



# THIBIDI CATALOGUE



*Powered by quality*



THIBIDI

TỐC ĐỘ  
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LIMITED

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# 01

## COMPANY OVERVIEW

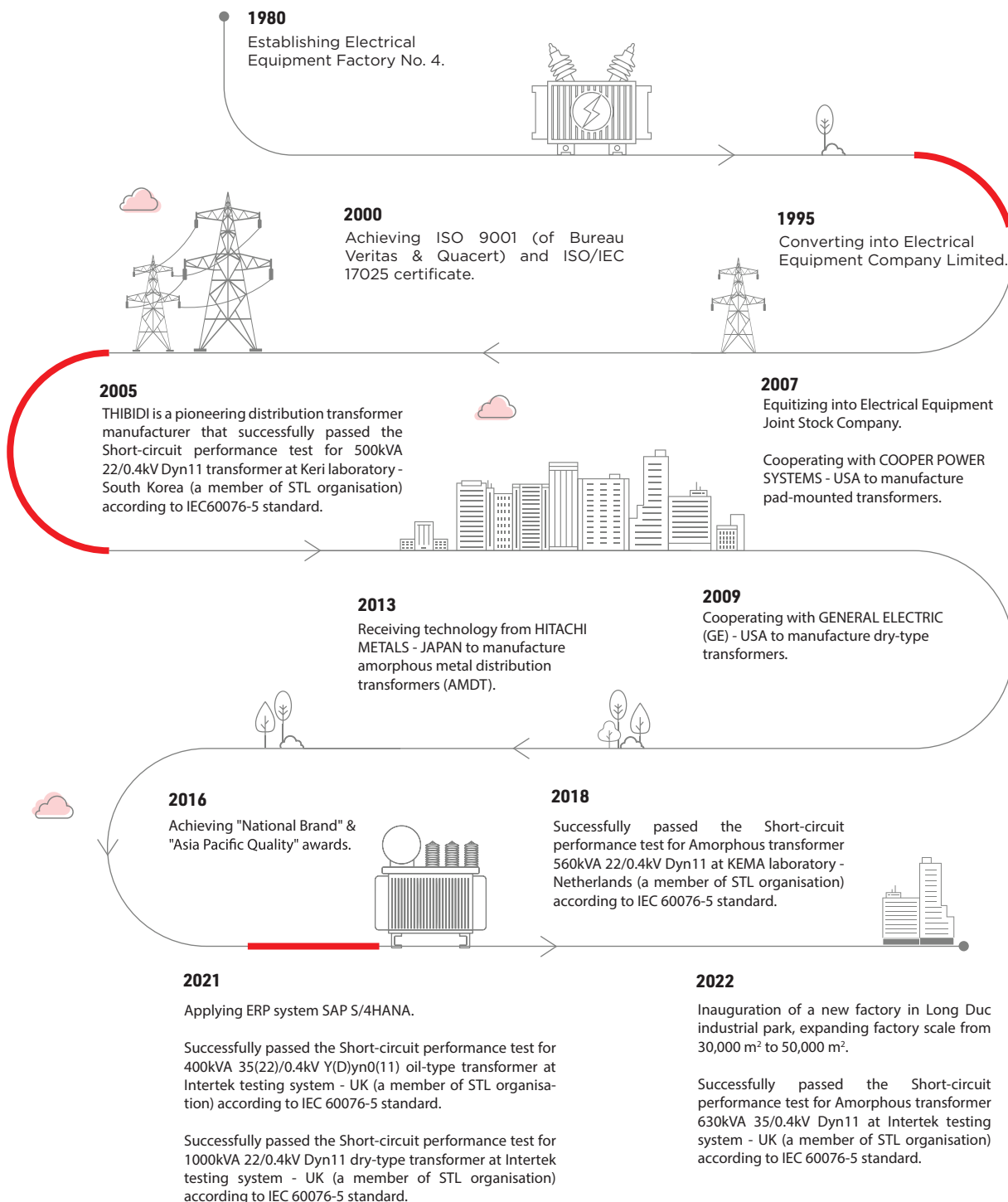
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## A BRIEF HISTORY OF FORMATION AND DEVELOPMENT

Electrical Equipment Joint Stock Company (abbreviated as THIBIDI) was established on January 26<sup>th</sup>, 1980, by the Ministry of Mechanics and Metallurgy. It is now a subsidiary of GELEX Group - a leading corporation in the electrical equipment sector in Vietnam. THIBIDI specializes in producing and supplying various types of distribution transformers, including single-phase and three-phase oil-immersed transformers, dry-type transformers, and pad-mounted transformers.

The company's headquarters is located at Lot P, Road N3-1, Long Duc Industrial Park, Long Duc Commune, Long Thanh District, Dong Nai Province, Vietnam.



# TYPICAL AWARDS



**GLOBAL PERFORMANCE EXCELLENCE AWARD: BEST IN CLASS - LARGE MANUFACTURING ORGANIZATION 2016**

by Asia Pacific Quality Organization



**LEADING BRAND AND #1 MARKET SHARE IN VIETNAM**  
(Independent survey of Vietnam High-Quality Goods Business Association)



**VIETNAM VALUE AWARD 2016, 2018, 2020, 2022**

by Ministry of Industry and Trade



**NATIONAL QUALITY GOLD AWARD 2012, 2015**

by the Prime Minister of the Government



**LEADING INDUSTRY BRAND GOLD CUP**



**VIETNAM GOLD STAR**



**VIETNAM BRAND GOLD CUP**



**ISO GOLD CUP**

# CERTIFICATES

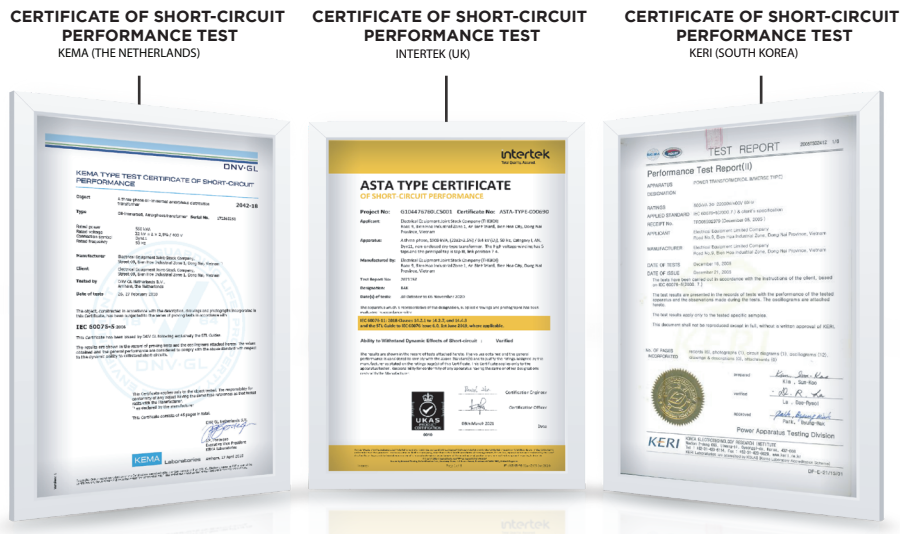
## ISO - QUALITY MANAGEMENT SYSTEM

ISO 9001 is an international standard that defines the requirements for quality management systems. This is also the most popular approach to quality management system. THIBIDI has built synchronous models, tools, and product quality management systems such as: ISO 9001, ISO/IEC 17025, applied SAP S/4HANA enterprise management system, contributing to improving products quality and competitiveness for THIBIDI.



