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Biograph mCT and Biograph mCT Flow

Environmental product declaration

Progress That is Impressive— Ecological Advances of Biograph mCT and Biograph mCT Flow

Designed as a truly hybrid system, Biograph™¹ mCT allows you to expand your system utilization in PET, CT and radiation therapy planning (RTP) imaging. The fast, high-resolution PET scan with advanced motion management enables visualization of small structures without compromising scheduling. With a small footprint, Biograph mCT can be utilized as standalone CT with full capabilities for oncology, cardiology and neurology studies. The large bore (78 cm) accommodates stereotactic and positioning devices for RTP.

Biograph mCT Flow™¹ is the first PET/CT to enable acquisitions with continuous bed motion. With its exclusive Flow-Motion™ technology, Biograph mCT Flow enables PET/CT examinations that are harmonized across institutions, standardized based on the clinical indication and personalized based on the patient anatomy. Biograph mCT Flow is the PET/CT system to improve patient outcomes, by bringing personalized medicine to molecular imaging.

- 29% reduction in energy on a per patient basis*
- 50% reduction of injected dose or 2x scan speed with TrueV and ultraHD•PET²
- 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
- Complete CT systems and their components are taken back and refurbished
- Product take-back according to strict EU directives
- 78% of the materials used can be returned to the flow of recyclable materials

* Compared to prior product family. Source: Siemens Environmental Portfolio Element No. 11305



50% reduction in PET injected dose²

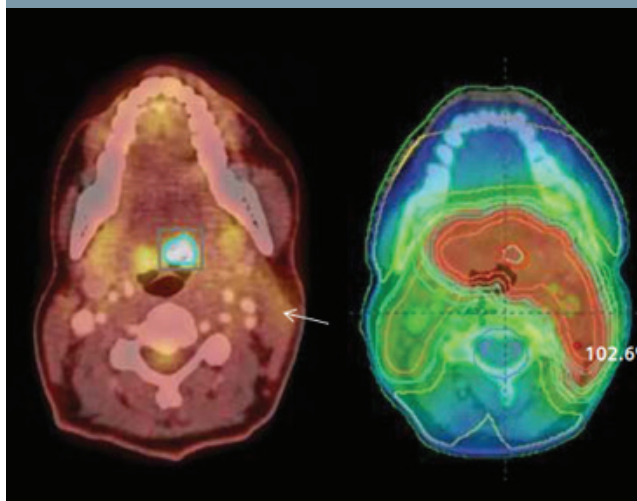
Biograph mCT and Biograph mCT Flow can be equipped with advanced technologies that improve system performance and enable the examination of patients with half the injected dose. The enabler technologies are TrueV and ultraHD•PET.

TrueV high-speed technology widens the axial Field of View (FOV) by 30% when compared to a standard FOV. With an increased count rate performance of more than 70%, you can lower dose rates or scan time. For example, a scan time reduced by half or 50% less dose injected in the patient.

ultraHD•PET incorporates Time-of-Flight (TOF) and measured point spread functions (PSF) into the iterative reconstruction algorithm. TOF measures the actual time difference between the detection of each coincidence photon. This additional timing information is used to better localize the event within a small range along each line of response. The better localization of each event using TOF reduces noise in the reconstructed image and increases the signal-to-noise ratio by up to 200%.

Besides reducing the exposure of patients and staff to radiation, reducing the injected dose also provides a reduction in environmental impacts. In a scenario where the dose volume during the life cycle is reduced in 45 kg, the Cumulative Energy Demand (CED) is reduced by 30 GJ and the Global Warming Potential (GWP) is reduced by nearly 2t CO₂ eq.

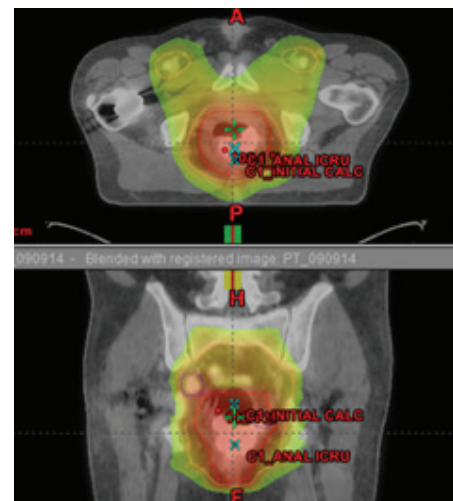
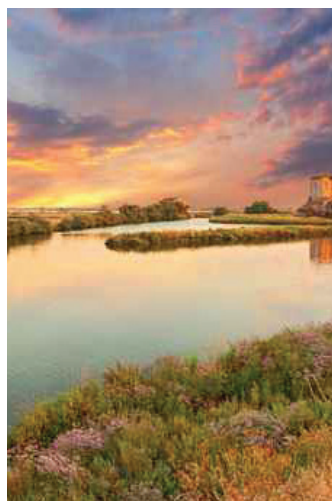
Data courtesy of Rigshospitalet, Copenhagen, Denmark



Minimize patient exposure

As part of the STRATON X-ray tube, the unique Adaptive Dose Shield moves collimators on the X-ray tube to block unnecessary radiation dose. The shield dynamically opens at the onset of a spiral range and dynamically closes at the end, eliminating clinically irrelevant dose.

