Technical characteristics

Cast resin distribution & medium power transformers	Impregnated/Cast or Cast/Cast (Encapsulated)
Manufacturing standards	IEC, ANSI, TSE, BS, etc.
Rated power	Up to 30 MVA
Voltage level	Up to 52 kV
Phases	One or three phase unit
Voltage regulation	With tapping links or on-load tap changer
Short circuit impedance	On request
Rated frequency	50 Hz or 60 Hz
Vector groups	Dy, Yy, Yd as standard. Others on request
Material thermal class insulation	According to IEC 60085, Class F or Class H
Temperature rise	Class F: mean winding temperature rise 100 K Class H: mean winding temperature rise 125 K With ambient temperature in accordance with IEC 60076-11 The temperature of the cooling air should not exceed: • 40 °C at any time; • 30 °C monthly average of the hottest month; • 20 °C at yearly average. and not below: • -25 °C in the case of outdoor transformers • -5 °C in the case of indoor transformers For other ambient temperatures, winding temperature rise adapted.
Type of cooling	AN (natural air) AF, AFWF on request
Short circuit withstand ability	The transformers are designed to withstand the thermal and dynamic effects resulting of a secondary short-circuit in accordance with IEC 60076-5.
Sound level	The measurement (A-weighted sound pressure LpA) and the calculation of sound level (A-weighted sound power LwA) are done in accordance with IEC 60076-10. The sound level requirements are in accordance with national standards.
Installations	Indoor (IP00, with enclosure protection from IP20 up to IP55) Outdoor (with enclosure protection from IP22 up to IP55)
Climatic, environmental and fire behaviour classes	Class C2: The transformer is suitable for operation, transport and storage at ambient temperature down to -25 °C Class E2: Frequent condensation or heavy pollution or combination both. Class F1: Transformers subject to a fire hazard. Restricted flammability is required. Emission of toxic substance and opaque smokes shall be minimised.
HV & LV terminals	Top or Bottom entry available upon request. On request: Plug in bushing for HV terminals .Busbars or monoblock bushing for LV terminals. On request: Cable boxes according to client/manufacturer standard or norm (BS or NEMA) requirements.
Accesories	Thermal protection system On request: Enclosure, fans, antivibration pads, plug-in bushing, monoblock bushing, Automatic Voltage Regulator Panel, Earthing ball pins, etc.

Make the most of your energy[SM]

Schneider Electric Industries SAS

35, rue Joseph Monier
CS 30323
F - 92506 Rueil Malmaison Cedex (France)
Tél. : +33 (0)1 41 29 70 00
RCS Nanterre 954 503 439
Capital social 896 313 776 €
www.schneider-electric.com

NRJED111263EN

As standards, specifications and designs change from time to time, please ask for confirmation of the information given in this publication.

Design: Schneider Electric Industries SAS
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02-2012

Tricast

Cast Resin Dry Type Transformer

Schneider Electric

Tricast Cast Resin Dry Type Transformer Up to 30 MVA - 52 kV


PM102866


PM102867

Around the world, customers are demanding eco-friendly solutions for their transmission networks that are not only safe for their personnel but that are also safe for the environment.

With today's focus on improving environmental impact and preserving the earth's natural resources, Schneider Electric's contribution is to manufacture safe and environmentally friendly equipment : Tricast

High quality and reliability make Tricast Cast Resin Dry Type Transformers the perfect solution for infrastructure projects such as transmission and distribution substations, public buildings and high-rise developments.

As Tricast is self-extinguishing, it provides an effective solution for use in industrial installations susceptible to fire hazards. In addition, it meets the needs of special applications such as wind farms and it is the perfect replacement for PCB transformers.

Tricast, the safe eco-friendly solution

Our Tricast range of dry type cast resin transformers complies with all your distribution transformer requirements. Tricast is available as single and three-phase units. With ratings up to 30 MVA and 52 kV, 50/60 Hz, it offers Air Natural cooling for continuous indoor service (with Air Forced (AF) and outdoor options with enclosure protection up to IP55), and normal or reduced losses.

Tricast meets the following standards:

- IEC 60076-11
- EUS-EN 60076-11; 2004
- NF EN 60076-11 and NF C 52-115
- DIN 42523-1
- IEEE / ANSI C57.12.01
- EN 50329

Quality assurance

Our transformer production site is certified ISO 9001, ISO 14001 and ISO 18001.


