

NEWSLETTER

November 2012



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ATTACHED TO THIS EDITION: *First circular and Sponsorship opportunity of the 7th EFEE world conference on explosives and blasting. Moscow 15-17 September 2013.*

We in EFEE hope you will enjoy the present EFEE-Newsletter. The next edition will be published in March 2013. Please feel free to contact the EFEE secretariat in case:

- You have a story you want to bring in the newsletter.
- You have a future event for the next EFEE-newsletter upcoming events list.
- You want to advertise in a future newsletter.

Or any other matter.

Johan Finsteen Gjødvad, Chairman of the Newsletter Committee and Vice president of EFEE

Corrections to the latest edition of the EFEE Newsletter

Dearest readers; some of our many knowledgeable readers has made the Newsletter editors aware of a typing error in the last edition of the Newsletter. We hereby correct the error. The published text in the last edition of the Newsletter read: *“Albert Armangue and James Tyler showed a film presenting the event and presented the French proposal to take place in September 2012.”*

The correct text should of course be: *“Albert Armangue and James Tyler showed a film presenting the event and presented the French proposal to take place in September 2015.”*

Johan Finsteen Gjødvad, Chairman of the Newsletter Committee and Vice president of EFEE

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EFEE Secretariat,
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Dear EFEE members, the president's voice

I hope you have enjoyed the many golden autumn days which seemed to have prolonged– the end of the year as it draws closer on the edge of summer. November introduces the fourth season – winter. Following this introduction is the latest EFEE newsletter in which we would like to inform you about the current blasting technology developments and events.

The EFEE Board used July's and October's board meetings mainly in preparing for the 7th World Conference on Explosives and Blasting taking place from 15th to 17th September 2013 in Moscow. Together with the National Organization of Explosives Engineers of Russia (NOEE), EFEE has completed organizational preparations for the conference in Moscow. The first circular has been sent to participants of the past conferences and can also be downloaded as a PDF file from the EFEE website www.efee.eu. The information is also attached to the Newsletter. If you are interested in presenting a paper at the conference in Moscow, we kindly ask you to send your abstract to the following address by 31st January 2013: info@efee2013.com. As always, there will also be an explosives trade exhibition accompanying the conference in Moscow. You can make use of this opportunity and present your company, as well as open up new markets for your business. We would be delighted to welcome you as an exhibitor in Moscow: exhibition@efee2013.com. Further information can be found at: www.efee2013.com.

Another important topic at the latest Board as well as during our Council Meeting on 27th October 2012 in Paris was the current status of implementing the EU directives 2008/43 and 2012/4 about Track and Trace of Explosives by the affected companies. The binding dates for implementation are set and determine that manufacturers and importers of explosives must clearly label the respective goods starting on 05th April 2013. All downstream companies transporting, storing and using explosives must record the data from 05th April 2013 onwards and securely file this information for 10 years as well as be able to provide information as to the use of the goods at any time.

Participants of the Council Meeting held on 27th October 2012 had the opportunity to get familiar with two possible solutions for implementing the directives in a company's structures. They were presented by Mr. Frank Ille from the company Dresden Informatik (Germany) and Ms. Ivana Jakubkova from Austin Powder (Czech Republic). The two representatives stressed that companies should provide sufficient resources and time for implementing the directives. To inform the readers of the Newsletter Dresden Informatik and Austin Powder has promised to provide their presentation in the next EFEE Newsletter. A further point of the last council meeting was the work of the Standing Committees. In this context I would like to especially point out the activities of the Shot Fire Committee which will also be mentioned in this newsletter. I wish you a nice time and am looking forward to meeting you at the next Council Meeting and General Assembly which will be held from 26th to 27th April 2013 in Amsterdam.



Jörg Rennert, President of EFEE

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Using blast plane as the basis for planning makes all the difference



*"I sincerely recommend iSURE. Using this tool can easily save up to half a million Euros in just 1 kilometer of tunnel."**

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iSURE is designed for the people on site. Even if it is revolutionary in its approach, it still follows the natural way of thinking. The iSURE uses the most critical location of the round – the blast plane – as the basis for the whole planning process. As a result, hole locations, and thus blasting, are optimized. This means excellent accuracy, fast process and high profile quality. Not to mention large-scale savings. Sandvik – understanding underground.



