

SLIM[®] Transformer a new development for the wind industry



2 MVA SLIM[®] Transformer

● Linking wind turbines and the grid with compact transformers

Wind turbines require a grid connection where generation voltage is increased to medium voltage by a step-up distribution transformer.

These transformers are installed in the tower or the nacelle and consequently have to meet high specifications.

- Broad range of power and voltage
- Good fire behaviour
- Environmentally friendly materials
- Low recycling costs
- Reduced dimensions for in-tower and nacelle installation
- Low no load loss and load loss
- Overload capability
- Withstanding harmonics
- Resistant to overvoltage

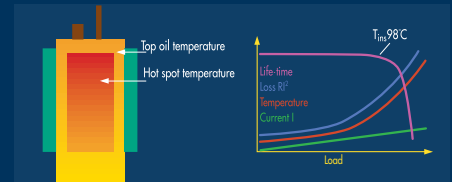
● New technologies in developing a SLIM[®] Transformer

SLIM[®], a new generation of compact transformers, introduces a concept based on Pauwels' innovative transformer design and know how and DuPont NOMEX[®] heat management technology.

Compact designs include environmentally friendly and fire resistant silicon oil, high temperature insulation for 850 kVA up to 4 MVA power and voltages from 440 V to 3000 V (LV) and 10500 V up to 36000 V (HV).

SLIM[®]

● Thermal technology at the core of the development



Classic designs have 60 K top oil temperature rise and 78 K hotspot temperature rise specifications in order to stay below the 98°C thermal life insulation limit. In SLIM[®], this thermal constraint is now 50% higher allowing for improved designs.

● More power for less space

Dimensions can be reduced up to 30% or alternatively, the power output can be increased by 30% compared to conventional designs. This allows easy on-site installation.

● Design with lower loss

The SLIM[®] Transformer loss can be optimised resulting in almost 50% lower no load loss and comparable load loss, in comparison to a dry type transformer.

● Safety, protection and environment

Used materials have a fire point above 300°C resulting in a safe product. Since the transformer is earthed and hermetically sealed, limited maintenance is required and operation is permitted while the transformer is energised. All materials are recyclable up to 98%.

● Overloading, harmonics and overvoltages

Overloading and harmonics result in increased temperature rises which can be handled easily using high temperature materials. The insulation system is more resistant to switching surges and overvoltage from the generator.

● Total cost of ownership

The SLIM[®] development brings advantages like compactness, lower loss, high reliability and good environmental properties that result in a lower total cost of ownership for the turbine manufacturer as well as for the owner.

Technical data

SLIM[®] versus mineral oil and cast resin transformer
2 MVA 690 V / 20 kV

	SLIM [®]	Mineral oil	Cast resin
Dimensions (LxWxH)	2210x770x2200mm	2040x1150x2200mm	2000x840x2170mm
Mass	4500 kg	5500 kg	4600 kg
No load loss	2100 W	2100 W	3900 W
Load loss	19000 W (125°C)	18000 W (75°C)	19200 W (125°C)
Fire point	360°C class K	150°C class O	>300°C class F1
Recycling cost	0.07 eurocent/kg	0.07 eurocent/kg	0.14 eurocent/kg
Protection	IP55	IP55	IP00



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