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NOTE: THE FOLLOWING PARAGRAPH NUMBERS REFER TO API-673, FIRST EDITION, JANUARY 1982, WHICH IS A PART OF THIS PRACTICE

SECTION 1 - GENERAL

- I 1.1 SCOPE
- a. This practice covers special purpose fans, including their associated driver, power transmission and auxiliaries, which are designed for operation at developed discharge pressure of less than 5 psi (34 kPa) from atmospheric pressure.
 - b. All specifications in this practice are additions to those of **API-673** unless specifically noted as exceptions. Paragraph numbers in this practice which do not appear in **API-673** are new paragraphs.
 - c. **An asterisk (*)** indicates that a decision by the Purchaser is required or that additional information is furnished by the Purchaser.
Note: A bullet (•) is shown in **API-673** indicating that a Purchaser's decision is required.
 - d. **Vendor qualification.** Fans, including guide vanes and dampers, shall be supplied by vendors qualified by experience in manufacturing the unit proposed. To qualify, the vendor must have manufactured, at the proposed point of manufacture, at least two units of comparable power, speed, and service conditions which have been operating satisfactorily for at least one year.
- I 1.5 REFERENCED PUBLICATIONS
- a. **Table 1** lists the practices and standard which shall be used with this practice.
 - * b. **Table 2** lists the practices, code, and standards which shall be used with this practice **as specified** by the Purchaser.

TABLE 1

PRACTICES			
IP 2-1-1	Plant Noise Design Criteria	IP 18-10-1	Additional Requirements for Materials
IP 10-11-1	Sizing of Drivers and Transmissions for Compressors, Fans, and Pumps	IP 18-12-1	Positive Material Identification
IP 10-14-1	Lube and Seal Oil Systems for Machinery	IP 20-1-1	Inspection of Equipment and Materials
STANDARD			
API Standard			
673	Special-Purpose Centrifugal Fans for General Refinery Service		

TABLE 2

PRACTICES			
IP 10-7-1	General Purpose Steam Turbines	IP 16-9-1	Low Voltage A-C Motors Up to 200 HP (150 kW)
IP 10-10-1	High Speed, Special Purpose Gear Units	IP 16-9-2	AC Motors: Medium Voltage and Low Voltage Over 200 HP (150 kW)
CODE AND STANDARDS			
ASME Code		ASTM Standards (Cont)	
Section VIII	Pressure Vessels, Division 1	B 111 / B 111M	Copper and Copper Alloy Seamless Condenser Tubes and Ferrule Stock
ASTM Standard		NACE	
A 193 / A 193M	Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service	MR0175	Sulphide Stress Cracking Resistant Metallic Material for Oil Field Equipment
A 194 / A 194M	Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service	NEMA	
		SM23	Steam Turbines for Mechanical Drive Service

IP 10-13-1		Special Purpose Centrifugal Fans	
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(This practice is appropriate for attachment to Inquiry or Purchase Document)

SECTION 2 - DESIGN

	2.1	GENERAL
O,R	* 2.1.3	Fans and auxiliaries shall be suitable for outdoor installation in the climatic zone specified.
E	2.1.15	Noise. Fan vendor shall submit noise emission data for the quoted machine per IP 2-1-1 .
I	* 2.1.21	Unless otherwise specified, the fan vendor shall assume unit responsibility for all equipment and all auxiliary systems included in the scope of the order.
	2.2	FAN HOUSING
R	2.2.4	Internal bolting for fan housing, inlet box, and access doors shall be self-locking .
	2.3	FAN HOUSING CONNECTIONS
O	2.3.2	(Exception) Drain connections shall be valved .
	2.7	CRITICAL SPEED AND BALANCE
O,R	2.7.10	The rotating elements shall be dynamically balanced.
O,R	2.7.11	After completion of the final balancing of the assembled rotor, the sensitivity of the balancing machine shall be checked and reported.
O,R	2.7.12	(Exception) All fans shall be shop tested. The peak-to-peak amplitude of vibration (including run-out) in any plane, measured on the shaft adjacent to the bearing housing, shall not exceed 2.0 mils (50 µm) throughout the specified speed range.
	2.8	BEARINGS AND BEARING HOUSINGS
O,R	2.8.8	a. (Exception) All bearing housings shall have provisions for water cooling.
R		b. Material for cooling coils shall be per ASTM B 111 Alloy C44300, C44400, or C44500. Pipe connections inside the bearing housing are prohibited.
	2.9	LUBRICATION
R	2.9.2	(Exception) A pressurized lubrication system shall be provided for any fan unit supplied with a steam turbine or gear in the main drive system . The lube oil system shall be per IP 10-14-1 with the following modifications:
	*	a. Lube oil system shall be mounted within the confines of the main unit base area unless mounting on a console assembly base is specified.
	*	b. Unless otherwise specified, fans shall have a steam turbine main oil pump and a motor driven stand-by pump .
	2.10	MATERIALS
	2.10.1	GENERAL
R	* 2.10.1.1	Fan housing and inlet box construction shall be of carbon steel unless otherwise specified.
R	* 2.10.1.8	a. Fan components exposed to wet H ₂ S shall conform to NACE MR0175 . Wet H ₂ S service includes exposure to trace quantities including startup and shutdown
	2.10.2	CASTINGS
R	2.10.2.2	Steel casting repairs shall comply with ASTM A 488 or ASME Section VIII, Division 1 .
	2.10.4	LOW TEMPERATURE
R	* 2.10.4.1	(Exception) Impact requirements for low temperature service will be governed by IP 18-10-1 . Critical Exposure Temperature (CET) will be specified.
	2.10.5	MATERIAL INSPECTION
R	2.10.5.1	(Exception) Butt welded joints of pressure casings shall be 100% radiographed . Inspection procedures for other pressure casing welds shall be approved by the Inspector. Examination method and acceptance criteria shall be per ASME Code Section VIII, Par. UW-51 , except that fluorescent intensifying screens such as calcium tungstate shall not be used.

SECTION 3 - ACCESSORIES

	3.1	DRIVERS
	3.1.1	GENERAL
I	3.1.1.1	(Exception) Drivers and gears shall be sized per IP 10-11-1 .
R	3.1.1.4	Shaft bearings. Anti-friction type thrust and radial bearings are not acceptable for drivers and power transmissions.