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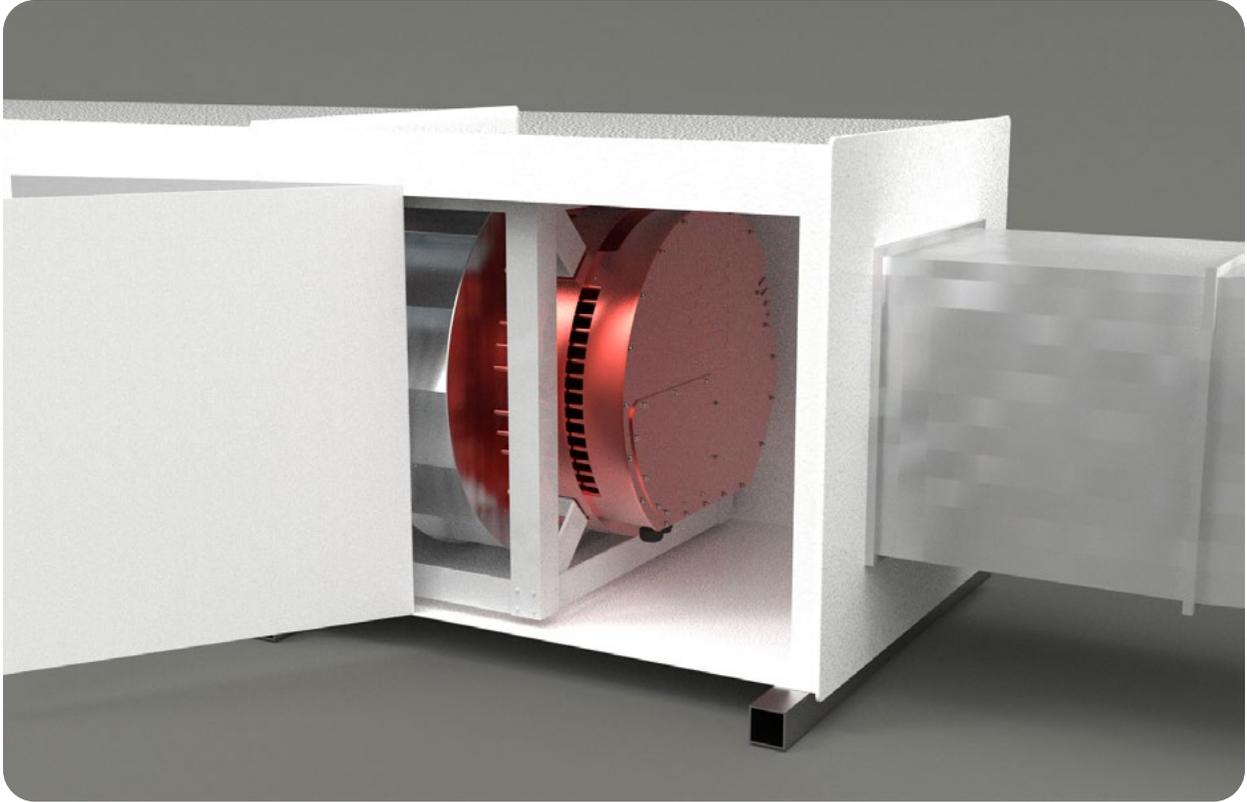
4 Crucial Factors for Fan Motor Serviceability

Your motor will fail... eventually. While it may seem grim to be thinking about motor failure at the point of purchase, it's important to be proactive and consider the serviceability of a motor before making your final selection.

Premium AC induction motors and EC motors that are operated with variable speed contain an iron core with copper wire windings. In these conventional motors, the copper wire that is bent and wound is frequently heated and cooled with the iron core. Because it's difficult to make these windings uniform, frequent heat cycling causes expansion and contraction, weakening the copper wire and eventually leading to motor failure. Another byproduct of uneven heat cycling is erosion of the insulation between the core and windings.

Bearings are also vulnerable to early failure when variable speed drive-induced transients ground through the bearing raceway. The grounding ring or wear surface can be easily replaced in some motors, but not others. Proper grounding can help prevent arcing in the bearing raceway, which will pit and scour the raceway surfaces, leading to premature failure.

The average EC motor requires failure mode maintenance and testing every 6 months. Without a thorough and comprehensive maintenance plan, motor failure can have significant consequences to your business. When a motor failure occurs, business operations may be interrupted and slowed or even halted for a repair period of anywhere from days to weeks long. This may lead to decreased productivity, loss of product, and loss of personnel. If the motor cannot be easily serviced, you may have to hire a specialized motor repair company.



