EUEXCERT –

CERTIFYING EXPERTISE IN THE EUROPEAN EXPLOSIVES SECTOR

Presenter: Erik Nilsson, KCEM, Gammelbackavägen 6, SE-691 51 Karlskoga, Sweden, +46 586 84741, +46 586 84749 (fax), erik.nilsson@kcem.se,
Co-Authors:
Dr Jacqueline Akhavan Cranfield University, Defence Academy of UK, Shrivenham, Swindon, SN6 8LA, UK+441793 785324 j.akhavan@cranfield.ac.uk

Hanne Randle Karlstad University, Universitetsgatan 2, SE-651 88 Karlstad, Sweden, +46 54 700 1000, +46 54 700 1460 (fax), hanne.randle@kau.se

Hans Wallin, KCEM, Gammelbackavägen 6, SE-691 51 Karlskoga, Sweden, +46 586 84742, +46 586 84749 (fax), hans.wallin@kcem.se

Abstract

An understanding of explosives science and technology, and the competence to harness it is central to maintaining Explosives capability, national security, and in sustaining a competitive industry. A consequence of eroding this competence is the increased likelihood of explosives accidents. These are often catastrophic as demonstrated by accidents in Nigeria, Russia, Toulouse and Enschede. In addition to the serious loss of life there was the very significant damage to houses, domestic and industrial infrastructure and to the environment at a cost of many millions of euros.

There is a perception and some evidence that in Europe competence in this key technological area is being eroded. In several European nations a high proposition of the most experienced and knowledgeable personnel are retiring or nearing retirement. Urgent efforts are therefore underway in some European nations to replenish this expertise.

In the year 2003 KCEM started a European project with partners from Finland, Italy, Norway and United Kingdom to tackle this problem. The project is partly financed by the Leonardo da Vinci programme. The aim of this pilot project is to establish a training and education programme aimed at restoring and maintaining the competence of workers engaged in the explosive business. The programme places increased emphasis on improving the quality of the educational material and in improving access to training through use of workplace and e-learning. Improvement in competence and skills will enhance the status of explosives workers, improve worker and public safety and improve European industrial competitiveness through greater worker mobility and the ability to react rapidly to a fast changing economic and industrial environment.

This paper will describe the project, the outcomes of the project and coming activities. More information about the project can be found on the projects website, www.euexcert.org.

Description of the project

There is a perception and anecdotal evidence that as a result of changes in the security environment in Europe due to the end of the Cold War, major contraction of the defence sector and downsizing and rationalising of defence industries have taken place. Concomitantly the European competence in this key technological area has been eroded. This has been explicitly identified in several European nations where a high proportion of the most experienced and knowledgeable personnel are retiring or nearing retirement. Urgent efforts are therefore underway to replenish this expertise. This loss of expertise has resulted in an increase in accidents involving explosives not only in Europe but also on a world wide basis. These accidents generally result in loss of life, damage to buildings, equipment and the environment at a cost of many millions of euros. The aim of EUExcert pilot project is to establish a training and education programme aimed at restoring and maintaining the competence of all workers engaged in the production and use of explosives. To achieve this aim the partners in the programme will conduct a comprehensive analysis of the European explosive business. It will identify for each member state, the size and scope of the explosives worker community, and the competencies and skills required by these workers. This will be accomplished through close consultation with stakeholder organisations in each of the member nations, annex 1. The training and educational needs of the European community for explosive workers will then be determined in relation to the required competencies. A comprehensive programme of education and training will be developed utilising the widest range of training and educational methods, ranging from traditional classroom-based teaching, workplace learning and electronic learning. These will be developed and delivered by a range of educational establishments, including universities and higher education institutions, professional bodies, trade union organisations and specialist further educational authorities. Pilot training and education programmes will be developed and tested in several member nations. The results of the work will be widely disseminated through a programme of reports, demonstrations and presentations to stakeholder groups in the member nations. A network of interested individuals and organisations will be encouraged to promote the concept of a world class European explosives community.

Relevance

Although the explosive sector is highly regulated due to the hazardous nature of the materials, the competencies of the workers in the explosives sector is not regulated in detail. It is a fact that no measurable qualification which is linked to competencies exists in Europe for workers in the explosive sector. The only training given to explosives workers is in-house training which is not transferable between companies and countries; this training has no status or recognition. Due to the increase in skills shortage it has

come to the attention of the explosives sector that, not only is there is a lack of competent people but there are no standards to which to measure these competencies. From the outcomes of the EUExcert project and the EUExcert conference it was evident no European country had competencies for workers in the explosives sector.

