

Behovet av högskolekompetens inom
explosivämnessektorn

Behöver vi verkligen göra något?

Måste vi göra det NU?

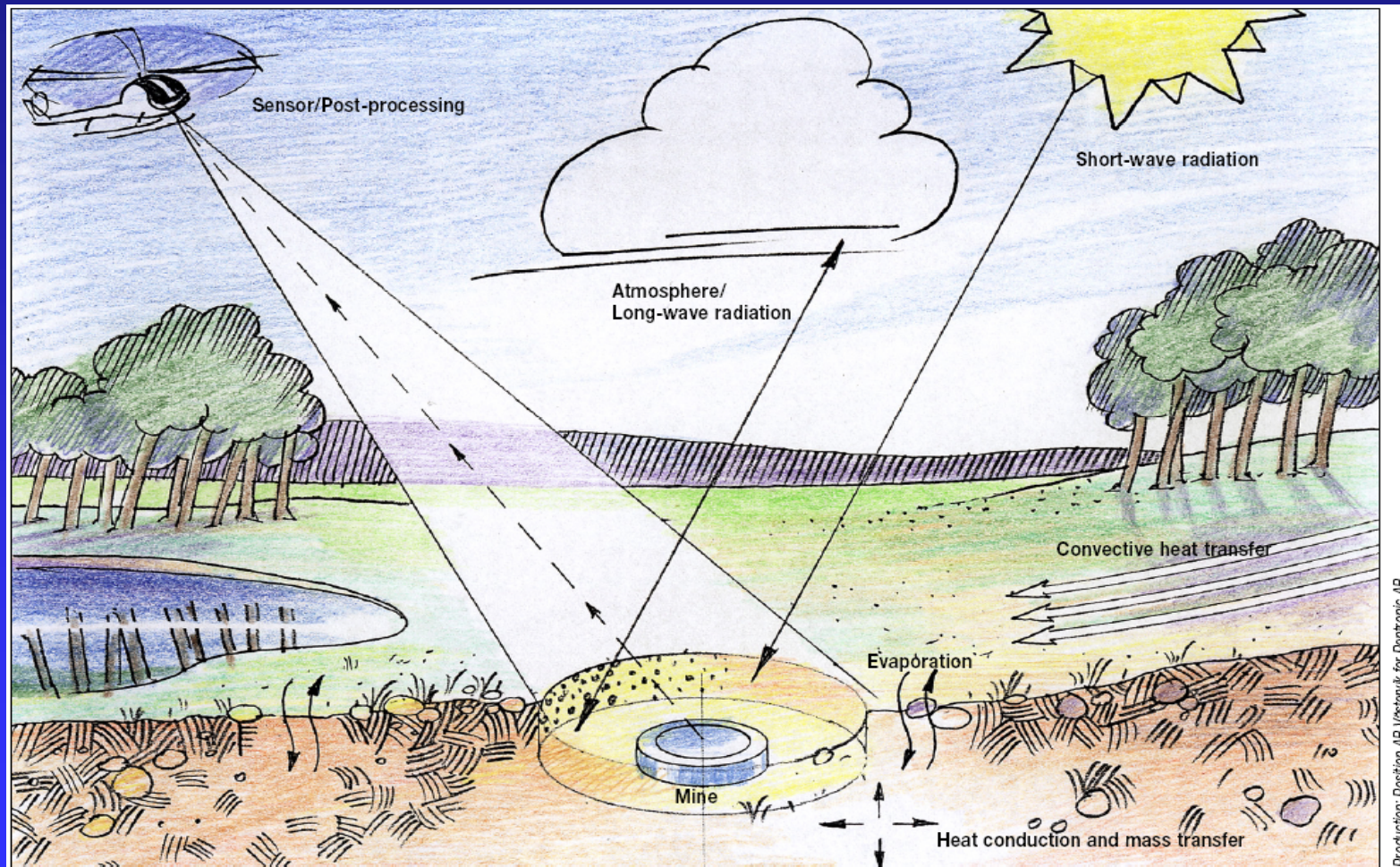
VESP, Vingåker

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Detection of explosives is a common research interest for the authors



*A decreasing
but very important
Swedish and European industrial sector
needs a (new) better system for
university education of specialists!*

*A system based on the Bologna process
and an industrial European network?*

Two BIG problems in the explosives sector

- A great amount of the specialists in the explosives sector will be retired in a few years
- All specialists need always continuous maintaining and development of competence

Life-long maintaining and development of competence are necessary because

- The ongoing very fast development of the engineering science
- The increasing competence demand from both companies and society
- Increase the self-confidence of the expert
- Facilitate for the expert to work in other working areas

