SGB-USA Dry Type Transformers
Compact Core Vacuum Pressure Impregnated Specification:

The transformer shall be of Compact Core Vacuum Pressure Impregnated construction (VPI) and shall supplied (as a core and coil assembly) (be mounted in a suitably ventilated indoor, outdoor enclosure).

The transformer shall be manufactured by a company which is certified to ISO 9001 for design and manufacture of Power, Distribution and Specialty Dry Type Transformers. A certificate of Compliance to this requirement shall be provided with the proposal.

The transformer shall be rated _____ kVA with a primary voltage of _____kV (delta, wye) connected and have a BIL rating of _____ kV and a secondary voltage of _____V(delta, wye) connected and have a BIL rating of _____ kV.

The transformer is to have an impedance (per manufacturer's standard, _____ %IZ.)

The average temperature rise of the transformer windings shall be rated at (80˚C, 115˚C, 150˚C). The transformer shall not exceed the specified temperature rise when the unit is operated continuously at full nameplate rating. The transformer shall be capable of carrying 100% of the nameplate rating in a 30˚C average, not to exceed 40˚C maximum ambient in any 24 hour period.

The high voltage and low voltage windings shall be constructed using (copper, aluminum) conductors. The conductors shall be insulated with a _____˚C insulation. Transformer windings, insulation class 1.2 kV (600V) and below, shall be wound using foil or sheet conductors.

Transformer windings, insulation class 2.5 kV (2400V) and above, shall be wound using wire conductors. The high voltage winding shall be wound over the low voltage winding with enough mechanical bracing to prevent movement during fault conditions.

The transformer core shall be wound from a continuous strip of magnetic steel without any joints, therefore avoiding the related losses. The width of the steel sheet shall vary in order to produce an almost D-shaped cross section of a core ring. Three core rings shall be mounted together to form a three-phase core with triangular shape. Each core leg shall be made up of two D-shaped parts from two core rings combined, resulting in a circular cross section. Magnetic flux densities are to be kept well below the saturation point. The finished core shall be coated to protect against corrosion.

Primary and secondary coordination bus assemblies, as required for connection to associated switchgears are to be of(welded, bolted) construction.

The coils and all clamping structure and bus work shall be assembled on the core, and then dried at atmospheric pressure in an oven through which hot air is continuously circulated. The totally assembled core and coil assembly shall be vacuum pressure impregnated in epoxy varnish. The total VPI process shall apply a one (1) cycle epoxy protective shield of varnish to the coils and a protective shield to the bus, core and support structure. The varnish shall be cured on the core and coil assembly following an established temperature vs. time baking cycle in a hot air circulating oven. The VPI process shall effectively impregnate the entire core and coil assembly which results in a unit which is virtually impermeable to moisture, dust, dirt, salt air and other industrial contaminants.

The transformer shall have vibration isolation pads installed between core and coil assembly and enclosure base structures to prevent the transmission of structure borne vibration.

The impulse rating of the transformer must equal or exceed the basic impulse level specified by ANSI for the applicable voltage class. The basic impulse level shall be inherent to the winding design and is to be obtained without the use of supplemental surge arresters.

{OPTIONAL FEATURES}
The enclosure shall be constructed of heavy gauge sheet steel and shall be finished in ANSI 61 paint color. The paint shall be applied using an electrostatically deposited dry powder paint system. All ventilating openings shall be in accordance with NEMA and the NEC standards for ventilated enclosures. The base of the enclosure shall be furnished with ground pads located on opposite diagonal corners. The base shall have jacking pads and shall be constructed of heavy steel members to permit skidding or rolling in any direction. The core shall be visibly grounded to the frame by means of a flexible grounding strap.

Forced air cooling, when required, shall increase the continuous self cooled rating of the transformer by 33 1/3%. The forced air cooling shall be regulated automatically by sensors placed in the low voltage winding's air ducts. Forced air cooling shall include: three phase electronic digital temperature monitor, fans, control wiring, control panel with test switch, indicator lights, alarm and alarm silencing switch.

When 80˚C and 115˚C winding temperature rise are specified, they can be designed with inherent overload capabilities. An 80˚C rise unit shall be capable of continuous operation at 35% above name-plate rating and a 115˚C rise unit shall be capable of continuous operation at 17% above nameplate rating when specified. This overload capability would be achieved on the AA and FA rating and shall be accomplished by allowing the transformers ultimate rise to be 150˚C. Customer specification must define the high capacity overloads.

After completion, each transformer shall undergo the following routine tests per ANSI C57.12.01 and ANSI C57.12.91.Tests Included the following:
• Megger
• Ratio
• Resistance
• Phase relation
• Load Loss, Impedance and Regulation
• No Load Loss and Excitation Current
• Applied Potential Test
• Induced Potential Test