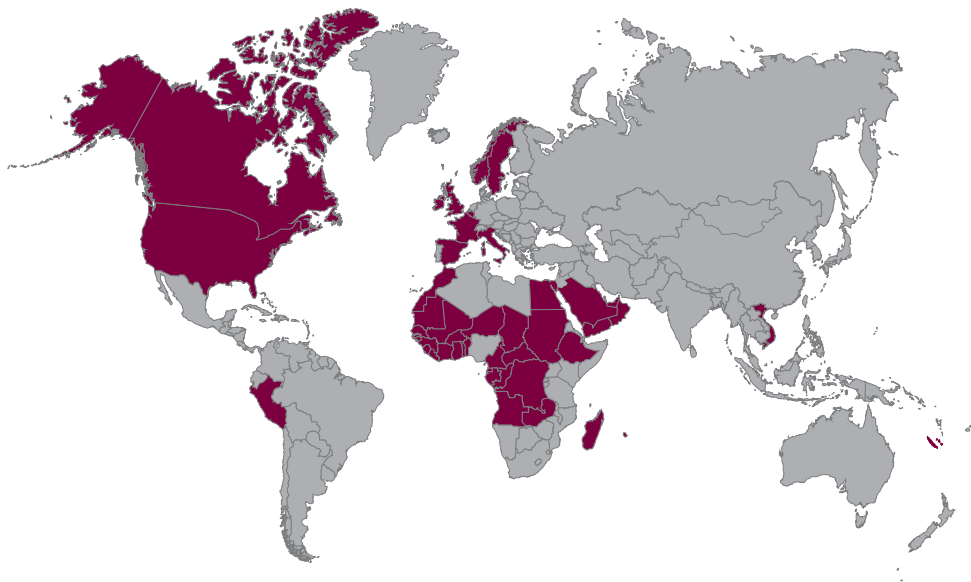




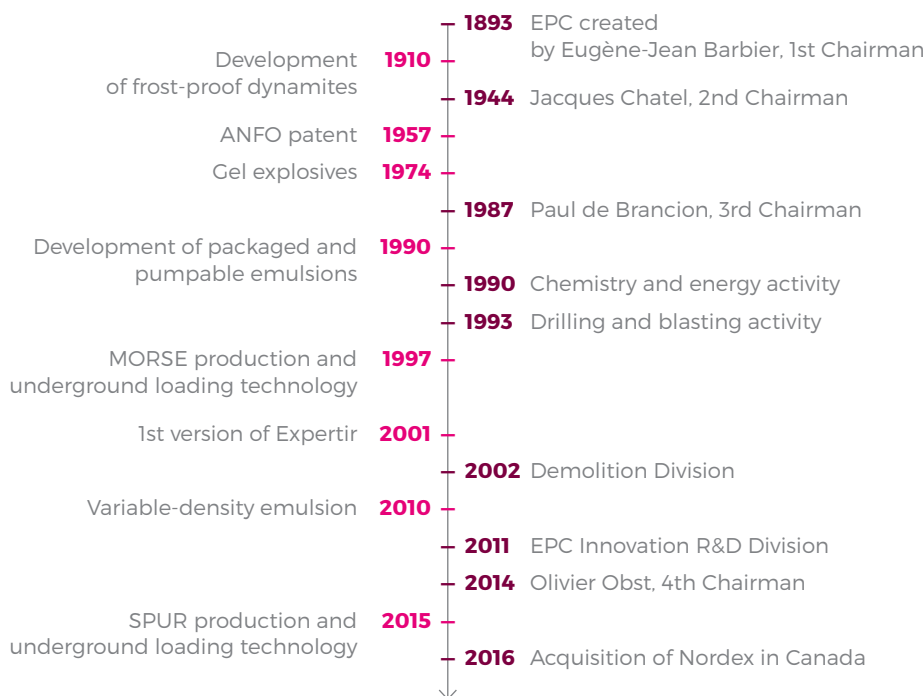
EPC
GROUPE

**Concentrated Energy[®]
underground**

www.epc-groupe.com



A global player in explosives to handle your challenges underground



Revenues of
€ 340 MILLION

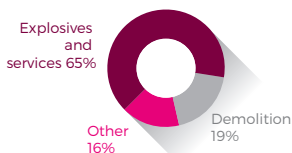
2,000
employees

Consolidated
equity capital of
€ 100 MILLION

R&D
investments of
€ 2 MILLION

Customers in more than
40 countries
and 5 continents

39 subsidiaries
in 21 countries



EPC Groupe has always been present in the underground market sector. The development of this expertise began in the early 20th century in the European iron, coal and gold mines. Later, the excavation of dozens of kilometres of tunnels and galleries needed to create major infrastructures establishing the group's solid reputation among the major construction and engineering players.

A fast-expanding sector is the underground infrastructure projects which facilitates transport and helps to optimize the flow of traffic to and around large cities. A sector in which we play an active part.