The European market is regulated by directives that define boundaries for activities within companies, for example the 'Seveso directive', which specifies the environmental standards within which the explosives sector must adhere to. This directive also requires people who handle explosives to be competent. The rapid integration of the different member states in the EU, often caused by transnational mergers both in the Defence and Civilian sectors, not only requires competent people but also necessitates the standardisation of these competencies in explosives.

It is of a fundamental interest for the European Explosives Sector to overcome the national borders and the language borders that separates the different member states

Impact

The results and outcomes from the EUExcert project will provide a tool for competency assessment and planning which will be based on demands from the explosives sector in Europe.
The competency framework will reduce the time for developing pedagogical models for adult learning, since the competency framework requires flexible solutions for workplace learning and training.
The competency framework and the development of a European standard will create a more flexible and mobile workforce in the explosives sector.
At the present time there is a high risk of accidents occurring at the workplace due to a lack of knowledge, skills and experience of the workers for the safe handling of explosive substances. The development of modern learning techniques, which makes it easier and more economic to provide education and training at workplace level working conditions will ensure that the workplace becomes safer through a decrease in risk.
Accidents involving explosive substances can be simulated using modern e-learning techniques providing the workforce with the opportunity to gain experience without being subjected to the hazards.
Increase cooperation between the education providers and companies in the explosives sector leading to an education and training package which can be based on the company's training needs and the individual workers demands.
The development of a European competence for workers in the explosives sector will increase the opportunity to sustain changes in the European market through a more flexible workforce and will ensure compatibility on the global market.
The competency framework and the development of a European standard may have an impact on the legislation in Europe, as it will highlight the problems related to the explosives sector caused by the lack of legislation which regulates the requirements for basic occupational and educational standards in each country.

Valorisation

The lifespan of the results could be sustainable if they are adapted and developed in accordance with the requirements from the industry. The idea of the competency framework is to develop a standard for the explosives industry; however the level of use will depend on how the European countries will be able to embrace this concept and setup a close cooperation between the suppliers of vocational education and training. The education providers will also need to adapt their courses and training packages to fit into the requirements for the sector specific knowledge, and the company and individual demands. The providers of training develop educational materials should also be able to embrace new techniques such as e-learning and workplace training in order to deliver the training in the companies. At the present time Sweden and UK have a developed an infrastructure for adult learning that already provides learning opportunities based on new pedagogical methods – such as workplace instructors, mini learning centres and e-learning materials. Other countries which do not have this type of infrastructure and if they wish so, can use the Swedish or UK system to deliver their education and training packages in the workplace.

It is therefore possible to transfer the concept of developing a competency framework to other manufacturing industries on the European and world market, however it will require from them the desire to develop the whole package; from learning at work to the understanding of how to supply training based on the demands from the employees, company requirements and competency assessment.

Partnership and transnationality

The partnership has developed an understanding for the need of a European and accordingly a World standard of competencies in the explosives sector. The project has led to a deeper understanding of the need of developing a common ground for education and training for the European market within the explosives sector. The partnership has also acknowledged the fact that all partner countries can benefit from the project and that they can all contribute towards setting up a European standard based on their specific knowledge and system for adult and vocational education. The project has also developed a common understanding of the need of avoiding risk related to the lack of skills and competencies, which will occur when the older employees retire from the workforce. The partnership is aware that at the present time there is a lack of systems for the transfer of knowledge from one generation of workers to the next. The European market expects companies to compete on the global market, this is possible if the companies have access to a flexible workforce, without increasing the risk of hazards; this can only be provided through investments in further training and education. However at the present time, the companies cannot supply the training because it is not supplied as a flexible package. Through the results of this project and collaboration between the partner countries, educational providers and industrial companies, a flexible workplace training package has been developed which is easy to access and gives an economic advantage which can

be adapted to the individual and company needs. Through the formation of a network, the companies will be able to discuss these issues and share best practice.

The EUExcert partnership is growing

The work from the first EUExcert project has resulted in the production of competencies for workers in the explosive sector which could be used for a European Occupational Standard and a framework for European Vocational Qualifications. These competencies were originally developed for the UK explosives sector and only samples were validated for the European market. It is intended to explore all the UK competencies with a view to setting up a European awarding body called a 'Foundation' which will oversee the European competence framework and qualifications associated with this framework with a view to issuing certificates.

