MAGNETOM Vida – the first 3T MRI scanner with BioMatrix Technology – embraces human nature and the unique set of challenges that each patient brings to the MRI exam. By embracing these challenges, we overcome patient variability – ushering in a paradigm shift in MRI. The outcome: fewer rescans, predictable scheduling and consistent, high-quality personalized exams for high-end clinical routine as well as clinical research.

In addition to the revolutionary BioMatrix Technology, MAGNETOM Vida has an all-new magnet and system architecture as well as various revolutionary features to serve the increasing demands in high-end clinical imaging and in clinical research.

**Embrace human nature at 3T**

**Key product features**

- BioMatrix Technology for less rescans and consistent, high quality personalized exams
- Unifying a new level of 3T performance, patient comfort and cost efficiency with additional > 20% energy savings with Eco-Power™
- Accelerated workflows and reduced scan times for higher throughput and robustness with GO technologies
- Expanding the patient population eligible for MRI with Inline Compressed Sensing for free-breathing exams in cardiac and abdominal MRI
MAGNETOM Vida

Key differentiator

BioMatrix is the cornerstone technology of MAGNETOM Vida helping to enhance productivity, consistency and robustness in MRI. Productivity is further enhanced by GO Technologies that address the entire workflow of an MRI exam enabling to increase efficiency in every step. In combination with the integrated coil technology Tim 4G scans are 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. MAGNETOM Vida incorporates several power-saving technologies reducing the energy consumption significantly over comparable systems. Additionally, with the Green Cooling Package (optional), customers can decrease their energy consumption for cooling by up to 39%². Furthermore, MAGNETOM Vida is easy to site with low space requirements and low connection values enabling to use existing infrastructures and with that reduce installation costs.

Zero Helium boil-off magnet technology

MAGNETOM Vida 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 Vida requires no helium refill in normal use. Depending on the frequency and type of applications used, overall savings of up to 1,300 liters of liquid helium 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

- Reduction of energy consumption with Eco-Power technology
- 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%²

Customer benefits

- Consistently high image quality and higher productivity with BioMatrix Technology
- Reduced life-cycle costs by increased energy efficiency
- Small installation area enabled by ultra-short and lightweight magnet technology
- Increased marketability and accommodation of more patients thanks to excellent patient comfort options
Energy consumption is the most important environmental characteristic 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 up to 104 MWh in form of secondary raw materials or thermal energy to the economic cycle.

**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.

*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.

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**Cumulative energy demand**

Energy consumption is the most important environmental characteristic 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 up to 104 MWh in form of secondary raw materials or thermal energy to the economic cycle.

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![Primary Energy in MWh](chart.png)

- **Material supply**: 231 MWh
- **Production and transportation**: 722 MWh
- **Usage (per 10 years)**: 3,267 MWh
- **End of life**: -104 MWh

---

4
Identification of product materials

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

![Material distribution chart]

Packaging

For domestic delivery our MRI systems are transported by truck in open packaging. For overseas delivery by air freight closed packaging is used and the magnet is delivered on a reusable steel pallet (see graphs on the right). In case of sea freight the components are additionally vacuum packed.

The packaging reuse ratio for closed packaging 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. 450 kg
- closed packaging approx. 2,400 kg

Product take back

Most of the materials used to produce MAGNETOM Vida are recyclable. 93% (by weight) can be recycled for material content and 7% 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.
### Operating data

<table>
<thead>
<tr>
<th>Heat emissions of the device&lt;sup&gt;a&lt;/sup&gt;</th>
<th>8.4 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>• System ready to measure&lt;sup&gt;b&lt;/sup&gt;</td>
<td>23.1 kW (XQ gradients)</td>
</tr>
<tr>
<td>• Scan&lt;sup&gt;6&lt;/sup&gt;</td>
<td>27.4 kW (XT gradients)</td>
</tr>
</tbody>
</table>

| Allowed ambient temperature<sup>c</sup> | 18°C–22°C |
| Allowed relative humidity<sup>d</sup> | 40–60% |

<table>
<thead>
<tr>
<th>Noise level</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Basic load</td>
<td>≤ 62.9 dB (A)&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td>• Full load</td>
<td>≤ 102.9 dB (A)&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power consumption&lt;sup&gt;f&lt;/sup&gt;</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• System off</td>
<td>4.3 kW</td>
</tr>
<tr>
<td>• System ready to measure&lt;sup&gt;b&lt;/sup&gt;</td>
<td>8.4 kW</td>
</tr>
<tr>
<td>• Scan&lt;sup&gt;6&lt;/sup&gt;</td>
<td>23.1 kW (XQ gradients)</td>
</tr>
<tr>
<td></td>
<td>27.4 kW (XT gradients)</td>
</tr>
</tbody>
</table>

| Power-on time<sup>g</sup> | 5.5 min |

### Technical specifications

<table>
<thead>
<tr>
<th>Interface for heat recovery</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible type of cooling</td>
<td>Water-cooling</td>
</tr>
<tr>
<td>Complete switch-off is possible</td>
<td>No</td>
</tr>
<tr>
<td>Device is adjustable for the user in terms of height</td>
<td>Yes</td>
</tr>
<tr>
<td>Uniform operating symbols for device families</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Ionizing radiation

| Measures/techniques to minimize ionizing radiation exposure | not applicable |
| Minimization of ionizing radiation compared to the limit value for patients | not applicable |

### Electromagnetic fields

<table>
<thead>
<tr>
<th>Measures/techniques to minimize the exposure to electromagnetic fields</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• actively shielded magnet</td>
<td></td>
</tr>
<tr>
<td>• actively shielded gradients</td>
<td></td>
</tr>
<tr>
<td>• if necessary magnetic shielding RF-cabin with 90 dB damping</td>
<td></td>
</tr>
</tbody>
</table>
Replacement parts and consumables

<table>
<thead>
<tr>
<th>Item</th>
<th>Life cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adsorber</td>
<td>every 9 years</td>
</tr>
<tr>
<td>Rechargeable battery</td>
<td>optional</td>
</tr>
<tr>
<td>(Patient trolley)</td>
<td></td>
</tr>
<tr>
<td>ERDU-battery</td>
<td>every 10 years</td>
</tr>
<tr>
<td>Cold head</td>
<td>approx. every 4–5 years</td>
</tr>
<tr>
<td>Vacuum pump filter</td>
<td>every 2 years</td>
</tr>
<tr>
<td>ECG-Electrodes</td>
<td>disposable material</td>
</tr>
</tbody>
</table>

Disposal / substance information

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

Further ecologically relevant information

Elements of instruction are:
• Recommendations for saving energy: Yes
• Recommendations for cleaning: Yes
• Recommendations for appropriate use of consumables: Yes

Cleaning

The following classes of active agents in specific concentrations have been tested and are approved for cleaning:
• 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: No

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

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1 Data on file
2 based on climate dates for Munich.
3 Primary energy is the energy contained in natural resources prior to undergoing any man made conversions (e.g. oil, solar).
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 at 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

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