



# Artis zee / Artis zeego

Environmental Product Declaration

[www.siemens.com/healthcare](http://www.siemens.com/healthcare)

**SIEMENS**

## Progress that is Impressive – Ecological Advantages of Artis zee

- Low-dose imaging protocols for interventional procedures with up to 66% dose saving\*
- Dose awareness information for physicians and nurses is available in every user manual
- Stand-by mode available for Artis zee Large Display option to save energy by up to 80% when not in use\*\*
- 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 Artis zee systems and their components are taken back and refurbished
- Product take-back according to strict EU directives
- More than 95% of the materials used can be returned to the flow of recyclable materials
- Environmental product declaration is available for download via internet [www.siemens.com/healthcare-ehs](http://www.siemens.com/healthcare-ehs)

\* Compared to standard dose settings

\*\* Compared to Artis zee Large Display in operation mode

### Dose Reduction Advances in Interventional Radiology/Interventional Cardiology

Low-dose examination protocols with Artis zee/zeego systems are state of the art. They require the most modern imaging systems in order to perform online image processing for each and every fluoroscopy pulse and frame acquired in Digital Subtracted Angiography and Digital Radiography.

Improvements in the IT performance of modern imaging systems together with intelligent algorithms for noise reduction and signal boost methods have resulted in a balanced visualization of fine vessels in low-dose imaging in fluoroscopy, DSA and cardiac imaging in the latest generation of Artis zee/zeego systems.

Accompanied by the modern dose-saving features named CARE, the Artis zee/zeego systems support interventionists by operating in 'low dose' in their daily routine.



## **Artis zee** **There's so much more to zee.**

The field of interventional imaging and minimal-invasive therapy has never been more demanding. To enhance patient outcomes and remain on the cutting edge, radiologists, cardiologists and surgeons need a system that enables them to care with greater speed, efficiency, and precision.

The answer is Artis zee<sup>®</sup>, a major advance in interventional imaging that supports the user in three critical areas. Its innovative Artis zee imaging chain with CLEAR technology offers outstanding image quality for better clinical decisions. Our CARE package (Combined Applications to Reduce Exposure) keeps radiation dose to the patient and operator as low as possible. Its workflow enhancements help the clinical team function more efficiently. And it is an investment that can be made with confidence, backed by one of the industry's most comprehensive customer care programs, Life.

In an increasingly competitive healthcare marketplace, Artis zee provides the versatility and advanced capabilities needed to deliver enhanced, faster, and more effective care.

## Environmental Management System

Our environmental, health and safety management system conforms to ISO 14001 and helps us put our policy into practice.

You can find further information about our environmental, health and safety management system at [www.siemens.com/healthcare-ehs](http://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 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 "Environmental product design for medical electrical equipment".

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

## Reduction of Critical Substances

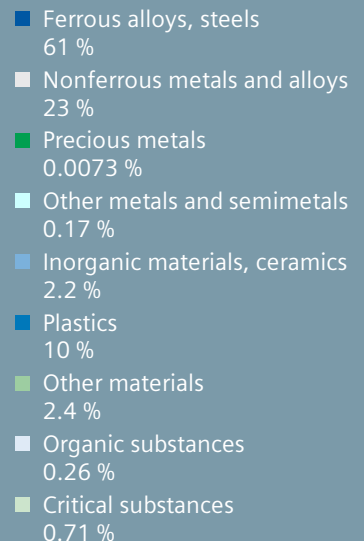
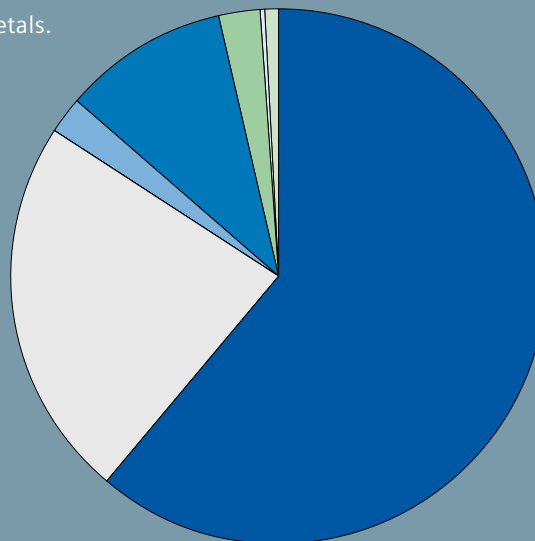
Siemens has made strides to reduce materials in our Artis zee system which are environmentally harmful and are not easily recyclable. An example of this is a recent improvement in our X-ray tube manufacturing in which Siemens has eliminated the use of beryllium (Be 4).

Beryllium is a toxic metal to organic tissue. Although Siemens has not completely eliminated all non-recyclable materials we are continually making improvements to reduce the environmental impact of Siemens products.

### Identification of Product Materials\*

Artis zee is mainly built out of metals. This provides a high degree of recyclability.

Total weight 2,597 kg



\* Data is valid for Artis zee monoplan systems.

## 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 27 MWh in the 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).

## Packaging

Our cardiology and angiography systems are shipped in “open packaging” within Europe and to the USA. We use “open packaging” for more than 65% of our shipments. The individual parts of a delivery need only be wrapped in dust protective covers. In turn, they are loaded in a special transport frame, which travels from the supplier to the end-customer and is then returned for reuse. We use “closed packaging” only for tropical countries or countries where the law so requires. The wooden crates or sealed packaging can then be used for material, or to some extent, thermal recycling. Values listed on the right represent average values from these two types of packaging.