*Learn more about iSURE at www.understandingunderground.sandvik.com

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Central remote blasting in K+S underground mines

Mining potash and rock salt with drilling and blasting methods is one of the core processes in the K+S Group. The introduction of central remote blasting systems at K+S was forced in the middle of the 20th century comprehensively due to the possible risk of CO₂-salt outbursts in distinct potash mines. The topmost objective is to protect the workers from primary and secondary impacts from blasting by complete pull-out into safe areas during fixed blast periods.

Central remote blasting systems in K+S mines are designed to initiate all connected mine blast circuits with the controller being positioned in great distance (up to 15 km, possibly more) from the firing device which is located close to the blast site (50 m e.g.).

Mining activities of the K+S Group in Germany

In Germany the K+S Group is operating 6 potash mines and 3 rock salt mines. The yearly mine output is approx. 40 M metric tons. In the conventional mining cycle with drill and blast K+S is operating approx. 200 drill rigs and 80 explosives loaders.

The geology of the potash mines in the Werra/Fulda mining district is determined by secondary volcanism. This leads to a general risk from inducing CO₂-salt outbursts by blasting in certain mining areas. The safety concept is to pull out all personnel into safe areas during the fixed blasting periods. Due to organisational reasons and travelling distances of up to 15 km between the shafts and the working faces blasting is conducted during the shift changes in large mines. All blasts are fired from a central point either located on surface or underground.

Layout of modern central remote blasting systems

While remote power line initiation in Germany was first reported in 1909, central remote blasting systems are widely used in German potash mines since 1956. The command unit resp. the ripple control unit is docked to the according electrical underground power net.



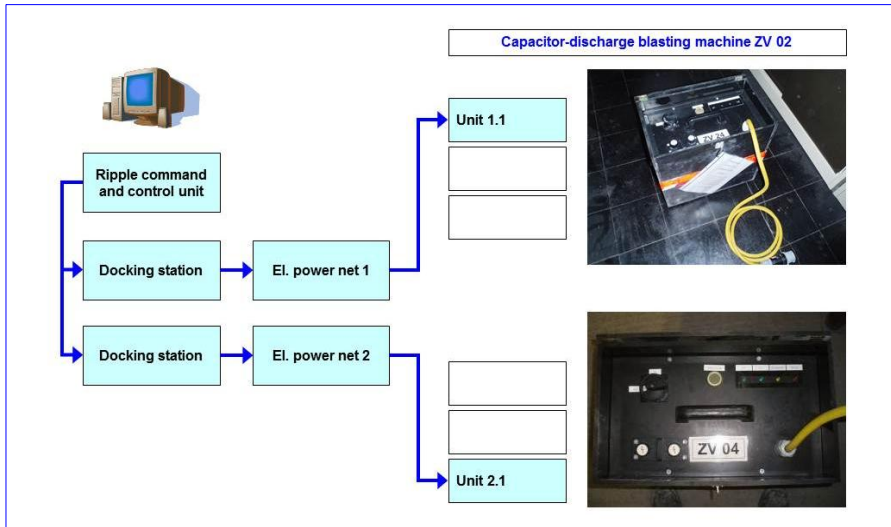
A ripple command and control unit underground with key lock and password protection, and the according docking station.

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From here the safety-coded commands for initiation readiness and the actual blast sequences are sent to the units. The allocation of this installation is also possible on surface.

Capacitor-discharge blasting machine ZV 02

The blasting unit ZV 02 (Zündverteilung 02) is a special firing device for central remote blasting in potash mines. The development started in 1999 as has run through several technical optimisation stages. Figure 2 shows the scheme of a central remote blasting system, the ZV 02 units are used mobile at the blast sites.

The ZV 02 is designed to initiate circuits with electrical detonators of German U-Type classification with 950 Ohms resp. 1,200 Ohms of series resistance. The high impact strength case is equipped with an additional lid, the protection category is IP 54, the mass is 21 kg, and power supply is 500 V AC. The ripple control receiver is designed for double DECABIT signals, representing a very high safety standard. The internal control technology consists of two different PLC; all safety related switching operations must be authorized by both PLC. Respecting safety aspects the design is partially redundant with diverse redundant components.