## INTERNATIONAL CERTIFICATES

In order to affirm the quality of transformers, THIBIDI constantly invests in factories and chooses modern machines and technologies to create a breakthrough in productivity and quality. Transformers are tested and certified by prestigious international organizations such as: KEMA - Netherlands, INTERTEK (ASTA) - UK, KERI - South Korea... (members of STL organisation).



# 02

## PRODUCT



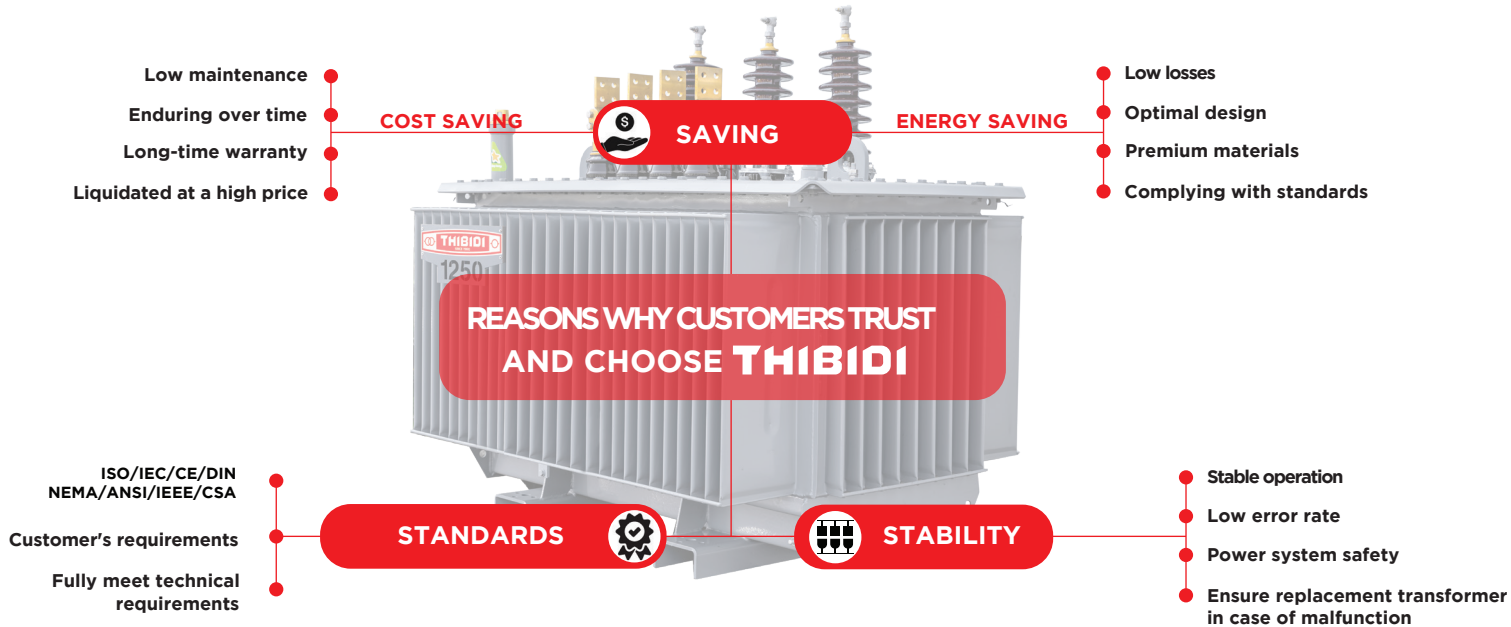
Oil-immersed transformer 10

Dry-type transformer 17

Pad-mounted transformer 20



# PRODUCT



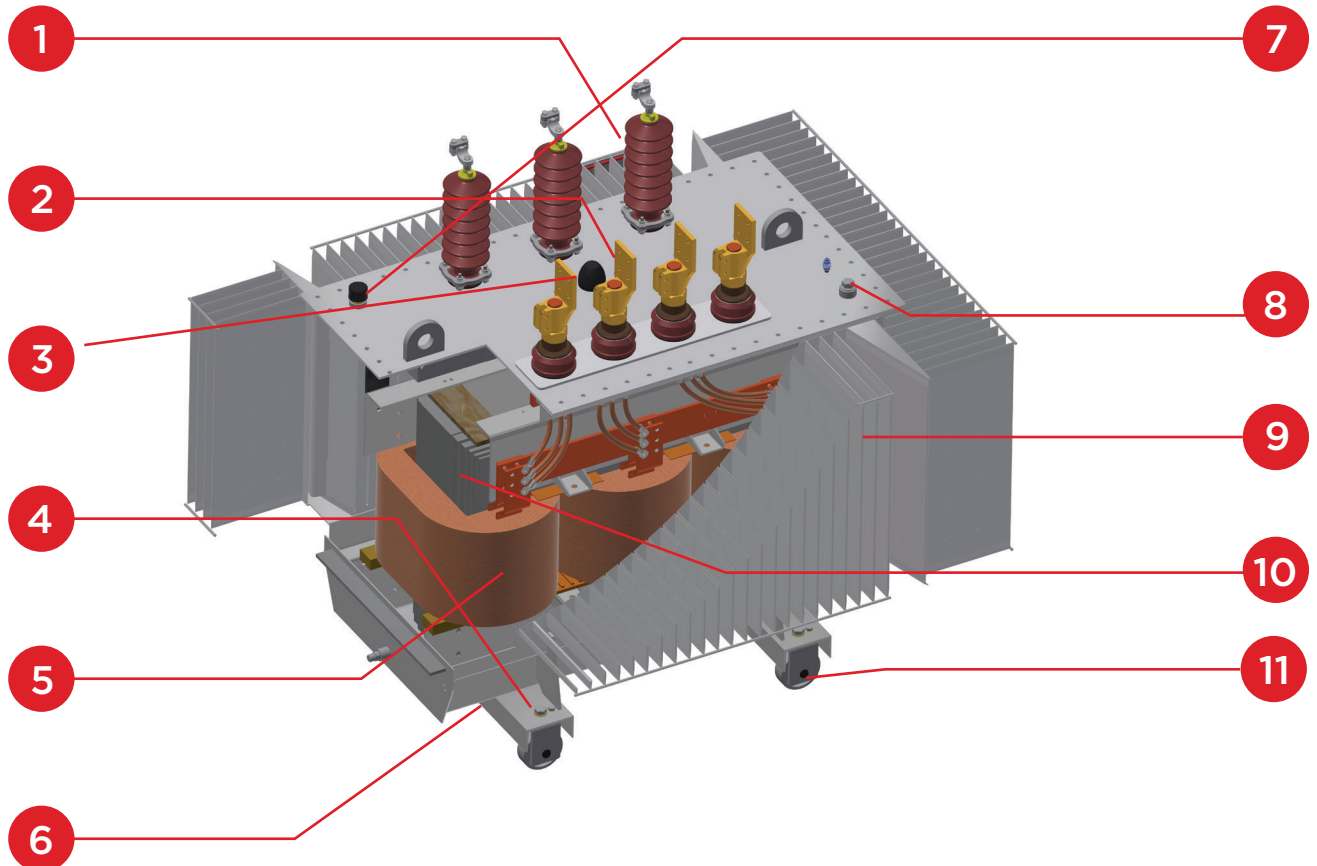
With modern and synchronous materials and machine imported from Europe and G7 countries, such as Germany, USA, Switzerland, Italy, Sweden, Canada, Japan... THIBIDI has the capacity to design, manufacture and supply to domestic and foreign markets with various type of transformers:

- **SINGLE-PHASE OIL-IMMERSED TRANSFORMERS.**
- **THREE-PHASE OIL-IMMERSED TRANSFORMERS.**
- **DRY-TYPE TRANSFORMERS.**
- **PAD-MOUNTED TRANSFORMERS.**
- **OTHER ELECTRICAL EQUIPMENT PRODUCTS.**

In addition, THIBIDI researches, develops and provides the “**Remote transformer monitoring device**” to help user manage risks; minimize downtime of transformers, electrical systems; increase the safety of operating environment.



## OIL-IMMERSED TRANSFORMER



1 High voltage bushing

2 Low voltage bushing

3 Off-load tap changer

4 Base channel

5 Winding

6 Tank

7 Pressure valve

8 Thermometer pocket

9 Cooling fin

10 Steel core

11 Wheel

# OIL-IMMERSED TRANSFORMER

## A. SILICON STEEL CORE TRANSFORMER (CRGO)



THIBIDI's oil-immersed transformers comply with domestic and international standards and regulations, and are continuously improved to provide users with high-quality, safe, stable, and reliable products.

# OIL-IMMERSED TRANSFORMER

## KEY FEATURES

- Natural oil and air circulation cooling system (ONAN).
- Sealed type or open type.
- Good short-circuit withstand capability.
- Able to withstand overvoltage due to lightning.

## APPLICATION

- Indoor or outdoor installation.
- Electrical industry: solar, hydroelectric power,...
- Hospitality, building, civil...
- Special industries.

## APPLICABLE STANDARDS

- ISO/IEC/CE/DIN/NEMA/ANSI/IEEE/CSA

## TESTING

- Testing is conducted according to IEC and IEEE standards.

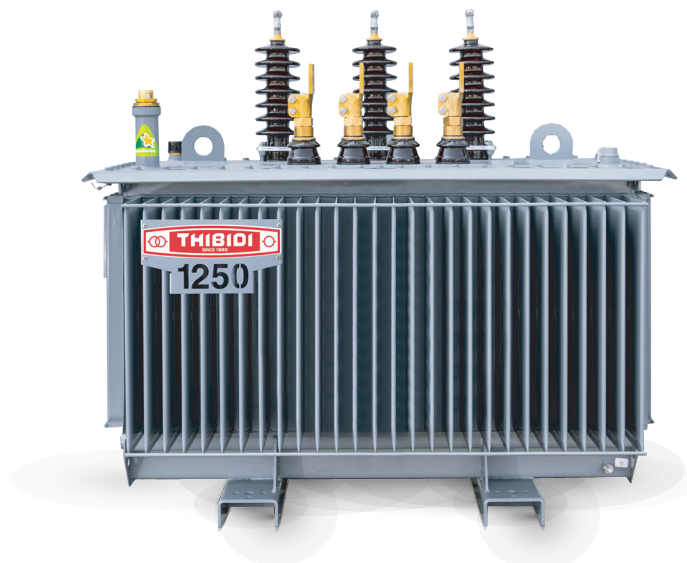
## TECHNICAL SPECIFICATIONS

	Single-phase oil-immersed transformer	Three-phase oil-immersed transformer
<b>RATING</b>	UP TO 167kVA	UP TO 15,000kVA
<b>VOLTAGE</b>	UP TO 35kV	UP TO 35kV
<b>COOLING TYPE</b>	<b>ONAN</b>	<b>ONAN/KNAN/ONAF</b>
<b>INSTALLATION</b>	INDOOR/OUTDOOR	INDOOR/OUTDOOR
<b>STANDARD</b>	<b>ISO/IEC/CE/DIN/NEMA/ ANSI/IEEE/CSA</b>	<b>ISO/IEC/CE/DIN/NEMA/ ANSI/IEEE/CSA</b>
<b>PRODUCTION CAPACITY</b>	18,000 PCS/YEAR	10,000 PCS/YEAR

\* Or according to the customer's requirements.



Single-phase oil-immersed transformer



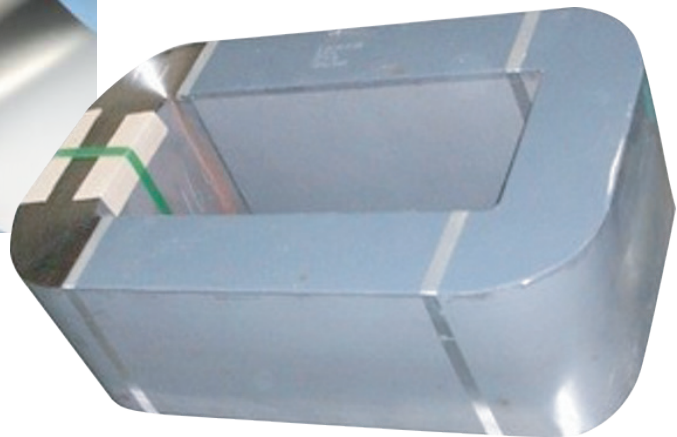
Three-phase oil-immersed transformer

# OIL-IMMERSED TRANSFORMER

## B. AMORPHOUS TRANSFORMER



Amorphous metal



Amorphous core

### BENEFITS OF AMORPHOUS TRANSFORMERS

Currently, the trend among customers using transformers is to focus strongly on transformer's efficiency. This trend requires transformers to have low operating costs, improve energy savings, and minimize environmental impact.

