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Final report from Portugal



Laboratory of Energetics and Detonics
Condeixa, PORTUGAL
Partner nº 10

FINAL REPORT FOR LEONARDO DA VINCI PILOT PROJECT



Project Number 503572-LLP-1-2009-1-SE-LEONARDO-LNW

By
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December 2011

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1. INTRODUCTION

This programme is aimed at the creation of stakeholders network in the explosives sector to support the development of competences and to prevent accidents. In terms of results the programme aims to achieve the accreditation and certification of competencies on the basis of a standard already developed in previous LdV projects. The aim is to monitor and evaluate a certification process at European level and builds a European association that will control occupational standards. The proposal is the development of an international cooperation between stakeholders in the explosives sector.

Details of the results and outcomes of the work conducted during the 2 year contract at LEDAP are reported in this document. This document is to be submitted to KCEM, who will compile a final report and submit this to the EU commission.

The programme is organised in six WP's:

- WP1-Project management
- WP2-Dissemination
- WP3-Quality assurance
- WP4-Development of national EUExcert nodes
- WP5-Issuing of EUExcert certificates based on accreditation of individual competencies
- WP6-Implementation EUExcert as a European association.

2. OUTCOMES

LEDAP was involved in all workpages, in some of them more intensively. Tab. 1 describes the objectives for each WP, the cooperation, the level of results and explanation of delay.

Tab. 1. Contribution of LEDAP to EUExNet results.

| WP | Objective | Cooperation, level of results and explanation of delay |
|-----|--|--|
| WP1 | Project management | LEDAP cooperated with all partners participating in all meetings and provided the information required about stakeholders, node and reference group and website. |
| WP2 | Dissemination | LEDAP cooperated in the dissemination of the programme using electronic communication by email, website, articles in newsletters, oral presentations in international conferences, seminars in universities and with the organisation of an international conference. |
| WP3 | Quality control of performance | LEDAP cooperated with Karlstad University on the quality control of the tasks achieved, delays and difficulties. |
| WP4 | Development of national EUExcert nodes | LEDAP contributed to the network developing the national EUExcert node. The national node is large spectrum with experts from different areas in explosives sector. The meetings of national node were devoted to understanding the methodology and criteria used by UK group to build UK occupational standards and to collecting and discussing the education, training and certification of competences of the professionals in |

| | | |
|-----|--|--|
| | | Portugal and on the identification of gaps on the explosives sector. |
| WP5 | Issuing of EUExcert certificates based on accreditation of individual competencies | LEDAP cooperated with University of Pardubice and IExp on the trial to issuing EUExcert certificates based on accreditation of individual competencies. The results obtained based on a trial at Austin Powder company in Czech Republic were discussed between the three partners. LEDAP developed an inquiry to explosives manufactures and pyrotechnics workplaces to record education level and vocational training of workers. The job title, areas of activity and competences required were demand in this inquiry. The inquiry was previous discussed within national node before to be sent by email to companies. The reply is running slowly. |
| WP6 | Implementation EUExcert as a European association | LEDAP is a founding member of EUExcert Association. LEDAP participated on the discussion of the Articles of EUExcert Association approved at the meeting in Riga, 2011 April. |

3. PROGRESS MEETINGS

| Progress meetings | LEDAP represent's | Date |
|-------------------------------------|-------------------|-----------------------|
| 1 st – Karlskoga, Sweden | José Góis | 18 -19 March 2010 |
| 2 nd – Lonato, Italy | José Góis | 30 Sept – 1 Oct. 2010 |
| 3 rd – Riga, Latvia | José Góis | 14 – 15 April 2011 |
| 4 th – Lisbon, Portugal | José Góis | 22 – 23 Sept 2011 |

3.1. Dissemination and exploitation

The objectives and activities of the programme were disseminated to Portuguese stakeholders in explosives sector. The explosives sector is divided in military and civil. The military part is organised in three armed forces: army, navy and airforces. The civil part includes manufactures and end-users companies and authorities. Authorities include police, economy and environmental ministries. Universities and polytechnic provide courses, master and PhD programmes - some of them include subjects about explosives. There are also police and military schools for polices and militaries. Figure 1 shows an arrangement of the stakeholders in Portugal.

