Technical Papers

<table>
<thead>
<tr>
<th>Topic</th>
<th>Paper Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blast Vibration and Seismology</td>
<td>In-situ measurement of wave propagation in water for deep cavern mining with surface blast vibration monitoring&lt;br&gt;Kihammar, E., Eriksson, L., and Nyberg, M.</td>
</tr>
<tr>
<td>Health, Safety and Environment</td>
<td>Development of a nation-wide model for the estimation of road dust production from road works&lt;br&gt;Wolter, A., and Pilcher, J.</td>
</tr>
<tr>
<td>Quarry Experience</td>
<td>Characterization of blast damaged rock for the production of fractionated products&lt;br&gt;Steffens, M., and Ebeling, M.</td>
</tr>
<tr>
<td>Construction Blasting</td>
<td>Dynamic analysis of a mechanical mining system&lt;br&gt;Kakrosh, M., and Aghdam, M.</td>
</tr>
<tr>
<td>Extraction of contiguous seam and overburden using through seam blasting technique&lt;br&gt;Wagner, J., and Schönhoff, M.</td>
<td>500.00</td>
</tr>
<tr>
<td>Blast Design Management</td>
<td>Development of a new hybrid explosive for the mining industry&lt;br&gt;Buchholz, T., and Ebeling, M.</td>
</tr>
<tr>
<td>New Applications and Training</td>
<td>Development of an online training course for employees in the mining industry&lt;br&gt;Müller, A., and Schönhoff, M.</td>
</tr>
<tr>
<td>Mining Technology</td>
<td>Optimization of cut and fill algorithm for open pit mining&lt;br&gt;Steffens, M., and Ebeling, M.</td>
</tr>
<tr>
<td>Construction Blasting</td>
<td>Development of a new mechanical mining system&lt;br&gt;Kakrosh, M., and Aghdam, M.</td>
</tr>
<tr>
<td>Quarry Experience</td>
<td>Characterization of blast damaged rock for the production of fractionated products&lt;br&gt;Steffens, M., and Ebeling, M.</td>
</tr>
</tbody>
</table>
Exhibitors
The conference includes a large exhibition, taking up 1000 metres squared. The exhibition will display and promote the latest innovations in technology, environmental issues and more. The total list of exhibitors is available on our website.

If you are interested in becoming a sponsor or exhibitor please visit www.efee2017.com

Venue Information
The 2017 EFEE conference includes welcoming receptions, technical presentations and exhibition and take place at The Brewery Conference Centre in Winterviken, the Alfred Nobel’s incredible Winterviken factory.

For further information please visit www.efee2017.com.

Accommodation
The conference venue has been secured at The Stockholm Skansen. The Stockholm Skansen Skansen is located in the top Sidudden area of Stockholm, with fantastic views over the water and Old Town. For additional information, contact www.stockholmskansen.se, www.stockholmskansen.se, or www.stockholmskansen.se (excluding tax).

Welcome Drinks Reception
The welcome drinks reception marks the opening of the conference, and will take place on the evening of Sunday 10 September at The Brewery Conference Centre in Stockholm. The welcome drinks reception will be served around the exhibition hall. The list of exhibitors is available on our website.

To view the timetable or place your booking please visit www.efee2017.com.

Guided Bicycle Sightseeing Tour
Guided tour by bike where you will experience Stockholm from its most beautiful side. See the city’s stones, green, gardens, landmarks and viewpoints. During the bicycle tour you will also visit the Old Town and Skansen also participate in a site visit to the biggest road construction project in Sweden – E4 The Stockholm bypass – Földhålet Stockholm.

For further information please visit www.efee2017.com.

Tickets are available to purchase through the registration process.

On-Site Hotel
The 2017 EFEE conference including welcome reception, technical presentations and exhibition will take place at The Brewery Conference Centre in Winterviken, the Alfred Nobel’s incredible Winterviken factory.

6.50pm
End of conference and exhibition.