A comprehensive maintenance plan can help mitigate some of these risks; however, even the most well-devised maintenance protocols can't prevent an unexpected motor failure. Here are four things to look for when you want a more reliable and serviceable motor.

1. Fewer Sources of Motor Failure

The easiest way to mitigate the risk of motor failure is to look for a motor that has fewer sources of failure. Logic follows that with fewer sources of failure, your motor will have fewer failures. Look for a motor that has no windings and no transient currents that require grounding. The IEs Series motor from Infinitum—designed for use with fans and pumps, but suitable for use in other industrial and manufacturing markets—replaces the iron core and copper windings with a PCB stator. The copper traces printed into a circuit board cannot move or flex, and are so precise that they eliminate unwelcome currents induced in the iron core stators by high frequency harmonics. This PCB stator eliminates one of the most common causes of motor failure: bearing failure caused by unbalanced phase voltages and currents induced in the stator and rotor cores due to high frequency harmonics, which can exceed the insulation levels of bearing lubricants and eventually lead to bearing failure.

2. Maintenance Accessibility

Accessing and lifting a heavy motor for maintenance, repair, or replacement often requires partial or complete disassembly of the system your motor supports. Larger motors may require special equipment, such as a lift or crane. If you don't own the equipment needed to lift or move your motor, you will need to rent it, adding cost and extending the downtime.

Look for a motor that has a smaller footprint, weighs less, and can be accessed and moved without heavy equipment. The smaller, lighter PCB stator used in IEs Series motors contributes to a motor that weighs about [55% less than conventional motors with an iron core](#).

3. Ability to Repair Instead of Replace

In most situations, repairing a motor is preferred over replacing it. Yet, for many smaller traditional motors, replacement may be easier, faster, and cheaper than repair. If a spare motor is onsite and available, the issues of maintenance accessibility become primary. On the other hand, if there is no spare motor in stock, the options are to order a replacement motor or repair the one that failed. Since some of the most popular motor manufacturers import from outside the United States, the result can be lead times that are weeks or even months long (and that's when there isn't a pandemic causing delays). For motor repairs, you will likely need to hire a motor repair shop, which may or may not be able to repair your motor onsite and may or may not need special training from the motor manufacturer to repair your motor.

The most serviceable motors are those that can be easily be repaired. Make sure key components, such as windings, bearings, and grounding rings are accessible. If the motor system is modular, it can be taken apart to allow a motor repair technician easy access to the faulty part, opening the possibility they may be able to replace a single part onsite instead of the whole system; thereby reducing the cost of the motor failure and minimizing downtime. Infinitum's IEs Series motor, which is sold as an integrated system, features a modular variable speed drive that can be decoupled from the motor and replaced in the field. The IEs Series also requires little additional training for motor technicians and does not require a certified technician for maintenance.

If you do have to replace your motor, you'll want to purchase from a motor manufacturer with a shorter lead time. Infinitum's IEs Series motors can be manufactured regionally because they use off-the-shelf components, shortening manufacture times, shipping times, and avoiding import delays and issues.

4. Intelligent Monitoring

Perhaps the optimal way to improve a motor's reliability and serviceability is to predict and anticipate when maintenance will be required. Most motor manufacturers include a list of preventative maintenance tasks and a recommended schedule for them to prolong a motor's life. But performing these tasks diligently can't prevent motor failure. While knowing the average lifespan of a motor and its components can enable predictions about when the motor may require maintenance, the lifespan of a motor is highly dependent on factors such as the way a motor is used, the environment the motor is in, and how well the motor is maintained.

As motor technology is advancing, some motor manufacturers are integrating native intelligent monitoring in their motors. The Infinitum IEs Series motors feature industrial IoT cloud connectivity that provides continuous monitoring of your motor with remote access. With this native monitoring, you can better predict when maintenance may be required and plan around it by scheduling maintenance tasks at more opportune times, ordering spare parts in advance.

Eventual motor failure is one of life's certainties. Purchasing a motor that is serviceable will help to mitigate motor failure risks, minimize the interruption maintenance causes, and reduce motor maintenance costs.

Looking for a more serviceable motor?

[Contact us](#) to see which Infinitum motor is best for you.

[Learn more](#) about Infinitum's breakthrough technology.