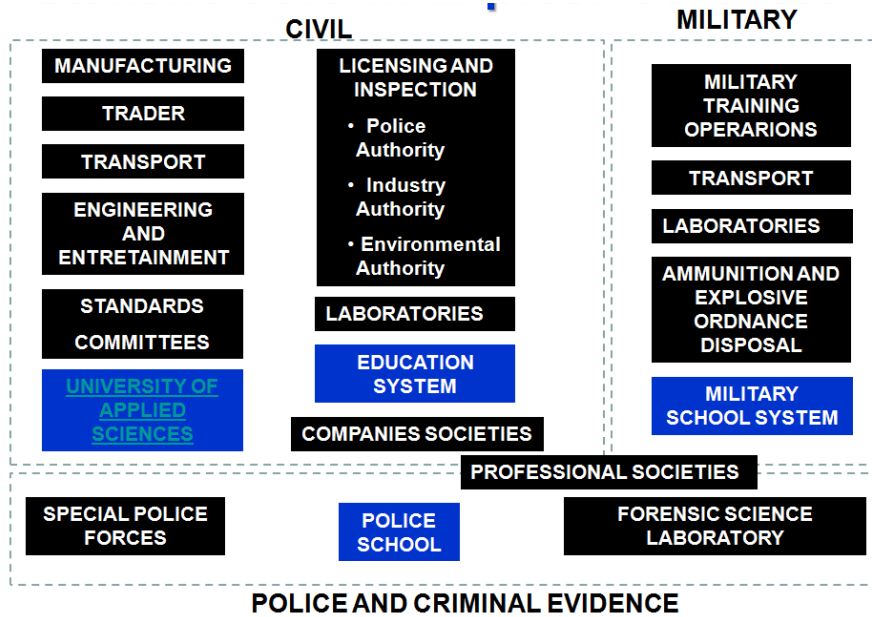


Fig. 1. Stakeholders in explosives sector in Portugal.

In Portugal there is 3 explosives manufactures, around 50 pyrotechnics workplaces and 200 hunting cartridges workplaces. Total of professionals expected in these companies are near 750. The end-users comprise quarries, mines and civil construction. These companies have as minimum an engineer with education in mines, civil engineering, geology or mechanical engineering, which manage explosives activities in the company. They have also a minimum of 2 shotfires. The number of professionals devoted to explosives at end-users did not quantify. But its number should be more than 1000.

The dissemination of EUExNet programme and activities at the stakeholders are carried out using the website of LEDAP (www.ledap.org) and website of AP3E-Portuguese Association of Studies and Explosives Engineering (www.ap3e.pt), which has as member's manufacturers, end-users, laboratories and individuals working in explosives sector. Electronic newsletters and information about the main activities carried out during the programme were sent to the different societies in explosives sector (ANIET-National Association of Extractive and Transformer Companies: www.aniet.pt, APIPE-Portuguese Society of Explosives and Pyrotechnic Companies: www.apipe.org, ANEPE-National Association of Explosives Products Companies's: www.anepe.org) and also to the authorities and universities. Some articles were published in the journals and newsletters of these societies. Three oral presentations were achieved in International conferences. During the seminars organised by AP3E at Portuguese universities to disseminating the 6th EFEE conference was also refereed the EUExNet programme. For the documentation of the dissemination previous described are shown in the following pictures.



Fig. 2. LEDAP webpage.



Fig. 3a. AP3E webpage reporting EUExNet project.



Fig. 3b. AP3E webpage documenting the 2nd International Conference on Explosive Education and Certification of Skills held in Lisbon 2011 Sep 21.



Fig. 4. Ingenium – Journal of Portuguese Engineering Society announcing the 2nd International Conference on Explosive Education and Certification of Skills held in Lisbon 2011 Sep 21.

EUROPEAN QUALIFICATION FRAMEWORK IN THE EXPLOSIVES SECTOR

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ABSTRACT

Examining the causes of pyrotechnics accidents invariably reveals that human error is the major contributory factor. Safety in pyrotechnic activity depends on people making decisions at the right time. Those decisions require people having the necessary skills to carry out their jobs properly. The concept of competence in explosives sector defined in many countries. A number of EU countries started a programme of work (EUEXcert) to examine competences of the workers in explosive sector through the training and education with a view to setting up a European qualifications framework in order to award European certificates for workers in this sector. This project has been funded by the European Union Leonardo da Vinci programme. Based on EUEXcert project a new project namely EUEXNet started with the objective to establish a transferable certificate of competences, which will be recognised inside and outside EU, providing a system that makes mobility of workers possible. The idea is to create a central node that provides a framework for competencies within a network with national bodies. This paper describes the results achieved in EUEXcert project and the recent developments in the new project.



Fig. 5. Abstract relative to the oral presentation and proceedings of 12th International Symposium on Fireworks in Oporto, Portugal, 2010 Oct 11-15.

A FORMAÇÃO E QUALIFICAÇÃO DOS OPERADORES DE FOGO EM PORTUGAL E NA EUROPA

José Góis

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ADAI - Associação para o Desenvolvimento da Aerodinâmica Industrial;
DEM-FCUC - Departamento de Engenharia Mecânica - Faculdade de Ciências e
Tecnologia da Universidade de Coimbra;
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Sumário

No quadro da harmonização das qualificações e competências dos profissionais do sector dos explosivos, em particular dos operadores de fogo são apresentadas os recentes desenvolvimentos produzidos pela EFEE e pelos projectos europeus EUEXNet e ESSEEM, financiados pelo programa LdV. É descrito também a iniciativa conjunta da AP3E e ANIET para a aproximação da formação e da qualificação dos operadores de fogo em Portugal com aos padrões europeus.

