ExAM Brochure

ExAM – new trend in hazardous area
Ex personnel competency training and certification

ExAM is a training and certification program for hazardous area Ex professionals

ExAM is a methodology, which covers all requirements of related Ex personnel competencies defined by relevant EN/IEC/ISO standards

ExAM is owned by ExNB Certification Institute

ExAM certification scheme is approved by the European Commission (GROWTH Directorate-General)

2020

1) Introduction

Hazardous area industries require competent people being active in all levels. Competency has to be shown both on theoretical and practical level. Competency is not just one-time exercise, it has to be refreshed in every 3-5 years to comply latest industry regulations and trends. Hazardous area competency (HAC) shall be the basis for both electrical and non-electrical explosion protection. HAC is an add on to one's basic knowledge of being electrician or mechanical fitter (further education). Units of Ex personnel competencies can be subject of further discussion, but all are related to one's position on site including daily routine duties. Company shall highlight the definition of competencies related to EN/IEC standards 60079-0, -10, -14, -17 and -19, incl. ISO 80079-36/-37 using the definition how we can build up inhouse competency systems for improvement of overall safety of hazardous area industries.

The legal way of explosion protection defines the following approach in each case for hazardous area industries:

- *first*: avoid the presence of hazardous material
- *second*: do not ignite if any present / eliminate of all sources of ignition
- *third*: if you can avoid or limit the presence of hazardous material: safety distance, bursting disc, etc.

Note: It can only be done and managed by competent personnel.

EX COMPETENCY in all cases:

- Ex personal competency must be verified and comply with latest IEC versions;
- in many cases ex product certification, guarantee, warranty issues are strongly connected to Ex personnel competency;
- Ex personnel competency itself does not make one be an electrician, mechanic, engineer;
- To practice one's basic education in hazardous environment Ex personnel competency has to be proven.

HOW DOES IT WORK?

- Company shall apply standards.
- Company shall apply to have one personnel competency system
    - dedicated for personnel (internal, external)
    - and how to integrate this Ex personnel competency on daily level as an engineering lead (see owner's engineering – ExOE – page 8)

The EN/IEC standards describe the various personnel competencies dedicated to different phases of hazardous area industries' operation:

- installation, design;
- maintenance;
- repair.

2) What is hazardous area personnel competency?

The design of the installation, the selection of equipment and the erection, but also inspection, maintencance and repair covered by the relevant standards shall be carried out only by persons whose training has included instruction on the various types of protection and installation practices, relevant rules and regulations and on the general principles of area classification. The competency of the person shall be relevant to the type of work to be undertaken.
Appropriate continuous education or training shall be undertaken by personnel on a regular basis.

NOTE: Competency can be demonstrated in accordance with a training and assessment framework relevant to national regulations or standards or user requirements.

Knowledge and skills

Responsible persons who are responsible for the processes involved in the design, selection and erection of explosion protected equipment shall possess, at least, the following:

a) general understanding of relevant electrical engineering;
b) understanding and ability to read and assess engineering drawings;
c) practical understanding of explosion protection principles and techniques;
d) working knowledge and understanding of relevant standards in explosion protection;
e) basic knowledge of quality assurance, including the principles of auditing, documentation, traceability of measurement and instrument calibration.
Such persons shall confine their involvement to the management of competent operatives conducting selection and erection duties and not engage themselves directly in the work without ensuring their practical skills at least meet the requirements.

Operatives/technicians (selection and erection) shall possess, to the extent necessary to perform their tasks, the following:

a) understanding of the general principles of explosion protection;
b) understanding of the general principles of types of protection and marking;
c) understanding of those aspects of equipment design which affect the protection concept;
d) understanding of content of certificates and relevant parts of the relevant standards;
e) general understanding of inspection and maintenance requirements of IEC 60079-17;
f) familiarity with the particular techniques to be employed in the selection and erection of equipment referred to in this standard;
g) understanding of the additional importance of permit to work systems and safe isolation in relation to explosion protection.

Designers (design and selection) shall possess, to the extent necessary to perform their tasks, the following:

a) detailed knowledge of the general principles of explosion protection;
b) detailed knowledge of the general principles of types of protection and marking;
c) detailed knowledge of those aspects of equipment design which affect the protection concept;

d) detailed knowledge of content of certificates and relevant parts of this standard;
e) understanding of practical skills for the preparation and installation of relevant concepts of protection;
f) detailed knowledge of the additional importance of permit to work systems and safe isolation in relation to explosion protection;
g) detailed knowledge of the particular techniques to be employed in the selection and erection of equipment referred to in this standard;
h) general understanding of inspection and maintenance requirements of IEC 60079-17.

