



Exploration & Production

GENERAL SPECIFICATION

HVAC

GS HVA 211

Electrical heaters

02	10/04	Updating
01	12/03	Change of Group name and logo
00	10/02	First issue
Rev.	Date	Notes



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1. Scope

This document defines the minimum requirements for design, construction and installation of electrical heaters in HVAC systems.

The words and expressions in capital characters are defined inside the general specification **GS HVA 801**.

2. Reference documents

The reference documents listed below form an integral part of this General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the EFFECTIVE DATE of the CONTRACT.

Equipment and installations must be in accordance with (in order of precedence):

1. The country local regulations where equipment and/or installations shall be operated
2. Total General Specifications as listed in **GS HVA 000**
3. The International Standards
4. The French Regulation (when Country local regulation does not exist).

International System of Units (SI)

Notes:

- In case of discrepancy between documents the more stringent requirements shall apply.
- The HVAC VENDOR or CONTRACTOR may propose proven improvements to the reference documents but shall obtain written approval of the COMPANY prior to implementation.
- A International Standard is a good "engineering practice" which shall be recognised and taken into consideration by VENDOR, SUPPLIER, MANUFACTURER and/or CONTRACTOR. If required, the translation of the standards must be included into HVAC scope.
- The latest revision of Standards, codes, regulations and the published errata if any must be used and applied by VENDOR, SUPPLIER, MANUFACTURER and CONTRACTOR.

Standards

Reference	Title
IEC 60079	Electrical apparatus for explosive gas atmosphere

Professional Documents

Reference	Title
Not applicable	

Regulations

Reference	Title
Not applicable	

Codes

Reference	Title
Not applicable	

Other documents

Reference	Title
Not applicable	

Total General Specifications

Reference	Title
GS HVA 000	List of HVAC specifications
GS HVA 801	Terminology, definitions, abbreviations

3. Electric heaters

3.1 Design

The maximum air pressure drop, at the nominal air flow rate, shall be 60 Pa.

The maximum air velocity in an electrical heater shall be 4 m/s.

The surface temperature of the heating element shall not exceed 90°C in all configurations.

For electric heaters installed inside a duct, an even air distribution across the heating elements shall be ensured. A minimum distance of 1300 mm (upstream and downstream) shall separate the heater from any elbow, transition piece, filter, frame member, fan or damper. More stringent requirements of MANUFACTURER regarding minimum recommended distances shall be respected.

3.2 Construction

Each heater shall include the following components:

- Sheathed heating element with fins or smooth surface
- Electrical/junction box
- Safety grille for personnel protection
- Anti-radiation screens in the hot air outlet.

The electrical elements shall be black heat type, the tubular elements being AISI 316 Stainless steel (or equivalent *) packed with magnesium oxide.

A high temperature thermostat with manual reset shall limit the surface temperature of the heating elements to a maximum of 90°C.

An air flow switch with automatic reset shall switch off the heater in case of ventilation air shortage.

Dilatation must be considered for integration within ducts or casings.

Casing shall be made of same material than ducts and shall be air tight.

* To be submitted to *COMPANY* for review.

3.3 Electrical part

Each electrical heater shall be provided with a terminal box (IP55 enclosure), pre-wired electrical components, suitable for control/safety and devices such as:

- Isolating switch
- Relay for remote alarms
- Manual reset high temperature safety cut-outs
- Earthing clamps on the casing and bolt in the terminal for connection of earthing cables.

A small electric heater (up to 4 kW) can be controlled by a step controller or a three stage thermostat. Heaters with heating capacity above 4 kW shall be pre-wired for Triac control.

3.4 Maintenance

The electrical elements shall be installed so that they can be easily dismantled for cleaning or maintenance without any duct or casing dismantling. Electrical connections of all components shall be easy to access. The terminal box shall be external to the air stream.

3.5 Inspection door

At the upstream and downstream of each duct electrical heater to supply an inspection door.

3.6 Information to be provided

The CONTRACTOR shall provide at least the following information:

- Trade name and type of product
- Rated heating capacity
- Dimensions and weight
- Maximum surface temperature of the heater
- Description and detailed documentation of the product proposed
- Certificate of classification for the terminal box.