

# Power Transformers

## SOLID INSULATION OVERHEAD TRANSFORMERS



### Description

SIOT, Solid Insulation Overhead Transformer, is a revolutionary transformer which is a breakthrough solution for existing overhead distribution transformers. For number of decades, standard overhead transformers have been part of our daily lives. However due to its distinctive characteristics, there were limitations on installation sites; dust, humidity, interference of branches and bushes and so on. SIOT is designed to fully operate under harsh environment and offers easy and safe access for workers.

### Features

- HV & LV integrally molded
- Oil-free solid insulation
- No exposure of live conductors
- Non explosive
- Self-extinguishing
- Great application for severe environment

### Product Range

- kVA

Single phase 25, 37.5, 50, 75, 100

Three phase 50, 75, 150, 225, 300

- HV : 24,940GrdY/14,400V and below

- LV : 600V and below

- BIL : High voltage 60 to 125kV, Low voltage 30kV

- Impedance : 1.0% ~ 3.5%

\* Customized products are available according to customers' specification and requirement



**CHERYONG ELECTRIC**



# Power Transformers

## SUBMERSIBLE TRANSFORMER



### Description

Many utilities are pursuing underground distribution system for higher reliability as well as the preference of residential and commercial entities for its aesthetic benefits. Our Submersible Transformer is custom-engineered to meet the requirements of our customers. It features a round vertical tank for single phase and rectangular design for three phase. Its Stainless Steel 304L tank resists corrosion and maintains full operation during submersion.

### Features

- Stainless steel tank (304L)
- Submersible
- Proven reliability
- Resists corrosion

### Product Range

- Single phase : 15kVA ~ 333kVA
- Three phase : 25kVA ~ 1000kVA
- HV : up to 25kV (150kV BIL)
- LV : Up to 600V (30kV BIL)
- \* Available in Amorphous Core
- \* Customized products are available according to customers' specification and requirements



## Power Transformers

### SOLID INSULATION DISTRIBUTION TRANSFORMER



#### Description

SIDT, Solid Insulation Distribution Transformer, represents a major advancement in transformer technology. The SIDT is built by oil-free construction with maintenance free solid insulation and is hermetically sealed in polymer shell. As a result, SIDT delivers exceptional performance, reliability and safety. Since SIDT does not contain liquid for insulation or cooling, there is no threat of an oil leak or explosion. In addition, the compact size of SIDT minimizes excavation work and enables easy installations in any location including very small and limited space. Our SIDT is designed specifically for sub-surface applications and can be installed for above-ground applications; such as buildings.

#### Features

- Oil-free solid insulation construction with APG casting technology
- Underground type(subsurface)
- Integrally molded HV bushings and LV cable leads
- Non-corrosive, non-explosive
- High short circuit withstand strength
- Low sound level
- Compact (50% smaller compared to conventional oil-filled transformer)

#### Product Range

- kVA : Single phase 25, 50, 75,100, 167
- HV : Single ratings from 4,160GrdY/2,400 through 27,700GrdY/16,000
- LV : 240/120, 120/240, 480/240, 277, 347, 480, 575
- BIL : High voltage 60 to 125kV, Low voltage 30kV
- Impedance : 1.0% ~ 3.5%

\* Customized products are available according to customers' specification and requirements



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## Power Transformers

### SEISMIC WITHSTANDING CAST RESIN TRANSFORMER

#### Description

Seismic Withstanding Cast Resin Transformer is highly efficient and has low noise. It is optimally designed to withstand earthquake magnitude of Richter scale 7.3 by adapting advanced technology with integral spacer and energy dissipation type damper.

#### Features

- High efficiency
- Enhanced performance and lowered the noise by integrally connecting frame, winding and spacer
- Compact and economical
- With energy dissipation structure, transformer size and cost are considerably reduced
- Reliability

#### Product Range

- kVA : Single phase (up to 500kVA), Three phase (up to 12MVA)
- HV : Up to 34.5kV
- LV : Up to 25kV
- Applicable standards : KS, IEC, IEEE, CSA and IEEE 693 for seismic requirement
- \* Available in Amorphous Core
- \* Customized products are available according to customers' specification and requirements



### CAST RESIN TRANSFORMER

#### Description

Custom engineered Cast Resin transformers are well known for its low noise and compact size. With the application of cast resin transformers, our customers can reduce costs on low voltage cabling for they are generally located and installed closer to the electrical load when compared to oil immersed transformers. Reduction of maintenance cost and time is also another key factor.