Data courtesy of University of Pennsylvania, Valley Forge, Pennsylvania, USA



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



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

Cumulative energy demand*

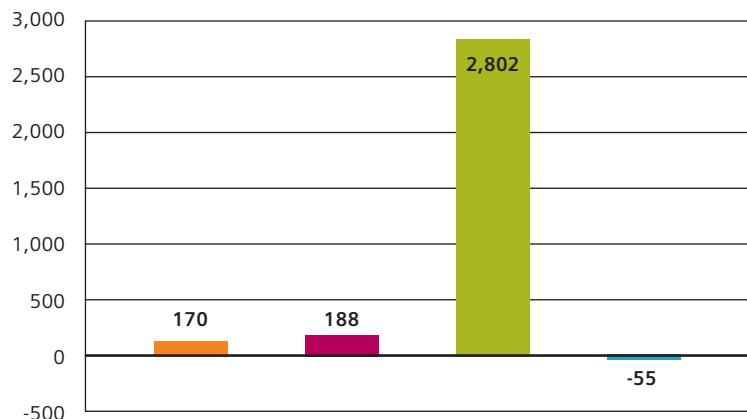
Energy consumption is the most important environmental characteristic of medical devices. This is why we use Cumulative Energy Demand to assess environmental performance. Cumulative Energy Demand is the total primary energy** that is necessary to produce, use and dispose of a device—including transportation.

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 55 MWh in form of secondary raw materials or thermal energy to the economic cycle.

* Based on 10 years usage.

** Primary energy is the energy contained in natural resources prior to undergoing any manmade conversions (e.g., oil, solar).

Primary energy in MWh



Materials



Production and transportation (manufacturing)



Usage (per 10 years)

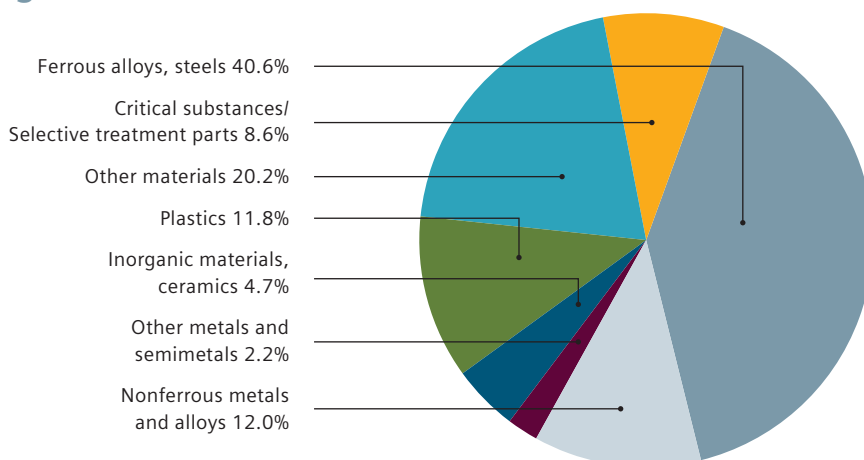


End of life

Identification of product ingredients

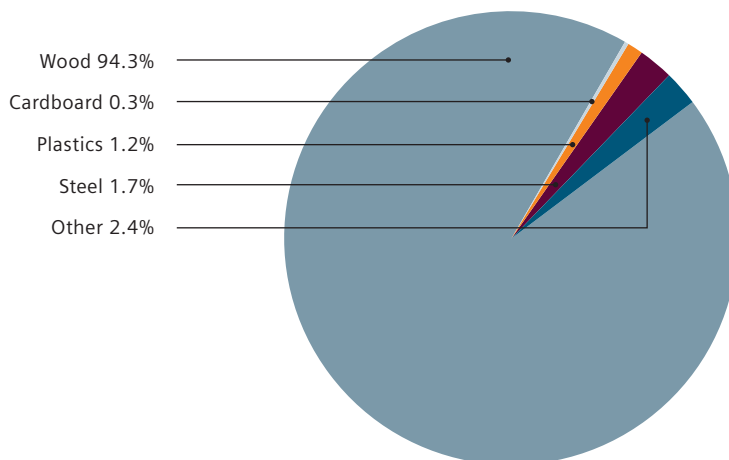
The Biograph mCT and Biograph mCT Flow are mainly built out of metals. This ensures a high degree of recyclability.