1. Introdução

Para os profissionais na área dos explosivos o conhecimento, em termos científicos e tecnológicos, é fundamental para lhes conferir competências para exercer a actividade para tomar o sector mais competitivo. Muito embora existam especificidades para cada tipo de actividade, muito dos conhecimentos em matéria de caracterização, procedimentos de segurança com produtos explosivos é comum para o sector civil. As diferenças fundamentais residem nos diferentes níveis de possibilidade dos produtos explosivos. Enquanto no sector militar se procuram produtos explosivos altamente potentes e insensíveis, no sector civil procuram-se usar ex-

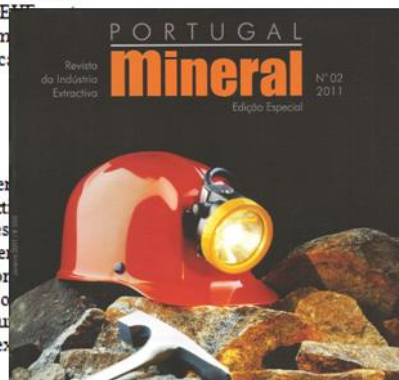


Fig. 6. Paper published in Portugal Mineral journal - Extractive Industry, Portugal 2011.

QUALIFICATION AND CERTIFICATION OF SKILLS IN PYROTECHNICS AND EXPLOSIVES MANUFACTURING INDUSTRY IN PORTUGAL

José-Góis

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Pyrotechnics and explosives manufacturing industry have a long tradition in Portugal. A large number of companies have more than fifty years old and some of them are closed to a hundred years old. The regulation that governs the licensing of explosives and pyrotechnics manufacturing is from eighties. The research & technology developments, quality control of raw materials and occupational health & safety standards carried out during the last two decades are not yet included in the Portuguese legislation. In pyrotechnics and explosives in Portugal is exclusively devoted to civil uses. Military industry is only committed to ammunition (explosives factories and around fifty fireworks factories are licensed for explosives factories and fireworks factories are supported by the number and qualification of workers are different in each sector companies are different too. Explosives factories have around fifty quarter of them are graduates. In opposition the common qualification factories are lower. An explosive factory must have a technical response course in mines or chemistry, in preference, or a military with a course engineering or in technical maintenance services of arms and am

Explosive Education and Certification of Skills

International conference, Riga, Latvia, April 12-13, 2011

Latvian University, EUExNet, KCEM, FAVILLE, EUExpert

You are invited to participate in the International Conference "Explosive Education and Certification of Skills". The conference aims to bring together experts, who are interested in the following topics:

- Legislation and certification in explosives sector and fireworks;
- Recovery of ammunition, demilitarisation;
- Detection of buried ammunition and mines;
- Case descriptions: Reports on prominent domestic and foreign cases;
- Operational tactics and techniques as well as new technical developments;
- Eco-toxicological evaluation of explosives;

Conference location:



Fig. 7. Oral presentation at International Conference on Explosive Education and Certification of Skills held in Riga, Latvia, 2011 April 12-13.

A NEW TRAINING MANUAL AND STRATEGY FOR IMPROVING SHOTFIRE COMPETENCES REQUIRED BY ALL PROFESSIONALS WORKING IN ROCK-BLASTING IN PORTUGAL

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1. — LEDAP; 2. — ADAI; 3. — Mechanical Engineering Department, University of Coimbra, Portugal; 4. — Geotechnical Engineering Department, School of Engineering (ISEP), Polytechnic of Porto, Portugal; 5. — Laboratory of Cartography and Applied Geology (LABCARGA), ISEP and GeoBioTecUA Centre

ABSTRACT

Certification of competences of Portuguese professional shotfirers is mainly based on an examination conducted by Police Department Authority for Guns and Explosives (DAE/PSP) or by Directorate General for Energy and Geology (DGE) and security matters in relation to storage and use of explosives. But non r are available for candidates to develop the knowledge's and skills even b employment. Pre-traineeship is carry out in some companies with re activities under the supervision of technical staff. In order to improve qu candidates to shotfire certificate issued by DAE/PSP both societies in exj (AP3E and ANIET) established a protocol with Police Authority (PSP) i blast training courses according the basic requirement for a European Sho by European Federation of Explosives Engineers (EFEE). With these pu in engineering geology, geotechnics, mining and mechanics from tl

2nd International Conference on Explosive Education and Certification of Skills

Portugal, Lisbon 21-22 September 2011

We are pleased to invite you to participate in the 2nd International Conference on Explosive Education and Certification of Skills, to be held at Hotel Açores Lisboa, in Lisbon, Portugal, 21st September 2011.