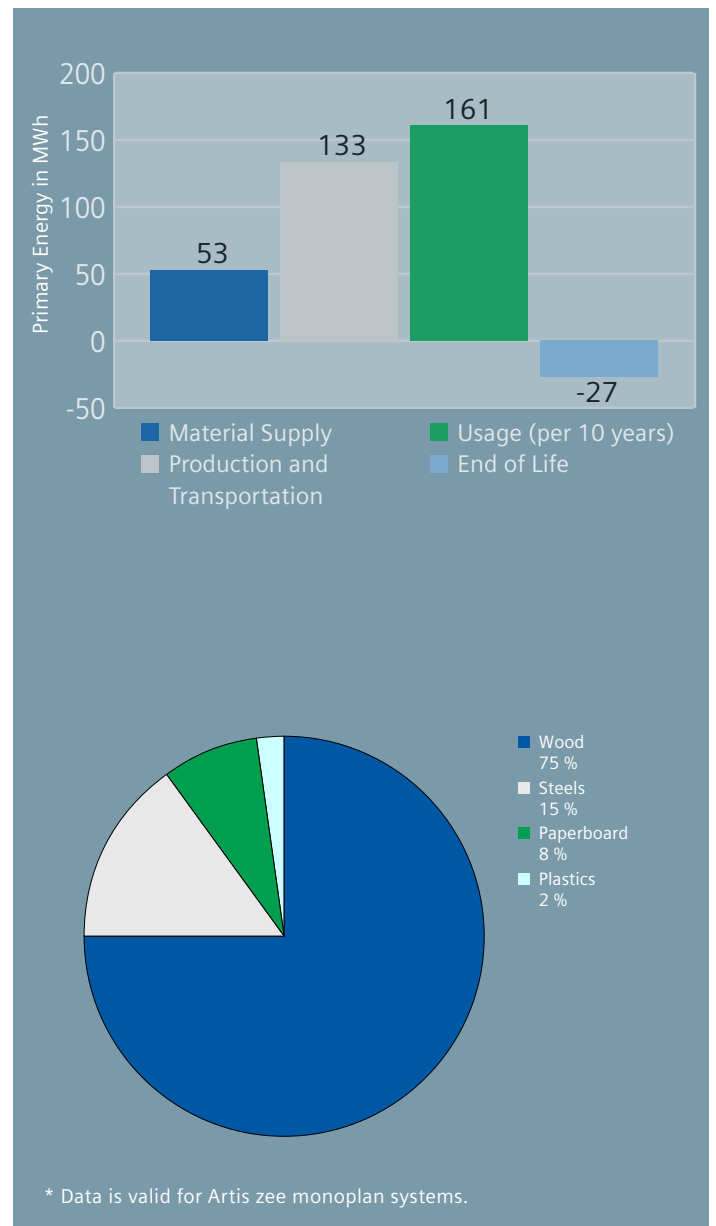
### Total Weight

Open packaging approx. 1,070 kg  
 Closed packaging approx. 2,010 kg

## Product Take Back

Most of the materials used to produce Artis zee products are recyclable. 96% of material (by weight) and 4% of the energy value can be recycled.

The high-performance X-ray tube assemblies are designed so that as many parts as possible may be reused. At the end of their life cycle the tube assemblies are returned and refurbished. Quality is guaranteed by compliance to standard IEC 62309. Under optimal conditions up to 40% of a tube assembly may consist of reused parts.



Our product disposal program ensures that we address the environmental aspects of our products – even the end of the product life cycle. 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

– typical load <sup>1</sup>	3 kW
– acquisition (max)	8.1 kW

<b>Allowed ambient temperature<sup>3</sup></b>	15° - 35°C
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<b>Allowed relative humidity</b>	20 - 75%
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### Power consumption:

– stand-by <sup>1</sup>	2.9 kW
– full load <sup>2</sup>	6.75 kW
– maximum load	80 kW

<b>Power-on time<sup>4</sup></b>	ca. 4 min.
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<b>Power-off time<sup>5</sup></b>	ca. 1.5 min.
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<sup>1</sup> Device is in operation but no patient examination is taking place

<sup>2</sup> Average value at examination of patients (abdomen routine mode)

<sup>3</sup> Within examination room

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

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

## Technical Specifications

Interface for heat recovery	no
Possible type of cooling	watercooling
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/technics to minimize ionizing radiation exposure	yes
Measures/techniques to minimize the exposure to electromagnetic radiation	n.a.
Minimization compared to the limit value for users	yes

With the Artis zee Large Display option that is available for all Artis zee systems, Siemens achieves a significant reduction in energy consumption when the display is in stand-by mode. Up to 380 watts can be saved when stand-by mode is activated.





### Replacement Parts and Consumables

Item	Life cycle
X-ray tube	30 months warranty (with respect to load conditions)
UPS battery	12 months

### Disposal / Substance Information

End of life concept	yes
Recycling information	yes
List of hazardous substances (not contained in the device)	yes

### Cleaning\*

Incompatible cleaning processes	
– total device	no
– restrictions for particular device components	yes

List of incompatible substance classes	
– total device	alcoholic/etheric disinfectants sprays organic solvents scouring solvents products containing phenylalkylamine
– restrictions for particular device components	yes

<b>Suitability of the device for sterile areas</b>	yes
Size of the surface to be cleaned**	approx. 5 m <sup>2</sup>

\*\* C-arm and C-stand, patient table, control console, monitor suspension

### Further Ecologically Relevant Information\*

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

\* More detailed information available in the user manual.

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 are subject to change without prior notice. Some/All of the features and products described herein may not be available in the United States and other countries.

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.

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For our environmental declarations, see [www.siemens.com/healthcare-ehs-mgmtsys](http://www.siemens.com/healthcare-ehs-mgmtsys)

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