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Abstract

In order to maintain the safety level of electrical equipment and diesel engines used in French coal mines susceptible to firedamp, INERIS, and Charbonnages de France (CdF) have developed with the contribution of Houillères du Bassin de Lorraine a certification procedure for the workshops which repair such equipment.

Due to the decreasing plan of CdF workers, the inadequacy of some manufacturers and the missing of some others, the use of external workshops for the repairing is more and more frequent. So, it is necessary for safety reasons to ensure that such repairs are conducted in optimal conditions.

The aim of Saqr-ATEX certification is to ensure that the quality and the traceability of repaired equipment used in gassy coal mines give an equivalent safety level to the new equipment one.

In order to be attractive for workshops, Saqr-ATEX is not only usable for ATEX coal mine equipment but also for ATEX equipment installed in every location where hazardous atmosphere could occur.

The setting up of this certification requires:

- the development of a technical referential based upon the IEC standard 60079-19,
- the writing of specific procedures for some types of equipment,
- the definition of an organisation scheme in order to ensure quality and traceability,
- the development of a procedure for the assessment of the workshop and concerned persons,
- » the development of certification procedures,
- the installation of committees with users, repairers and INERIS to ensure the certification transparency.

The whole is contained in the certification document Saqr-ATEX which has been registered with the French Ministry of Industry in accordance with the law related to the voluntary certification of products and services.

For the time being, about 15 repairer workshops are interested by this quality certification and 4 of them will be certified in October 2001.

INTRODUCTION

The need of a certification for the safety equipment against firedamp was expressed in 1999 by the Lorraine coal mines. This need is motivated by the preservation of the safety of the underground mine exploitations even in conditions of recession of the coal mines and mining industry in France. Indeed, this recession leads to a decreasing of the investments and reduces the interest of the manufacturers of equipment. In the same way, the working units of French coal mines have no more the need to buy new equipment and are obliged to maintain existing equipment. Furthermore, because of the decrease of their manpower, the technical services or the maintenance units of coal mines can not ensure any more all the repairs. In a lot of cases the manufacturers of mining equipment have either disappeared, or abandoned the manufacturing of these equipment, or stopped supplying spare parts. It makes so difficult the repair of the apparatus by the manufacturer or by his subcontractor. The repairs should be made more and more by outside workshops not always informed about the requirements and the compulsory constraints for the electric equipment intended for mines susceptible to firedamp or for explosive atmospheres. The purpose of the certification of the repairers is so to guarantee that the repairs are made according to the state of the art and that the level of safety of the repaired equipment stays the same that of the original equipment.

EVALUATION

While the international standards and the rule relative to the electric equipment and to the diesel engines for gassy mines are very strong and binding for the construction and the installation of

these appliances, there is little rules and international standards for the repair. There is an international standard relative to the repair of the electric apparatus for explosive atmospheres, the IEC 60079-19 but this does not apply to the equipment of the group I. However, the use of a single standard is not always sufficient to establish a reliable climate among the repairer and his customer and it is necessary to set up strict working procedures to establish this confidence. It is one of the objectives of the Saqr-ATEX certification. This implementation required:

- ◆ the creation of a technical guidance document for the repair based on the IEC 60079-19,
- ◆ the establishment of specific procedures for various equipment,
- ◆ the definition of an organisation as a quality assurance system to ensure the traceability and the quality of the repair works,
- ◆ the definition of the modes of evaluation of the workshop and the persons,
- ◆ the implementation of the procedures of certification,
- 4 the creation of a structure of participation which includes together the certifying body, the users and the repairer to insure the transparency of the certification.

ANALYSIS

Creation of a technical guidance document

We adapted the IEC standard the 60079-19 to take into account and to add the requirements relative to the group I as well as the requirements relative to the French mine regulations. However we have excluded the modification of equipment. This technical guidance document will be completed by the establishment of specific procedures for various apparatus and various types of protection. These procedures, more detailed than the technical guidance document, resume the working procedures of the various repairers. They will be validated by INERIS and the technical Unit of "Charbonnages de France". We have also used some foreign Standards on the repairing of such equipment from Australia and Great Britain.

Definition of a quality assurance system

An organisation as a quality assurance system leads to a specific plan of organisation. This plan is inspired mostly on the arrangements taken within the framework of the European directive 94/9/EC relative to equipment for potentially explosive atmospheres as regards to product quality assurance and the survey of the manufacturer.

The implementation of Saqr-ATEX guarantees:

- the means and the professional skill necessary for the repairs to be realised,
- the traceability of the repairs,
- the means required to realize the necessary tests and measurements,
- the marking of the repaired equipment.

The organisation scheme of the repairer is based on the following actors:

- "the authorised person " who is the final responsible for the repair
- "the person responsible for final tests",
- "the person responsible for the marking",
- "the person responsible for the storage and handling".

Definition of the assessment of persons and of the workshop,

The responsible persons for the repair have to, besides the knowledge in their repairing domain, know the regulations, the standardisation and the concepts of certification for the apparatus for explosive atmospheres. We foresaw so a program of training which could comprise:

- » awareness on the risks due to the explosive atmosphere, general points on the explosions, regulations in force, the standards guidance documents considered,
- information about the protection by enclosure (" d ", " e ", " p " " m ", IP.)
- information about the protection of the electronic equipment (" i ", SYST, etc.)
- information on, " Saqr-ATEX " technical procedures

At the conclusion of the training and as soon as the Workshop is ready, the " authorised person" and " the responsible persons ", are evaluated during an audit on the following basis:

- individual answers to two questionnaires, one, specific in the types of protection of the repaired equipment, and, another one, specific on the " Saqr-ATEX " procedures. The documents delivered during the training could be used,
- checking of a repaired equipment. The equipment shall have an official document issued by an Official testing house, allowing its use in explosive atmosphere.

At the issue of the evaluation, every person having acquired the level defined in the Saqr-ATEX procedures receives an individual "CERTIFICATE OF COMPETENCE" established for a duration of 3 years.

As regards the workshop, it is audited by INERIS and it aims at verifying the capacities of the repairing services to make the repairs according to the procedures.

It focuses on the organisation of the company in particular on:

- the system of assurance of the quality,
- the means and the professional skill necessary for the repairs to be realized,
- * the traceability of the made repairs,
- the means required to realise the necessary tests,
- " the marking of the repaired materials.

Implementation of certification procedures

These procedures fulfil the French related to the certification of services and industrial products. They describe

- ◆ the certification process, from the initial request of the repairer to the issuing of certificate,
- ◆ the appeal procedures for the complains and disputes
- ◆ the mark "Saqr-ATEX"

All these procedures and the technical specifications are joined together in one document called "Référentiel". This document and the trademark Saqr-ATEX are registered with the Department of Industry.

The "Référentiel" is given to all the repairers before the certification.

Participation committees

In order to insure the certification transparency, they are two committees, the steering committee and the ratifying committee.

The steering committee is a thinking group. It comprises representatives of INERIS, French coal mines, users and repairers.

The ratifying committee, formed with representatives of INERIS, users, repairers and Administration has the duty to ratify the "Référentiel".

CONCLUSION

The aim of Saqr-ATEX is to become an official national certification. It ensures to demanding users, the competency and the commitment of specialized repairers and a guaranty of safety, quality and traceability. This process is developed on the request of a coal mines user, the French national coal board "Charbonnages de France". It is studied by INERIS to be generalised to all the users of equipment for explosive atmospheres (oil, chemical, food industries...) beyond the survival of the French National coal board.

It is hoped, to improve the safety, that a such approach should be used wherever there is a risk of an explosive atmosphere.

References

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