

Improving standards for sustainability of electric motors

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The international focus on minimising our carbon footprint aims to reduce the effects of global warming and stabilize our weather patterns. At the same time, there is a realisation that we need to improve our sustainability and preserve the world's resources for the next generation and beyond. For those operating in industrial sectors, there is an opportunity to contribute to these efforts by looking at the most effective solution for motor repairs.

Thomas Marks, Secretary, AEMT, looks at the importance of considering all the options when an electric motor needs to be repaired.

Many service centres for electric motors belong to the Association of Electrical and Mechanical Trades (AEMT) which encourages members to assess and deliver the most appropriate repair or replacement of a motor. This ensures that their customers have the opportunity to reduce their energy usage by upgrading to a more efficient option, or repair the asset using the latest international standards and extend the service life of the motor cost-effectively.

Improved performance

Making the best choice relies on having all the relevant information for a certain situation. The decision to replace a motor with one of a higher efficiency classification is usually governed by the initial cost against the additional savings

that will be made during its service life. Depending on the application, upgrading from an IE2 to an IE3 motor may not be justified by the improvements in efficiency.

However, some operators have concerns about the efficiency of a repaired motor compared to the original factory build specification. These questions can be answered by a recent study carried out jointly by the AEMT and the Electrical Apparatus Service Association (EASA) in the USA. It concluded that the energy efficiency of a motor is retained after a repair that follows international standards and guides of good practice.

Furthermore, the repair or remanufacturing of a motor effectively doubles the service life of the machine, especially in modern, clean environments. The reliability of the motor is similarly extended and in many cases they will carry the same warranty period as a new machine.

For those with specialist environments that require repairs to hazardous area motors, suitably qualified and certified repair centres will follow international standards (IEC 60079 19) to ensure the continued safety of the intrinsic protection concepts. It is worth noting that only suitably trained staff should undertake such repairs, otherwise the asset record for the motor may be compromised and with it, the assurances of the manufacturer's design.

Circular economy

The decision to repair a motor, rather than replacing it, is not only a cost-effective solution, it also minimises the amount of resources that need to be used. This is summarised in IEC 60034 23, the international standard for rotating electrical machine: repair, overhaul and reclamation. It highlights the fact that replacing the bearings in a 110 kW machine effectively doubles the life of the asset while retaining

99% of the original machine. Furthermore, the old bearings can be recycled as high quality 'green' steel scrap.

For a refurbishment that involves a motor rewind, 90.5% of the motor is reused and those parts that are replaced consist mainly of high-grade copper and steel scrap that can be recycled. In fact, just 0.9% by weight of the original machine, made up of varnish, grease, insulation and paint, will not be reused or recycled.

In every case, maintenance and repair centres that are members of AEMT will always consider all the options for each case and ensure that the operator is aware of both the financial and environmental costs. With all the available information, it is the responsibility of those working with electric motors to decide on the best course of action.

Image captions:



Image 1: Credit to Houghton International

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About the AEMT

The Association of Electrical and Mechanical Trades (AEMT) was founded in 1945. It is an International Association representing leading companies in the electrical and mechanical service and repair industry. Members manufacture, distribute, install, service, maintain, and repair, electric motors, drives, pumps, fans, gearboxes, generators, transformers, switchgear, and ancillary equipment. In addition to motor and pump service facilities, most members operate mechanical engineering workshops for metal fabrication and the repair and refurbishment of worn components. Others include panel building facilities and some carry out repairs to industrial electronic equipment. Associate Members are companies that supply products and services to Members.

Proceeding the publication of AEMT's and BEAMA's jointly produced first code of practice for The Repair and Overhaul of Electrical Equipment for use in Potentially Explosive Atmospheres, which was adopted as the initial IEC 60079-19 international standard. The association has put together a selection of Training modules covering the Theory and Practical nature to ATEX and IECEx equipment repair. The modules are delivered as accredited training courses by expert teams across the globe.

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