

Ex repairs: the knowledge and skills required

Thomas Marks, General Manager and Secretary at the Association for Electrical and Mechanical Trades, explores the requirements placed on the individuals and organisations involved in the repair and service of Ex-rated electromechanical equipment.

The knowledge and skills required to service Ex equipment such as motors, pumps, fans, compressors, gearboxes and other mechanical equipment, rests on two distinct categories of person, as highlighted in the IEC 60079-19

standard: the 'responsible person' and 'operatives'.

A hazardous area equipment service centre should have at least one 'responsible person', usually the manager or supervisor in charge of the workshop where servicing of Ex or hazardous area equipment is conducted.

The responsible persons must be trained to fully understand the protection concepts of the equipment, what can and cannot be repaired, and what repair procedures may be used, so that they

can fully support the workshop staff and verify any work carried out. The responsible person should be able to ensure that the correct records are kept and that quality control systems are in place for the Ex repairs. They should also be able to ensure that the company has the right tools for the equipment being repaired and the relevant standards and certificates.

Operatives are all the engineers and technicians that carry out the service and repair of hazardous area equipment. They should have attended a course offered by a

certifier of personnel competence to fully understand the protection concepts of the equipment they are repairing, and, as above, what can and cannot be repaired, and what repair procedures may be used.

As an example, the AEMT Ex-Register lists companies which have had operatives and responsible persons trained by the AEMT. To be on the register, a company should have an ISO 9001 quality control system or equivalent; the calibrated tools suitable for the work seen and the required certificates and standards; a minimum of one trained and competent operative; as well as a minimum of one responsible person to sign off and supervise Ex repair work completed by workshop technicians.

Both responsible persons and operatives must be able to provide sufficient evidence that they are up to date with the theory, skills and understanding of the Ex work they are involved with. Their staff should attend regular refreshers

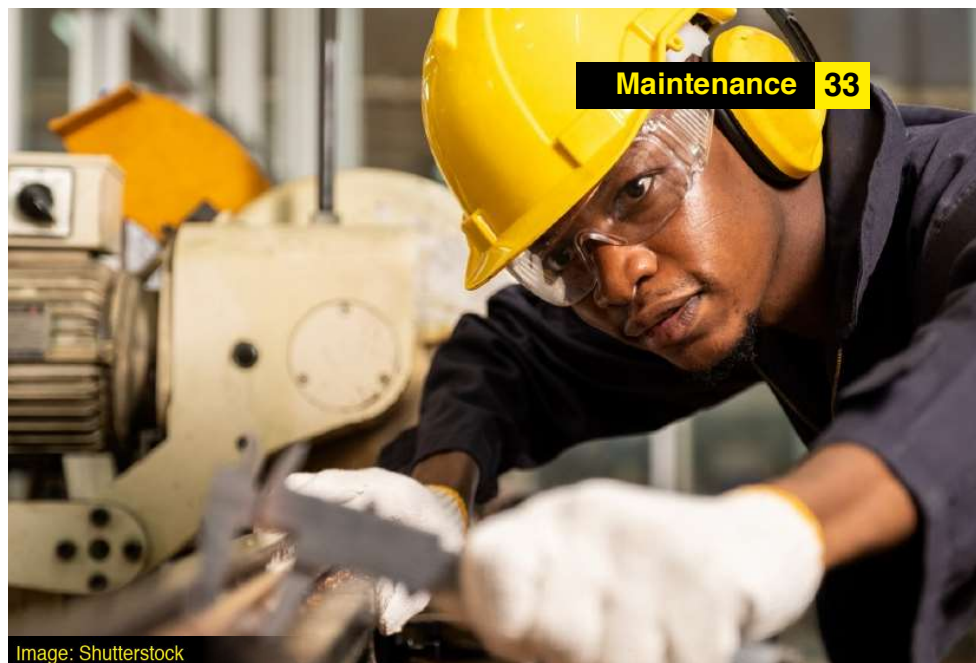


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every three years on the repair and overhaul aspects of Ex equipment. This means that Ex-registered companies remain up to date on the practical aspects of repair and any changes in updated standards and ATEX.

Competencies apply to each explosion-protection technique

for which a company or person is involved. For example, a person can be competent in the repair and overhaul of Ex d motors only and not be fully competent in the repair of Ex d switchgear or Ex e motors. In such cases, the repair facility management should define this in their documentation system. ■

Knowledge and Skills	Resp. Person	Operative
General understanding of relevant electrical and mechanical engineering at the craftsperson level or above	Yes	-
Practical understanding of explosion-protection principles and techniques	Yes	-
Understanding and ability to read and assess engineering drawings	Yes	-
Familiarity with measurement functions, including practical metrology skills, to measure known quantities	Yes	-
Working knowledge and understanding of relevant standards in the explosion protection field	Yes	-
Basic knowledge of quality assurance, including the principles of traceability of measurement and instrument calibration	Yes	-
Understanding of the general principles of types of protection and marking	-	Yes
Understanding of those aspects of equipment design which affect the protection concept	-	Yes
Understanding of examination and testing as related to relevant parts of most recent 60079-19 standard	-	Yes
Ability to identify replacement parts and components authorized by the manufacturer	-	Yes
Familiarity with the particular techniques to be employed in repairs referred to in this standard	-	Yes

About the author



Thomas Marks has worked for the AEMT since joining the organisation in 2013 as the Marketing and Events Manager. He became the association's Secretary in 2017 and General Manager in 2021. He works directly with the Officers of the association and the Council to ensure the association remains current and relevant to today's members. Having acquired his Ex Theory and Hands-on certificates of assessment in 2013, Thomas also supports the lead lecturers on the Ex training courses.



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