THIBIDI's amorphous metal distribution transformers (AMDT) are the optimal solution for reducing total owning cost (TOC), addressing environmental issues, increasing efficiency, enhancing reliability, and extending lifespan.

### EFFICIENT AND ENVIRONMENTALLY FRIENDLY

The ultra-low core (no-load) losses of amorphous transformers provide significant energy savings and cost benefits for owners. Amorphous transformers reduce core losses by 60-70% compared to traditional transformers made with cold-rolled grain-oriented (CRGO) steel, thus minimizing the costs associated with electricity generation and transmission.

Amorphous transformers have low core losses, which contribute to reduced CO<sub>2</sub> emissions throughout the transformer's lifecycle. Additionally, the production process of amorphous metal is more efficient and uses less energy compared to silicon steel. Amorphous steel, along with copper, transformer oil, and other semi-finished products of amorphous transformers, can be recycled, helping to preserve these valuable resources.

# OIL-IMMERSED TRANSFORMER

## KEY FEATURES

- Reduce no-load loss by 60-70%.
- Air and natural oil circulation. cooling system (ONAN).
- Sealed type or open type.
- Good short-circuit withstand capability.
- Able to withstand overvoltage due to lightning.
- Low operating costs, increased energy savings, reduced environmental impact.

## APPLICATION

- Indoor or outdoor installation.
- Electrical industry: solar, hydroelectric power,....
- Hospitality, building, civil...
- Special industries.

## APPLICABLE STANDARDS

- ISO/IEC/CE/DIN/NEMA/ANSI/IEEE/CSA

## TESTING

- Testing is conducted according to IEC and IEEE standards

## TECHNICAL SPECIFICATIONS

	Single-phase Amorphous transformer	Three-phase Amorphous transformer
<b>RATING</b>	UP TO 167kVA	UP TO 4,000kVA
<b>VOLTAGE</b>	UP TO 35kV	UP TO 35kV
<b>COOLING TYPE</b>	<b>ONAN</b>	<b>ONAN/KNAN/ONAF</b>
<b>INSTALLATION</b>	INDOOR AND OUTDOOR	INDOOR AND OUTDOOR
<b>STANDARD</b>	<b>ISO/IEC/CE/DIN/NEMA/ ANSI/IEEE/CSA</b>	<b>ISO/IEC/CE/DIN/NEMA/ ANSI/IEEE/CSA</b>
<b>PRODUCTION CAPACITY</b>	18,000 PCS/YEAR	10,000 PCS/YEAR

\* Or according to the customer's requirements.

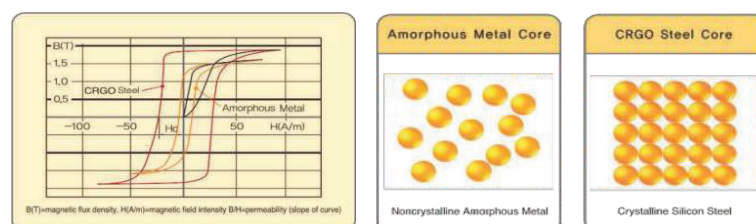
## HISTORY OF AMORPHOUS CORE TRANSFORMERS

Amorphous steel is an alloy with a randomly arranged molecular structure compared to the organized molecular structure of CRGO steel. Due to this molecular structure, amorphous cores are easily magnetized and demagnetized, significantly reducing energy losses compared to CRGO steel.

With technology transferred from METGLAS (a subsidiary of HITACHI Metals - Japan), THIBIDI has invested in facilities and technological lines to produce amorphous core transformers in Vietnam, contributing to energy savings and environmental protection.

## MAGNETIZATION CURVE

The hysteresis curve is a key characteristic of magnetic materials, and the hysteresis loop on the cross-sectional area represents hysteresis loss.



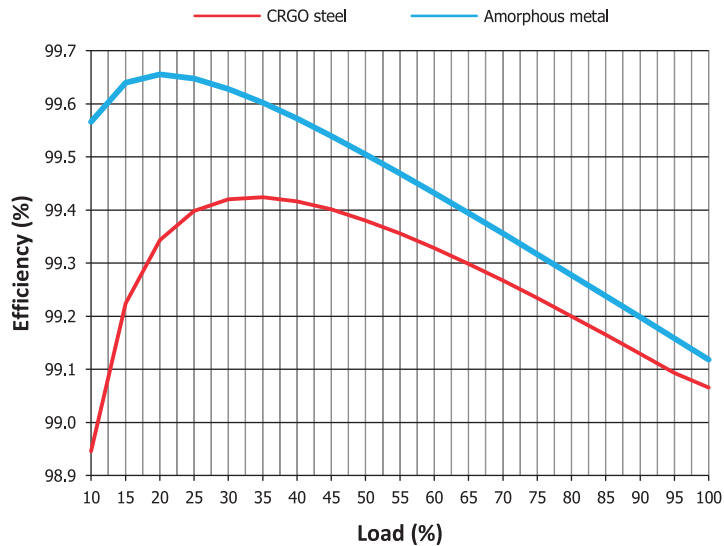
# OIL-IMMERSED TRANSFORMER

## (TOC - TOTAL OWNING COST)

Many utilities and users consider the Total Cost of Ownership (TCO) when purchasing a transformer. TCO includes both the initial cost of the transformer and the future costs of energy losses and operation over its lifetime, which is just as important as its initial price.