Competencies shall apply to each of the explosion protection techniques for which the person is involved. For example: it is possible for a person to be competent in the field of selection and erection of Ex "i" equipment only and not be fully competent in the selection and erection of Ex "d" switchgear or Ex "e" motors. In such cases, the person's management shall define This in their documentation system.

Responsible persons shall be able to demonstrate their competency and provide evidence of attaining the knowledge and skill requirements specified in relevant to the types of protection and/or types of equipment involved.

Operatives/technicians shall be able to demonstrate their competency and provide evidence of attaining the knowledge and skill requirements specified in relevant to the types of protection and/or types of equipment involved.
They shall also be able to demonstrate their competency with documentary evidence in the:

a) use of documentation in Verification Dossier;
b) production of reports, e.g. inspection reports, to the user as identified in Verification Dossier;
c) practical skills necessary for the preparation and installation of relevant concepts of protection;
d) use and production of installation records as identified in Verification Dossier.

Designers shall be able to demonstrate their competency and provide evidence of attaining the knowledge and skill requirements specified in relevant to the types of protection and/or types of equipment involved.
They shall also be able to demonstrate their competency with documentary evidence in the:

a) production of documentation specified in Verification Dossier;
b) production of designers certificates to the user as identified in Verification Dossier;
c) practical skills necessary for the preparation and compilation of relevant design details for the concepts of protection and systems involved;
d) updated and production of installation records as identified in Verification Dossier.

Assessment
The competency of responsible persons, operatives and designers shall be verified and attributed, at intervals relevant to national regulations or standards or user requirements, on the basis of sufficient evidence that the person:

a) has the necessary skills required for the scope of work;
b) can act competently across the specified range of activities; and
c) has the relevant knowledge and understanding underpinning competency.

Summary of hazardous area personnel competencies

Ex personnel competencies							
IEC standard	IEC 60079-14			IEC 60079-17		IEC 60079-19	
scope	Electrical installations design, selection and erection – *section of realisation*			Electrical installations inspection and maintenance – *section of operation*		Equipment repair, overhaul and reclamation – *section of repair*	
positions	**Responsible persons**	**Operatives / technicians**	**Designers**	**Responsible persons and technical persons with executive function**	**Operative / technician**	**Responsible persons**	**Operatives**
description	who are responsible for the processes involved in the design, selection and erection of explosion protected equipment	selection and erection	design and selection	who are responsible for the processes involved in the inspection and maintenance of explosion protected equipment	inspection and maintenance	who are responsible for the processes involved in the overhaul, repair and reclamation of specific types of explosion protection of explosion protected equipment	repair, overhaul
validity / refreshment	5 yrs			5 yrs		3 yrs	
Conformity assessment - General requirements for bodies operating certification of persons (ISO/IEC 17024:2012)							

ExAM – personnel competency system developed for a proper and safe operation

3) ExAM – new trend

Statements:

- An Ex competency training shall be a further education
- In a team as a minimum one Ex supervisor, one Ex technician shall be present

***Minimum Ex personnel competencies*:**

- General: Detailed knowledge of explosion protection (gas / dust)
- Operative / technician: read hazardous area classification and design / installation / maintenance / detailed inspection
- Supervisor: HAC / read design / understanding Ex installation and maintenance concepts / close inspection

Further Ex personnel competencies:

- Non-electrical explosion protection: ISO 80079-36/-37
- Repair: IEC 60079-19
- Design: IEC 60079-14

ExAM methodology *(described in relevant standards)*			
Units	1	awareness	detailed knowledge of explosion protection (gas / dust)
	2	operative / technician	read hazardous area classification and design / installation / maintenance / detailed inspection
	3	supervisor	HAC / read design / understanding Ex installation and maintenance concepts / close inspection
Modules	4	non-electrical	ISO 80079-36/-37
	5	repair	IEC 60079-19
	6	designer	IEC 60079-14, VD, HAC