In order to achieve this goal a new project with more partners proposes to do the following:

1. Increase the number of European partners and participating countries (annex 2) by disseminating and spreading knowledge about the competence framework to the explosive sector in Europe and the rest of the world. Members of the EUExcert partnership will present papers and posters on the outcomes of the EUExcert project at national and international conferences, seminars etc. The EUExcert website and newsletters will also be a source of information of current activities. All the organisations who attended the EUExcert conference (which was held in June 2005) will be contacted and invited to meet the EUExcert team with a view to joining as an associated member initially and a full member at a later date.
2. To form a new and improved network by contacting and collaborating with other European institutions and agencies. This network will provide a large critical mass to which EUExcert can seek advice with a view to the harmonisation of legislation and practice in the explosives sector. The European Federation of Explosive Engineers (EFEE), who at the moment is an associated partner, will become a full partner in this new programme of work.
3. Increase the skills, employability and mobility of our beneficiaries and target groups by establishing a programme of student exchanges. A preliminary study has already taken place between Sweden and UK via the Leonardo da Vinci Mobility programme. A group of Swedish trainers and educators visited the UK in November 2005 to discuss future cooperation between the two countries and a similar visit has been funded by the Leonardo da Vinci Mobility programme to send people from the UK to Sweden in December 2005. It is intended to start a programme of student exchanges between Sweden and the UK with a view to widening this to other European countries in the EUExcert partnership.
4. To produce a basic glossary of terms for the European explosive sector. Recent discussions within the EUExcert team have highlighted problems resulting from

incorrect translations of terminology within the explosives sector. The new glossary will be transferable between countries.

5. To develop transnational educational material for workers in the explosive sector incorporating flexible learning. The material will be initially formatted in English and then translated into other languages.
6. To setup a regulatory body called a 'Foundation'. The EUExcert team has been in contact with the British Computer Society (BCS) who were involved in setting up the regulatory body for the European Computer Driving License (ECDL). It is intended that the EUExcert team will seek advice from the BCS with a view to establishing a European Explosive Driving License (EuExDL). The certificates for the EuExDL will be issued by the Foundation. The Foundation will be financed through a fee paying membership and the issuing of certificates.

Within the frame of the project a second EUExcert conference on Education and Training will be held 13-15 June 2007 at the Defence Academy in Shrivenham, UK

Results and products, summary

So far the project has given the following results.

- A pilot study and trial of the occupational standards towards company specific requirements in several partner countries in Europe.
- Piloting a cross border training course – based on distant techniques.
- Piloting modular built education and training package based on new and modern techniques such as mini learning centres, e-learning, workplace training and individual support for adult learning.
- The project has developed cooperation between education suppliers within the partner countries and developed cooperation between companies in Europe and within each partner country.
- The EUExcert project has developed close cooperation with the European network EFEE in order to learn from their work and has also invited EFEE to become an associated partner in the project.
- A regular newsletter is circulated to all parties who register an interest in the outcomes of the project.
- A continuation of the project into a next phase – and the setting up of the standard setting board.

Annex 1

Stakeholder groups

The following stakeholder groups have been identified:

- Health and Safety Boards and advisers
- Government Agencies (i.e. MoD)
- Army, Air Force and Navy
- Police
- Fire Brigade
- Government and private research establishments
- Educational establishments
- Forensic laboratories
- Manufacturing companies for defence
- Manufacturing companies for commercial explosives
- Demolition and construction industries
- Off-shore oil industries
- Fireworks industries
- Mining and quarrying companies
- Disposal of explosives

Annex 2

Partners in the new project

- KCEM, Sweden, Project promoter
- University of Paradubice, Czech Republic
- Sprengschule Dresden, Germany
- Technical Inspectorate, Estonia
- Union Española de Explosivos, Spain
- Kemia, Finland
- EFEE, European Federation of Explosive Engineers (European partner, represented by France)
- Nitrex, Italia
- NAMMO RAUFOSS A/S, Norway
- University de Coimbra, Portugal
- APeL FOU AB, Sweden
- Learning Centre Masugnen, Sweden
- IN, Industrial workers in Nordic countrys (Also representing the European Organisation EMCEF)
- YFIND, Industrial– and Chemical Industries, Sweden
- Cranfield University, United Kingdom