Wednesday 13 September 2017
08.00 – 10.00 Conference Registration – The Brewery Conference Centre
08.00 – 10.00 Technical Sessions – The Brewery Conference Centre
09.00 – 10.00 Exhibition – The Brewery Conference Centre
12.00 – 13.30 Lunch
13.30 – 14.30 Welcome Drinks Reception and Opening Speeches – The Brewery Conference Centre
15.30 – 16.00 Welcome Drinks Reception and Opening Speeches – The Brewery Conference Centre
Monday 11 September 2017
08.00 – 12.00 Conference Registration – The Brewery Conference Centre
08.00 – 10.00 Technical Sessions – The Brewery Conference Centre
09.00 – 10.00 Exhibition – The Brewery Conference Centre
12.00 – 13.30 Lunch
13.30 – 14.30 Welcome Drinks Reception and Opening Speeches – The Brewery Conference Centre

Sunday Workshop
In the first time of EFEE Conference History the workshop will include a trip visit to the biggest road construction project in Sweden – E4 The Stockholm bypass – Földhålet Stockholm.

This essential new section of Stockholm network is 21 km long and involves 14 km being being dug underground, to reduce the impact on the environment. The section includes a huge amount of digging and blasting work using the very latest research and technology.

After this superb visit we will have the unique opportunity to discuss the project with the client, contractors and consultants including key areas of the design, environmental impacts and challenges in blasting and more.

Further information surrounding the project is available by contacting

www.stockholmskansen.se

Further information surrounding the project is available by contacting

www.stockholmskansen.se

Welcome Drinks Reception
The welcome drinks reception marks the opening of the conference and will take place on the evening of Sunday 10 September at The Brewery Conference Centre in Stockholm. The welcome drinks reception will be served around the exhibition hall. The list of exhibitors is available on our website.

To view the timetable or place your booking please visit www.efee2017.com.
Exhibitors
The conference includes a large exhibition, taking up 1000 metres squared. The exhibition will display and demonstrate the latest developments across the industry. Areas covered include explosives, consultants, suppliers and manufacturers. All lunches and coffee breaks will be served at the exhibition hall. The list of exhibitors is available on our website.

If you are interested in becoming a sponsor or exhibitor please visit www.efee2017.com/registration.

Venue Information
The 2017 EFEE conference includes welcoming receptions, technical sessions and exhibition and a series of talks by experts in the field. The venue is situated in the beautiful city centre.

Sunday Workshop
In the first ever EFEE Conference History the workshop will include a visit to the biggest road construction project in Sweden - E4 The Stockholm bypass – Földal Stockholm.

This essential new section of Stockholm network is 21 km long will involve over 12 km being built underground, to reduce the impact of traffic congestion. The workshops will take a look at the huge amount of drilling and blasting work using the very latest research and technology.

After this superb visit we will have the unique opportunity to discuss the project with the client, contractors and consultants including key areas of the design, environmental impact challenges in drilling and much more.

Further information surrounding the project is available by contacting:

Johan Finsteen Gjødvad
Jari Honkanen
Roger Holmberg
José Carlos Gois
Jörg Rennert, German

Guided Bicycle Sightseeing Tour
Guided tour by bike where you will experience Stockholm’s main attractions and see some of the city’s most beautiful sites, including the original small islands of the city’s earliest settlements.

Start at the centrally located City of Stockholm tour desk at the Hotel Nobis, Slussen and the tour will end at the Nobel’s incredible Winterviken factory. Experience the beginning of the blasting industry by visiting Alfred Nobel’s factory, a superb building that dates back to 1891 with wooden interiors, research and technology.

For further information please visit www.efee2017.com/registration.

Accommodation
The Stockholm Slussen Bladen has been secured as the EfEE Stockholm Skaven.

The Stockholm Slussen Bladen is located in the top Birdseye area of Stockholm, with fantastic views over the water and Old Town. Facilities include two restaurants, Eken Bar, complimentary WiFi, fitness centre, a selection of rooms and suite by view.

The hotel also has a short (10 minute) walk from the EfEE conference venue in Stockholm.

