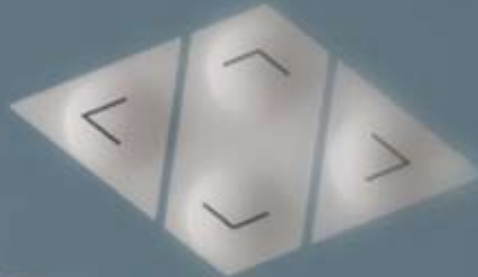


SIEMENS

21Dis trip Z1B/Z2
21Dis trip >Z3
87L Diff trip
Emergency mode
Warning

UL3 = 229.90 kV 120
IL1 = 885.10 A 25
IL2 = 880.90 A 145
IL3 = 894.20 A 95
S = 620.07 MVA
P = 561.80 MW
Q = 262.05 MVar
P.F. = 0.906
f = 50.02 Hz



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SIPROTEC 5

Environmental product declaration according to ISO14021

Answers for energy.

Environmental Mission Statement

Our knowledge and our solutions are helping to create a better world. We have a responsibility to the wider community and we are committed to environmental protection.

In our global operations, featuring a great diversity of processes, products, and services, our company is concerned with sustaining the natural resources essential to life.

We view the economy, environmental protection, and social responsibility as three key factors carrying equal weight in a liberal world market. We support the dissemination of knowledge needed for sustainable development through the transfer of knowledge in the fields of management and technology wherever we operate as a company.

For us, sustainable development in environmental protection means careful use of natural resources, which is why we assess possible environmental impacts in the early stages of product and process development. It is our aim to avoid pollution altogether or to reduce it to a minimum, above and beyond statutory requirements.



The product

Design for the environment

Ecological design is nothing new at Siemens. The company published its in-house standard SN 36350 on environmentally compatible product design in 1993, and since then this standard has been an integral part of our product planning and development process. Among other things, it calls for the use of separate and distinct material fractions, ease of disassembly, a reduction in the number of components per product, durability, low energy requirements during manufacture and day-to-day use, and the avoidance of hazardous substances. It also lists the minimum requirements regarding the parameters to be described in environmental declarations.

Fig. 1: Material composition of a basis module (flush-mounting housing) containing boards CP200, PS201, and IO202

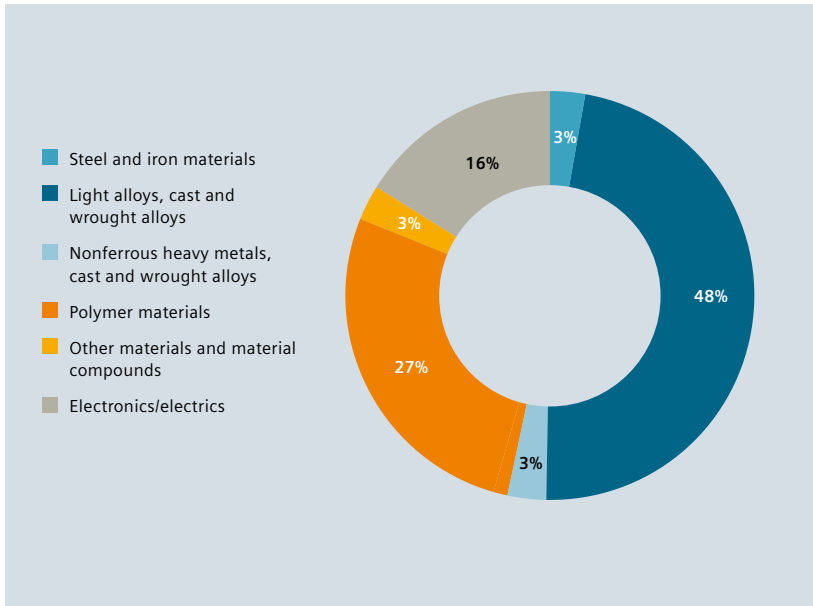
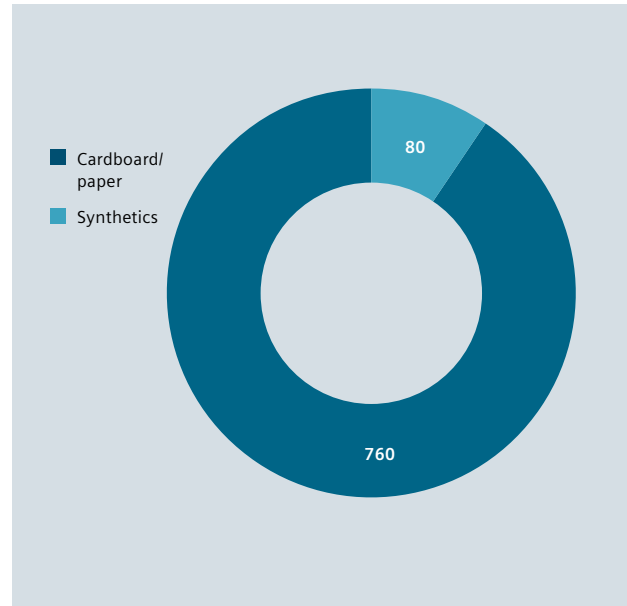


