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**TECHNICAL JOB
SPECIFICATION**

314/1

REVISION 0

DATE 05/04/2011

HIGH PRESSURE (HP) TRANSMISSION SYSTEMS

POSITIVE DISPLACEMENT PUMPS- CONTROLLED VOLUME

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QUALITY ASSURANCE PAGE

CHANGES LOG

REVISIONS LOG

0	05-04-2011	FIRST ISSUE	PQ DPT	V.G.
Rev. No	Rev. Date	REASON FOR CHANGE	Made By	Approved By

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REFERENCE DOCUMENTS

Job Spec. No. 700/1
[General Notes for Electrical Equipment & Materials]
Job Spec. No. 830/1
[External Painting]
Job Spec. No. 900/4
[Noise Control]
Job Spec. No. 970/2
[Shop Inspection of Equipment and Materials for NGT Project]
Job Spec. No. 970/3
[Inspection and Test Instruction]

EU DIRECTIVES:

2004/108/EC Electromagnetic Compatibility (**EMC**)
94/9/EC Explosive Atmospheres (**ATEX**)
97/23/EC Pressure Equipment Directive (**PED**)
2006/42/EC Machinery Directive
89/106/EEC Construction Products Directive (**CPD**)

API 675
[Positive Displacement Pumps - Controlled Volume]

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1.0

SCOPE

The **API Standard 675** "Positive Displacement Pumps-Controlled Volume", is an integral part of this standard. The numbering of sections and paragraphs is the same as in **API 675**. The type of change e.g. addition, exception, modification or substitution is noted for each item.

Compliance with this standard does not relieve the Manufacturer or the Vendor of the responsibility for supplying equipment of proper design and construction and fully suitable for all the specified operating conditions.

Exceptions to this and other applicable standards shall be clearly stated in the Vendor's/Manufacturer's proposals.

Vendor/Manufacturer shall either submit a list of exceptions or a statement to the effect that his proposal is in full accordance with these standards. In this latter case the purchaser shall assume that the proposal includes the cost of the requirements of any of the applicable EU Directives and standards. The Vendor/Manufacturer is responsible for ensuring that materials supplied by its sub-vendors comply with the requirements of the applicable EU Directives and these standards.

2.0

SPECIFICATION

SECTION 1 - GENERAL

1.1

SCOPE

1.1.2 New

Vendor/Manufacturer qualification. Equipment offered by Vendor/ Manufacturer shall satisfy the following minimum service and manufacturing experience requirements:

Pumps shall be identical or validly similar in frame power rating, rotational and piston speed, rated capacity, discharge and differential pressure, mechanical design and materials as compared with at least two units produced at the proposed manufacturing plant. These units must have had at least one year's satisfactory operation.

The applicable EU Directives must be satisfied and the application declared by Vendor/Manufacturer.

Equipment components and the complete unit shall bear the CE mark as required by the applicable EU Directives and the relevant certificates or declarations of conformity shall be submitted to the purchaser.

1.2

ALTERNATIVE DESIGN

Clar. Unless otherwise specified, pipe, pipe threading and flanges shall be based on European standards. For all other pump dimensions, metric system shall be applied, however U.S. customary systems can be accepted.

1.3

CONFLICTING REQUIREMENTS

Subs. The EU Directives, national laws and regulations and hierarchically the specific requirements stated in the purchase order and material requisition shall take precedence over this standard. The Vendor/Manufacturer shall in any case notify the purchaser of any possible conflict for resolution.

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1.5 REFERENCED REQUIREMENTS

New The latest revision of the following DESFA Specifications form part of this standard and take precedence, where applicable, over those listed in **API 675**.

Job Spec. No. 700/1
Job Spec. No. 830/1
Job Spec. No. 900/4
Job Spec. No. 970/2
Job Spec. No. 970/3

The following European Union Directives also must be applied:

2004/108/EC Electromagnetic Compatibility (**EMC**)

94/9/EC Explosive Atmospheres (**ATEX**)

97/23/EC Pressure Equipment Directive (**PED**)

2006/42/EC Machinery Directive

89/109/EEC Construction Products Directive (**CPD**)

SECTION 2 - BASIC DESIGN

2.1 GENERAL

2.1.12 Add. Unless otherwise specified, pumps, auxiliary equipment and accessories shall be intended for outdoor unprotected installation and subjected to corrosive atmosphere.

The Vendor/Manufacturer shall describe the winterizing extent, if any required, and provide all necessary clips or supports for the insulation. Vendor/Manufacturer shall also show on his drawings and P&I diagrams items of equipment and piping which require tracing and/or lagging.

2.1.21 New Unless otherwise agreed upon, the drive mechanism shall be of fully engaged design.

2.1.22 New Pumps and each component part thereof, which because of the weight, size or shape cannot be handled by hands shall be provided with lifting lugs or equivalent features.

2.1.23 New Packed plunger pumps shall not be used in hazardous or toxic service.

2.2 PRESSURE-CONTAINING PARTS

2.2.1 Add. Pressure containing parts subject to corrosion shall include a 3.2 mm corrosion allowance for carbon and low alloy steel.

2.2.2 Add. Pressure casing joints shall have a confined gasket.

2.3 LIQUID AND CONNECTIONS

2.3.1 Mod. Inlet and outlet connections shall be flanged, unless otherwise agreed upon before purchase order.

2.5 DIAPHRAGMS

- 2.5.5 Add. A probe/detector or pressure switch, as applicable, shall be provided to alarm in case of diaphragm rupture.

2.6 PACKED PLUNGERS

- 2.6.2 Add. For corrosive liquids, packing leakage drains shall be piped to the edge of the base plate.

2.7 RELIEF VALVE APPLICATION

- 2.7.2 Mod. Relief valves shall be supplied by Vendor/Manufacturer. End connections shall be flanged.

