

Basics of Electric Motor Repair

Let HECO's experience & resources ensure All Systems Go

Electric Motor Repair

You depend on your electric motors to keep things running -- and when something goes wrong with them, your entire electric motor powertrain is affected. Productivity drops, certain things have to be shut down, and the pressure is on for you to get things up and running as quickly as possible -- without spending too much money. You need to combine a quick resolution with low cost, and a key aspect of that lies in understanding what electric motor repair involves.

Key Factors in Electric Motor Repair Costs

The **cost of electric motor repair** is a major issue for plant managers, maintenance managers, and operations managers, as well as those responsible for maintenance planning. The more you understand about the factors that affect **electric motor repair costs**, the better decisions you will be able to make. Let's start with an obvious factor: electric motor diagnosis.

Electric Motor Diagnosis

How much your repairs cost will depend on what the diagnosis is for your motor. It could be something relatively straightforward, such as a clean-up and the replacement of a worn out bearing; on the other hand, it could be a diagnosis that requires an expensive repair such as a rewind with subsequent machining. The more complex the repair, the more the repair is going to cost. However, keep in mind that sometimes what looks like a serious problem may involve a very simple, straightforward, economical repair.

Here is something important to keep in mind, though: an accurate cost estimate always begins with an accurate diagnosis. If an electric motor shop fails to correctly diagnose what is wrong with your electric motor, then any

estimates are pretty much worthless. That's one of the many reasons why you want to find a repair shop with skilled, experienced technicians on staff.

Electric Motor Specs

Another major factor in the cost of repair involves the type of motor you have, which includes the motor specifications (e.g., a 25 HP motor may not cost as much in terms of labor when compared to a 500 HP motor). Something else that could impact price would be non-standard adaptations, such as special bearings that are difficult to find. Custom replacement parts can also drive repair costs up. And if time is of the essence, keep in mind that hard to find parts will increase the wait time for the repair to be completed.

Time Required for Repair

The **time involved in repairing an electric motor** will significantly impact the total repair cost, also. A quality repair shop with experienced technicians will be able to complete a repair job quickly, which in turn can impact the labor costs. The labor cost per hour may be a bit higher for a skilled shop, but the overall cost for the repair will most likely be lower because fewer hours are needed and the repair is completed correctly the first time.

Quality of the Electric Motor Repair Work

Keep in mind that you may be able to find a repair shop that offers you a repair solution at a low cost, but if their work is not high quality then you will end up paying much, much more in the long run. And let's face it: you can't afford either the downtime or the extra cost involved with having the same problem repaired again. Even worse, a shoddy repair could cause damage to other components, leading to even worse (and potentially more expensive) problems. In short, one of the best ways to save money on repairs is to use a high quality electric motor repair shop.

EASA Accredited Repair Services

One of the best indications of quality work is **EASA accreditation**. EASA stands for Electrical Apparatus Service Association, and an EASA accredited repair shop has undergone rigorous third-party evaluations in 23 different categories with over 70 elements -- all related to the electrical and mechanical repairs of

large electric motors. EASA accreditation indicates that the shop technicians are following industry best practices which in turn increases their productivity and reduces your repair costs.

Electric Motor Repair Process

There are multiple steps to the process of repairing an electric motor, large or small electric motors. There will also be some variation in the steps depending on the shop performing the repairs or the type of motor involved.

Cleaning and Baking Out Electric Motors

Cleaning and then baking out the electric motor (to remove all moisture) usually takes place before the inspection process. Cleaning of the stators, armatures, and rotors removes all debris and contaminants while baking is used to remove all moisture from the electric motor's windings.

Electric Motor Inspection

One of the most critical steps of an electric motor repair is a correct diagnosis based on a thorough inspection of the electric motor. Keep in mind that some electric motor repair shops may **charge an inspection fee** even if you don't choose to have them perform the repair. Inspection includes the tear-down of the electric motor, as well as the analysis and testing. A good inspection involves too many tests to list here, but basically it discovers not only the source of the problem at hand but also detects where future issues could lay (which often include the **most common causes of failure**).

Electric Motor Repair Processes

The actual repair process can include major undertakings such as rewinding and machining or perhaps something straightforward like replacing bearings or shafts. The procedure for repairs varies according to the diagnosis for the motor, the type of motor, and the equipment that the repair shop has access to.

Electric Motor Testing

No repair is complete until the electric motor has been thoroughly tested and, where appropriate, the results of testing compared to the related benchmarks.

Testing and documentation not only guarantees the quality of the repair and the functionality of the electric motor, but provides a starting point for future inspections, diagnosis, and maintenance.

Repair or Replace Your Electric Motor?

Deciding whether a motor needs to be **repaired** or **replaced** can be a tricky decision. Several factors need to be taken into account beyond immediate needs if you want to make a choice that will reduce your overall M&O costs. Key factors include the cause of motor failure, the age of the motor, the capabilities of your repair shop, the annual operating hours of the motor, and how efficient the motor is after the repair. Another interesting factor is the size of the motor: below a certain motor size, it is more economical to replace the motor. As an example, for most standard AC induction T-frame motors, the limit is around 50 to 70 hp. If the repair costs for a motor exceed 60 - 70% of replacement cost, then replacement would likely be a wise decision.

Conclusion

Are you in the market for electric motor repair services? Whether large or small electric motor repair, HECO provides repair solutions that you won't find anywhere else. We are EASA accredited and follow strict procedures for repair and reconditioning that allow us to provide you with the highest quality repairs that will reduce the M&O costs for your electric motor powertrain.