Fig. 2: Weight of the packaging for a basis module (flush-mounting housing) CP200, PS201, and IO202



Life cycle

SIPROTEC 5 devices generally consist of the following components:

- metal housing
- several circuit boards with assembled electrical components
- terminals
- front panel made of synthetic material with LCD display

Material

The typical material mix in SIPROTEC 5 device is illustrated in the diagram above.

The use of a light metal aluminum housing ensures that the transport weight is kept low, thus minimizing environmental impact.

Packaging

The weight of the packaging, distributed between the materials used, is shown in Fig. 2 above. The chart describes the same type of device as in Fig. 1.

Manufacturing

All products of the SIPROTEC 5 family are entirely manufactured at the Messgerätewerk, the measuring instrument factory, in Berlin. All important departments from procurement to disposal are located there. All components and devices are manufactured with state-of-the-art technology and logistics, and they are delivered directly to the customer. Comprehensive quality management, as well as manufacturing processes in accordance with RoHS guidelines, are a matter of course for Siemens. Even though we are not legally obliged to follow these guidelines in our production process, it goes without saying that we observe these guidelines and employ state-of-the-art, resource-saving production facilities to reduce the impact on the environment.

Fig. 3: Global warming potential (GWP 100 years) of a basis module (flush-mounting housing) in equivalent kgs of CO₂

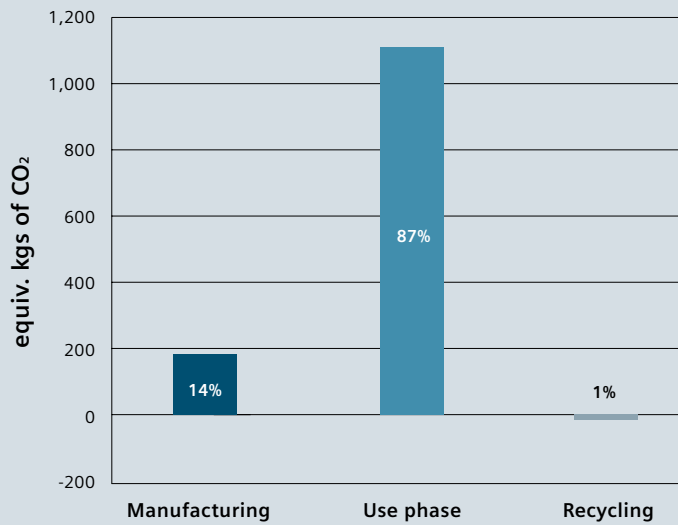
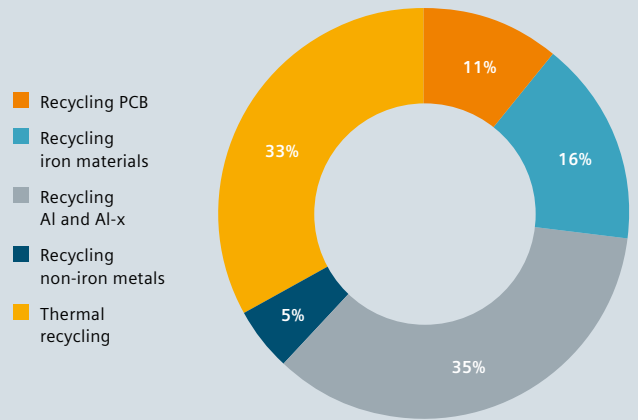