$$TOC = PP + A * P_o + B * P_k$$

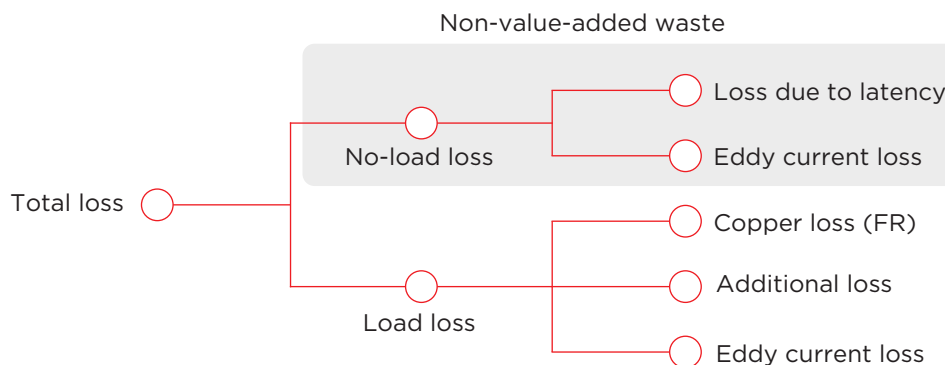
- PP** Purchase Price
- A** Cost for 1 Watt of no-load loss
- B** Cost for 1 Watt of load losses
- P<sub>o</sub>** No-Load Losses
- P<sub>k</sub>** Load Losses



Transformer Efficiency Curve. Transformer Efficiency 10,000kVA

## ULTRA-LOW LOSS STEEL

- Ultra-Low Loss Steel is an amorphous magnetic material produced from molten metal mixed with Fe, B, Si, and others through a rapid cooling process (106 OC/sec) (Source: HITACHI).
- The atomic structure is arranged irregularly into an amorphous state as a random network.
- When a magnetic field is applied, the ultra-low loss steel has a significantly reduced magnetic hysteresis compared to CRGO due to the easy rearrangement of atoms in the presence of a magnetic field.
- Ultra-low loss steel has high permeability (4 times that of CRGO) and thin material thickness (about 1/10 of CRGO), allowing the amorphous metal to reduce eddy current losses.
- Hysteresis loss occurs between magnetic domains when magnetic flux passes through the core material.
- Eddy current loss: Resistive loss occurs from eddy currents when magnetic flux passes through the core material.
- No-load loss: A portion of the energy loss of a transformer, which occurs when the transformer is energized, regardless of the presence of a load.



# OIL-IMMERSED TRANSFORMER

## TECHNICAL SPECIFICATIONS OF OIL-IMMERSED TRANSFORMER

SINGLE-PHASE TRANSFORMERS				
Rating (kVA)	No-load loss (W)		Load loss (W)	Impedance voltage (%)
	CRGO (Silicon)	Amorphous		
15	52	14	213	2
25	67	19	333	2
37.5	92	26	420	2
50	108	31	570	2
75	148	42	933	2
100	192	54	1305	2
<b>Tolerance</b>	≤	≤	≤	≥

\* Apply for Oil-immersed transformers, Amorphous Oil-immersed transformers

THREE-PHASE TRANSFORMERS				
Rating (kVA)	No-load loss (W)		Load loss (W) 75°C	Impedance voltage (%) 75°C
	CRGO (Silicon)	Amorphous		
100	205	60	1258	4
160	280	76	1940	4
180	295	81	2090	4
250	340	100	2600	4
320	385	116	3170	4
400	433	132	3820	4
560	580	176	4810	4
630	787	216	5570	4
750	845	232	6540	5
1000	980	280	8550	5
1250	1115	336	10690	5
1600	1305	376	13680	6
2000	1500	464	17100	6
2500	1850	554	21375	6
<b>Tolerance</b>	≤	≤	≤	≥

\* Apply for Oil-immersed, Amorphous Oil-immersed, Pad-mounted, Amorphous Pad-mounted transformers.

\* P<sub>0</sub>, P<sub>k</sub> of the three-phase amorphous transformers 180kVA and 2500kVA are linearly interpolated according to TCCS 10: 2021/EVN.

### Notice:

- Please contact us regarding your specific needs.
- Other rating, voltage and specifications as per customer's requirements.

## DRY-TYPE TRANSFORMER

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**THIBIDI** dry-type transformers (a product of collaboration between THIBIDI and **GE Group - USA**) operate safely, with high reliability and environmental protection. The dry-type transformers are designed to meet stringent safety and fire protection requirements.

# DRY-TYPE TRANSFORMER

## KEY FEATURES

- Fire resistance with the highest class F1.
- Higher short-circuit withstand capability.
- Moisture resistant.
- Compact size.
- High overload capacity.
- Low loss, low noise.
- Easy maintenance.
- Environmentally safe.

## APPLICATION

- In buildings.
- In tunnels.
- In food processing plants.
- On ships and boats.
- In crane areas.
- On offshore platforms.
- In residential and urban areas.

## TECHNICAL CHARACTERISTICS OF DRY-TYPE TRANSFORMERS

<b>RATING</b>	UP TO 10,000kVA
<b>VOLTAGE</b>	UP TO 35kV
<b>COOLING TYPE</b>	<b>AN/AF</b>
<b>INSULATION CLASS</b>	F, H
<b>INSTALLATION</b>	INDOOR AND OUTDOOR
<b>STANDARD</b>	<b>ISO/IEC/CE/DIN/NEMA/ ANSI/IEEE/CSA</b>
<b>PRODUCTION CAPACITY</b>	1,000 PCS/YEAR
<b>MATERIAL</b>	Copper, Aluminum

\* Or as per customer requirements.



# DRY-TYPE TRANSFORMER

## APPLICABLE STANDARDS

- ISO/IEC/CE/DIN/NEMA/ANSI/IEEE/CSA

## TESTING

- Tests are conducted according to IEC and IEEE standards.

## ACCESSORIES / OPTIONS

- Enclosure protection: IP20, IP21, IP23, NEMA 1, NEMA 3R, and others.
- Heat-resistant pads; Temperature sensors.
- 120/240V air cooling fan.
- Temperature control for fan operation.
- Wheel.

## STANDARD ENCLOSURE TYPES

- IP23, NEMA 3R for outdoor installation.
- IP20, IP21, IP30, NEMA 1 for indoor installation.

## TECHNICAL SPECIFICATIONS OF DRY-TYPE TRANSFORMER

THREE-PHASE DRY-TYPE TRANSFORMER			
Rating (kVA)	No-load loss (W)	Load loss (W) 120°C	Impedance voltage (%) 120°C
160	740	2950	4
250	850	3959	4
320	1020	4620	4
400	1150	5405	4
560	1610	6900	4
630	1700	7130	4
750	2050	7498	5
1000	2400	8211	5
1250	2850	11914	5
1600	3300	13110	6
2000	4100	14111	6
2500	5150	17411	6
3200	6050	21505	7
4000	7079	26184	7
<b>Tolerance</b>	≤	≤	≥
*Apply for Cast resin transformers			

### Notice:

- Please contact us for your specific application.
- Other rating, voltage and specifications as per customer's requirements.
- Aluminum windings are commonly used.

