



NATIONAL PETROCHEMICAL COMPANY
STANDARDS

MATERIAL STANDARD
FOR
FORCED DRAFT FANS FOR BOILERS
& PROCESS SERVICES
NPCS-MS-RE-12

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1 GENERAL

- 1.1 Special purpose centrifugal fans shall be supplied in accordance with the following:

API Standard 673 "Special Purpose Centrifugal Fans for General Service", First Edition, January 1982.

- 1.2 This standard is supplemented by the data sheets for each individual item on which the operating conditions and special requirements are listed. Wherever the data sheets conflict with the provisions of this standard, the data sheets shall govern. In the event that there are any exceptions to specifications, data sheets, codes, standards, etc., these shall be clearly listed in vendor's bid.

- 1.3 Compliance by manufacturer with the provisions of this standard does not relieve him of his responsibility of furnishing equipment and accessories of proper design mechanically suited to meet the specified service conditions.

- .4 Unproven, prototype of "first-off" equipment is not acceptable; only proven equipment may be used. Proven equipment is defined as equipment that has been in continuous operation elsewhere for a minimum of two years without major breakdowns, on similar duties and under similar conditions. In this context, "similar" does not mean absolutely identical. However, fans of given sizes and pressure ratings must have been operated together at powers and speeds of the same order of magnitude on the application under consideration.

- 1 5 Vendor is to provide an experience list with the bid.

2 MODIFICATIONS TO API 673

The following paragraphs specifying the modifications follow the API 673, first edition and each paragraph denotes an addition, substitution or deletion.

(Substitution)

The API Standard clause is deleted and replaced by the new clause.

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(Deletion)

The API Standard clause is deleted without any replacement.

(Addition)

A new clause with a new number is added.

(Modification)

Part of the API Standard clause is modified, and/or a new description and/or condition is added to that clause.

3 SECTION 1 - GENERAL

1.1 SCOPE

(Substitution)

This standard together with the requisition, data sheets and all attachments covers the minimum requirements for special purpose centrifugal fans.

1.2 ALTERNATIVE DESIGN

1.2.1 (Addition)

Metric fasteners and flanges constitute alternative design features and must be cited as an exception in the proposal.

1.2.2 (Addition)

Where reference is made in this standard to AISI or ASTM materials, alternative equivalent materials are acceptable. Where alternates are offered in place of AISI, ASTM or ASME, they shall be of similar or higher quality and design. Chemical composition and properties shall be checked to ensure suitability for the intended service. All materials will be subject of review by Purchaser.



1 3

CONFLICTING REQUIREMENTS

(Substitution)

In case of conflict between the various documents, their order of precedence is as follows:

- a) Purchaser Order.
- b) Requisition.
- c) Data Sheets.
- d) Project Specification (s).
- e) This standard.
- f) Referenced Industry Standards.

1.3.1

(Addition)

All conflicting requirements shall be referred to purchaser in writing. Purchaser will issue confirming documentation, if needed, for clarification.

4

SECTION 2 - DESIGN

2.1

GENERAL

2.1.2

(Modification)

The maximum continuous speed for fans driven by variable speed drives shall be 105% of the highest speed necessary to meet any specified operating conditions. In case of fans driven by synchronous speed or induction AC motors, the maximum continuous speed shall be considered to be the motor synchronous speed multiplied by the gear ratio (if any). Design speeds shall be at least 110% of the maximum continuous speed and shall be the speed used to calculate the maximum stress of the impeller. For fans with steam turbine drives, the design speed shall be at least 110% of the turbine overspeed trip. Fans shall also be designed and constructed to be suitable for continuous operation at a temperature of 56°C above the specified inlet temperature.

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2. .3 (Modification)

The fan unit and its auxiliaries shall be suitable for operation outdoors without shelter.

2.1.6 (Modification)

Vendor shall specify all losses that constitute an addition to purchaser's inlet and outlet conditions. Losses associated with the control system shall be included by the fan vendor only when he furnishes this part of the system,

2.1.8 (Substitution)

The rated speed of the fan shall not exceed
3000 rev./min for shrouded impellers and
1500 rev./min for paddle type impellers.

For a specific application, speed shall not exceed 90% of the maximum allowable speed permitted by vendor.

2.1.12 (Substitution)

Motors, electrical components and electrical installations shall be suitable for the area classification which will be specified in the electrical and instrumentation project specifications.

2.1.14 (Deletion)

"When specified".

2.1.15 (Substitution)

The equipment shall conform to the Project Noise Specification.

The maximum permissible sound level shall not exceed 85 dBA measured at 1 m from fan and driver surface for the recommended range of operation.

Where noise insulation or acoustic enclosures are provided, they shall be of suitable construction for the specified environmental conditions. The internal construction of in-line silencers shall be compatible with the gas being handled.

2.1.21 (Addition)

The rotor assembly shall be designed to handle a minimum of 110% of maximum connected driver torque from zero rev./min to design speed.

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