Fig. 4: Distribution of substances when the basis module is recycled (flush-mounting housing)



Environmental indicators

Application

To guarantee protective functions at all times, protective devices have to be permanently in operation. Possible disturbances in the devices are immediately signaled.

This is why energy consumption is the most important environmental issue. Therefore, we calculate the environmental impact with accumulated energy expenditure. This is the total amount of energy used in production, use, and recycling of a device. This includes all necessary transportation.

The GWP (Fig. 3) is an index for the assessment of the global warming potential, as measured against the CO₂ equivalent.

Energy consumption

Energy consumption is the most important environmental aspect of protection devices. We use the cumulative energy demand (CED) to assess possible effects on the environment. CED is the sum of primary energy spent to manufacture a device, to operate it, and to dispose of it, including all relevant transport activities. Our protection devices can be almost entirely recycled.

Disposal

At the end of the product life cycle, the product may be disposed of as electronic waste. Entering old devices in the recycling process is made possible by the effortless separation of circuit boards and metal housing. Only the lithium batteries need to be disposed of separately.

Risk factors for the environment

In case of fire, the application guidelines for electronic devices apply. In the event of damage, virtually no harmful substances are emitted thanks to the metal housing and the fire-resistant synthetic materials used in the production of the device.

SIPROTEC 5 products are developed and certified according to guideline UL 187 of the American Insurance Underwriter Laboratories.



Manufacturer

Product description

SIPROTEC 5 protection and bay control devices are a state-of-the-art development in Siemens' proven SIPROTEC range. The reliable SIPROTEC 5 products protect the following components of the electrical power supply:

- transmission lines
- transformers
- busbars
- generators.

As bay control devices, SIPROTEC 5 products are employed with the proven SICAM product family in substation automation. The products' durability and their eco-friendly design are an important contribution to sustainable solutions.

Their innovative modular design makes the SIPROTEC 5 range ideally adaptable to individual requirements and, as a result, helps to avoid unnecessary ecological damage.

Environmental management system

In order to fulfill our responsibility for environmental protection, Siemens has installed an environmental management system documenting the attained level and ensuring further development and improvement. The system is certified under DIN EN ISO 14001 and integrated into the company's management system.

In the field of energy automation, Siemens is a strong partner for the industry, for utilities, and for major energy consumers. Long-standing experience and comprehensive technological expertise, as well as innovative products, systems, and solutions, position Siemens as a globally leading supplier and a reliable partner for today and tomorrow. The Siemens product range comprises

- SIPROTEC protection and bay control devices
- SICAM substation and telecontrol systems
- SIMEAS power quality products
- Control systems
- Communication solutions
- AMIS smart meter systems.

Future-oriented protection and automation solutions from Siemens can help make networks intelligent, environmentally friendly, reliable, and efficient. Siemens has a lasting influence on energy automation by offering innovative solutions, continually setting trends in the sector, and together with its customers driving the evolution of smart grids.

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Published by and copyright © 2011:
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Power Distribution Division
Order No. E50001-E720-A294-X-4A00
Printed in Germany
Dispo 06200, c4bs No. 7439
fb 3654 482303 WS 0711

Printed on elementary chlorine-free
bleached paper.

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The required technical options should therefore
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