For more information please visit www.efee2017.com/registration.

Welcome Drinks Reception
The welcome drinks reception makes the conference and will take place on the evening of Sunday 10 September 2017 and will include a glass of drinks at the reception. The venue is E4 The Stockholm bypass.

The cost to participate is SEK 225.00 for EFEE members and SEK 350.00 for non-members (excluding tax).

Dinner
Experiences the beginning of the blasting industry by visiting Alfred Nobel’s incredible Winterviken factory.

The evening will transport you back in time to the engineering of the industry, with a treat in the incredible Swedish innovator and chemist, Alfred Nobel. The dinner will take place at Winterviken, Alfred Nobel’s factory, a superb building that dates back to 1891 with wooden interiors, research and technology.

The evening includes a presentation encompassing the history of the building and Alfred Nobel’s innovative factory, a Swedish menu paired with local wines prepared by one of Sweden’s most renowned chefs - Markus Aujalay and Nihal Trieman.

The cost to participate at this magnificent experience is SEK 1,100.00 (excluding tax). Places are limited and only available through the registration process.

Activities
Open Top Bus Tour
Hop-on and off as many times as you like. The ticket is valid for two days and includes a complimentary sightseeing tour of central Stockholm. Continuously manned by a top guide deck seat can be booked in advance for extra comfort during the sightseeing tour.

To see the timetable or place your booking please visit www.efee2017.com/registration.

Guided Bicycle Sightseeing Tour
Guided tour by bike where you will experience Stockholm’s main attractions and see some of the city’s most beautiful sites, including the original small islands of the city’s earliest settlements.

Start at the centrally located City of Stockholm tour desk at the Hotel Nobis, Slussen and the tour will end at the Nobel’s incredible Winterviken factory. Experience the beginning of the blasting industry by visiting Alfred Nobel’s factory, a superb building that dates back to 1891 with wooden interiors, research and technology.

For further information please visit www.efee2017.com/registration.

Old Town and Riddarholmen Tour
Experience a 2 hour guided walk through parts of the Old Town, Riddarholmen and the Gamla Stan.

This tour will include a visit to the island of Riddarholmen, Grants, Storkyrkan and the Riddarholmen Palace.

Limited space, Language: English. Tours depart daily from Stockholm Central Station.

Tour length: 2h. Meeting Point: Stockholm, Tour Old Town, Private Price: 350 SEK

Booking is available on the Stockholm Our Way website.

Visit www.stockholmourway.com for more information.

More recently Stockholm has become famous for its social media, food and wellness and famous summer music festivals.

For further information please visit www.stockholmourway.com.

Travel by Air
Stockholm Arlanda Airport, located North of Stockholm, serves as a base or departure for many international flights.

Tickets cost circa 280 SEK each way.

Travel by Public Transport
Public transport is relatively inexpensive and useful for navigating the city’s islands and historical sites. The fastest way to get around by metro, which covers most of the city.

Stockholm Information
Stockholm is Sweden's capital city and the centre of its culture, media and economy. This beautiful city is of course referred to as ‘the Venice of the North’ on the city is spread across 14 coastal islands.

Stockholm is the home of Alfred Nobel and the birthplace of the Nobel Prize. In 2010 the city was granted the European Green Capital Award in recognition of it being one of the cleanest capitals in the world.

Stockholm was first recognised as a city in 1252, although it is believed to have been a settlement since the Stone Age. The city’s original small islands of the city’s earliest settlements.

Stockholm is of course the home of Alfred Nobel and a thriving blasting industry which will be taking full advantage of during the conference programme.

More recently Stockholm has become famous for its social media, food and wellness and famous summer music festivals.

For further information please visit www.stockholmourway.com.

IPVST NJOVUFT GSPN 1BSJT
Exhibitors

The conference includes a large exhibition, taking up 1000 metres squared. The exhibition will display and demonstrate the latest developments across the industry. Areas covered include explosives, suppliers, consultancies and manufacturers. All lunch and coffee breaks will be served around the exhibition hall. The list of exhibitors is available on our website.

