

Cast-Resin Transformer

Product Catalog



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Transforming the Future of Energy

Indonesia's leading manufacturer of
power and distribution transformers



SINTRA specializes in the design, manufacturing, and testing of three-phase cast-resin (dry-type) transformers up to 10,000 kVA and 33 kV.

These cast-resin transformers are recommended for various industrial applications due to their excellent performance and cost economics. Without the typical fire hazard, the transformer can be placed near the load center. Conventional applications include for high-speed rails, residential apartment buildings, exhibition centers, office and public buildings, hospitals, data centers... etc.

Features

The primary and secondary windings are encapsulated in epoxy resin and the transformer relies on natural air convection, and the option of added cooling fans, for heat dissipation

The compact design of dry-type transformers provides many safety, economical, and environmental advantages without compromising the electrical and mechanical integrity of conventional oil-cooled transformers.

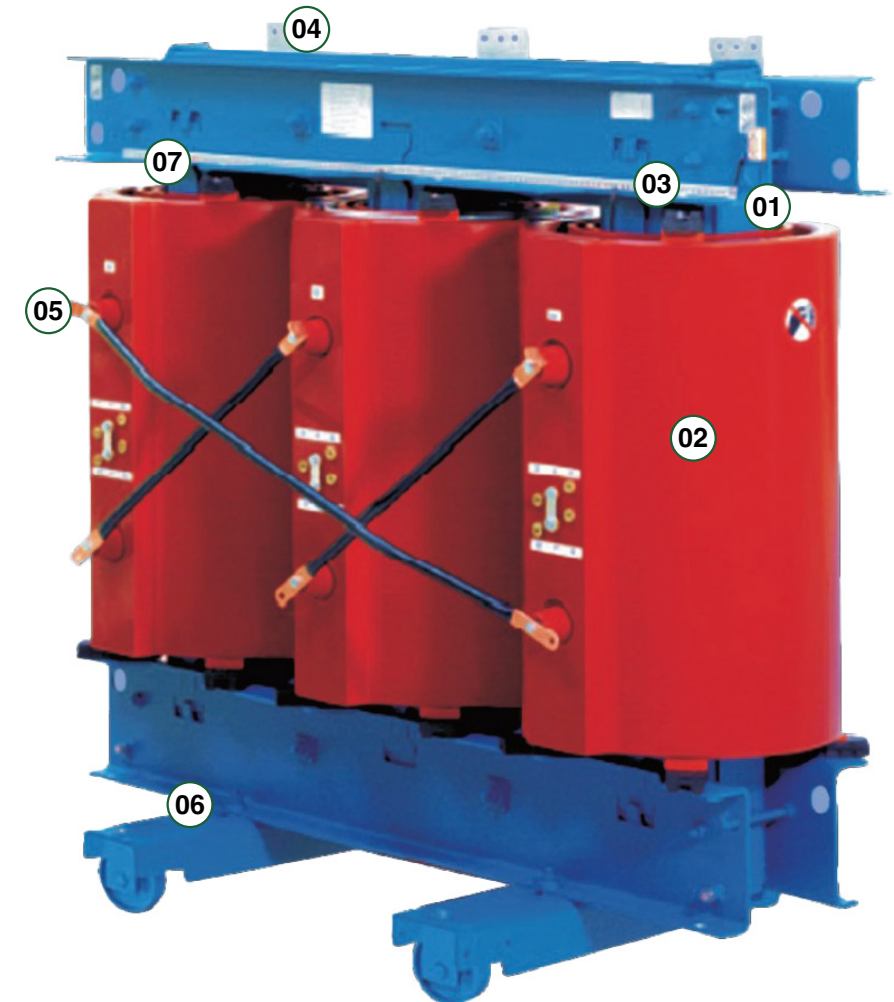
Advantages of Cast-Resin (Dry-Type) Transformers Compared to Oil-Immersed Transformers



- Low Load Losses
- Low Installation Costs
- Low Fire Hazard
- Free Maintenance
- Environmentally-Friendly
- Sustainable
- No Oil Usage
- Compact Design
- High Overload Capacity
- Moisture Resistant



