



Confirmation of Product Type Approval

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product. This certificate reflects the information on the product in the ABS Records as of the date and time the certificate is printed.

Pursuant to the Rules of the American Bureau of Shipping (ABS), the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) with expiration date of 24/JUL/2019. The continued validity of the Manufacturing Assessment is dependent on completion of satisfactory audits as required by the ABS Rules.

And; a Product Design Assessment (PDA) valid until 13/JUL/2019 subject to continued compliance with the Rules or standards used in the evaluation of the product.

The above entitle the product to be called Product Type Approved.

The Product Design Assessment is valid for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Product Name: Transformer, Dry Type
Model Name(s): Types CK,CKN, CF,CFN,CJ,CG

Presented to:
HAMMOND POWER SOLUTIONS INC.
595 SOUTHGATE DRIVE
GUELPH
Canada

Intended Service: Marine and Offshore Applications - Electric Distribution and Propulsion.

Description: Dry Type Power Transformers: Cast Resin Types: CJ (open core and coil), CK (enclosed ventilated); CKN (enclosed non-ventilated) transformers and auto transformers, 3- phase; Cast Resin Types: CG (open core and coil), CF (enclosed ventilated); CFN (enclosed non-ventilated) transformers and auto transformers, 1- phase.

Tier: 5

Ratings: Type CJ, CK, CKN: 3- phase, 50/60Hz, 46kV class max, 3000kVA max., Class 150, 180, 200C insulation system; Ambient Temp: -20 °C to 40 °C (with derating from 40 °C to 60 °C); Type CG, CF, CFN: 1- phase, 50/60Hz, 46kV class max, 1500kVA max., Class 150, 180, 200C insulation system; Ambient Temp: -20 °C to 40 °C (with derating from 40 °C to 60 °C);

Service Restrictions:

- 1) Unit Certification is required for essential services or emergency services as per 4-8-3/7.3.5 of the SV Rules. For Unit Certification requirements, see "Comments".
- 2) Transformers rated more than 10 kVA/phase and over are to be provided with anticondensation heaters installed inside the transformer enclosure and energized at full heater voltage from a suitable external source throughout the standby period.
- 3) Transformer enclosures are to have degree of protection not less than IP23 and if installed in spaces accessible to unqualified personnel the degree of protection is to be increase to IP44 in accordance with 4-8-5/3.7.5(c) of the SV Rules.

Comments:	The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined. The Rules applicable to this assessment are: 1) All LV (1 kV or less rated voltage) transformers rated 1 kVA or more (1-phase) and 5 kVA or more (3-phase) intended for essential or emergency services are to be tested by the Manufacturer, whose certificate of tests will be submitted to the Bureau. Routine tests are to include (as a minimum): measurement of winding resistance, voltage ratio, impedance voltage, short circuit impedance, insulation resistance, load loss, no-load loss and excitation current, phase rotation and polarity, dielectric strength and temperature rise for the prototype of each size and type. 2) All three phase HV (more than 1 kV rated voltage) transformers (or 3-phase bank transformers) rated 100 kVA or more are to be tested in the presence of the Surveyor as per IEC 60076 and 4-8-3/7.3.5 and 4-8-5/3.7.5(e) of the Rules. Other HV transformers (less than 100 kVA) will be accepted on the basis of a performance test conducted after installation in the presence of the Surveyor. 3) Each transformer is to be provided with a nameplate in corrosion resistant material, showing all data as per 4-8-3/7.3.6 of the Rules. In addition, the nameplates of HV transformers are to show information about the applicable standard (IEC 60076) and the short duration power frequency withstand voltage for verification of insulation level of each winding in accordance with 4-8-5/3.7.5(f) of the Rules. 4) Overvoltage Protection is to be provided by: i) Direct earthing of the lower voltage system; ii) Appropriate neutral voltage limiters, or iii) Earthed screen between primary and secondary winding of transformers. See 4-8-5/3.5.5 of the SV Rules.		
Notes / Documentation:	Supporting Documentation: CSA Group Certificate of Compliance No: 2579272, issued 23 MAY 2013; Brochure HPS EnduraCoil Cast Resin Transformer, AUG 2013, 2 pages; HPS Transformer Test Report P/N 204680, dated 04 MAR 2013, 4 pages; HPS Transformer Test Report P/N 204679, dated 04 MAR 2013, 5 pages; HPS Transformer Test Report P/N 204678, dated 04 MAR 2013, 4 pages; HPS Transformer Test Report P/N 204677, dated 04 MAR 2013, 4 pages; Dwg. No. CJ, CK,CKN, CG, CF,CFN, Rev. 0, Typical Transformer Outline Drawing, 1 sht.;		
Term of Validity:	This Product Design Assessment (PDA) Certificate 14-HS1202098-PDA, dated 14/Jul/2014 remains valid until 13/Jul/2019 or until the Rules or specifications used in the assessment are revised (whichever occurs first). This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product. Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA. Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.		
ABS Rules:	Rules for Conditions of Classification, Part 1 2014 Steel Vessel Rules 1-1-4/7.7, 1-1-A3, 1-1-A4 which covers the following: Steel Vessel Rules 4-8-3/7, 4-8-5/3.7.5, 4-8-5/5.17.9; Rules for Condition of Classification, Part 1 - 2014 Offshore Units and Structure 1-1-4/9.7, 1-1-A2, 1-1-A3 which covers the following: Mobile Offshore Drilling Units 4-3-5/1.7.2, 4-3-5/Table 1, 6-1-7/11;		
National Standards:	ANSI C57.12.91 (1979) Transformer Test; CSA C22.2 No. 66-1956(File 003902-0-000); C22.2 No. 47-M90 (CSA L3902); UL E147879, E112313, E61431, E50394, E258346, E90686;		
International Standards:	IEC 60076-3;		
Government Authority:			
EUMED:			
Others:			
Model Certificate	Model Certificate No	Issue Date	Expiry Date
PDA	14-HS1202098-PDA	14/JUL/2014	13/JUL/2019



ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.