The blasting unit supplies sufficient initiation energy from a powerful capacitor to the circuit, there are units with 2,000 V and 2,400 V DC output in operation. By introducing the ZV 02 unit it was possible to replace the old type central remote blasting systems partially using separate extensive lead-in line installations with multiple switches, which were safe but technically unreliable. ZV 02 represents the state of the art in safety aspects. Energy supply and signal transmission take place over the stationary power net, which is available mine-wide. The high reliability compared to older systems is realised by the special electronic components.

With the ZV 02 unit there normally is no need for parallel circuits, the single series circuit helps to avoid misfires from low currents due to human error in the blast circuit design. In midterm it is planned to design the next generation ZV 03 for K+S adapting to the latest technical and safety standards and considerably reducing the weight of the unit, which is handled manually at the blast site.

Summary

Since the first application of a central remote blasting system more than 100 years ago the systems have been constantly developed. Safety of personnel has always been top priority for K+S

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especially in protection against primary and secondary risks during blasting. For certain mines central remote blasting systems are essential – in particular for the potash mines with the risk of CO₂-salt outbursts. But also other mines can profit from the safety, technical, and economic advantages.

In the smaller rock salt mines there are systems with conventional capacitor-discharge blasting machines and one older central remote blasting system with separate lead-in wires and switches. In the potash mines central remote blasting system is a standard.

The use of ripple control systems with safety-coded transmission of readiness and firing signals is advantageous for mines with long distances and mine-wide branched power nets. The capacitor-discharge blasting machine ZV 02 resp. the follow-up unit is completing the existing central remote blasting systems in the K+S mines in Germany in supplying the best possible initiation energy for electric detonator series circuits.

Dr. Rüdiger Triebel, K+S Aktiengesellschaft, Germany

Blasting of two tower blocks in Copenhagen, Denmark

On 13th May 2012 two tower blocks in Copenhagen were demolished by blasting. This was the biggest building blasting job in Scandinavia until now.

The two concrete buildings, 15 and 13 stories, 14,100 t and 16,500 t, were constructed in 1954 - 1956. Because of outdated design and high cost of renovation, the owner, AAB cooperative housing society, decided in 2006 to demolish the buildings and hired NIRAS for planning and management of the demolition work. The options for demolition: Blasting, crane and ball, long range concrete breaker, deconstruction from the top lifting elements by crane, and demolition from top to top using small machines were assessed with respect to safety, environment protection, cost and time. The result of the assessment showed that the blasting solution was the safest and most advantageous method.



The 13 story Ruskær Building. Picture taken from South East. Free space to the West side of the building should be noticed.

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After tendering procedure the Danish demolition contractor Brandis A/S together with the Scottish blasting company Safedem won the contract.

The demolition work contract started in October 2011 with stripping the buildings and preparation for blasting, scheduled in May 2012.

Blast design

The basic design of the blasting of the two buildings was vertical collapse (implosion) with a slight inclination to the West, where there was free space:

- Blasting in ground floor and two blast floors, respectively 5th and 9th, and 6th and 11th floor.
- Charges were placed in long drill holes in the centre of the walls parallel to the surface.
- Explosive charge 25 - 40 g per meter, detonating cord, PETN
- EXCEL, shock tubes, non-electric detonators, time delay 600 - 2000 ms



Principle of blast design showing the blast floors.



Principles of blast design showing the time delays of blast sequence, from step 1 (600 ms) to step 9 (2000 ms)

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Risks

Whereas there was free space to the West side of both buildings, the nearest neighbouring buildings to the East and South were in a distance between 20 – 30 m. A detailed risk assessment was prepared. The most critical hazards were:

- Vertical collapse of the buildings and damaging the nearby buildings.
- Drop or throw of building parts to the East and damaging nearby buildings.
- Uncontrolled turn down of the gables.
- Risk vibration damage to buildings and installations.
- Dust impact to the environment.

Because of the week construction of the buildings, there was a risk of vertical collapse of buildings instead of a collapse with an inclination towards West. In order to ensure the stability of the “hinge” and the collapse mechanism the building was modelled and the collapse was simulated by the use of LS DYNA 3D software program. The intended collapse of the buildings was proofed.

The gables of the buildings had a monolithic concrete structure. The gables might disintegrate during the blow down and turn down and hit the neighbour buildings. Therefore, the gables were tied to the buildings with wires.