4) ExAM as per training and certification of Ex personnel competencies

ExAM - EN/IEC/ISO methodology (described in relevant standards) – schedules (in days)				ExAM in days									
ExAM methodology (described in relevant standards)				Operator / Manager		Ex Personnel							
						Electrical				Non-electrical			
						technician		supervisor		technician		supervisor	
				Units	Days	Units	Days	Units	Days	Units	Days	Units	Days
units	1	awareness	detailed knowledge of explosion protection (gas / dust)	1	1								
	2	operator / technician	read hazardous area classification and design / installation / maintenance / detailed inspection			1-2	3.5						
	3	supervisor	HAC / read design / understanding Ex installation and maintenance concepts / close inspection					1-3	3.5				
module	4	non-electrical	ISO 80079-36/-37							1-2-4	4.5	1-3-4	4.5
module	5	repair	IEC 60079-19			1-2-5	4	1-3-5	4	1-2-4-5	5	1-3-4-5	5
module	6	designer	IEC 60079-14 with regards to design					1-3-6	4			1-3-4-6	5

You go for:

- Operator/manager: → unit 1
- Technician (electrical): → units 1-2
- Supervisor (electrical): → units 1-3
- Technician (electrical/non-electrical): → units 1-2-4
- Supervisor (non-electrical): → units 1-3-4
- Repair technician (electrical): → units 1-2-5
- Repair supervisor (electrical): → units 1-3-5
- Repair technician (electrical/non-electrical): → units 1-2-4-5
- Repair supervisor (electrical/non-electrical): → units 1-3-4-5
- Designer (electrical): → units 1-3-6
- Designer (electrical/non-electrical): → units 1-3-4-6

ExAM shall be based on your position at site.

ExAM shall support you to be able to demonstrate your skills mandatory to have on site in any possible Ex hazardous environment.

Validity:

- 5 years
  - EN/IEC 60079-14/-17, ISO 80079-36/-37
- 3 years
  - EN/IEC 60079-19, ISO 80079-36/-37

5) ExAM further trainings

ExAM offers wide ranges of Ex related trainings focusing on use of hazardous area environments:

- **Ex Owner's Engineer – ExOE ExAM**
  - ExOE shall be the lead of any hazardous area projects (green, brown, …)
  - ExOE ExAM 1 day course (theoretical)
  - ExOE ExAM introduces the EOE methodology of hazardous area excellence
  - Dedicated to hazardous area professionals, but hazardous area owners too
  - ExOE methodology is a tool
  - ExOE methodology has been developed by **ExNB**
- **DustEx assessor**
- **Tertiary explosion protection**

- **ExAM refreshment courses**
  - See ExAM validity (page 7)

More information at http://www.exnb.eu/en/exam

6) EN ISO/IEC 17024:2012

Conformity assessment

General requirements for bodies operating certification of persons (citation from the international standard)

This International Standard has been developed with the objective of achieving and promoting a globally accepted benchmark for organizations operating certification of persons. Certification for persons is one means of providing assurance that the certified person meets the requirements of the certification scheme. Confidence in the respective certification schemes for persons is achieved by means of a globally accepted process of assessment and periodic re-assessments of the competence of certified persons.

This International Standard specifies requirements which ensure that certification bodies for persons operating certification schemes for persons operate in a consistent, comparable and reliable manner. The requirements in this International Standard are considered to be general requirements for bodies providing certification of persons. Certification of persons can only occur when there is a certification scheme. The certification scheme is designed to supplement the requirements included in this International Standard and include those requirements that the market needs or desires, or that are required by governments.

7) Our legislation

Notification of a Body in the framework of a technical harmonization directive

From : Government Office of the Capital City Budapest
Németvölgyi út 37-39
H-1124 Budapest
Hungary

To : **European Commission**
GROWTH Directorate-General
200 Rue de la Loi,
B-1049 Brussels.
Other Member States

Reference : Legislation : 2014/34/EU Equipment and protective systems intended for use in potentially explosive atmospheres (recast)

Body name, address, telephone, fax, email, website :

ExNB Tanúsító Intézet Kft.
Kozák tér 13-16.
1154 Budapest
Hungary
Phone : +3630-9660223
Fax :
Email : exnb@exnb.eu
Website : www.exnb.eu

Body : **NB 2684**

The body is assessed according to :

EN ISO/IEC 17020 - Inspection
EN ISO/IEC 17024 - Certification of persons
EN ISO/IEC 17065 - Product certification

On the basis of the ExNB's request the Government Office of the Capital City Budapest Metrological and Technical Supervisory Department Technical Supervisory Section as the notifying authority

confirms

that ExNB Certification Institute Ltd. notified body (NB 2684) has been notified to European Commission through NANDO Information System for Directive 2014/34/EU (ATEX) based on the standard EN ISO / IEC 17065: 2012 Conformity assessment -- Requirements for bodies certifying products, processes and services furthermore EN ISO/IEC 17024:2012 Conformity assessment -- General requirements for bodies operating certification of persons.