## PAD-MOUNTED TRANSFORMER



Pad-mounted transformer is a collaborative product between **THIBIDI** and **COOPER POWER SYSTEMS - USA**, integrating the entire medium voltage circuit breaker, medium and low voltage protection system, and transformer into a single unit. The pad-mounted transformer provides safety and aesthetics while minimizing costs and significantly reducing space.

THIBIDI's pad-mounted transformers are used for ground installation and are connected with underground cables. The transformers are protected both internally and externally by internally installed fuses.

With available configurations and accessories, THIBIDI's pad-mounted transformers will meet customers' requirements. Ultra-low loss cores are always available for customer who need high-efficiency designs.

# PAD-MOUNTED TRANSFORMER

## KEY FEATURES

- High reliability.
- Compact.
- Insulation with Mineral oil / FR3 oil.
- Various optional accessories are provided upon request.
- Connection schematic: Ring circuit/Radial circuit.
- Increase safety.
- Does not use SF6 gas.
- Has a high flash point.

## APPLICATION

- Install indoors or outdoors.
- Electrical industry.
- Public utility company.
- Special industries.

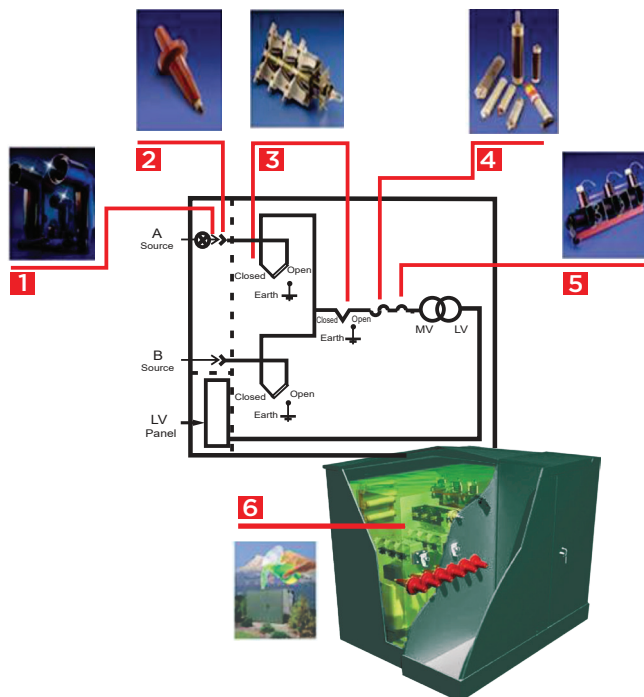
## APPLICABLE STANDARDS & TESTING

- ISO/IEC/CE/DIN/NEMA/ANSI/IEEE/CSA

## TECHNICAL SPECIFICATION OF PAD-MOUNTED TRANSFORMER

<b>RATING</b>	UP TO 2,500kVA
<b>VOLTAGE</b>	UP TO 35KV
<b>COOLING TYPE</b>	<b>ONAN/KNAN</b>
<b>INSTALLATION</b>	INDOOR AND OUTDOOR
<b>STANDARD</b>	<b>ISO/IEC/CE/DIN/NEMA/ ANSI/IEEE/CSA</b>
<b>PRODUCTION CAPACITY</b>	1,000 PCS/YEAR

\* Others as per customer's requirements.



1. Elbow and Tee Connectors.
2. Apparatus Bushings.
3. Loadbreak Sectionalizing Switches.
4. ELSP Partial-Range Current Limiting Back-up Fuses.
5. Three-Phase MagneX® Interrupter.
6. Envirotemp® FR3™ Fluid.

Main components of a pad-mounted transformer.

# OTHER ELECTRICAL EQUIPMENT PRODUCTS



**MV SWITCHGEAR**



**RECLOSER**



**RING MAIN UNIT (RMU)**

**KIOSK-TYPE SUBSTATION**



# REMOTE TRANSFORMER MONITORING DEVICE



## 1. SMART SPECIFICATIONS

- Remote online measurement, monitoring and management.
- Manage and operate smart power systems.
- Shows the location of the transformer (with GPS).
- Expandable modularity to accommodate additional requirements needed in the future.
- Retrieve and display data in cyberspace anytime, anywhere.

## 2. SMART POWER SYSTEMS MANAGEMENT

- Send early warning signals to operations staff and management. Prevent incidents, operate safely and minimize power outages.
- Operational data is displayed in real time, complete, accurate and synchronous.
- Quick retrieval of operational data such as repair, maintenance and operations substation.

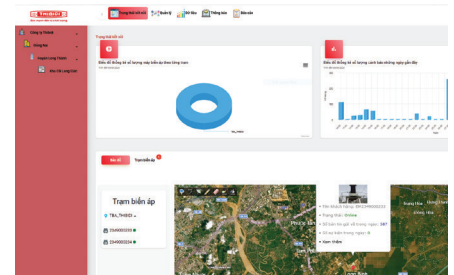
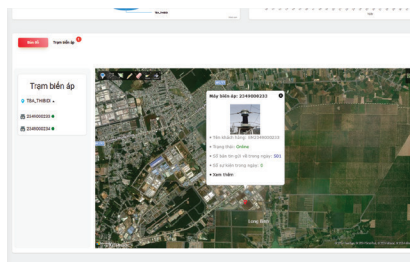
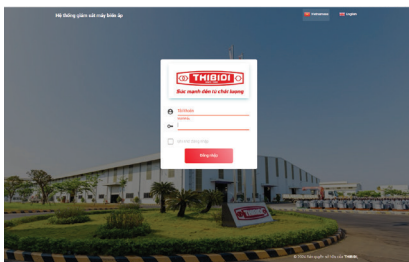
## 3. REDUCE POWER SYSTEMS OPERATING COSTS

- Reduced manpower to operate the power systems.
- Reduced troubleshooting costs.
- Reduced inspection and maintenance costs.
- Reduced power loss costs.

## 4. ELECTRICAL SAFETY

- Operators minimize direct contact with electricity.
- Remotely monitor and check the operating power systems.

## 5. CAN BE INSTALLED ON BOTH NEW AND BEING-USED TRANSFORMERS



# 03

## PRODUCTION & TESTING EQUIPMENT

Production equipment	26
Testing	28





# PRODUCTION EQUIPMENT



## STACK CORES - CUT-TO-LENGTH STEEL 45° MACHINES

The silicon steel sheets are cut at an angle of 45° by fully automatic cutting Georg - Germany machines. Automatic cutting process for three-phase stacked cores for Dry type, distribution, intermediate, and furnace transformers. High precision, low building factor. Lower no-load losses and noise levels.



