC60601-1-9:2007 "Environmental product design for medical electrical equipment".

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

Identification of Product Components

During the development of MAGNETOM Avanto, a method was piloted that helped determine product materials. This provided the prerequisites for high-quality recycling of the system.

Total weight: approx. 8000 kg



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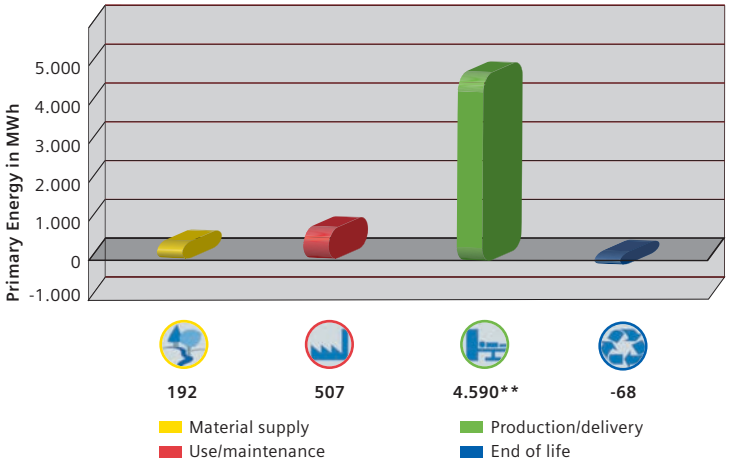
Cumulative Energy Demand

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 are nearly entirely recycled for materials or energy. With an appropriate end-of-life disposal, it is possible to return 68 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 power).



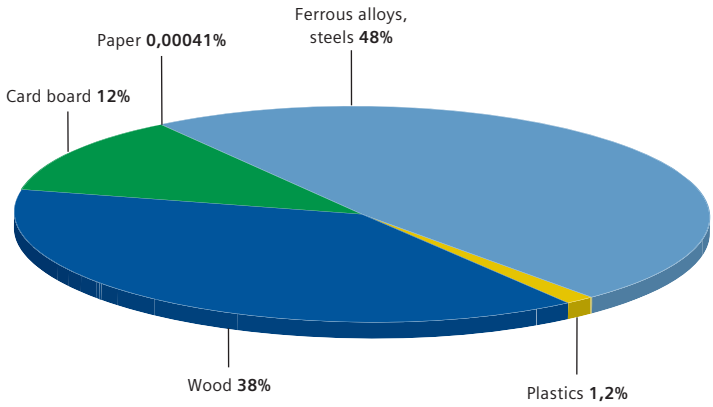
** Based on 10 years usage.

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 overseas 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 60%. Most of the rest is supplied to material recycling. Only an insignificant amount (< 1%) has to be recycled for energy.

Total weight:

– open packaging	approx. 1.000 kg
– closed packaging	approx. 2.750 kg



Product Return

Most of the materials used to produce MAGNETOM Avanto are recyclable. 93% (weight %) can be materially and 7% energetically recycled.

EMAS: validated information – Environmental declaration 2004

Our product return program ensures that we address the environmental aspects of our products – even at end of life phase. 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 \dissipation of the device		
– basic load[1]		≤ 20 kW
– full load[2]		30 kW
Permissible room temperature[3]		18°C - 22°C
Permissible relative humidity[3]		40 - 60%
Noise level	**Avanto**	**Espree**
– basic load[1]	≤ 75 dB(A)	not recorded
– full load[2]	≤ 99 dB(A)[6]	≤ 115 dB(A)[7]
Energy consumption		
– during ramp up[4]		8-20 kW
– basic load[1]		≤ 20 kW
– full load[2]		30 kW
Power-on time[4]		7 min
Power-off time[5]		7 min

[1)] Device is in operation but no patient examination takes place
[2)] Average value for energy consumption at patient examination
[3)] within examination room
[4)] From off-mode to operating state
[5)] From operating state to off-mode
[6)] Measured according to NEMA
[7)] Measured according to IEC 60601-2-33

syngo®, the unique software platform for medical applications and systems, integrates all patient-related information, physiological, and imaging data across your entire clinical workflow. In every workplace *syngo's* innovative user interface allows you to know intuitively what to do. Its intelligent automation features accelerate your exam, enabling smooth, efficient workflow, across modalities, departments, and people. With *syngo*, your workplace is uniquely customized to the way you work. The "program" concept in *syngo* MR enables scanning patients with a minimum of mouse clicks. This speeds up the total examination time.

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 system families	√

The combination of our world-class gradients together with Tim (Total imaging matrix) enables the most demanding applications.

Other features involve:
- Actively shielded (AS), compact, full-body gradient system
- Extremely low eddy currents
- Coil and amplifier water-cooled for maximum energy efficiency

Radiation

Measures/techniques to minimize ionizing radiation exposure	not applicable
Minimization compared to the limit value for patients	not applicable
Measures/techniques to minimize the exposure to electromagnetic radiation	actively shielded magnet actively shielded gradients if necessary magnetic shielding HF-cabin with 90 dB attenuation
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

Waste management concept for the end of product life	√
Recycling information for the device	√
List of restricted substances	√

Cleaning

Not permissible cleaning modes	
– total device	⦸
– restrictions for particular device components	⦸
List of incompatible substance classes	
– total device	alcoholic/etheric disinfections sprays organic solvents scouring solvents products containing phenolalcylamin/lye
– restrictions for particular device components	⦸
Suitability of the device for sterile areas	⦸
Size of the surface to be cleaned*	approx. 5 m^2

* Body Coil (inside), patient table overlay, local-coil, control element, console, keypad, intercom, mouse

Additional Ecologically Relevant Information

Elements of instruction are:	
– recommendations for saving energy	√
– recommendations for efficient cleaning	⦸
– recommendations for appropriate use of consumables	√

Parts of this environmental product declaration are the result of the IPP-Project* "Ecological product information of diagnostic imaging devices". The criteria for this product information was developed via a dialogue process by the manufacturers of medical devices,
– Agfa-Gevaert HealthCare GmbH,
– Philips Medical Systems DMC GmbH and
– Siemens AG Medical Solutions,
the users of medical devices,
– Albertinen-Krankenhaus,
– ENDO-Klinik Hamburg GmbH,
– Katholisches Kinderkrankenhaus Wilhelmstift GmbH,
– Klinikum Bremen-Mitte gGmbH,
– Universitätsklinikum Hamburg-Eppendorf,
– Conradia radiologische Praxen,
the following associations,
– Hamburger Krankenhausgesellschaft e.V. and
– ZVEI – Zentralverband Elektrotechnik- und Elektroindustrie e.V.
initiated by the "Behörde für Stadtentwicklung und Umwelt Hamburg".

** Integrated Product Policy. (IPP)*

This declaration is for information purposes only, it is not part of the specification and does not represent any warranty or guarantee.

The information in this document contains general descriptions of the technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.

Siemens reserves the right to modify the design and specifications contained 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.

Please find our environmental declarations:
www.siemens.com/healthcare-ehs-mgmtsys

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