2.10 DRIVE BEARINGS

- 2.10.1 Add. All antifriction bearings, including those installed on motor and gear, shall be equipped with metal cages.

2.13 MATERIALS

- 2.13.1.14 New Asbestos and its compounds or other carcinogenic mineral fibers shall not be used in any form.

SECTION 3 – ACCESSORIES

3.1 DRIVERS

- 3.1.1 Add. Motor Manufacturer shall be approved by purchaser.
The intent of this requirement is to select motors from a single motor supplier to the greatest extent possible for a single plant site.
Odorizer pumps may be driven by magnetic pulse devices or other suitable means.
- 3.1.4 Mod. The motor nameplate rating shall be at least 125 percent of the greatest power required.

3.3 BASE PLATES

- 3.3.1 Add. The base plate shall have a raised lip to contain stuffing box leakage, and a sloped drain pan terminating with a 3/4 inch minimum tapped connection.
- 3.3.4 Subs. Unless otherwise specified, the Vendor/Manufacturer shall prepare all grout contact surfaces of the base plate for cement grouting.
- 3.3.11 New All corners of parts that shall be embedded in the grout shall be rounded to a minimum of 50 mm.
- 3.3.12 New All base plates shall be provided with two diagonally oriented earthing bosses.

3.5 PIPING

3.5.1 GENERAL

- 3.5.1.6 Add. Except on instrument service, all threaded connections, on hazardous or toxic applications, shall be seal welded.
- 3.5.1.9 Mod. Table 1 - Parker Ferulok™ type or equal compression fittings shall be used in case of tubing.

3.6 PULSATION SUPPRESSION DEVICES

- 3.6.2 Mod. Unless otherwise specified, the pulsation suppression devices shall be sized as per criteria stated in **chapter 3.6 of API standard 675**. Process connections shall be flanged.

3.7 SPECIAL TOOLS

- 3.7.1 Add. The extent in Vendor's/Manufacturer's scope of supply shall include all the necessary special tools and fixtures for installation, commissioning and maintenance.

SECTION 4 - INSPECTION, TESTING, AND PREPARATION FOR SHIPMENT

4.1 GENERAL

- 4.1.1 Clar. The extent of inspection and testing participation, as well as the advance notice, are defined in the equipment data sheets, and DESFA Job Specifications No **970/2** and **970/3**.
- 4.1.5.1 Add. The Vendor/Manufacturer shall provide a quality control plan listing the proposed program of inspection and testing, for purchaser review and agreement, on the items to be witnessed or observed and the hold points.

4.2 INSPECTION

4.2.1 GENERAL

- 4.2.2.1 Clar. Vendor shall keep records of the test and manufacturing data listed at item a) and d).
- 4.2.1.4 New The scope of purchaser inspection shall include as a minimum, suborders, materials, welding, heat treatments, repairs, nondestructive testing, dimensional check, approval of test data and certification, final inspection prior to shipment and, if required by Regulations, verification of Machinery Directive conformity certificate and "CE" mark.

4.2.3 MECHANICAL INSPECTION

- 4.2.3.4 Clar. Hardness of parts, welds, and heat affected zones shall be verified on H₂S service.

4.3 TESTS

4.3.2 HYDROSTATIC TEST

- 4.3.2.1 Add. Hydrostatic test shall be performed after completion of auxiliary piping welding to the pressure casing.

4.3.3 PERFORMANCE TEST

- 4.3.3.4 Clar. Flow repeatability and linearity test shall be part of the performance test.

4.4 PREPARATION FOR SHIPMENT

- 4.4.1 Subs. Preparation for shipment shall be in accordance with the requirements stated in the purchase documents.

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- 4.4.3.1 Mod. The painting of all exterior surfaces shall be suitable for the specified environment. The paint, preparation, and painting procedure shall be approved by purchaser and shall include both primer and finish coat.

SECTION 5 - VENDOR'S DATA

5.1 GENERAL

- 5.1.1 Add. Supplementary instructions are included in the Material Requisition.

5.2 PROPOSALS

5.2.1 GENERAL

- Clar. The specific statement of compliance shall be addressed to any of the requirements stated in the material requisitions and all the associated standards and specifications. Vendor is responsible that materials supplied by its subvendors comply with the specifications and that subvendors are fully aware of the applicable specifications content.

5.2.3 TECHNICAL DATA

- 5.2.3.bAdd. A statement of the guaranteed noise emission levels shall be provided.

5.3 CONTRACT DATA

- 5.3.7 Clar. The technical data manuals, in the required number of copies, shall be furnished.

SECTION 6 - GUARANTEE AND WARRANTY (New)

- 6.1 Pump Vendor/Manufacturer shall be responsible for the commercial and engineering coordination, supply, delivery and satisfactory operation of the complete unit, including driver, transmission, and all auxiliary equipment.

- 6.2 Pump vendor shall be responsible for parts supplied by its subsuppliers.

- 6.3 Unless exception is recorded by the Vendor/Manufacturer in the proposal, it shall be understood that the Vendor/Manufacturer agrees to the following guarantees and warranties:

6.3.1 MECHANICAL

Unless otherwise specified in the purchase order, all equipment and component parts shall be warranted by the Vendor/Manufacturer against defective materials, design and workmanship for 1 year after being placed in service or 18 months after date of delivery whichever is the earliest.

6.3.2 PERFORMANCE

The equipment shall be guaranteed for satisfactory performance at the operating conditions specified in the data sheet within the tolerance as specified at **para 4.3.3 of API 675**.

- 6.3.3 If any performance deficiency or defects occur during the guarantee and warranty period, the Vendor/Manufacturer shall make all necessary alterations, repairs, and replacement at the conditions defined in the purchase documents.