#### Features

- Advanced manufacturing and testing facilities
- Various selection for optional accessories
- Applicable for metro, utilities, power plants, mills and other major operating facilities

#### Product Range

- Up to 34.5kV 12MVA
- \* Available in Amorphous Core
- \* Customized products are available according to customers' specification and requirements



## Power Transformers

### POLE MOUNTED TRANSFORMER

#### Description

Pole Mounted transformers are highly reliable and manufactured as per the requirements of customers. They are expertly-designed, engineer-supported transformers which fully meet the requested standards. Wide range of standards and optional accessories are available for selections. Our transformers are both available in Silicon Steel and Amorphous Core.

#### Features

- High reliability
- Proven technology
- Advanced manufacturing and testing facility

#### Product Range

Up to 34.5kV 500kVA

- \* Available in Amorphous Core
- \* Customized products are available according to customers' specification and requirements



### PAD MOUNTED TRANSFORMER

#### Description

Our PAD Mounted transformers are applicable for installations at busy city streets by connecting underground cables. The transformers are also protected from internal and external problems with the application of internal fuse. Our Compact Type PAD Mounted transformers are specifically designed for places which require minimum installation space.

#### Features

- High reliability
- Reduced installation space
- Insulated with either Mineral oil or Natural ester fluid
- Various optional accessories are available upon request

#### Product Range

Up to 34.5kV 3000kVA

- \* Available in Amorphous Core
- \* Customized products are available according to customers' specification and requirements



## Power Transformers

### AUTO TRANSFORMER

#### Description

Autotransformer is often used for step-up or step-down applications. It contains only one (common) winding with a portion of coil serving both primary and secondary winding. Our Autotransformers are typically used for railways and provide smaller, lightweight size due to the sharing of single coil; resulting in better voltage stability and greater overload tolerance. We offer both oil immersed and cast resin type together with wide range of optional accessories to meet the requirements of our customers.

#### Features

- Light and compact
- Proven stability and reliability
- Standard accessories

#### Product Range

- kVA : Up to self capacity of 15MVA / load capacity 30MVA
- Voltage : Up to 55kV/27.5kV
- Type : Oil immersed and cast resin types
- Applicable standards : IEC 60076
- \* Customized products are available according to customers' specification and requirements



### POWER(OIL IMMERSED) TRANSFORMER

Oil immersed transformers are designed to provide the best performance and reliability. With our commitment to individualized solutions, we provide highest quality of transformers meeting or exceeding special requirements of customers. We also provides exceptional after service on installation, testing and commissioning.

#### Features

- Advanced manufacturing and testing facilities
- Various selection for optional accessories
- Applicable for metro, utilities, power plants, mills and other major operating facilities

#### Product Range

- Up to 69kV 50MVA
- \* Available in Amorphous Core
- \* Customized products are available according to customers' specification and requirements



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# Power Transformers

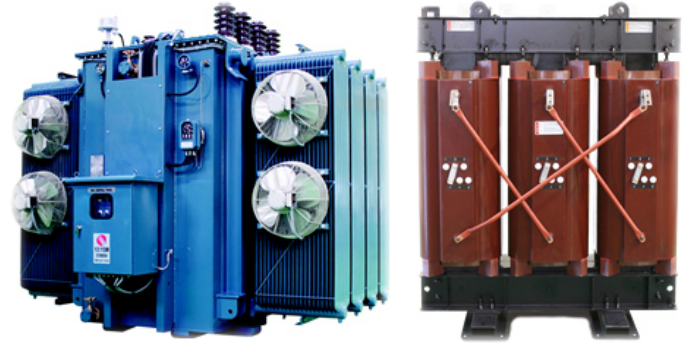
## AMORPHOUS TRANSFORMER

### Description

Leading Amorphous transformer market for more than 20 years. With ever-growing needs for eco-friendly product due to new legislations and an environmental sensitivity, we provide super energy-saving Amorphous transformer. Reliable and flexible technical solution for great savings in cost and better efficiency.

### Features

- Low no-load loss
  - Reduces no-load loss by up to 75% when compared to conventional transformer
  - Saves operation and maintenance cost
- Substantially lower electricity cost when facility is not operating



### Product Range

Amorphous Cast Resin Transformer : Up to 69kV 6MVA

Amorphous Oil Immersed Transformer : Up to 69kV 15MVA

\*Manufactured the World's Largest Amorphous Oil Immersed Transformer (12/15MVA) to Samsung Electronics

\* Customized products are available according to customers' specification and requirements

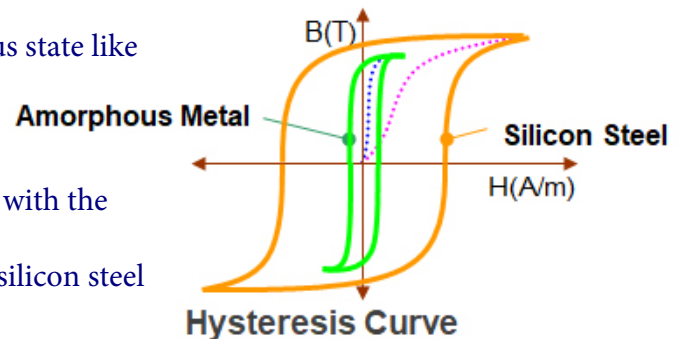
## AMORPHOUS METAL

Amorphous metal is an amorphous magnetic material created from molten metal which is mixed with Fe, B, Si and others through a rapid cooling process ( $10^6$ °C/sec).

