

Reference Product and Methodology

ABB's SureWave is the new generation of Static Frequency Converter (SFC) allows the connection of 60 Hz powered equipment to a 50 Hz supply network and 50 Hz powered equipment to a 60 Hz supply network. Additionally, the SureWave SFC can stabilize the frequency and the voltage to allow the correct operation of sensitive equipment when the supply is not sufficiently regulated.

Table 1 – Reference product

Description	Quantity
SureWave SFC Model	PCS120-42-225
Nominal Output Power (kVA)	2250 kVA
Mass	4,694 kg

Rules for extrapolation to a homogeneous environmental family

The PEP can cover variants of the referenced product if they belong to a homogeneous environmental family¹. The SFC variants satisfy the requirement to be defined as homogeneous environmental family:

- Same main functionality
- Same product standards
- Similar manufacturing technology: same type of materials and manufacturing processes.

The extrapolation rules for the calculation of the variants' environmental impact assessment, from the environmental impacts of the reference product (2250 kVA), are defined by following the stages defined in section 2.6 in the PCR (PEP ecopassport® Program, 2016).

Table 2: Parameters that vary between different products of the same environmental family

	Manufacturing	Distribution	Installation	Use	End of life
Parameters	SFC weight, Packaging weight	SFC weight, Packaging weight	Packaging weight	Energy consumptions, emission factor of electricity grid	SFC weight

Extrapolation rule to manufacturing stage

The environmental impacts generated during the manufacturing stage directly correlated to the total mass of the SFC including its packaging. The extrapolation rule is:

$$\text{Coefficient} = \frac{\text{mass of variant considered} + \text{mass of packaging of variant considered}}{(\text{mass of reference product} + \text{mass of packaging of reference product})}$$

¹ group of products matching the same functional unit, the environmental impacts of which are identical to the reference product or can be extrapolated, possibly by applying a defined calculation rule (PEP ecopassport® Program, 2016)

Extrapolation rule to distribution stage

The environmental impacts generated during the distribution stage directly correlated to the total mass of the SFC including its packaging. The extrapolation rule is:

$$\text{Coefficient} = \frac{\text{mass of variant considered} + \text{mass of packaging of variant considered}}{(\text{mass of reference product} + \text{mass of packaging of reference product})}$$

Extrapolation rule to installation stage

The environmental impacts generated during the installation stage directly correlated to the total mass of the SFC's packaging. The extrapolation rule is:

$$\text{Coefficient} = \frac{\text{mass of packaging of variant considered}}{\text{mass of packaging of the reference product}}$$

Extrapolation rule to use stage

The environmental impacts generated during the use stage directly correlated to the SFC energy consumption. The extrapolation rule is:

$$\text{Coefficient} = \frac{\text{Energy consumption of variant considered}}{\text{Energy consumption of reference product}}$$

Extrapolation rule to end of life stage

The environmental impacts generated during the manufacturing stage directly correlated to the total mass of the SFC. The extrapolation rule is:

$$\text{Coefficient} = \frac{\text{mass of variant considered}}{\text{mass of reference product}}$$

Extrapolation Coefficients

The coefficients for the calculation the environmental impacts of the SFC variants resulting by the extrapolation rules stated above, are reported below.

Table 3: Extrapolation factors included in the homogeneous environmental family

SFC Variant	Manufacturing	Distribution	Installation	Use	End of life
PCS120 SFC 250kVA	0.107	0.107	0.331	0.111	0.0912
PCS120 SFC 500 kVA	0.146	0.146	0.331	0.222	0.133
PCS120 SFC 750 kVA	0.185	0.185	0.331	0.333	0.174
PCS120 SFC 1000 kVA	0.670	0.670	0.667	0.444	0.670
PCS120 SFC 1250 kVA	0.709	0.709	0.667	0.556	0.712
PCS120 SFC 1500 kVA	0.747	0.747	0.667	0.667	0.753
PCS120 SFC 1750 kVA	0.922	0.922	1.000	0.778	0.917
PCS120 SFC 2000 kVA	0.961	0.961	1.000	0.889	0.958
PCS120 SFC 2250 kVA	1.000	1.000	1.000	1.000	1.000