## UNICORER CORES - UNICORE MACHINES

The silicon steel sheets are cut and shaped by Australian Unicore AEM cutting machines. Cutting process is automatic for 3-phase 5-legged cores, 3-phase 3-legged cores, and single phase cores, ... with high precision, and low technology coefficient. These cutting machines have low no-load and low technology coefficient. These cutting machines have low no-load minimizing CO<sub>2</sub> emissions into the environment.



## AMORPHOUS CORES

### 1. AMORPHOUS CUTTING MACHINES

AMORPHOUS alloys are cut by AMORPHOUS cutting machines manufactured in Taiwan. AMORPHOUS core processing technology transferred by HITACHI. The cutting process is programmed to automatically cut for 3-phase 5-legged cores, 3-phase 3-legged cores and 1-phase cores... High precision, low building factor. Lower no-load losses and noise levels.



### 2. AMORPHOUS ALLOY CORE ANNEALING FURNACES

AMORPHOUS cores are annealed according to a specialized process on an annealing furnace manufactured in Taiwan. The process is controlled completely automatically, the cores were form shapes, reduce no-load losses and noise.



## LOW VOLTAGE COILS - LOW VOLTAGE FOIL WINDING MACHINES

Low-voltage coils with conductor material using copper foil and DDP insulation paper (Krempel - Germany; Weidmann - UK) are processed by LAE - Italy copper foil winding machine. The winding machine automatically adjusts the tension of the wire loops and DDP insulation paper. This process produces low-voltage coils with high accuracy and stable quality. These coils dissipate the heat very well, increase their capacity to withstand short-circuit at fault operation, and they are last long.



## HIGH VOLTAGE COILS - HIGH VOLTAGE WIRE WINDING MACHINES

High-voltage coils with conductor material using high-quality electromagnetic wire (enameled copper wire) from brands such as CADIVI, NGO HAN, KCT and DDP insulating paper (Krempel - Germany; Weidmann - UK) processed on TUBULY - Swiss wire winding machine. The winding machine automatically adjusts the tension of the wire loops and DDP insulation paper. The wire loops are pressed and held tightly by DDP insulating paper. When drying the glue on the insulating paper loosens and bond's between the wire loops and wire layers into a solid block, ensuring the ability to withstand short circuit forces during operation.



## TANKS

### 1. LINES FOR CORRUGATED WALLS

The corrugated wall production lines allow the creation of the tank walls totally automatic way were imported from LAE - Italy, with control of weld tightness using photosensitive solution. The fin walls have a self-expanding function with high quality steel supplied from POSCO, suitable for the expansion of oil during transformer operation.

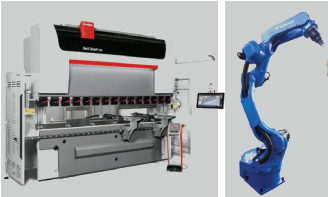
# PRODUCTION EQUIPMENT



## 2. LASER CUTTING MACHINES



Mechanical parts are cut on a CNC laser machine TRUMPF - German. The cutting process is automatic according to the installed program, ensuring accurate dimensions and high productivity.



## 3. BENDING MACHINES

Mechanical parts are shaped on CNC bending machines Bystronic - Swiss, Trumpf - Germany. Automatic bending program according to the installed program, high accuracy.



## 4. YASKAWA WELDING ROBOTS

The tanks are welded using Japan's MOTOMAN-YASKAWA automatic welding robot. High precision and guaranteed weld quality.



## 5. GROWELL SAND-BLASTING MACHINES

Steel mechanical parts are cleaned using a GROWELL - Thailand automatic shot blasting machine. Cleans and creates better product surface roughness. Integrated dust collection system, environmental protection.



## 6. POWDER COATING LINES

Automatic powder coating system by Perfect System - Singapore with paint spraying robot arm. Using high-quality powder coating, the paint finish is better and the quality is uniform. The paint is anti-UV, anti-corrosion and hot moisture, providing excellent and durable protection.



## DRYING CORE AND COILS - OVEN

The assembly core and coils are dried by the Perfect System - Singapore drying oven. The drying program automatically controls temperature and humidity to ensure the highest insulation after drying.



## OIL FILLINGS - OIL TREATMENT AND VACUUM OIL FILLING SYSTEM

The insulating oil is treated and filtered into vacuum environment. Equipment manufactured by ABB, completely eliminates air bubbles in the transformer.