The array of atom is irregularly arranged into Amorphous state like liquid (random structure)

Due to the advantage that atom's rotation is easy to cope with the variation of magnetic field, Amorphous metal reduces the hysteresis loss more than silicon steel

Amorphous metal has high natural resistance (3 times higher than that of silicon steel) and the thin thickness of material (about one tenth of silicon steel) enables Amorphous metal to reduce eddy loss and hysteresis loss more than silicon steel



# Power Transformers

## AMORPHOUS METAL

### Hysteresis Loss

Hysteresis losses are caused by the frictional movement of magnetic domains in the core laminations being magnetized and demagnetized by alteration of the magnetic field. These losses depend on the type of material used to build a core.

### Eddy Current Loss

Eddy current losses are caused by varying magnetic field inducing eddy currents in the laminations and thus generating heat. These losses can be reduced by building the core from thin laminated sheets.



Structure of Silicon Steel

- 1) Regular atomic structure (low electric resistivity)
- 2) Thickness (0.18~0.35mm)



Structure of Amorphous Metal

- 1) Irregular atomic structure (double electric resistivity than Silicon Steel)
- 2) Thickness (0.025mm) / About 1/10th thickness of Silicon Steel

## Reliability and Quality

- Excellent short circuit capability**

Robust single coil construction address actual component of short circuit forces
- Better overloading capacity**

Lesser heat generation due to lower losses  
Lesser impact on aging of insulation
- Assured Product quality**

Use of single quality core material  
Highly mechanized & standardized process to achieve consistency
- Ease of Manufacture and Repair**

Easy lacing & unlacing of core for coil installation
- Uniform Transformer Designs**

Transformer designs through software to achieve optimum performance parameters



## Power Transformers

### POWER TRANSMISSION AND DISTRIBUTION GAS INSULATED SWITCHGEAR (25.8kV & 170kV)

Gas Insulated Switchgear (GIS) is a compact switchgear containing major substation equipment, such as gas circuit breaker, disconnecting switch and earthing switch in the metallic enclosure that is filled with SF6 gas. We provide utilities and industries with state-of-art GIS for the reliable operation of transmission and distribution system.

#### Features

- Compact design
- High reliability and safety
- Low life cycle cost
- Easy operation



### POLYMER LIGHTNING ARRESTER ATTACHED LEAD WIRE

Polymer lightning arresters provides optimum protection to distribution electrical equipment against lightning and other operational conditions.

#### Features

- Low residual voltage
- Maintenance free
- Easy installation
- Extend leakage distance (over 745mm)



#### Product Range

- Voltage : 19kV
- Nominal discharge current : 5A
- Max. continuous operating voltage : 15.3kV
- Weight : 4kg

### HYBRID CUTOUT SWITCH

Generally installed on current transformers(HV) to protect from overcurrent due to short circuit or excessive overload.

#### Features

- Enhances electric specification by extending the leakage distance (594mm)
- Not necessary to use polymetric coupling insulator
- Light weight
- High strengthened Porcelain(inside) and Polymetric exterior
- Prevents external objects such as birds

#### Product Range

- Voltage : 25.8kV
- Rated current : 100A
- Power frequency withstand voltage : 42kV
- Impulse withstand voltage : 125kV
- Rated breaking current : Asymmetric 10kA, Symmetric 7.1kA
- Leakage distance : over 590mm
- Weight : 9kg



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# Power Transformers



Cheryong Electric, Korea as an affiliate company of Cheryong Industrial and Woojin Electric, focus more on developing products related to transmission and distribution. Currently having more than one hundred professionals from different areas who are ready to serve customers with integrity.

Reaching to the new levels of accomplishment has always been a high priority for 'Cheryong Electric', to provide advanced technology product to its customers. As a result, successfully launched innovative products such as

## **Solid Insulation Distribution Transformer (SIDT)**

and leads the market with environmentally-friendly high-efficiency

## **Amorphous transformers.**

Together with the spirit of innovation, we will continue to provide prosperous future as the global leading innovator through infinite challenges and creativity.

Rest assured , FST together with its partners strive and commit ourselves to quality, integrity and reliability.

for detailed technical literature, please mail us at [info@fstarabia.com](mailto:info@fstarabia.com)

We solicit your enquiries.

