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Introduction

This manual has been prepared to guide users of fans designed to meet the requirements of the European Unions ATEX (ATMosphères EXplosifs) Directive. It details the measures necessary for proper installation, operation and maintenance procedures and is in accordance with EN 14986. Personnel operating or maintaining this equipment shall be trained in the proper procedures for doing so.

This manual is to be used along with manual IM-2-06 “Installation, Operation and Maintenance Manual – Fans with CE Mark”. This addendum for ATEX fans identifies additional considerations beyond IM-2-06 specific to ATEX fans. Guidelines identified in IM-2-06 must be followed unless otherwise stated here.

ATEX fans are supplied for safe operation in the conditions they were designed for. However, to assure safe operation, the fans must be operated within the limits identified in the documentation included with each fan shipment as well as installed, inspected and maintained as indicated in IM-2-06 and this manual. Unless authorized by Twin City Fan Companies, Ltd., modifications must not be made to the fan. Any modification performed would void the warranty and ATEX certification.

Personal Protection

See IM-2-06 for required personal protection.

Hazardous Materials

See IM-2-06 for hazardous materials considerations.

Installation

Shipping and Receiving

See IM-2-06 for shipping and receiving requirements.

Handling

See IM-2-06 for handling requirements.

Unit Storage

See IM-2-06 for storage requirements.

Foundations and Supporting Structures - Industrial Fans

See IM-2-06 for foundation and supporting structure requirements.

Fan Installation - Factory Assembled or Disassembled Units

See IM-2-06 for fan installation requirements.

Bearing Installation

See IM-2-06 for bearing installation requirements.

Shaft Seals / Closing Plate

Most fans supplied by Twin City Fan Companies for ATEX applications will use a brass closing plate to minimize leakage around the shaft. This closing plate must be aligned to give approximately the same clearance at all points around the OD of the shaft. It is important that the alignment of this plate is verified before starting the fan.

Seals manufactured by others must be installed, operated and maintained per the manufacturer’s instructions.

Grouting

See IM-2-06 for grouting requirements.

Drive Mounting

See maintenance section below for additional considerations for drives on ATEX fans.

See IM-2-06 for additional drive mounting requirements.

Flexible Couplings

See IM-2-06 for flexible coupling requirements.

Duct Connections

Fans with duct connections must allow for inspection of critical clearances between rotating and stationary parts and must allow for cleaning. Inlet and outlet ducts must have sufficient access doors to allow for inspection identified in this manual as well as in IM-2-06.

The layout of the inlet ducting must assure that the air entering the fan is sufficiently mixed with regards to temperature. Localized hot sections of the air stream could become a hazard if they are at a higher temperature than the equipment was evaluated for.

Ducting shall be so arranged that the fan is not positioned at a “low point” where it is possible for foreign objects or liquid to lodge. See IM-2-06 for additional duct connection requirements.

Guards and Enclosures

ATEX fans must be protected to at least IP20 of EN 60529 against the ingress of foreign particles. To achieve this, the mesh size used for guarding must not allow particles greater than 12.5 mm to pass. A mesh of this size can negatively impact fan performance. If it is possible to achieve this protection for the fan by using a mesh located away from the fan inlet and in a lower velocity section of ductwork, then losses due to the added mesh can be minimized.

See IM-2-06 for additional guard and enclosure requirements.

Electrical Supply and Controls

Electrical equipment for ATEX fans must comply with an equipment group, category and zone according to EN 60079-0 or EN 50281-1-1 that is appropriate for the fan it is driving / monitoring and is appropriate for the specific environmental conditions at the place of installation.

Any monitoring devices used must be checked regularly to assure proper operation.

The manufacturers’ instructions for all electrical supply, controls and equipment must be followed. This is particularly important in the case of thermally protected motors.

See IM-2-06 for additional electrical supply and control requirements.

Vibration

Vibration monitoring is mandatory for fans that are Category 2D in the airstream. Alarm shutdown levels shall meet the requirements of ISO 14694.

See IM-2-06 for additional vibration considerations.

Maintenance

Safe operation of ATEX fans rely on clearances between rotating and stationary parts being maintained. These clearances can be reduced due to layers of combustible or non-combustible materials. Every fan must be inspected regularly and cleaned as needed to avoid a buildup of materials. The required frequency of inspection and cleaning will vary based on application; therefore the user must determine the frequency of inspection and cleaning required to avoid a buildup of materials.

Belt drives may become a source of hazardous temperatures if they are not tensioned or aligned properly. Drives must be aligned as indicated in IM-2-06 and tensioned as indicated on datasheet SF 5003 supplied by Twin City Fan. Replacement belts must be identical to those originally supplied.

Rotating components may be grounded through antifriction bearings. Bearings must be checked and if necessary replaced after a voltage spike or similar electrical incident.

See IM-2-06 for additional maintenance requirements.

Fan Operation

Proper Use and Application

It is critical that ATEX fans are used as intended and in accordance with the limits and markings of the fans. ATEX fans are supplied with a datasheet indicating the operation limits. Operation outside of these limits may cause an explosion hazard.

Operating within acceptable vibration levels is critical to obtain the expected life of the fan and components. Vibration levels must be in conformance with ISO 14694. In addition, fans must not be subject to external vibration either while at rest or during operation.

See IM-2-06 for additional information on proper use and application.

Sound

See IM-2-06 for considerations regarding sound.

Operation Checklist

Required clearances between rotating and stationary parts must be verified before starting the fan. Clearances indicated in “ATEX – FAN CLEARANCES CHECKLIST” must be verified with the fan and ductwork installed before startup. Form “ATEX – FAN CLEARANCES CHECKLIST” is specific to each fan and is included with the shipment of each fan. The measured clearances should be recorded and compared to the design minimum values to verify that the design requirements are met before the fan is started.

See IM-2-06 for additional items in the operation checklist.

Troubleshooting Guidelines

See IM-2-06 for troubleshooting guidelines.



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