Product Structure



01. Low Voltage Winding

By Cu or Al sheets (foil). Turns are tightly bounded together by high quality insulating material

02. High Voltage Winding

By Cu or Al sheets (foil). Impregnated with epoxy resin by vacuum-pressure impregnation in casting machine

03. Stacked Core

Using cold-rolled grain-oriented silicon steel laminates, stacked by step-lap method for optimal no-load loss

04. Low Voltage Terminals

At the top of the transformer

05. High Voltage Terminals

Variable arrangement. HV taps for voltage adjustment. Adjustable in no-load state

06. Core Clamp and Frame

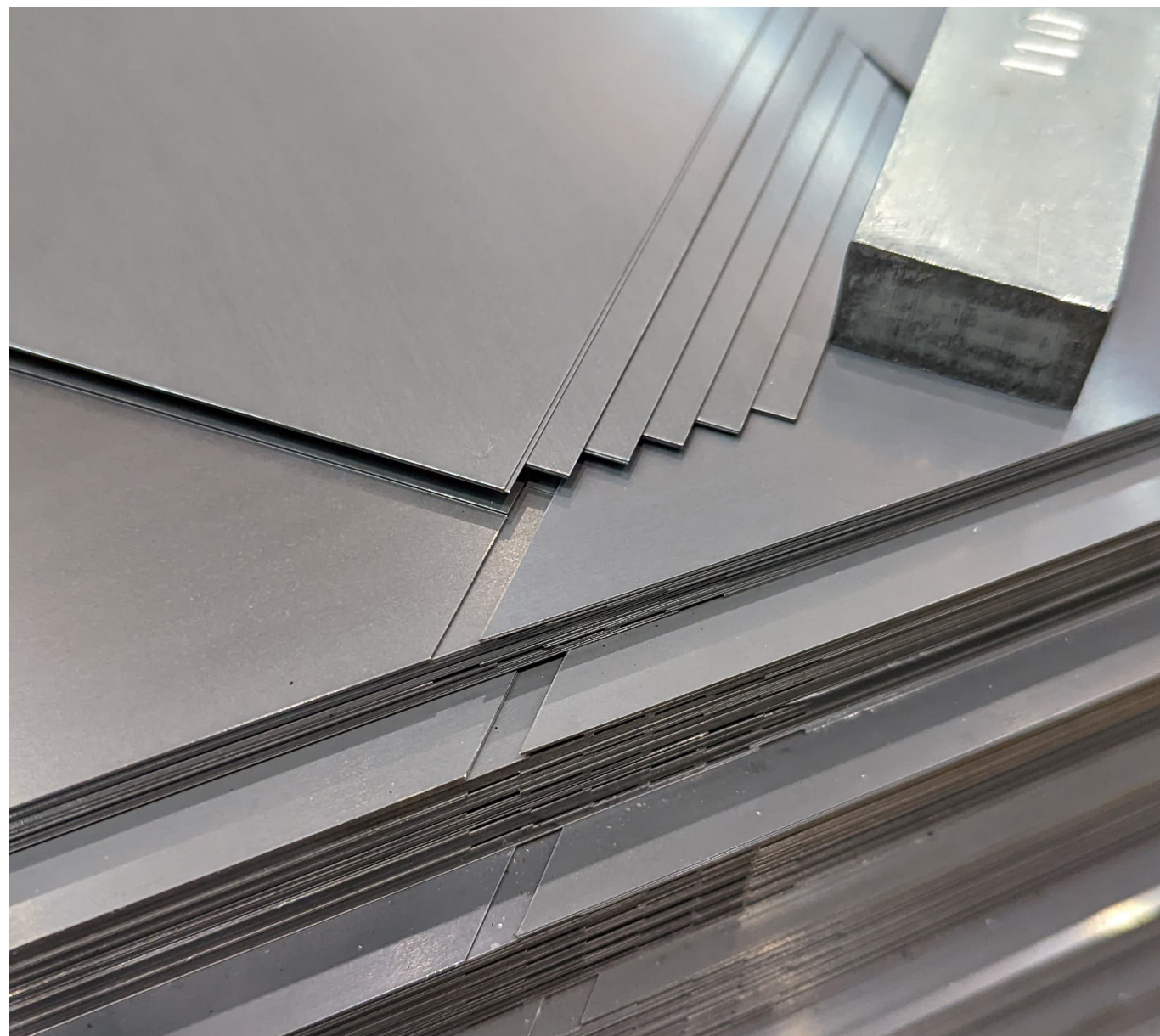
High accuracy, laser-machined steel plate. Rollers can be installed for bi-directional movement upon request