If you are interested in becoming a sponsor or exhibitor please visit www.efee2017.com

Venue Information

The 2017 EFEE conference includes welcome receptions, technical presentations and exhibition as well as the gala dinner and inspection visit to the biggest road construction project in Sweden – E4 The Stockholm bypass – Förbifart Stockholm.

The Brewery is one of the most reputed in the capital, with over 100 years of history, famous chefs - Markus Aujalay and Stefan Engqvist, and a selection of rooms and superb city view.

The Brewery Conference Centre

The Hilton Stockholm Slussen is located in the hip Södermalm area of central Stockholm, offering beautiful scenery. The facility includes two restaurants, Eken Bar, complimentary WiFi, fitness centre, a selection of rooms and superb city view.

Welcome Drinks Reception and Opening Gala

The evening will transport you to the beginnings of the industry with a look at the incredible Swedish innovator and chemist, Alfred Nobel. The dinner will take place at Winterviken, Alfred Nobel’s former residence, with the building and Alfred Nobel’s association, a luxurious Swedish fitness centre, a selection of rooms and superb city view.

Welcome Drinks Reception

The welcome drinks reception makes up the opening of the conference and will take place on the evening of Sunday 10 September, at The Brewery Conference Centre. The welcome drinks reception will include a selection of drinks, light snacks, and music. Tickets can be purchased for partners at SEK 300 (excluding tax).

Gala Dinner

Experience the beginning of the blasting industry by visiting Alfred Nobel's incredible Winterviken facility.

The evening will transport you to the origins of the industry with a tour of the incredible Swedish innovator and chemist, Alfred Nobel. The dinner will take place at Winterviken, Alfred Nobel’s facility, a superb building that dates back to 1865 with wooden beams, brass and beautiful features. The evening will include a presentation encompassing the history of the building and Alfred Nobel society. A来了晚餐 menu served with local wines prepared by one of Sweden’s most required chefs - Markus Aujalay and Stefan Engqvist with Swedish entertainment. 

Entry includes:

Welcome drinks, 3 course meal, wine, coffee and entertainment.

The cost to participate is SEK 1,100 (excluding tax).

Additional cost to subscribe to the Gala Dinner:

The cost to participate is SEK 1,100 (excluding tax).

Tickets are available to purchase through the registration process.
Rates

Early Bird Discount valid between 15 July and 31 August

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference registration for EFEE Members</td>
<td>kr. 1,650.00</td>
</tr>
<tr>
<td>Conference registration for EFEE Members (individual) and those applying for EFEE Membership</td>
<td>kr. 2,500.00</td>
</tr>
<tr>
<td>Conference registration for EFEE Members (additional registrations per membership)</td>
<td>kr. 1,450.00</td>
</tr>
<tr>
<td>Conference registration for EFEE National Members (one discounted registration, per membership)</td>
<td>kr. 1,950.00</td>
</tr>
<tr>
<td>Conference registration for EFEE National Members (additional registrations per membership)</td>
<td>kr. 1,450.00</td>
</tr>
<tr>
<td>Conference registration for EFEE National Members (one discounted registration, per membership)</td>
<td>kr. 1,950.00</td>
</tr>
<tr>
<td>Conference registration for EFEE National Members (additional registrations per membership)</td>
<td>kr. 1,450.00</td>
</tr>
</tbody>
</table>

Registration from 1 August 2017

<table>
<thead>
<tr>
<th>Item</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conference registration for EFEE Members</td>
<td>kr. 2,500.00</td>
</tr>
<tr>
<td>Conference registration for EFEE Members (individual) and those applying for EFEE Membership</td>
<td>kr. 3,500.00</td>
</tr>
<tr>
<td>Conference registration for EFEE Members (additional registrations per membership)</td>
<td>kr. 2,000.00</td>
</tr>
<tr>
<td>Conference registration for EFEE National Members (one discounted registration, per membership)</td>
<td>kr. 2,000.00</td>
</tr>
<tr>
<td>Conference registration for EFEE National Members (additional registrations per membership)</td>
<td>kr. 2,000.00</td>
</tr>
<tr>
<td>Conference registration for EFEE National Members (one discounted registration, per membership)</td>
<td>kr. 2,000.00</td>
</tr>
<tr>
<td>Conference registration for EFEE National Members (additional registrations per membership)</td>
<td>kr. 2,000.00</td>
</tr>
</tbody>
</table>

This price is exclusive of Swedish taxes (typically 25% VAT).