ExAM - Ex personnel competency methodology of ExNB was the subject of approval based on standard EN ISO 17024:2012 and it was proved that ExAM has been complied with the requirements of the standard.

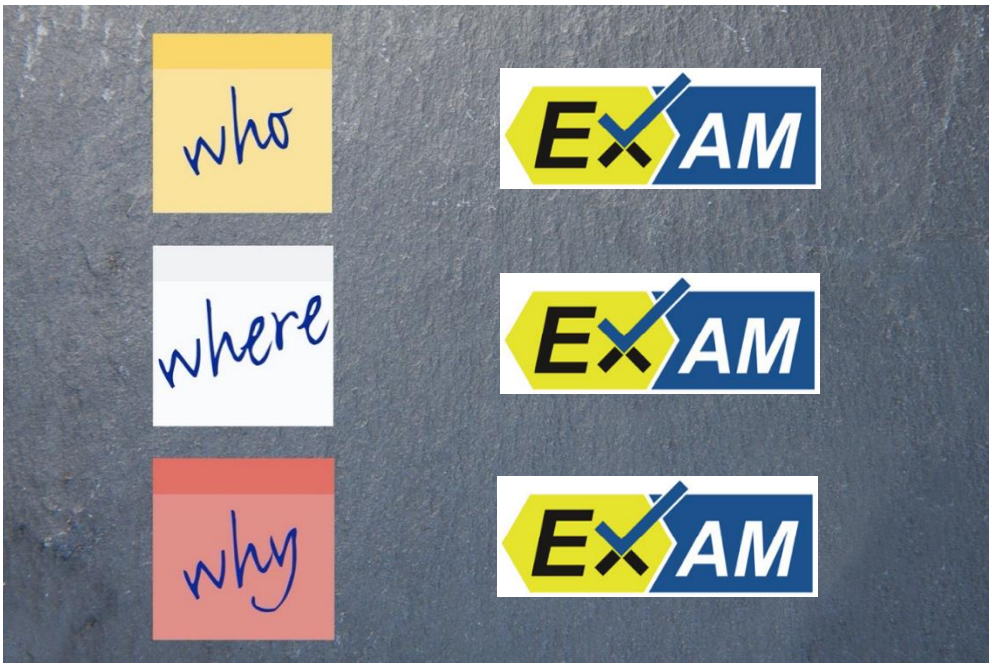
Budapest, 2019.04.17.

Pethő Sándor
osztályvezető
head of section

Kapja:
ExNB Kft.
Irattár

8) List of relevant standards

- **EN/IEC 60079-0**
  - Equipment - General requirements
- **EN/IEC 60079-10-1**
  - Classification of areas – Explosive gas atmospheres
- **EN/IEC 60079-10-2**
  - Classification of areas – Explosive dust atmospheres
- **EN/IEC 60079-14**
  - Electrical installations design, selection and erection
- **EN/IEC 60079-17**
  - Electrical installations inspection and maintenance
- **EN/IEC 60079-19**
  - Equipment repair, overhaul and reclamation
- **EN 1127-1**
  - Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology
- **EN ISO 80079-36**
  - Non-electrical equipment for explosive atmospheres – Basic method and requirements
- **EN ISO 80079-37**
  - Non-electrical equipment for explosive atmospheres. Non-electrical type of protection constructional safety "c", control of ignition sources "b", liquid immersion "k"
- **EN ISO/IEC 17024**
  - Conformity assessment - General requirements for bodies operating certification of persons



ExAM – an up-to-date personnel competency system for any field of Ex operation globally

9) Contact us

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+36 30 9660 223
exam@exnb.eu
http://www.exnb.eu/en/exam

Note:

- All who successfully take the **ExAM** will be listed at www.exnb.eu
- Detailed knowledge of relevant standards is a must have
- Working experience (3 yrs min), and relevant education (technical, HSE, chemical, process…) shall be proven by applicant

- ***ExNB*** - **ExAM,** which means:
  - Full compliance with relevant EN/IEC/ISO standards
  - Full responsibility on hazardous area compliance
  - Dedicated to Ex hazardous area industries and professionals
  - ExAM covers all aspects of required hazardous area personnel competencies