MOTOR Does your plant have a preference for any manufacturer? What enclosure and cooling do you prefer for the motor? Does the motor or fan need a brake for maintenance?

MAINTENANCE Has the operations group considered what is needed to remove the maintenance sections on the fan housing and lift out the rotor? Can the motor be lifted off the foundation and replaced?

WEAR Do the fan rotor and housing experience any significant wear (Figure 4) from the airstream? If so, what type of wear protection works best for this fan? How often do you repair or replace the wear protection? Do you have any samples of the dust or a chemical and particle size analysis of the dust? Do you know how much dust goes through the fan?

CORROSION Do the fan rotor and housing experience any significant corrosion from the airstream? If so, what type of corrosion protection and construction materials work best for a fan in this process? How often do you repair or replace the parts of the fan exposed to the airstream? Do you have a chemical analysis of the airstream?

INSTRUMENTATION Does your operation a type preference for temperature, speed, vibration and pressure sensors? Are your sensors hard-wired or battery-operated? If battery-operated, are they communicating via Bluetooth, Wi-Fi or cellular?

SHIPPING AND RECEIVING What type of unloading facilities do you have for the equipment being received (Figure 5)? Crane capacity and hook height? Will the equipment be stored inside or outside? Will power be available for the motor heaters? Will the rotating equipment be accessible to be spun to keep the bearings lubricated according to the instruction manual?

FOUNDATIONS Have you experienced any cracking in the foundations? Do vibration readings on the fans change during freeze/thaw cycles, dry/wet cycles? Do you feel any vibration from the foundation while the fan is running?

ENVIRONMENT AT THE SITE Is the fan inside or outside a building? What are the site elevation and weather conditions? What are the noise abatement requirements for the fan? Will the fan be connected to a stack, which could facilitate transmission of a pure tune to the surrounding neighborhood? Will the fan see extensive heat, cold, ice, snow, rain, dust or humidity?

SUMMARY

As the number of employees continues to decrease as a result of economic pressures and automation, the fan supplier should spend more time helping with customer research and documenting equipment history.

Selecting the appropriate industrial fan involves gathering considerable information. A knowledgeable and experienced partner can guide you in the selection process, resulting in the most suitable fan for the application at hand.

SUCCESSFULLY SELECT AN INDUSTRIAL FAN

GATHERING SITE AND FAN HISTORY IS CRUCIAL WHEN CHOOSING THE RIGHT UNIT FOR THE APPLICATION

BY STEVEN F. BACK, NEW YORK BLOWER

When selecting a custom, engineered-to-order (ETO) heavy industrial fan (Figure 1), you need to make your fan vendor aware of certain basic requirements. These include the fan specifications, regional codes, drawings and photos of the process, details about the location, information about the installation, and last but not least, details about the process.

However, some of the most important information almost always is lost in the request for quotation (RFQ) process. This is the invaluable history of the fans operating in a similar ventilation or process scenario. A fan's durability, reliability, useful life and operating cost will change with the many different ventilation and process applications.

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HISTORY IS KEY

Heavy industrial fans have been around since the first industrial revolution in the 1800s. History of what has and hasn't worked is abundant and obtainable. However, most of the difficulty in collecting history lies in where to find it. The following situations can make it difficult to collect equipment history:

- Knowledge often leaves with personnel during layoffs.
- The fan is for a new process or ventilation scenario with no history available.
- Engineering, maintenance and purchasing are not communicating effectively.
- An engineering firm separate from the plant site is working on the specification.
- Plant management believes that history has no value because it is requesting the "very best" fan at the least initial cost and quickest delivery.

Collecting and passing along a written document of a fan's performance history will work, but it isn't the best option. Instead, a pre-quote or predesign meeting in which all parties can listen to each other, ask questions and start a knowledge-gathering session about the history of fans in similar processes and ventilation scenarios will put you on the right path to choosing the correct fan for your application.

It's important to communicate to your fan vendor what has and hasn't worked from the perspective of the people erecting and maintaining the fans. This is the case for new equipment and when rebuilding, upgrading or retrofitting existing fans. This information should be included when writing the fan specification. However, often it gets diluted or forgotten all together by the time the RFQ gets to the fan supplier.

Personnel needed in the meeting should include the experts who install, maintain and oversee equipment maintenance. These suggestions can help address some of the challenges when collecting equipment history and ensure a successful planning meeting:

- If personnel turnover has left little experience, consider bringing in personnel from a similar operation in your company.
- If the fan is for a new process or ventilation scenario, ask the fan supplier for its recommendations of similar processes and bring in experienced fan technical service personnel to the meeting.
- If there is little or no communication between engineering, maintenance and purchasing, then talk with the site's maintenance manager.
- If an engineering or procurement firm is creating the fan RFQ, request they attend the meeting.
- If you, the customer, want the "very best" fan at the "very best" cost and delivery, then, once again, the fan vendor needs permission to talk with the maintenance manager to get some history and insight.

When you have key personnel at the table, amass details large and small about the equipment, site and other variables such as vibration and temperature. Be sure to address the any previous performance issues and ask these questions:

PAST FAN FAILURES What fan failures (Figure 2) have you had in the past and how did you fix them? What are the most frequent fan problems that you have experienced?

BEARINGS AND LUBRICATION TYPE What has been the best performing bearing and lubrication type on similar fans with similar operating conditions and arrangement? Do you have bearing leaks and, if so, where? Do you have any trouble changing the bearing? If so, what? Have there been any bearing problems (Figure 3) due to the operating environment?

COUPLINGS What has been the best performing coupling on similar fans with similar operating conditions and arrangement? Is this coupling being used on variable-speed or constant-speed fan? What type of lubrication does it use? Are you having any problems with this coupling?

SHAFT AND BEARING SEALS What type of bearing and shaft seals are being used on your fans? What is the best performing seal on your bearings? Do you have any trouble changing the seals? If so, what? Have you experienced any sealing problems because of the operating environment?

SYSTEM EFFECTS Does the fan experience any significant vibration from the airflow? Are any of the ducts, expansion joints, dampers, silencers, etc., attached to the fan experiencing vibration or fatigue cracks? Is there any whistle or rumbling sound emitted from the connection ducts or fan?

FIGURE 1: An industrial fan's durability, reliability, useful life and operating cost will vary with the many different ventilation and process applications.

FIGURE 2: Addressing past performance issues such as this wheel failure can help you properly select a new fan and avoid such issues from repeating.

FIGURE 3: Lack of proper bearing lubrication compromised this fan's performance.

FIGURE 4: Depending on the application, ask your van vendor for suggestions for proper protection from wear.

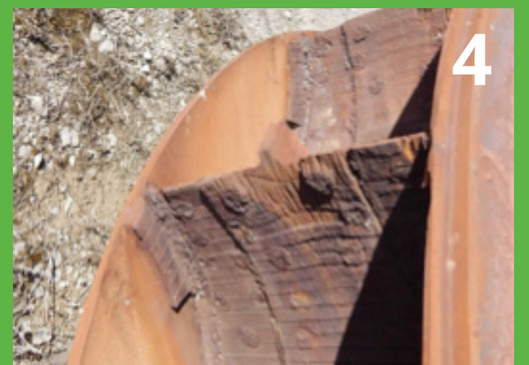
FIGURE 5: Provide information to your fan supplier about dock facilities so they can deliver and install the fan without issue.

INDUSTRIAL FAN

WHEEL FAILURE

BEARING LUBRICATION

FAN WEAR



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