Environmental Product Declaration

ProtectIT Feeder Protection Relay REX 521

Company Information

ABB Oy, Substation Automation in Finland is part of ABB’s automation technology sector. The company is in charge of design, manufacturing and marketing of protection and automation equipment and systems for electrical networks, including services and software products.

Environmental management

The ISO 14001 environmental management system has been implemented and the Vaasa factory has been certified since 1997. Life cycle assessment (LCA) is continually applied to the products.
Application
The REX 521 feeder protection relay is a member of ABB’s protection relay family. The REX 521 protects incoming and outgoing feeders, providing control, measurement and supervisory functions for various medium voltage network devices.

Function
The feeder protection terminals incorporate a wide range of functions:
- Protection functions
- Measurement functions
- Power quality measurements
- Control functions
- Condition monitoring
- Communication
- Standard functions (interlocking, alarming and control sequencing)

Environmental Performance

Functional unit
The functional unit of our LCAs is an IED variant. The environmental impacts in the Life Cycle Assessment have been calculated for the most typically delivered variant of each product.

Manufacturing of the product
The manufacturing at ABB consists of assembling components manufactured and delivered to ABB by subcontractors, and calibration, testing and packing. The only negative impacts of the manufacturing phase are waste generation and some energy consumption. The amount of waste produced is minimized by waste sorting and reusable packaging.

Use of the product
The product can save equipment and resources when performing its function as a protection relay. The environmental impacts during the life cycle of the relays are caused by the electrical power consumption, not the operation itself.

Recycling of the product
It is recommended that the product is recycled by a company specialized in recycling of electronic equipment. ABB aims at continuously increasing the degree of recycling of the equipment manufactured. It is estimated that more than 70 weight percent can be recycled.
The most significant environmental impact (Global Warming Potential indicator) is the power use during the product lifetime (medium 8 W). The second biggest impact is coming from the production process of printed circuit boards.
The five environmental impact values

Acidification AP
Acidification originates from the emissions of sulphur dioxide and oxides of nitrogen. In the atmosphere, these oxides react with water vapour and form acids which subsequently fall down to the earth in form of rain or snow, or as dry depositions. Acidification potential translates the quantity of emission of substances into a common measure to compare their contributions to the capacity to release hydrogen ions.

Eutrophication NP
Nutrients (mainly nitrogen and phosphorus) from sewage outfalls and fertilised farmland accelerate the growth of algae and other vegetation in water. The degradation of organic material consumes oxygen resulting in oxygen deficiency and fish kill.

Global Warming Potential GWP
The index used to translate the level of emission of various gases into a common measure to compare their contributions to the absorption by the atmosphere of infrared radiation. GWPs are calculated as the absorption that would result from the emission of 1 kg of gas to that from the emission of 1 kg carbon dioxide over 100 years.

Ozone depletion ODP
The index used to translate the level of emissions of various substances into a common measure to compare their contributions to the breakdown of the ozone layer. ODPs are calculated as the change that would result from the emission of 1 kg of a substance to that from the emission of 1 kg of CFC-aa (a freon).

Photochemical ozone creation POCP
The index used to translate the level of emissions of various gases into a common measure to compare their contributions to the change of the ground-level ozone concentration. POCPs are calculated as the change that would result from the emission of 1 kg of a gas to that from the emission of 1 kg of ethylene.

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