Total weight: approx. 3,798 kg



Packaging

The Biograph mCT and Biograph mCT Flow system packaging primarily consists of wood, plastic and steel, all of which are recyclable.



Product take back

Most of the materials used to produce Biograph mCT and Biograph mCT Flow are recyclable; 78% (by weight) can be recycled for material content and 22% for energy.

The high-performance X-ray tube assemblies are designed in a way that as many parts as possible may be reused. At the end of life, the tube assemblies are taken back and are refurbished. Under optimal conditions, up to 40% of a tube assembly may consist of reused parts.

Our product take back program addresses 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. 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

Allowed room temperature	20 - 26 C
Allowed relative humidity	20 - 75% WITH DewPoint below 63° F (17° C)
Noise level	
Basic load	68 dB
Full load	74 dB
Energy consumption	
During ramp up	10 kVA
Basic load	10 kVA
Full load	150 kVA
Energy savings mode	10 kVA
Power-on time	10 minute
Power-off time	5 minute

Technical specifications

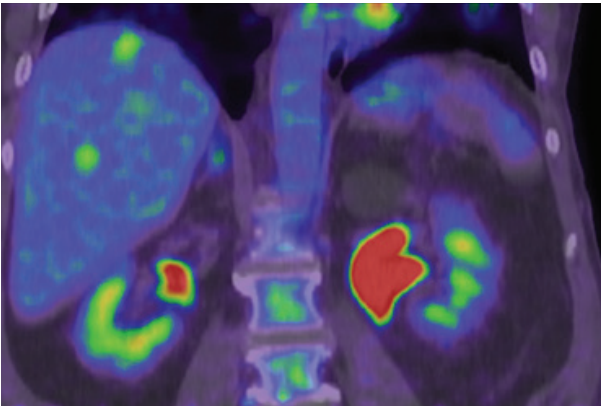
Interface for heat recovery	✓
Type of heat recovery (cooling)	Water/water, water/air
Complete switch-off is possible	✓
Device is adjustable for the user in terms of height	Yes, the height of the computer systems can be set by the end user.
Uniform symbols for device family	✓

Radiation

Measures/techniques to reduce Ionizing radiation exposure	Ultra-Fast Ceramic (UFC) detectors CARE Dose4D™ Shaped Filter and Adaptive Dose Shield
Measures/techniques to reduce exposure to electromagnetic radiation	Not applicable
Reduction compared to the limit value for users	Not applicable



Data courtesy of Royal Brisbane Hospital, Brisbane, Australia



Replacement parts and consumables

Replacement and consumable parts	Phantoms - 1 year The Phantom is the only replacement part that the consumer replaces on their own. All other serviceable parts are replaced through Siemens Service.
X-ray tube	1 year warranty

Disposal/substance information

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

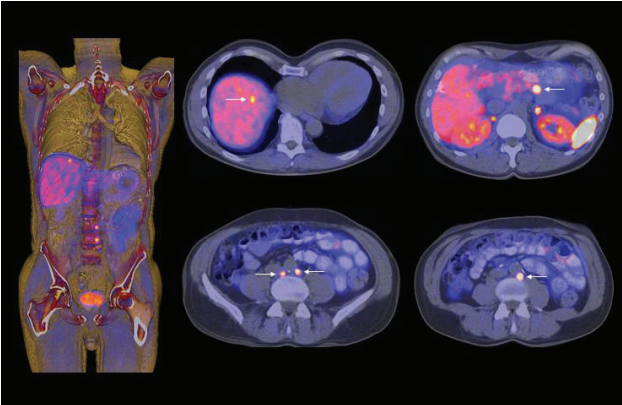
Cleaning

Incompatible cleaning processes and substances	
For product	Cleaning - Only use mild cleanser when the unit is powered on. Disinfecting - Commercially available decontamination or germicidal solutions may be used sparingly to wash the gantry, table, pad or head holder surfaces.
For particular components of the product	
Suitability of the device for sterile areas	No
Size of the surface area to be cleaned	Approx 3.5 m²

Further ecologically relevant information

Recommendations for saving energy	✓
Recommendations for efficient cleaning	✓
Recommendations for appropriate use of consumables	✓

Data courtesy of Department of Nuclear Medicine, Katharinenhospital Klinikum, Stuttgart, Germany



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Please contact your local Siemens sales representative for the most current information or contact one of the addresses listed below.

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¹ Biograph mCT and Biograph mCT Flow are not commercially available in all countries. Due to regulatory reasons their future availability cannot be guaranteed. Please contact your local Siemens organization for further details.

² Based on competitive literature available at the time of publication. Data on file.

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