Objectives and target

The overall objectives of the conference are to contribute to the harmonization of training and qualification of personnel in explosives sector for the development of a transferable certificate of Explosive Competences, through the discussion and sharing of knowledge, as well as experiences on the training and procedure of accreditation of individual competencies. The conference addresses all people occupied and active in




Fig. 8. Abstract of oral presentation and proceedings of the 2nd International Conference on Explosive Education and Certification of skills, 2011 Sep 21.

FCT FACULDADE DE CIÊNCIAS E TECNOLOGIA
UNIVERSIDADE NOVA DE LISBOA

AP3E
ASSOCIAÇÃO PORTUGUESA DE ESTUDOS E ENGENHARIA DE EXPLOSIVOS

Seminário sobre Explosivos e Operações de Desmonte

ENTRADA LIVRE

Numa colaboração com a AP3E – Associação Portuguesa de Estudos e Engenharia de Explosivos realiza-se no dia 12 de MAIO de 2010 (Quarta-Feira), pelas 14:30, no Departamento de Ciências da Terra da Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa um Seminário sobre Explosivos e Operações de Desmonte. O referido Seminário prevê o desenvolvimento dos seguintes temas e oradores:

1. Explosivos de uso civil: suas propriedades e colocação no mercado – Prof. José Carlos Góis (DEM-FCTUC)
2. Aplicação de explosivos em operações de desmonte de rocha – Engº António Vieira (ISEP)
3. Controlo de impactos ambientais decorrentes da aplicação de explosivos – Prof. Pedro Bernardo (IST)
4. Aspectos legislativos relacionados com o sector dos explosivos – Dr. Victor Rodrigues (MAXAMPor, SA)
5. Aplicação de explosivos no desmonte de rocha para a indústria cimenteira – Engº Dina Gomes (Urmaquinas, Lda)

Local: sala 336, Departamento de Ciências da Terra, Campus de Caparica, tel. 212948573.

Objectivo: Promover a Engenharia dos Explosivos junto dos alunos das licenciaturas e dos mestrados dos cursos sediados no Departamento de Ciências da Terra e outros potenciais interessados (Engenharia Civil, Engenharia Mecânica, Engenharia do Ambiente ...).

UNIVERSIDADE DE ÉVORA

AP3E
ASSOCIAÇÃO PORTUGUESA DE ESTUDOS E ENGENHARIA DE EXPLOSIVOS

Seminário sobre Explosivos e Operações de Desmonte

ENTRADA LIVRE

Numa colaboração entre o Departamento de Geociências da Universidade de Évora e a AP3E – Associação Portuguesa de Estudos e Engenharia de Explosivos realiza-se no dia 27 de MAIO de 2010 (Quinta-Feira), pelas 14:30, no Colégio Luís António Verney, um Seminário sobre Explosivos e Operações de Desmonte. O referido Seminário prevê o desenvolvimento dos seguintes temas e oradores:

1. Explosivos de uso civil: suas propriedades e colocação no mercado – Prof. José Carlos Góis (DEM-FCTUC)
2. Aplicação de explosivos em operações de desmonte de rocha – Engº António Vieira (ISEP)
3. Controlo de impactos ambientais decorrentes da aplicação de explosivos – Prof. Pedro Bernardo (IST)
4. Aspectos legislativos relacionados com o sector dos explosivos – Dr. Victor Rodrigues (MAXAMPor, SA)
5. Importância do acompanhamento técnico, a nível do desempenho e do controlo de impactos ambientais, em desmontes de rocha com explosivo – Engº Ana Rita Borralho (SEC, SA)

Local: Anf. 1, Colégio Luís António Verney, Universidade de Évora

Objectivo: Promover a Engenharia dos Explosivos junto dos alunos das licenciaturas e dos mestrados dos cursos de Engenharia Geológica, Engenharia Civil, Física, Química, Engenharia do Ambiente e industriais e técnicos ligados à indústria extractiva.

i. Entrega de 1 exemplar do DETONICA (revista da AP3E)

ii. Para os estudantes são oferecidas condições especiais de inscrição na AP3E como associado - dispensa do pagamento de jóia
– Sócio estudante: 10 € (valor da quota anual)

iii. Para informações:
- Departamento de Geociências da Universidade de Évora
Rua Romão Ramalho nº 59, 7000-671 Évora
Telef. – 266745301
Fax – 266745397
Email: jacapo@uevora.pt
Eng. Ruben Varela Martins

Fig. 9. Announcement of two Seminars on Explosives and Blasting: at University of Lisbon and at University of Évora in 2010 May 12 and 27 respectively.

3.2. Conference in Lisbon

Organised by LEDAP and ADAI was held in Lisbon in 2011 Sep 21 the 2nd International Conference on Explosive Education and Certification of Skills. 51 delegates from 19 countries have participated and 11 papers were presented.