The number of employees in the explosives industry

1989

2009

- Bofors and FFV: 5500 of 20 000 worked in the explosives sector
- Other actors: 2000 in the explosives sector
- Totally: almost 8000 worked in the explosives sector
- Totally: 3800 including administration, service, transportation etc
- About 600 of 3800 work at a number of small actors
- Some actors are very small

The changing situation in the Swedish explosives industry

1989

- Two very large Swedish actors, Bofors and FFV, with a broad explosives competence
- Both actors had large departments for training and education

2009

- A big number of small actors
- Only a few actors have more than 200 employees
- No (?) departments for training and education exist any longer

The changing situation in the Swedish explosives industry

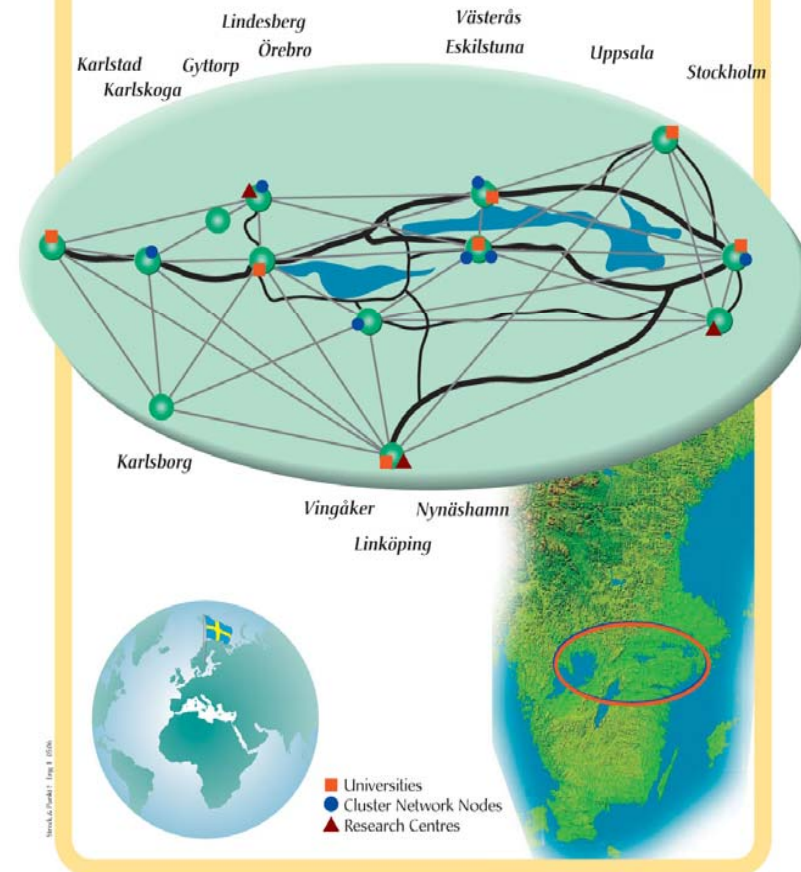
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The main part of the explosives network in Sweden is situated in southern Sweden

The Alfred Nobel explosive Industrial emporium was originally founded around the Lake Mälaren. Today a Cluster and a Network for explosive co operation are growing.



Higher engineering education at universities and university colleges in Sweden - yesterday

- Engineering education, 3 years; bachelor level ("högskoleingenjör")
- Engineering education, 5 years, earlier 4.5 years; master level ("civilingenjör")
- PhD in engineering, 4 years ("teknologie doktor")

Higher engineering education in Sweden – 2009 and ahead

- The European Bologna process has now (?) been introduced in Sweden
- Engineering education - bachelor level; 3 years
- Engineering education - master level; 2 years (i.e. $3 + 2 = 5$ years education)
- Engineering education - master level; 5 years ("civilingenjör"). Remains
- PhD in engineering; 4 years. Remains

Why is it necessary to solve the
problem NOW?

A possible system solution for university education and further education of explosives specialists

- A combination of a number of existing university courses within the Bologna system is used
- The use of external courses for specialists in the explosives industry and organizations
- The system solution is based on the European Qualifications Framework, EQF

The structure of a future university education on master level for specialists in the explosives sector

- Use one year of a relevant engineering education on the master level in the Bologna system as a base (1 year)
- Half a year is used for external and university courses in the explosives sector in Sweden or abroad (0.5 year)
- The diploma work is connected to an industry in the explosives sector in Sweden or abroad (0.5 year)
- European transnational co-operation is necessary

Four partners must be involved in the education process

- The student
- The university sector and the relevant research agencies
- The industry
- The society

Some advantages and disadvantages with the planned higher education

- It gives a master exam
- All involved courses give academic points
- The education gives higher cost for the student
- The education gives higher but limited cost for the university sector
- The education gives higher cost for the industry

The organizer of the future education of explosives specialists?