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ISO 9001, ISO 14001 and ISO 18001
Transformers units certifications

Safety and reliability first

Safety & reliability first

To ensure total compliance with the most relevant national and international standards, Tricast transformers have been put through the most stringent series of tests. Tricast is one of few transformers having successfully passed these tests and is characterized by the following features:

- C2 Insensitive to thermal shocks. Withstands overloads and frequent changes in loading.
- Dielectric tests of standard <10pC.
- E2 Very resistant to polluted environments and humidity. E2; Immune to corrosive environments.
- Reduced flammability and self-extinguishing. Excellent classification according to international standards: F1 Fire behaviour.

Tricast is your best solution for public safety. Whether for industrial plants susceptible to fire hazards or use in public buildings and high rise developments that are occupied or visited by thousands of people per day.

Eco-friendly

Because preserving the environment is one of the most important issues today, we have designed our products to help you meet the latest environmental protection guidelines and regulations introduced by national and international governments and institutions.
Tricast dry-type cast resin transformers are not only self-extinguishing, they are also free of any risk of leakage of flammable or contaminating substances. Using non-toxic high quality materials, Tricast components are designed to enable the maximum amount to be recycled. Tricast is the best solution to replace existing PCB transformers.

Tricast for a modern world

Minimizing space requirements and associated civil work costs is a major factor in most building projects today. Whether it is for a new city center office block, an expansion in the capacity of an industrial process or a wind farm project, the compact design of Tricast provides a costeffective solution.
The exclusive casting system and advanced technology used in its HV windings give Tricast transformers the reliability and operating characteristics needed in the high-technology applications which demand maximum availability and maximum quality of electrical supplies.

Tricast Tests


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Electrical and routine tests

Winding resistance, voltage ratio and vector group, no-load losses and no-load current, short circuit impedance, load losses, dielectric tests, partial discharge testing

Type tests

In addition to the routine tests, the following type tests can be performed on request in Schneider Electric laboratories:
- Impulse voltage test and temperature rise test.
- Noise level test (this test can be performed on request in our laboratories).

Specific tests

Short circuit withstand test.

Tests in accordance with international standards

The tests prove compliance with class E2 - C2 - F1.

Smoke classification

During a fire, the smoke alone can have considerable impact on people, property and the environment. The effect of smoke may include:
- Opacity: no orientation.
- Emission of corrosive gases which produces damage far from he fire zone and increases repair costs and downtime.
- Emission of noxious gases which present a health and safety hazard.

Tricast specifications


PM102872

Magnetic core

The magnetic core consists of oblique cut, grain- oriented steel sheets insulated by carlite, made for low losses. It is protected on the surface with a flash-proof varnish (non-static insulation) in order to prevent the sheet from corroding and to improve the noise level.

LV winding

The LV winding generally consists of aluminium foils isolated between layers by a pre-impregnated insulating material with hot polymerized resin. If necessary, ventilation ducts can be added. A choice of copper coils and casting is also available depending on the specific application requirement. Particularly LV winding casting under vacuum moulds enhances the mechanical stability and shock withstandability during thermal overload.

HV winding

The HV winding is an insulated aluminium (or copper) conductor cast under vacuum in moulds. Strong fiber glass reinforcement dramatically improves and enhances the mechanical stability and shock with standability during thermal overload.

HV/LV column assembly

The columns are assembled concentrically. The LV winding and HV winding is blocked between two frames by wedges with rubber cushions that also serve as expansion absor–bers. This arrangement ensure minimal movement during handling.

Exclusive casting system

In the face of increasingly strict regulations with regard to the risk of fire and pollution, Schneider Electric practices a policy of permanent research on the fire behavior of insulating materials. This has led to the exclusive class F casting system (temperature of insulation system: 155°C) developed in our laboratories. This system comprises 2 main components:
- Epoxy resin,
- A hydrid hardener.

When polymerized, the epoxy resins associated with the hardener forms a stable three-dimensional network. These systems have better properties than most of plastics. Their use in transformers is justified owing to their:
- Excellent resistance to thermal aging
- Remarkable adherence to almost all known materials.

Exceptional performance renders the windings resistant to many chemicals. Mechanical strength and high-thermal conductivity are achieved by incorporating selected mineral fillers, thus enabling heat to be evacuated during use, improved fire resistance and a dramatically reduced quantity of combustible materials.
The solid insulation is obtained by vacuum casting in pre-heated moulds, followed by a hardening period under controlled temperature. After hardening by polymerization, this casting system becomes permanent. It offers excellent fire behavior and immediate self-extinction well beyond rated conditions of use.

Customer benefits

- Self-extinguishing
- Designed for wet or highly polluted environments and areas with high electrical disturbance
- Excellent load and short-circuit performance
- Low noise level
- Space optimization
- Environmentally friendly
- E2, C2, F1
- Almost zero maintenance (occasional cleaning and recommended checks only)


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