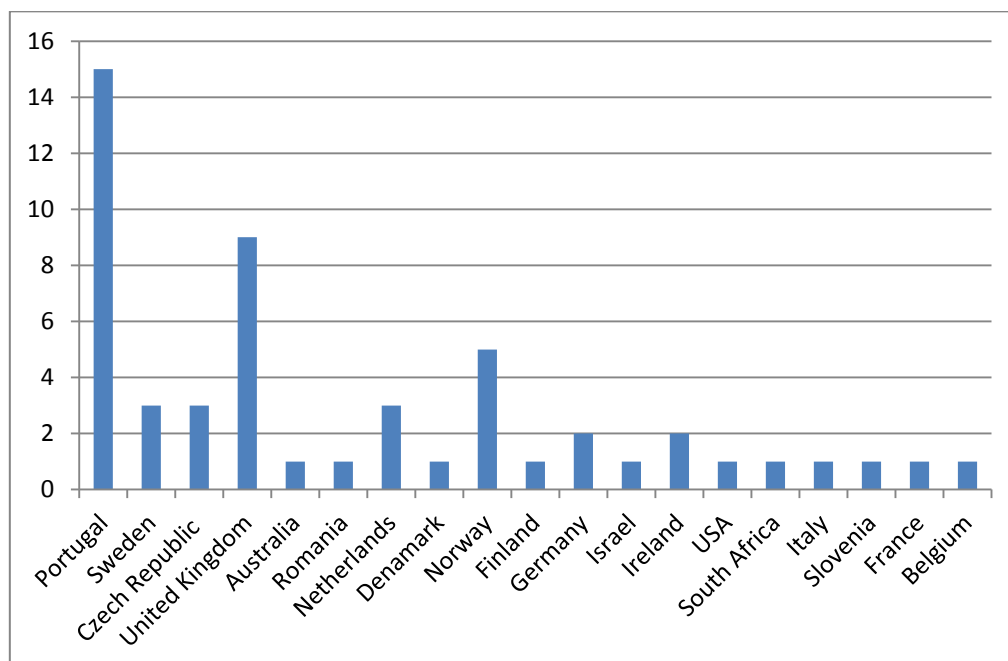


Fig. 10. Number of delegates and countries at the 2nd Int. Conference on Explosive Education and Certification of Skills in Lisbon.

| | |
|-------------|--|
| 9:00-9:30 | Registration |
| 9:30-9:45 | Opening of the Conference |
| 9:45-10:15 | EUExNet – A EUROPEAN EXPLOSIVES NETWORK – <i>Erik Nilsson and Hans Wallin, KCEM, Sweden</i> |
| 10:15-10:45 | THE DIFFICULTIES IN SETTING TRAINING STANDARDS IN AN INDUSTRY WHERE NONE EXIST- <i>Alan Hatcher, ISSEE, United Kingdom</i> |
| 11:45-11:15 | Coffee-break |
| 11:15-11:45 | ASSESSING COMPETENCE IN THE WORKPLACE FOR EXPLOSIVES QUALIFICATIONS - <i>Denise Clarke, Homeland Security Qualifications, United Kingdom</i> |
| 11:45-12:15 | VARIOUS WAYS HOW COMPETENCE STANDARDS MAY BE USED TO IMPROVE MOBILITY IN EXPLOSIVE SECTOR - <i>Milos Ferjencik and Vojtech Pelikan, University of Pardubice, Czech Republic</i> |
| 12:15-12:45 | DISPLACEMENT EFFECT WORKS WITH EXPLOSIVES ON SURROUNDING AREA – <i>Constantin Ciocoiu and Constantin Lupu, Romania</i> |
| 12:45-14:00 | Lunch |
| 14:00-14:30 | THE FUTURE EUROPEAN SHOTFIRER, COMPETENCE LEVEL BASED ON A LDV PROJECT REQUIREMENTS – <i>Aslak Ravlo, NFF, Norway</i> |
| 14:30-15:00 | FIREWORKS REGULATIONS AND TRAINING IN DENMARK: PAST, PRESENT AND FUTURE - <i>J. Hansen, DSTA, Denmark</i> |
| 15:00-15:30 | FIREWORKS REGULATIONS AND TRAINING IN PORTUGAL: PAST, PRESENT AND FUTURE - <i>A. M. Rodrigues, ANEPE, A. M. Fernandes. APIPE, Portugal</i> |
| 15:30-16:00 | Coffee-break |
| 16:00-16:30 | INTRODUCTION OF EXPLOSIVE SUBSTANCES AND ARTICLES (ESA) NATIONAL OCCUPATIONAL STANDARDS (NOS) VOCATION QUALIFICATION (VQ) ASSESSMENT IN QINETIQ - <i>Brian Wilson, QinetiQ, MoD, United Kingdom</i> |
| 16:30-17:00 | USE AND MISUSE OF EXPLOSIVES: A PORTUGUESE POLICE APPROACH – <i>Luís Ferreira, CIESS, PSP, Portugal</i> |
| 17:00-17:30 | A NEW TRAINING MANUAL AND STRATEGY FOR IMPROVING SHOTFIRE COMPETENCIES OF PROFESSIONALS WORKING IN THE FIELD OF EXPLOSIVES IN ROCK - <i>J. Góis, Univ. of Coimbra; A. Vieira, A. C. Galiza and H. I. Chaminé, Polytechnic of Porto, Portugal</i> |
| 17:30-17:45 | Final plenary and closing of the Conference |

Fig. 11. Program of the 2nd Int. Conference on Explosive Education and Certification of Skills in Lisbon 2011 Sep 21.