- An explosives company?
- FOI (The Swedish Defence Research Agency)?
- A new course organizer controlled by the explosives industry and explosives organizations ?
- KCEM in collaboration with a university or a university college or a group of universities?
- An international course organizer?
- Someone else?

Summary

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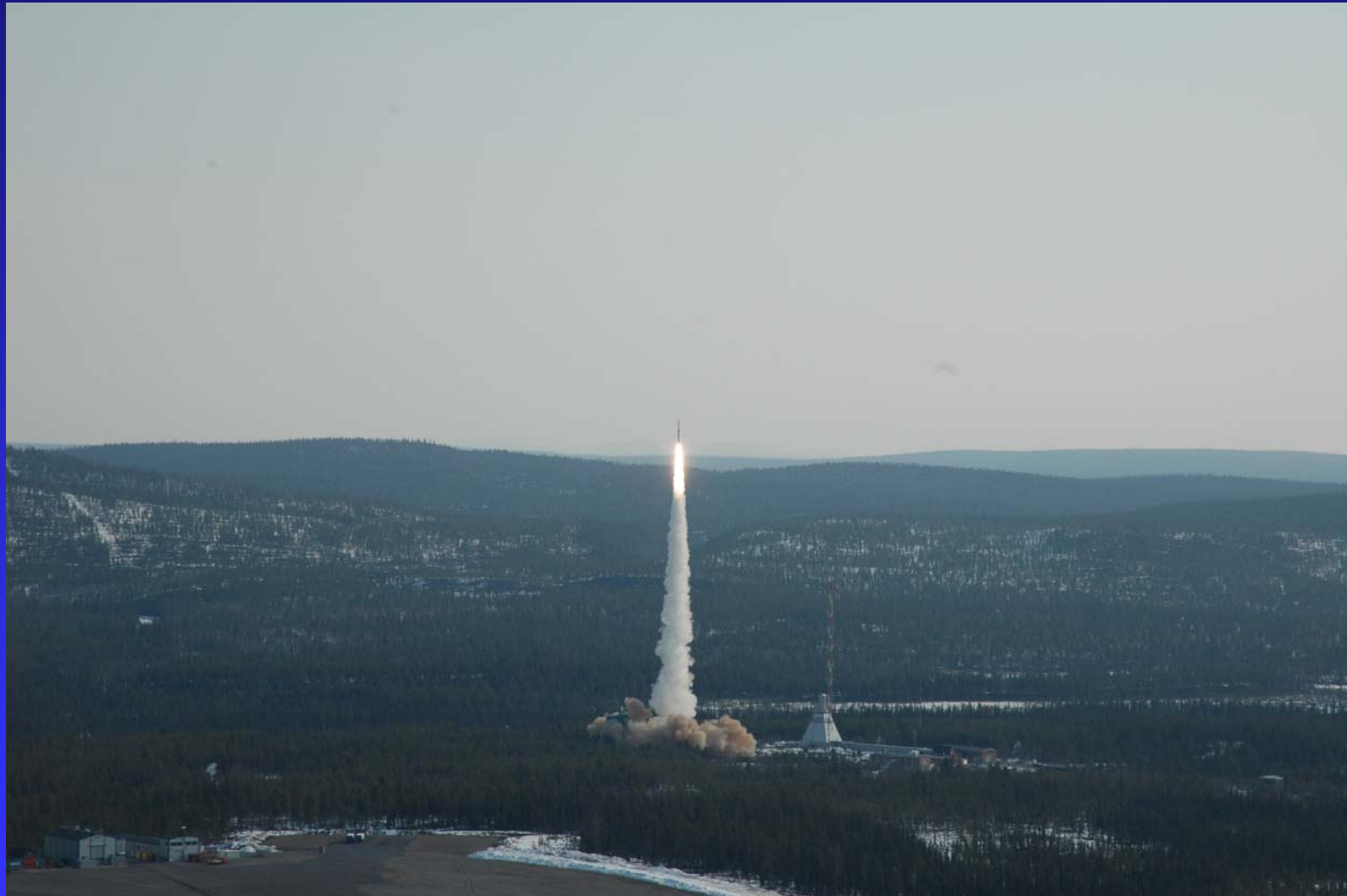
Some very essential questions ...

- Is the Swedish explosives sector including the industry, research agencies, public authorities and other interest organizations a too small market for a specialized university education?
- Have the Swedish explosives sector and the Swedish universities the required competence for all necessary explosives courses?
- Can an international co-operation be a way to solve a part of or the whole education problem?

Detection of IED (Improvised Explosive Device) has become a Swedish problem – is our education relevant?



Kommentarer? Frågor?



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Om det finns ytterligare frågor –
tveka inte att kontakta

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