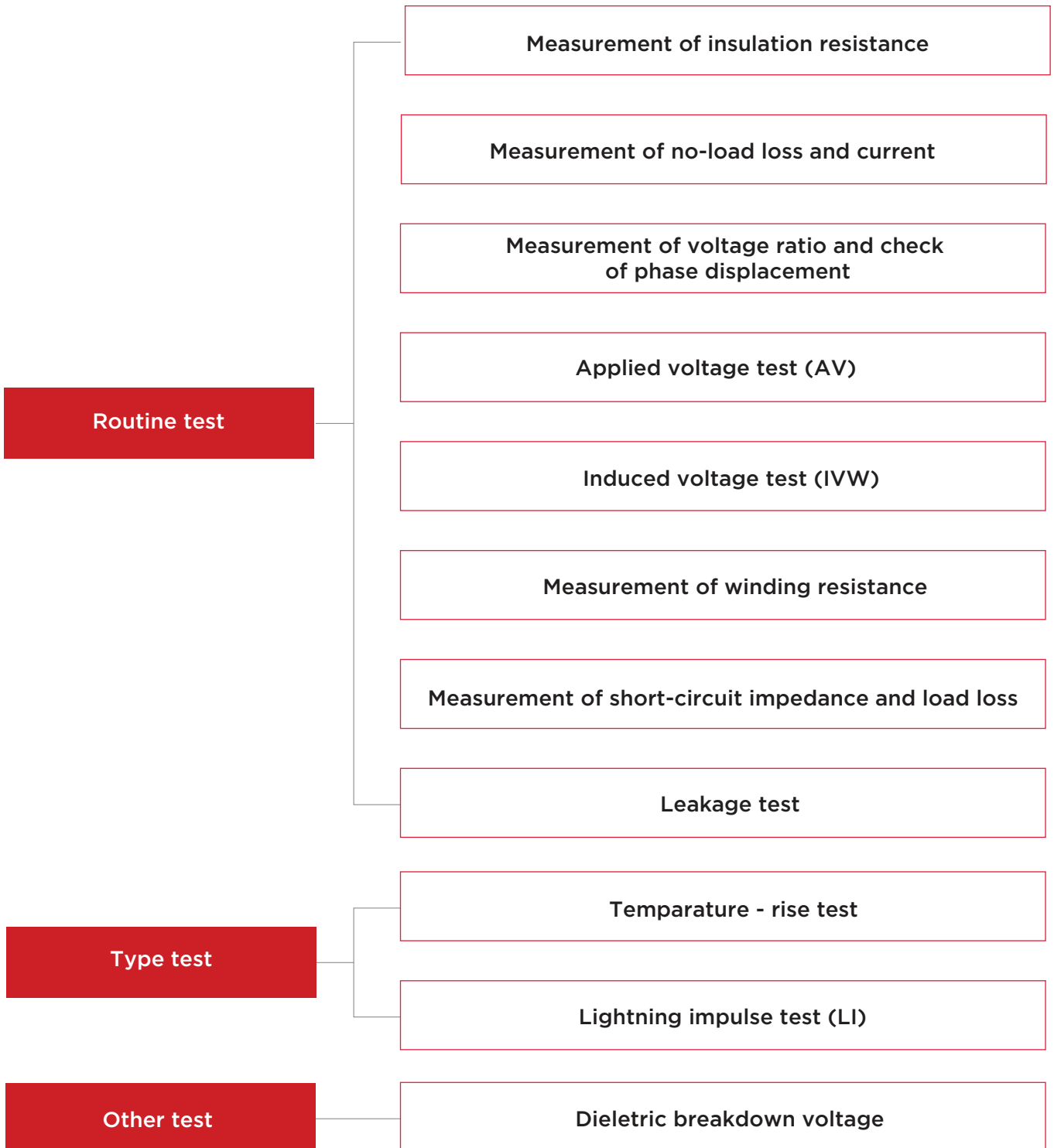
## TESTINGS - LABORATORY

To ensure the best product quality, safe and reliable operation, THIBIDI has invested in a product quality testing laboratory with modern equipment that has been evaluated and complies with the requirements of IEC 17025 standards issued by the Bureau of Accreditation, accreditation No VILAS O54.



Transformers manufactured by THIBIDI are tested according to IEC-60076, /EEE standards... In addition, the Company's laboratory also tests transformers according to standards requested by customers.

# TESTING



THIBIDI tests transformers according to standards of IEC, IEEE... and customer's requirements.

# TESTING



Channel thermocouple temperature recorder  
**MADGETECH**



Winding resistance meter  
**VANGUARD**



Insulation resistance tester  
**MEGGER**



Digital multimeter  
**HIOKI**



Transformers high precision micro ohmmeter  
**SCHUETZ MESTECHNIK**



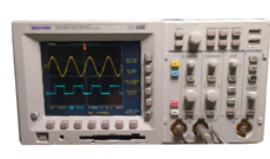
Digital power meter  
**YOKOGAWA**



Single-phase transformer turns-ratio meter  
**VANGUARD**



Three-phase transformer turns-ratio meter  
**VANGUARD**



Oscilloscope  
**TEKTRONIX**



Insulating oil test set  
**MEGGER**

## TESTING

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To ensure product quality when launching to the market while meeting customer's requirements, the company has invested in a product quality inspection room equipped with modern devices that meet the IEC 17025 standard, certified by the Ministry of Science and Technology, accreditation no. VILAS 054. The transformers manufactured by THIBIDI are tested according to IEC 60076 standard.

Additionally, THIBIDI's laboratory also tests transformers according to standards requested by customers.



# 04

## UTILITY OPTIONS



## UTILITY OPTIONS



### THE CABLE BOX OF A TREE-PHASE TRANSFORMER

- The cable box is used to protect the HV (high voltage) - LV (low voltage) cables of the transformer. The cable box is assembled from multiple separate components.
- The exterior of the cable box has two doors, making it easy to assemble connectors.



### BUCHHOLZ RELAY

- The Buchholz relay is designed to promptly alert of internal faults within the transformer, enabling it to shut down the transformer and prevent potential damage.
- The relay is engineered to detect faults and prevent damage by monitoring the oil pressure, windings, and other components in oil-immersed transformers.



### RIS2

- The RIS2 is an integrated and compact measuring device designed for sealed oil transformers.
- It combines the functions performed by various transformer accessories into a single, compact, and reliable device that continuously monitors the pressure, temperature, oil level, and gas of the transformer.



### OIL TEMPERATURE INDICATOR (OTI) AND WINDING TEMPERATURE INDICATOR (WTI)

- This product is designed for transformers, specifically engineered for high durability, with the primary function of controlling oil temperature (OTI) and winding temperature (WTI). It is constructed to be mounted outdoors directly on the transformer in any climate, whether tropical or arctic. All parts are made from non-corrosive materials or have surface treatments.
- A good measuring system ensures the safe and accurate operation of high-durability sensors. In addition to the basic types described below, there are many options available. For example: remote display; high-temperature environments; protection class IP 55 or 65 according to IEC standards.



### ON-LOAD TAP CHANGER (OLTC) FOR TREE-PHASE TRANSFORMER TYPE V

#### Technical Specifications

• Phase	03 phases
• Current	200/350/500A
• Voltage	1,500V
• Maximum switching capacity	525kVA
• Tap position	Maximum 27 (Optional changes)

\*These accessories are installed on the transformer according to customer's requirements.

05

**SERVICE**



## UTILITY OPTIONS

Along with improving product quality in production, THIBIDI always focuses on after-sales service, hoping to provide customers with a professional, fast service experience, ensuring peace of mind for customers when using THIBIDI products. Our professional staff is always on duty 24/7 to perform technical consulting, maintenance and warranty services, always ready to serve whenever customers need.



Consultation on selection and installation of transformers.



Repair and overhaul of transformers at THIBIDI. (For damages that cannot be fixed at site.)



Warranty



Maintenance and repair of transformers at site. (For minor damages.)



Other services according to customer requirements.

With the goal of maximizing customer satisfaction, THIBIDI commits to ensure that the products and services provided to customers always meet the highest technical standards and quality.

THIBIDI committed to providing high-quality products that meet standards, along with fast and reliable after-sales service and warranty, ensuring that Customers always feel secure and satisfied throughout the shopping and product usage process.



### Mobile repair service and super-fast warranty only at THIBIDI:

- A team of professional and experienced technicians
- Fully equipped with tools and spare parts
- Ready to come to the customer's location for repairs

### Super-fast warranty service:

- Commitment to arrive within 24 hours of receiving the request
- Quick and efficient handling of all issues
- Reducing waiting time and minimizing operational disruptions

## **ELECTRICAL EQUIPMENT JOINT STOCK COMPANY**

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