David Sinclair, Safedem, preparing test blasting.



Result of test blasting.

In accordance with the German standard DIN 4150-3 “*Erschutterungen im Bauwesen. Einwirkungen auf bauliche Anlagen*”, 1999, threshold value of 20 mm/s was agreed for vibration velocity.

Experiences from blasting of tower blocks in UK and other countries have shown that dust clouds make risk to the public with respect to panic and fear of pollution. Before blasting of the buildings the buildings have been cleansed for hazardous substances including asbestos, lead and PCB. Therefore, the risk of harmful substances in the dust was eliminated. In order to minimize the risk of panic, detailed information on public behaviour in case of dense dust clouds was distributed by the media before blow down.

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Blow Down

After evacuation of persons living in the neighbour buildings and establishment of the safety zone the trains and roads were stopped. Just after 12 hour the blow down of the first tower block took place successfully.



Blasting of the first tower block

According to appointment with the insurance company the results of the vibration recordings and eventual damages on buildings should be checked before blasting of the second tower block. The recorded vibrations were lower than 20 mm/s and no damages were observed. The next blasting followed shortly after and was also successful.

Total amount of explosives provided by Orica Mining Services A/S Denmark:

- 3500 m detonating cord
- 60 kg explosives, 30 kg per building
- 14000 m EXEL shock tubes, 7000 per building
- 1600 charges, 800 per building

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Blasting of the second tower block

Maximum recorded vibration velocity was 10,2 mm/s in a distance of 12 m and 4,55 mm/s in a distance of 22 m. No damage was reported or registered after the following inspection.

Erik Krogh Lauritzen and Johan Finsteen Gjødvad, NIRAS, Denmark

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7th EFEE World Conference, 15 - 17 September 2013 Moscow

The EFEE World Conference has established itself as one of the key explosives forums both in Europe and Internationally. Our previous conferences held in the past years each attracted more than 500 delegates from over 50 different countries.



The conference includes technical sessions, an exhibition, educational workshops, welcome drinks reception, gala dinner and partner programme. The event will draw attention from explosives users, manufacturers of explosive and equipment for drilling operations, researchers and professionals involved in construction and mining industry.

The aim is to bring together those whose disciplines are explosives and blasting techniques. The conference will provide us with an excellent forum to share the latest developments and technical practices combined with a fantastic opportunity to network with specialists throughout the world.

The conference will focus on practical papers on the following themes:

- Demolition
- Blast casting
- Mining in arctic conditions
- EU Directives and Harmonisation Work
- Health, Safety and the Environment
- Technical Development
- Shot Hole Development
- Blasting Covering Experiences from Projects
- Clearance & Decontamination
- Management Covering Blast Design
- Explosive Detection for Security
- New Applications & Training

There will be an exhibition held in parallel with the conference. The exhibition will provide an ideal opportunity for users of explosives, consultants, suppliers and manufacturers to demonstrate their latest developments to a wide cross section of the industry.

For more information please refer to the attached information to this Newsletter "*First circular*" and "*Sponsorship opportunity*".

Looking forward to see you all in Moscow in 2013.

Johan Finsteen Gjørdvad, Vice president of EFEE

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EFEE Shotfire Workshop in prior to the council and AGM, 24-25th April 2013 Amsterdam

The ESSEEM project, supported by EFEE both by free work and funding, has ended successfully.

Now the time has come to present to the members of EFEE the work done. The presentation will be held as a workshop prior to the EFEE next council and AGM in Amsterdam Holland. All EFEE member nations are asked to send their respective expert in education of shotfire to the workshop.

The workshop will be held the 24-25th of April 2013 while the EFEE council and AGM meetings are held 26th and 27th April 2013.

Furthermore, the workshop will work as the kick-off of the new LdV (Leonardo da Vinci) project of developing a training course for shotfires. The project will, as the ESSEEM project, work as yet another milestone on the road of the long term goal of developing a pan-European education accepted in all the member countries.

An official invitation will be sent out to the EFEE member nations prior to the meeting. Questions to the workshop should be sent to the Norwegian delegation to EFEE Mr. Karl Kure (karl.kure@norgespost.no) or Mr. Vegard Olsen (vegard.olsen@orica.com).