Fig. 12a. Delegates at the 2nd Int. Conference on Explosive Education and Certification of Skills in Lisbon 2011 Sep 21.



Fig. 12b. Delegates at the 2nd Int. Conference on Explosive Education and Certification of Skills in Lisbon 2011 Sep 21.

4. NATIONAL NODE AND ACTIVITY

The EUEXCERT node in Portugal mix professionals from military and civil explosives sectors. The three society described in chapter 3 (ANEPE, APIPE and AP3E) are represented. The police are represented and two teachers are members. Table 2 shows the names and affiliation of the members.

Tab. 2. Portuguese EUExcert node.

| | |
|-------------------|---|
| <i>José Góis</i> | <i>Chairman</i> |
| Luís Ferreira | Head of Police Operational Division (Police EOD) |
| Sara Almada | Head of Army Laboratory |
| Ana Fernandes | Director of APIPE (Portuguese Society of Explosives and Pyrotechnic Companies) and Director of a pyrotechnic workplace |
| António Rodrigues | President of ANEPE (National Association of Explosives Products Companies) and Director of a pyrotechnic workplace |
| Pedro Bernardo | Commercial Manager at SEC SA (nowadays ORICA Portugal) and invited Teacher in Mining Engineering at Higher Technical Institute in Lisbon |
| Milagre Martins | Director of MAXAM Portugal |
| José Góis | Teacher in Mech. Eng. at University of Coimbra, Research in Energetic Materials at LEDAP and President of AP3E (Portuguese Association of Studies and Explosives Engineering) |

The communication with members was performed by email. Large files were sent using specific communication tools or providing links to allow accessing to documents.

The meetings of EUEXCERT Portuguese node were held in Coimbra at Mechanical Engineering Department, chosen as the most convenient for the members. The criterion for the selection of members for the National EUExcert node was to joint professionals with

large experience, motivated to this challenging and capable to understand documents in English.

The discussion during the meetings was conducted to the understanding of UK occupational standards and their applicability in Portugal. Priority was focused on manufacturing activities in explosives and pyrotechnics and the legislation that regulate qualifications and certification of skills.

The Catalogue of Professional Jobs in Portugal (Tab. 3) refers only two jobs directly linked to explosives sector: shotfire (7542.0) and worker at fireworks manufacture (7549.3). The structure and organisation of the Portuguese Catalogue of Qualifications was established by the Ordinance nº 781/2009, July 23 and the descriptors for the characterization of National Qualification Levels were fixed by the Ordinance nº 782/2009, July 23. The certification of skills resulting from the accreditation, validation and certification of skills acquired and developed in lifelong learning was established by the Ordinance nº 211/2011, May 26. Previous was established the mechanism for the accreditation of diplomas, certificates and other qualifications to citizens from other members-state (Decree-law nº 48/2003, May 20, transposing the Directive nº 1999/42/CE).

Tab. 3. Jobs in Explosives Sector listed in the Catalogue of Professional Jobs in Portugal.

| | | | | |
|---|----|------|--------|--|
| 8 | 81 | 754 | 7536.1 | Sapateiro |
| | | | 7536.2 | Maleiro |
| | | | 7536.3 | Correio |
| | | | 7536.4 | Albardeiro e similares |
| | | | | Trabalhadores de outros ofícios |
| | | 7541 | 7541.0 | Mergulhador |
| | | 7542 | 7542.0 | Carregador de fogo e dinamitador |
| | | 7543 | 7543.0 | Calibrador e verificador de produtos (excepto alimentos e bebidas) |
| | | 7544 | 7544.0 | Fumigador e outros controladores, de pragas e ervas daninhas |
| | | 7549 | | Trabalhador de outros ofícios, n.e. |
| | | | 7549.1 | Trabalhador de vidro de óptica |
| | | | 7549.2 | Salineiro |
| | | | 7549.3 | Trabalhador de fabrico de foguetes (fogueteiro) |
| | | | 7549.4 | Trabalhador de outros ofícios diversos, n.e. |
| | | | | Operadores de instalações e máquinas e trabalhadores da montagem |
| | | | | Operadores de instalações fixas e máquinas |
| | | | | Operadores de instalações, da extracção mineira e de processamento de minerais |
| | | | | Minheiros e trabalhadores das pedreiras |
| | | | | Mineiro |
| | | | | Trabalhador das pedreiras |
| | | | | Operadores de instalações de processamento de minérios e rochas |
| | | | | Operador de instalações de processamento de minérios |
| | | | | Operador de instalações de processamento de rochas |
| | | | | Perfurador de poços, sondador e similares |
| | | | | Operadores de máquinas para trabalhar cimento, pedra e outros minerais |
| | | | | Operador de máquinas para trabalhar o cimento |
| | | | | Operador de máquinas para trabalhar a pedra |
| | | | | Operador de máquinas para trabalhar outros minerais |
| | | | | Operadores de instalações de transformação e acabamento, de metais |
| | | | | Operadores de instalações de transformação de metais |
| | | | | Operador de instalações de fornos e de primeira transformação de metais |
| | | | | Operador de instalações de fornos de segunda fusão, vazadores e laminadores, de metais |