07. Spacers and Insulation Cylinder

To eliminate mechanical vibrations between windings and silicon core, ensuring low noise emissions, and the improve heat dissipation of the transformer by natural convection

Core Product Features

The transformer core is composed of high quality cold-rolled grain-oriented silicon steel sheets. Very often, the silicon steel laminates are stacked using step-lap joint method, which creates a smooth magnetic flux path to lower no-load loss. The stacked core has low iron loss, low excitation current, and high mechanical strength.



Windings and Vacuum Casting

The primary (HV) and secondary (LV) windings are wound from copper or aluminum foil.

The parameters of the vacuum pressure impregnation are selected to guarantee optimal saturation of resin in the windings. The windings are then thermally stiffened in an annealing oven and the finished product becomes fully resistant to adverse ambient environmental conditions.

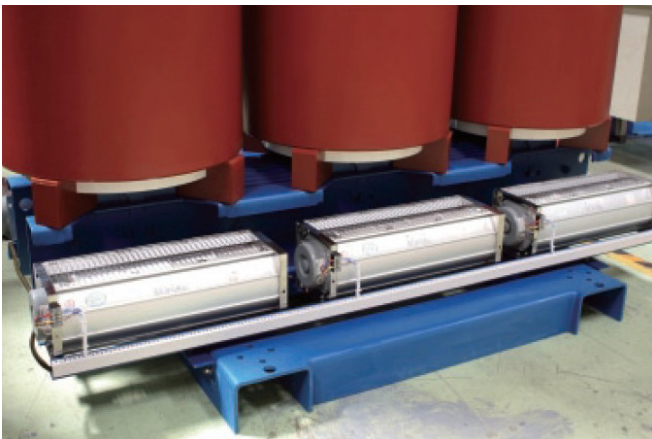


This configuration of windings, named foil-windings, have high AC voltage and impulse voltage withstand capacity. The windings are then placed in a vacuum casting machine where they are impregnated with specially blended epoxy resin and then casted.



Cooling and Overload

Cast-Resin transformers are special in that they rely on natural air convection for heat dissipation. With additional cooling fans installed, cast-resin transformers can be overloaded up to 40% of the rated capacity for an extended period of time.



Test items include, but are not limited to, the following:

- Turn ratio test
- Polarity test
- Copper loss (load loss) test
- Iron loss (no-load loss) test
- No-load current measurement
- Impedance measurement
- Applied voltage test
- Induced over-voltage test
- Impulse voltage test
- Temperature rise test

Table of Reference (IEC 60076)

Rated Capacity	Winding Material	Primary Voltage	Tapping Range	Secondary Voltage	No Load Loss	Loaded Loss 120°C	Impedance	Noise	No-Load Current
(kVA)		(kV)		(kV)	(W)	(W)	(%)	(dB)	(%)
200	Copper or Aluminum	20	± 2x2.5%	0,4	740	2950	6	50	0.8
250					850	3420		52	0.8
315					970	4090		52	0.8
400					1160	4850		52	0.8
500					1350	5790		52	0.8
630					1530	6840		53	0.6
800					1760	820		53	0.6
1000					2070	980		53	0.6
1250					2380	1150		54	0.6
1600					2790	13870		56	0.6
2000					3240	1640		58	0.5
2500					3870	1940		59	0.5

