

MANUFACTURING PROCESSES

Hammond Power Solutions produces the most reliable, technologically superior power transformers in the market today.

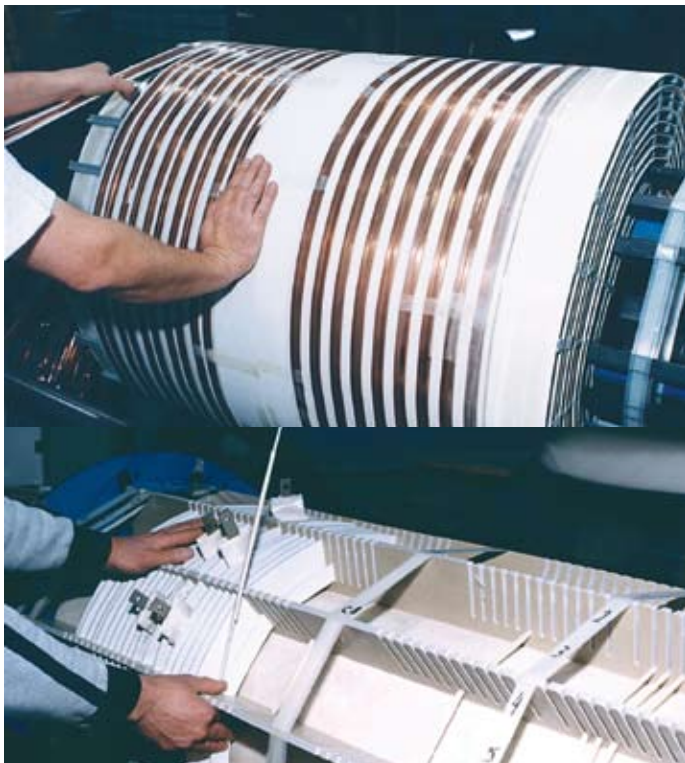
This is as a result of continuing development in all phases of the design and manufacturing processes in meeting the requirements of a broad range of customers and the most onerous applications. Our dry type transformers are now the largest in kVA and impulse voltage level of any manufacturer.

Additionally, these transformers have demonstrated improved withstand ability to short circuits and will provide a life expectancy considerably in excess of current industry standards.

Core Construction

HPS cores are manufactured from high grade non-aging, fully processed silicone steel laminations. Cores are precision cut to close tolerances using modern equipment, to eliminate burrs and minimize losses. They feature core construction that optimizes energy efficiency.

The completed core is sealed in epoxy to prevent the ingress of moisture.



Coil Construction

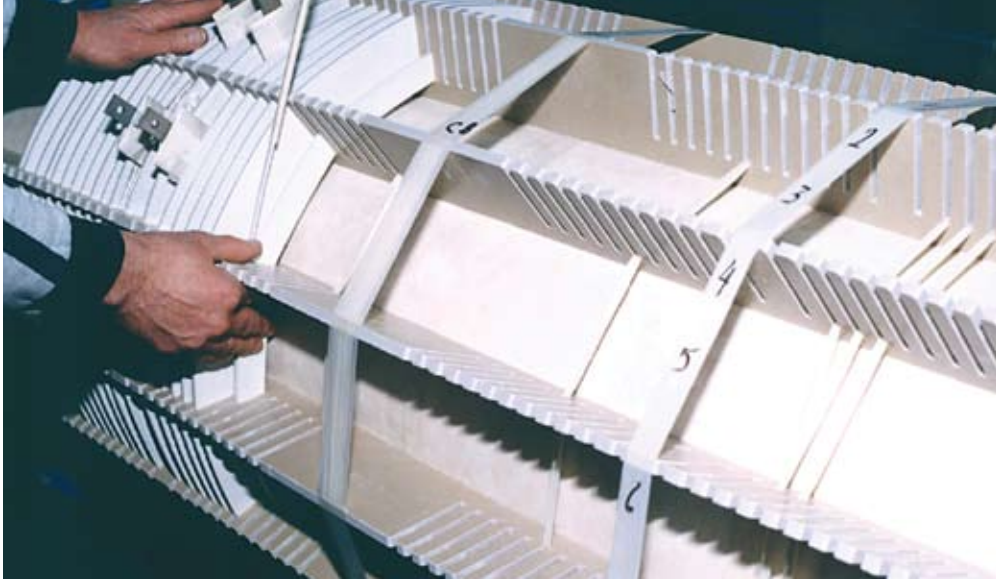
Coils are either layer (barrel) or disc wound to suit the voltage class. Typically, disc wound coils are utilized above 8.7 kV class. Available in aluminium or copper, windings are designed with wire or foil conductors for optimum performance for the application.

Disc wound coils feature comb construction to electrically balance voltage stresses over the full length of the coil.

All internal connections are brazed or TIG or MIG welded.