The vocational training whether education system or employment was regulated by the decree-law nº 401/91, October 16 (Tab. 4). In 1995 was regulated the professional certification for training on the job – decree-law nº 95/92, May 23 (Tab. 5).

Tab. 4. Vocational training regulation (Decree-law nº 401/91).

| |
|--|
| <p align="center">Decreto-Lei n.º 401/91 de 16 de Outubro</p> <p>O presente diploma destina-se a regular as actividades de formação profissional inserida quer no sistema educativo quer no mercado de emprego. A primeira,</p> <p align="center">Artigo 1.º</p> <p align="center">Âmbito</p> <p>1 — O presente diploma estabelece o enquadramento legal da formação profissional.</p> <p>2 — Este diploma aplica-se:</p> <p>a) À formação profissional inserida no sistema educativo;</p> <p>b) À formação profissional inserida no mercado de emprego.</p> |
|--|

Tab. 5. Professional certification regulation (decree-law nº 95/92).

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| <p align="center">MINISTÉRIO DO EMPREGO E DA SEGURANÇA SOCIAL</p> <hr/> <p align="center">Decreto-Lei n.º 95/92 de 23 de Maio</p> <p>O presente diploma destina-se a estabelecer o regime da certificação profissional baseada em formação inserida no mercado de emprego ou em experiência profissional, partindo do disposto nos Decretos-Leis n.ºs 401/91 e 405/91, ambos de 16 de Outubro.</p> <p align="center">CAPÍTULO I</p> <p align="center">Disposições gerais</p> <p align="center">Artigo 1.º</p> <p align="center">Objecto</p> <p>1 — O presente diploma estabelece o regime jurídico da certificação profissional relativa à formação inserida no mercado de emprego e a outros requisitos do exercício das actividades profissionais.</p> <p>2 — O regime a que se refere o número anterior e o conjunto de entidades por ele abrangidas designam-se por subsistema de certificação profissional inserida no mercado de emprego.</p> <p>3 — A certificação inserida no mercado de emprego faz parte do sistema que integra também a certificação profissional inserida no sistema educativo.</p> |
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The Institute of Employment and Vocational Training (IEFP) provides several training courses and help candidates to obtain certification of skills (<http://www.iefp.pt>) (Tab. 6). Unfortunately no training course is available for employees or potential candidates to explosives sector. For civil explosives sector the certification of skills is only regulated for the *technical responsible* of explosives manufacture or pyrotechnics workplace and for the *shotfire*. The criteria to certify skills of these professionals are based on legislation published in 1986 (decree-law nº 386/86, October 30). The Explosives and Guns Department of the Police (DAE-PSP) certifies the competences of the professionals described above. Certification of skills of shotfires in mining and quarry companies could be assessed by technicians of regional departments of Ministry of Economy. Nothing is regulated to

describing the competencies of the assessors at Police or at Ministry of Economy. In general these assessors are engineers.

Tab. 6. Vocation training and certification at IEFP.

Formação e Certificação

Pode consultar estes dossiers...

Como obter Certificação Profissional?
 Não importa se é cozinheiro, carpinteiro, padeiro, operador de máquinas agrícolas ou mesmo bombeiro, qualquer trabalhador pode pedir um Certificado de Aptidão Profissional, comprovando que tem as competências necessárias para exercer o seu ofício com qualidade...

Formação e Mercado de Trabalho
 A educação e a formação constante são variáveis cada vez mais importantes para o desenvolvimento pessoal e profissional dos cidadãos. Adicionalmente, é uma preocupação crescente da maioria dos governos que reconhecem a importância da qualificação...

Os Cidadãos com Deficiência e o Mercado de Trabalho: Medidas de Apoio
 Este dossier dá a conhecer os apoios existentes na área do emprego para os cidadãos com deficiência, um conjunto de soluções que vão desde o aconselhamento ao apoio financeiro para a instalação por conta própria, passando pela formação, pel...

