

////////////////////////////////////  
Trafotek transformers are made to meet customer requirements in demanding applications. We are specially focused on manufacturing transformers for different types of frequency converters and special applications. Our transformer product range spans from 1 kVA low voltage transformers up to 20 MVA cast resin transformers and voltages up to 24 kV.  
////////////////////////////////////

## **TRAFOTEK TRANSFORMERS – PERFORMANCE AND RELIABILITY IN DEMANDING APPLICATIONS**

Selecting the right type of transformer can be challenging. We at Trafotek help our customer select the best transformer solution to utilize the performance of the complete system. In product design we optimize winding materials (copper or aluminum), insulation systems (vacuum impregnated or cast resin) and cooling methods (AN, AN/AF, AF, AFWF) to achieve an optimal electrical and mechanical performance, in which the size and weight of the product is minimized.

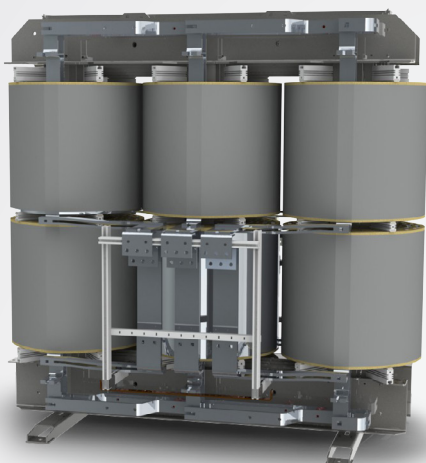
The most demanding applications are found in marine operations, electric propulsion to be more precise: 12 and 24-pulse transformers with 3 windings and 24-pulse transformers with 5 windings in one core. These are used to reduce the THD level in both low and medium voltage applications.

A wide range of auxiliary components can be selected for integration into our transformers. Components such as pre-magnetizing systems, starter units for fan motors or extra windings for auxiliary power.

**Find out more about Trafotek transformers at [www.trafotek.fi/products](http://www.trafotek.fi/products).**

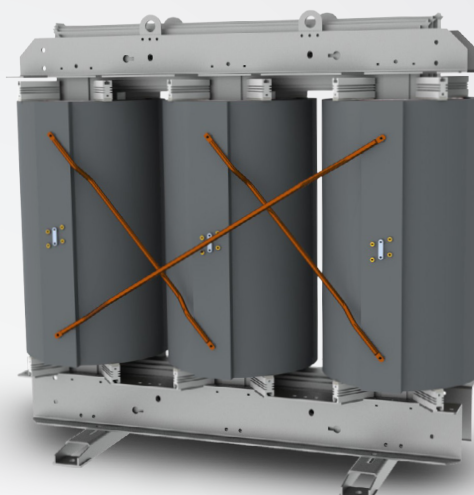


## TRAFOTEK DRY TYPE TRANSFORMERS



### » VACUUM PRESSURE IMPREGNATED (VPI) TRANSFORMERS

<b>Power range</b>	100 kVA - 12 MVA
<b>HV voltage range</b>	Up to 7,2 kV
<b>LV voltage range</b>	Up to 7,2 kV
<b>Frequency</b>	50 or 60 Hz (others on request)
<b>HV coil technology</b>	VPI
<b>LV coil technology</b>	VPI
<b>Insulation class</b>	H/180°C
<b>Temperature rise class</b>	F (B or H as option)
<b>Environmental class</b>	E1 (E2 as option)
<b>Climatic class</b>	C2
<b>Fire class</b>	F1
<b>HV winding material</b>	Aluminium (copper on request)
<b>LV winding material</b>	Aluminium (copper on request)
<b>Material of terminals</b>	Tinned copper
<b>Cooling options</b>	AN, AN/AF, AF, AFWF
<b>Transformer solutions for frequency converters</b>	3-, 4- and 5-winding transformers for 12/18/24-pulse applications
<b>Standards</b>	IEC 60076-11



### » CAST RESIN TRANSFORMERS

<b>Power range</b>	500 kVA - 20 MVA
<b>HV voltage range</b>	Up to 24 kV
<b>LV voltage range</b>	Up to 7,2 kV
<b>Frequency</b>	50 or 60 Hz (others on request)
<b>HV coil technology</b>	Cast Resin
<b>LV coil technology</b>	Prepreg (VPI on request)
<b>Insulation class</b>	F/155°C (H/180° on request)
<b>Temperature rise class</b>	F (B as option)
<b>Environmental class</b>	E2
<b>Climatic class</b>	C2
<b>Fire class</b>	F1
<b>HV winding material</b>	Aluminium
<b>LV winding material</b>	Aluminium (copper on request)
<b>Material of terminals</b>	Tinned copper
<b>Cooling options</b>	AN, AN/AF, AF, AFWF
<b>Transformer solutions for frequency converters</b>	3-, 4- and 5-winding transformers for 12/18/24-pulse applications
<b>Standards</b>	IEC 60076-11