Johan Finsteen Gjødvad, Vice president of EFEE

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New EFEE members

EFEE likes to welcome the following Members who recently have joined EFEE.

Company Members

Sandvik Mining and Construction OY
FINLAND

<http://www.miningandconstruction.sandvik.com/fi>
<http://www.sandvik.com/>

Sandvik Mining and Construction Oy is part of the Sandvik Group.

Sandvik Group is a global industrial group with advanced products and world-leading positions in selected areas – tools for metal cutting, equipment and tools for the mining and construction industries, stainless materials, special alloys, metallic and ceramic resistance materials as well as process systems.

In 2011 the Group had about 50,000 employees and representation in 130 countries, with annual sales of nearly 11 Billion Euros.

Austin Powder Slovakia s.r.o.
SLOVAK REPUBLIC

<http://www.austinpowder.sk/>
<http://www.austinpowder.com/>

Austin Powder Slovakia s.r.o. is part of the corporation Austin Powder Company, Cleveland, Ohio, USA. Austin Powder Slovakia s.r.o. is a reliable supplier of explosives, detonating system and maintenance services for blasting.

- Distribution of civil explosives
- Storage of explosives
- Blasting operation (surface and underground)
- Production of onsite bulk emulsion explosives
- Blast design
- Vibrations measurements
- Transport of dangerous goods (ADR class 1 - explosives)

Individual Members

John Keating, CRH, Ireland

Alexander Baliktsis, Exorixi s.a, Greece

Giacomo Nardin, Geologico of Giacomo Nardin, ITALY

Doru Anghelache, EPC EXPLO ROMANIA S.R.L., ROMANIA

Richard Green, IndEx Independent Explosives Engineers Ltd., UK

Michael Cechanski, STT SURFEX TECHNOLOGY AND RADING, AUSTRALIA

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Blasting technology

- Basics of general field blasting technology and agricultural and forestry blasting
- Basics of tunnel and underground blasting
- Special courses for Blasting of building constructions
- Special courses for Large hole blasting
- Special courses for Blasting in hot materials
- Special courses for Ice blasting

Pyrotechnics for technical purposes

- Basic courses for handling pyrotechnic articles for technical purposes – except their production (airbag/belt pretensioner etc.)

Pyrotechnics for outdoor and indoor

- Basic courses for the use of pyrotechnic articles (outdoor fireworks)
- Basic courses for the handling pyrotechnic articles in theatres and comparable locations – except their production (stage-fireworks, indoor fireworks)
- Special courses for handling explosives in TV- and movie productions- except their production (SFX Special Effect Course)

Explosive ordnance disposal (EOD)

- Basic courses for supervisor of Explosive Ordnance Disposal
- Special courses for ammunition of the former Warsaw Pact
- Special courses for world-wide demining
- Courses on detection of mines and unexploded ordnances for demining staff

Civil engineering/Building devices

- Basic course on demolition
- Course on gaining special knowledge on demolition, re-development and re-construction of cement-asbestos-products (TRGS 519)
- Course on preparation for dismantling contaminated old industrial buildings
- Course for safety and health coordinators on construction sites

Engineering Consultation

- Blasting Technology
- Pyrotechnics
- Explosive ordnance disposal (EOD)

Research and development

Blasting Technology



Pyrotechnics



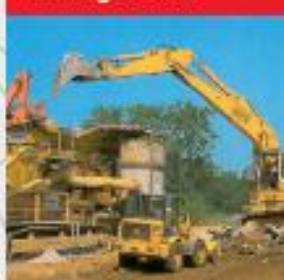
Explosive ordnance disposal (EOD)



Civil engineering and consulting



Building devices



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The art of successful blasting