Pode realizar estes serviços...

i Apoios Concedidos aos Candidatos a Formação Profissional
 Ao frequentar uma acção de formação profissional promovida pelo Instituto do Emprego e Formação Profissional (IEFP), o formando pode ter acesso a alguns apoios durante a acção.

i Apoios Específicos à Inserção Profissional de Candidatos provenientes de Grupos Desfavorecidos
 O Instituto do Emprego e Formação Profissional (IEFP) proporciona, a todos quantos enfrentem dificuldades específicas no acesso ao mercado de trabalho, um conjunto de apoios ajustados às suas necessidades.

In order to evaluate the competences of skills required for each employee in explosives manufactures and pyrotechnics workplace was designed an inquiry (Annex A). The inquiry is divided in two sections. Section 1 describes education and the vocational training courses. Section 2 describes the job title, areas of activity in the company and competences required. The inquiry was sent to all explosives manufactures and pyrotechnics workplaces. The answers are coming gradually. The results will be discussed by the national node.

5. IMPACTS

5.1. Impact on stakeholders

The different processes used for dissemination of EUExNet programme have had good feedback in Portugal on the main explosives manufactures and pyrotechnics workplaces. The end-users are widely dispersed and the feedback of their reactions is lower when compared.

A training manual for end-users in quarry and civil construction was developed within a protocol coupling AP3E, ANIET and DAE-PSP. Some teachers from the university of Coimbra,

Porto and Lisbon collaborated together with the explosive manufactures and companies of drilling tools to design this manual. Figure 13 shows the title of manual, the authors and associate companies and public institutions.



Fig. 13. Training manual for explosives shotfire.

Training courses will start soon based in this manual. The purpose of these courses is to pursuit the topics recommended by the European Federation of Explosives Engineers (EFEE) for the European shotfire.

The four societies (AP3E, APIPE, ANEPE and ANIET) and the Police and Ministry of Economy are awarded to the importance of the accreditation of individual competencies and process of issuing certificates.

The 2nd International Conference on Explosive Education and Certification of Skills in Lisbon in 2011 September 21, organised by LEDAP and ADAI, had the participation of 51 delegates (78.5% from Europe, 32% of them from Portugal). The conference had an excellent reply from the delegates, whom refereed the great importance of the subject and requested more time for discussion.

5.2. Impact on LEDAP

LEDAP has enlarged their influence on the companies and public institutions in Portugal with the experience acquired during the participation in the EUExNet programme. The vocational training and certification of competences became a new target in LEDAP activities. Collaborators at LEDAP from the university of Coimbra, students and researchers are conscious to their contributions to persist this programme. The network developed with the programme gave us an image of the dimension of stakeholders and the potential that the certification of skills may represent for the professionals and the image of explosives sector.

6. INVOLVEMENT OF PARTNERS

Concerning to LEDAP the involvement with partners was demonstrated by the following activities:

- Dissemination of 2nd International Conference on Explosive Education and Certification of Skills and some oral presentations at the Conference (all partners for first task and two partners for the second task)
- Transference of experience to help the understanding of UK occupational standards and methodology adopted for certification of skills (IExp)
- Trail process of issuing certificates and accreditation of individual competencies (University of Pardubice and IExp)
- Quality of the activities carried out during the programme (Karlstad University)
- Participation in the International Conference on Explosive Education and Certification of Skills in Riga (University of Latvia)
- Node implementation and stakeholders (IExp and KCEM)
- Newsletter and website (KCEM)

7. INVOLVEMENT OF STAFF

Staff of LEDAP involved in the project was coordinated by José Góis, who attended all progress meeting and two international conferences on the subject presenting oral presentations. The other members of LEDAP staff were engaged in the communication with national stakeholders and organising information about education, training manuals and courses, national regulations and authorities concerned to certification of skills.

8. MANAGEMENT ASPECTS

The report of activities carried out was progressively discussed in each progress meeting and management of tasks were upgrade. As leader of the project KCEM provided all the information required to developing the programme and pushed partners to cooperate and to transfer experiences. Although the different native languages of different partners the communications and document were wrote in English. IExp, University of Pardubice and LEDAP were in regular cooperation to trial the process of issuing certificates and accreditation of individual competencies.

Financial reports were regular reported describing costs according approved items. Costs were described to help accounting manager to understand the receipts wrote in native language of partners. Justification of staff cost was presented by LEDAP replying the order of LdV assessors.

9. PLAN FOR FUTURE

LEDAP is planning to spread the inquiry on education, training courses, job title, activities concerned and competences of skills required to all areas in explosives sector. National node is requested to discuss the results obtained and to analyse the implementation or adoption of UK occupational standards to explosives sector in Portugal.

Cooperation with other national nodes is planning under the network of EUEXCERT association. Transference of experience should continue.

A cluster joining companies in explosives sector, societies and institutions is planning for future. Production of manuals and training courses and preparation of assessors for certification of competences in explosives sector are palnning.



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