Register before 31st July to take advantage of our early bird packages. Your Student reference number will be required during registration. Any further bookings must be completed at the EFEE National Members rates indicated above.

We are delighted to announce Gold Sponsorship from EPC, Forcit, Lubrizol, Maxam, Orica and Yara and Silver Sponsorship from AkzoNobel, which will enable us to bring several high profile keynote speakers to the conference.

We expect the EFEE 9th World Conference on Explosives and Blasting to host over 500 participants from 50 different countries with a large industry exhibition. This will create a lively atmosphere where you can network, share ideas, meet the latest professionals and exhibitors and develop new business contacts.

At the beginning of my foreword and on behalf of the European Federation of Explosives Engineers – EFEE I would like to welcome all to our ninth edition of the EFEE World Conference on Explosives and Blasting which will take place in the European capital Stockholm, Sweden from 10th – 12th September 2017.

The EFEE President

Igor Kopal
The above rates exclude Swedish taxes (typically 25% VAT).

Any further bookings must be completed at the standard member registration rate.

EFEE Corporate Members and EFEE National Members are eligible for a discounted registration, per membership.

Stabilization of emulsion explosives utilizing optimized co-surfactant systems - Increased efficiency of stemming length, initiation sequence and energy distribution on rock movement and selectivity during a blast

Influenza of stemming length, initiation sequence and energy distribution on rock movement and selectivity during a blast

Explosive cutting of pipelines for the determination of materials properties

Economic losses in pit productivity versus yield from blast development

A new era of Blast Initiation Systems reducing safety risks, costs and enabling automation

A new approach to blasting services contracts

High speed video comparison of non-ideal explosive detonation using cylindrical and rectangular shaped charges

Dynamic response of a defective slope subjected to open-pit to underground mining blasting

Detonation performance of novel hydrogen peroxide and nitrate based hybrid explosives

The development of a new geometrical blast fragmentation model and its application to Grade Engineering

Prediction of blasting damage based on measurement while drilling technique

Improved logistical efficiencies through vertical emulsion pipelines

Controlled blast vibrations on the third set of locks: Panama Canal Expansion Program

Ring blasting modelling and optimisation

Utilization of aerial drones to optimize blast and stockpile fragmentation

Classification of Blast Management Plans: A case study article

Reporting system and database for blasting related incidents – another value adding EFEE project

Best practices guide for urban blasting operations

EU Directives and Harmonisation Work

Steady state performance of dilatant emulsion: Case studies from a Finnish gold mine

Efficient cut and fill blasting using Yara Gravimetric Bombs

Technical Development

A review of the last 15 years research in the field of explosives production and testing software

A review of Blast Initiation Systems regarding safety, costs, and existing alternative

Economic losses in pit drilling versus yield from blast development

High speed laser measurement of explosive initiation and detonation wave propagation

Influence of charging length, initiation sequence and energy distribution on rock movement and selectivity during a blast

Numerical optimisation of the laboratory dynamite charging

Rock blasting with shotcrete optimisation

Any blasting monitoring and optimisation

Reduction of laser extinction utilizing optimized on-harvesting system - increased efficiency

Technical Papers

A range of abstract have been submitted to our technical committee for approval including:

Blast Vibration and Seismology

Explosive Blasting Workshops

Welcome Drinks Reception

Sunday Workshop

EFEE Membership

Rates

EFEE Members

Gold Sponsors

Silver Sponsors

Technical Development

www.efee2017.com