## ENCLOSURE AND COOLING OPTIONS FOR TRANSFORMERS

<b>Cooling method</b>	AN (convection cooled)	AN/AF, AF (with forced air cooling)	AFWF
<b>Protection degree</b>	IP23 (IP44 on request)	IP23 (IP44 on request)	IP44 (IP54 on request)
<b>Installation environment</b>	Indoor (outdoor on request)	Indoor	Indoor
<b>Number of cooling motors</b>	-	2 or 4 pcs (external type)	2 or 4 pcs (external type)
<b>Coolers quantity</b>	-	-	1 or 2 pcs
<b>Stand still heating</b>	as option	as option	as standard
<b>Auxiliary connection box</b>	as option	as standard	as standard
<b>Air locks for the fan motors</b>	-	as standard	as standard
<b>Water leakage detector</b>	-	-	as standard
<b>Enclosure construction</b>	Dismountable sheet steel enclosure with bolted side panels and lifting lugs on the top		
<b>Enclosure colour</b>	RAL 7035, powder painted (other colours on request)		
<b>Cable inlets</b>	Bolted MCT-frames on the bottom (other cabling directions on request)		

All enclosure and cooling options are available for VPI transformers as well as for cast resin transformers.

# TRAFOTEK DRY TYPE TRANSFORMERS



## » AFWF TRANSFORMERS

### KEY FEATURES:

- » Double tube type air/fresh water cooler (sea water cooler on request)
- » Large selection of options: motor starters, pre-charging systems etc
- » Alternative cooler and water flange locations
- » Minimum service space needed for cooler and fan motors
- » Water leakage sensor, stand still heaters and vibration dampers as standard

Transformers with AFWF cooling systems are one of Trafotek's core areas of expertise. AFWF cooled transformers are often used in demanding applications such as the marine as well as the oil and gas industries where space is often restricted and which have long traditions in water cooling.

Liquid cooling enables effective and compact transfer of heat losses from electrical premises into the circulating liquid. By using AFWF cooling up to 30% of transformer weight can be saved and almost 90% of the heat losses will be transferred into the cooling water.

### THIRD PARTY CERTIFIED TRANSFORMERS FOR MARINE & OFFSHORE APPLICATIONS:

» LR » RINA » GL » DNV » BV » ABS » RMRS » CCS » PRS » KR » NK

## AUXILIARIES FOR TRANSFORMERS

- » Voltage tapplings for windings
- » Earthed copper screen between windings
- » Stand still heating
- » Pt-100 (3-wire) temperature sensors for windings and core
- » Air and water temperature sensors for AFWF transformers
- » Local temperature display with alarm / trip / sensors fault / 4...20 mA analog output functions
- » Anti-vibration dampers and bi-directional castors
- » Air flow detectors for transformers with forced cooling
- » Integrated pre-magnetizing transformer with control unit
- » Starter unit for the fan motors (transformers with forced cooling)
- » Thermal inspection windows
- » Surge arrestors
- » Integrated fuses, current transformers
- » Other custom-made solutions

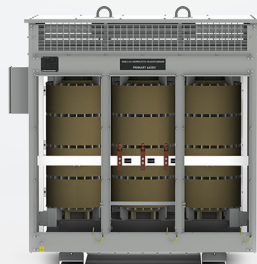
# TRAFOTEK TRANSFORMER OFFERING



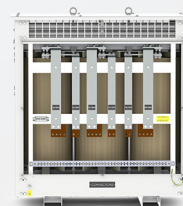
» DRIVES TRANSFORMERS



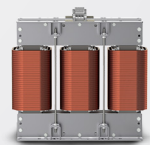
» EXCITATION TRANSFORMERS



» DISTRIBUTION TRANSFORMERS



» ISOLATION TRANSFORMERS



» CONTROL TRANSFORMERS



v2.0\_20150303



Kaarinantie 700, FI-20540 Turku, Finland  
Tel +358 2 275 9200 Fax +358 2 275 9210  
[www.trafotek.fi](http://www.trafotek.fi)