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THIBIDI
Powered by quality

AMORPHOUS TRANSFORMERS

THIBIDI AMORPHOUS CORE TRANSFORMER

Electrical Equipment Joint Stock Company (known as THIBIDI) was established in 1980, specializing in manufacturing and supplying various kinds of transformers, belonging to Vietnam Electrical Equipment Joint Stock Corporation (GELEX). Its headquarters is located in the Bien Hoa Industrial Zone No. 1, Road No. 09, An Binh Ward, Bien Hoa City, Dong Nai Province, Vietnam.

THIBIDI is the biggest manufacturer of distribution transformers in Vietnam and is well-known because of its best quality and services. With managerial expertise, team of experienced engineers and skilled workers, THIBIDI has been continuously improving its products and services to satisfy customers' demand and to integrate Vietnam transformers into Southeast Asian area as well as the global market.

The Amorphous Advantage

More than ever, electric utilities and other users of distribution transformers are emphasizing sustainability and looking for technologies that can lower operating costs, improve energy savings, and reduce environmental impact.

THIBIDI's amorphous metal distribution transformers (AMDT) is the product of choice to help achieve these important objectives.

Efficient and environmentally friendly

The ultra-low core (no-load) loss of an amorphous core transformer yields substantial energy and cost savings for its owner. In fact, amorphous core transformers can lower core loss by 60-70 percent compared to transformers made with conventional cold-rolled grain-oriented electrical steel (CRGO) cores, resulting in cost avoidance from reduced generation and deferral of generation and transmission capacity expansions.

The reduced core loss of an AMDT lessens impact on the environment by reducing carbon emissions over the transformer's entire operating life. Also, the amorphous metal core manufacturing process is more efficient, using less energy than required to manufacture CRGO cores. And, amorphous metal cores, along with the copper, aluminum, and oil components of an AMDT, can be recycled, promoting conservation of these valuable resources.

Quality and dependability

The Thibidi quality process assures that its AMDT's will provide exceptional reliability and long service life. Higher quality means fewer problems, and that translates into lower maintenance costs and greater profits for transformer users. Thibidi advanced design, manufacturing, and testing systems produce consistent quality. Our ISO-9001 registered quality management system links all aspects of the company's operations,

including marketing, engineering, manufacturing, and shipping functions to make sure that not only our products, but everything we do for customers is of the highest quality.

Product scope:

+ Single-phase oil-Immersed amorphous transformers: Primary voltage Up to 35 kV, Range Up to 167 kVA
+ Three-phase oil-Immersed amorphous transformers: Primary voltage Up to 35 kV, Range Up to 2500 kVA
+ Three-phase Cast resin amorphous transformers, windings are made of epoxy: Primary voltage Up to 35 kV, Range Up to 2000 kVA. (Cooperation products with General Electric (GE) – USA)
+ Three-phase oil-Immersed Pad-mounted amorphous transformers: Primary voltage Up to 22 kV, Range Up to 2000 kVA. (Cooperation products with Cooper Power System (CPS)-USA)
+ Besides THIBIDI also design and manufacture AMDT according to individual customer requirements

Single-phase Oil-Immersed amorphous transformers

Three-phase Oil-Immersed amorphous transformers

Three phase Oil-Immersed Pad-mounted amorphous transformer

Three phase Cast resin amorphous transformer

The AMDT story

Amorphous metal is a unique alloy that exhibits a molecular arrangement that is random in structure, rather than the organized crystalline structure of CRGO core steel. Due to its unique molecular structure, amorphous metal cores are more readily magnetized and demagnetized when energized, resulting in significantly lower energy loss compared to CRGO steel.

AMDT technology is considered mature and has been proven to be reliable. Distribution transformers containing amorphous metal cores were first made commercially available in the late 1980's. Since then until 2016 over 427,000 MVA have been installed worldwide, with exceptionally good field experience.

Received technology transfer from Metglas-USA (a member of Hitachi Metals Group – Japan), THIBIDI has invested factories, technological lines ... for the production of AMDTs in Vietnam to contribute to energy saving and environmental protection.

AMDTs and total owning cost

Most transformer users appreciate the need to base purchasing decisions on a transformer's total owning cost (TOC), rather than on initial price alone. Using TOC methodology, both core loss and winding losses are evaluated by assigning them economic values in equivalent first cost (or "present worth").

A basic TOC evaluation formula is shown below, where "A" is the discounted present value of core loss in dollars per Watt, and "B" is the discounted present value of winding loss in dollars per Watt. Core loss is incurred continuously as long as the transformer is energized. Winding loss is incurred only when supplying load and is a function of load current.

TOC = (Purchase Price) + (A x Core Loss) + (B x Winding Loss)

The core loss factor (A) and the winding loss factor (B) are calculated by considering the user's annual levelized cost for capital, energy, and other factors, along with load factor, expected rate of return, and anticipated transformer life.

Amorphous metal cores are particularly valuable for transformer users with relatively high "A" factors, because the lower core loss of AMDTs results in substantially reduced cost of ownership, with only a moderate increase in purchase price. For users wanting to go beyond MOST's minimum efficiency requirements, Thibidi AMDTs are the logical choice.