INFRA monitoring system

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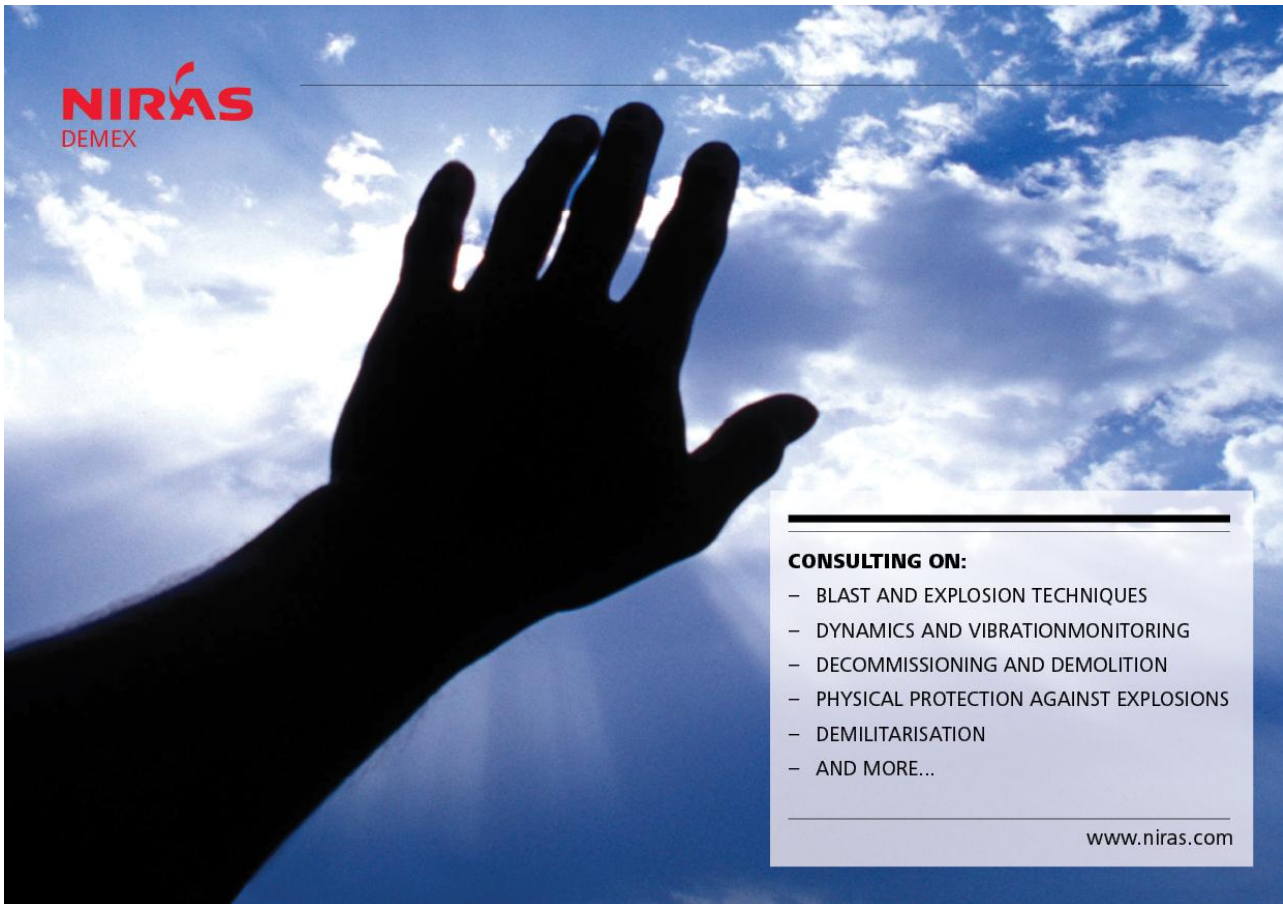
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Upcoming events

2012	Nov 24-29	FRAGBLAST 10, http://www.fragblast10.org	New Delhi, India
	Nov 24-29	Russian National Conference held together with FRAGBLAST	New Delhi, India
2013	Feb. 10 - 13	ISEE 39 th Annual Conference on Explosives and Blasting Technique http://www.ISEE.org/	Omni Fort Worth Hotel in Fort Worth, Texas USA
	Mar. 7	Demolition Conference, http://www.khl.com/	Istanbul Turkey
	May 5-8	CIM Conference & Exhibition, www.cim.org	Toronto, Canada
	May 31- Jun 7	World Tunnel Congress 2013, www.wtc2013.ch	Geneva Switzerland
	Aug. 11-15	23 rd World Mining Conference & Expo, www.wmc-expo2013.org	Montreal Canada
	Sept.15-17	The 7 th EFEE World Conference on Explosives and Blasting http://www.EFEE.eu/	Moscow, RUSSIA
2014	May 9-15	World Tunnel Congress 2014, www.wtc2014.com.br	Iguassu Falls, Brazil



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