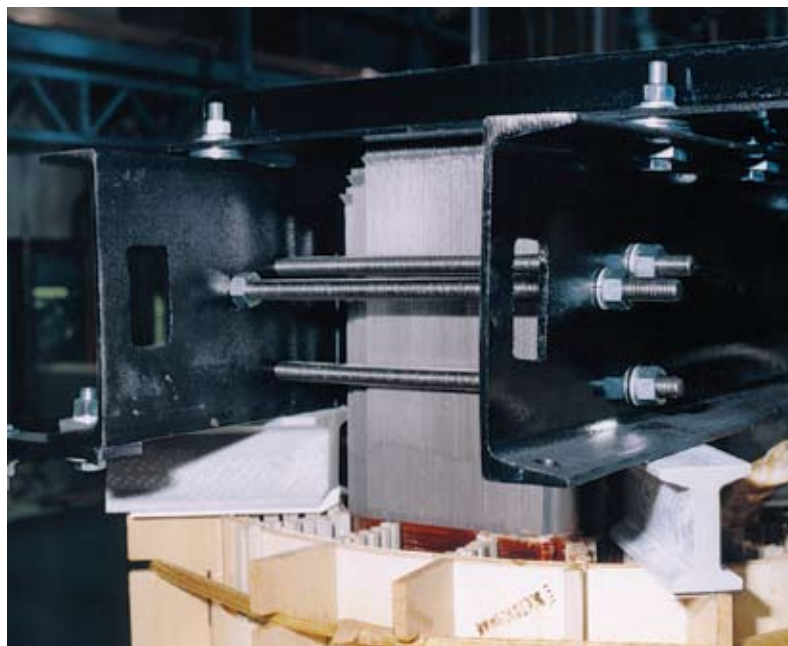
Insulation

Typically HPS dry-type power transformers are manufactured with a class H, 220°C insulation system. High temperature resistant materials are used including Nomex Aramid papers, silicone coated fiberglass, Nomex sleeving, supersil duct sticks and pressure sensitive glass tape. All materials meet or exceed UL standards for use on dry-type power transformers.



Core and Coil Assembly

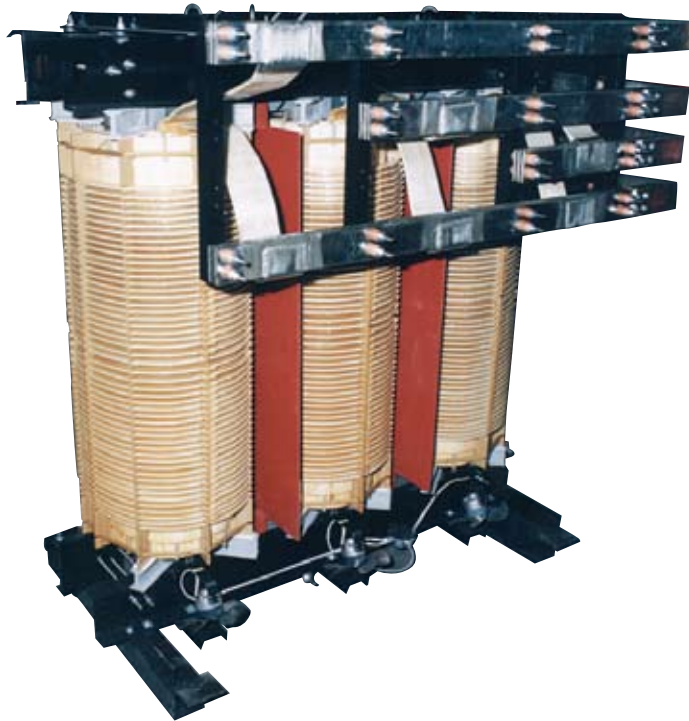
As a completed assembly, the coils are held rigidly in place between insulators clamped to the upper and lower core frames under high compression.





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Winding terminals can be secured firmly to the transformer structure.



The picture below shows how low voltage bus bars are bolted to the upper or lower core clamps with standoff insulators and quality hardware, all to ensure the integrity of the core and coil assembly. Other optional termination methods are available.





Impregnation

It is critical that transformers maintain the integrity of the dielectric properties of the insulation materials essential for long-term life expectancy. In order to meet designed life expectancies, transformers must not be compromised during the impregnation process.

At HPS, transformer coils are impregnated with two complete vacuum-pressure impregnating cycles:

- Coils are placed in a sealed tank and one full atmosphere of vacuum is drawn.
- The impregnation resin is then introduced into the chamber and the coils, or assembly, are then completely immersed in the impregnation resin.

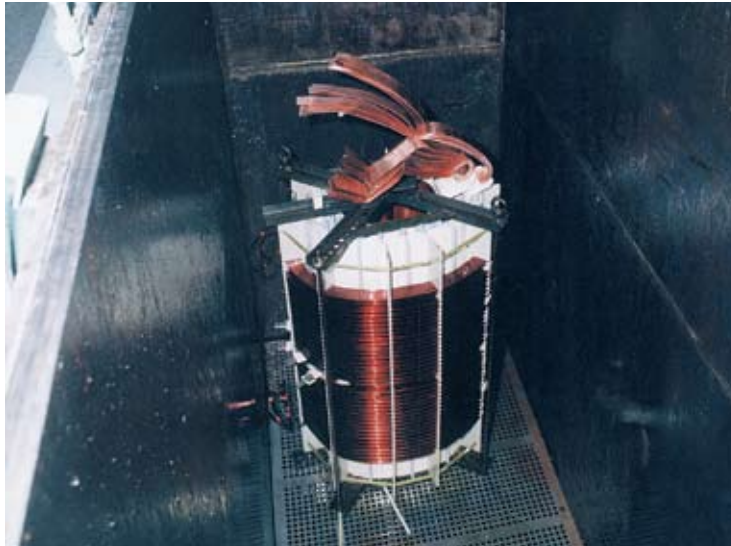




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Impregnation continued

- The tank is then pressurized to force the impregnation resin to thoroughly penetrate the windings.
- The coils or assembly are then removed from the chamber and oven cured.
- A complete second impregnating cycle follows to ensure thorough and complete impregnation.



The result are transformer coils which exhibit virtually corona free performance, a superior resistance to environmental conditions and a new standard of reliability even for the most onerous industrial, utility or commercial applications.