The crucial importance of the underground mine in the near future is also undeniable. While demand for metals can only increase under the pressures of urbanisation and technological changes, technologies for in depth extraction are reaching maturity.

In keeping with our corporate history, we want EPC to be a key player in the underground mine of the future.

In parallel, every day on the ground we are seeing an increase in the average cost of extraction due to the reduction in the grades of the deposits available, and the rising costs of energy, raw materials, equipment and labour.

Increasingly drastic regulatory and environmental constraints also impact heavily on costs. Safety and environmental regulations surrounding the use of explosives have never been more significant. More than ever, the optimisation of each link in the production chain is an absolute pre-condition to operational continuity.

In this context, EPC Groupe possesses real assets. With its renowned and long-standing experience in the management of explosives and initiation products, its ability to provide the underground sector with products,

technologies and solutions tailored to each site, and each project, gives our customers a decisive advantage.

The ambition which drive the men and women of EPC Groupe every day, at every location of the five continents is to deliver the best quality whilst observing our first priority: safety.

Olivier Obst
Chairman and CEO



Contents

OUR COMMITMENTS



Safety p. 4 – 5



Environment p. 6 – 7

OUR KNOW-HOW



Production p. 8 – 9



Engineering p. 10 – 11



Logistics p. 12 – 13



Mines p. 14 – 15



Tunnels p. 16 – 17



Integrated solutions p. 18 – 19





Safety first



CLASS 1 PRODUCTS, IN COMPLETE SAFETY

Safety is our priority. With 125 years of experience in the production, storage, transport and application of civil explosives, we have the expertise to handle all explosives-related issues on your site or project. We manage all aspects concerning class 1 products for you. The international context shows that these aspects require professionalism, rigour and the most advanced technologies to minimise risk to the greatest extent possible. One of the success factors lies in reducing the quantity of explosives handled and transported. Our at-face emulsion production and loading technology (SPUR) minimises the presence of class 1 products on the site (boosters, detonators etc.). With EPC Groupe as your single partner managing the safety aspects of your project's explosives needs, you can focus on your priority: your business.

ABSOLUTE PRIORITY

The excavation of two galleries and an inclined shaft in the Sarrans dam, 20 metres from an operational hydroelectric plant, led EPC Groupe to implement specific rules due to the complexity of the site. The procedure involved managing the co-activity of the high/low work phases so as to stay on schedule, while ensuring the operators were never in a situation of danger. Result: a 100% incident-free project awarded a satisfaction score of 9.5 out of 10 by the customer!

"EPC France's management of safety and deadlines in a difficult environment was exemplary."

Renaud Courtet, Head of Civil Engineering Business, EDF-CIH Technical Division

62%
reduction
in accident
frequency rate



60
EPC Groupe Team
Spirit Ambassador
employees





EPC
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Environment



ABSOLUTE RESPECT FOR THE ENVIRONMENT

The strength of EPC Groupe lies notably in its ability to innovate. Our laboratories have developed cutting edge products adapted to the most stringent environmental conditions EPC began developing frost-proof dynamites in 1910. Heirs of this history, EPC Innovation, the group's R&D Division, develops emulsions for our teams and our customers which minimise gas emissions on contact with concrete and the passage of nitrate compounds into groundwater. Our on-site production and loading technologies allow for the strict control of the quantities used, string loading included. The exact quantity of energy at the right place, no more, no less, upholes included. With bulk product loading, we keep the quantity of packaging on the ground to a minimum. The performance of our teams on the ground is governed by procedures based on the most exacting quality and environmental standards.

RECONCILING PRODUCTIVITY & ENVIRONMENT

When excavating the Talant tunnel, part of the Dijon bypass extension in France, major environmental constraints required special care and attention regarding possible contamination of the groundwater. Despite the massive and daily use of a mobile emulsion production unit to ensure the advancement of the project, no deterioration in water quality was detected by the supervisory authorities. Our goal: to guarantee our customers the productivity they expect while never at the expense of the environment.

€2 million
/year
invested in
Research and
Development



> 30 %

reduction in ammonia
emissions thanks to our
new generation emulsion
matrices





EPC
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THIS MACHINE
MUST BE
LOCKED OUT
PRIOR TO
SERVICING



Custom production



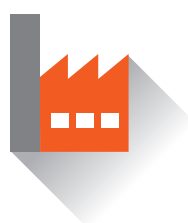
A COMPREHENSIVE RANGE FOR UNDERGROUND APPLICATIONS

With production sites across the globe and logistic flows to more than 40 countries, the group has established itself as a major player in the production of bulk and packaged explosives (including small-diameter cartridges optimised for uphole pneumatic loader) and initiation accessories (boosters, detonators, etc.). The group can therefore offer its customers the full range of explosive and initiation products required for their underground operations, including electronic detonator, all with traceability. The remotest sites or projects benefit from our modular and containerised production solutions, deployable in record time. Our SPUR technology allows for at-face production and the assurance of the quality (density, gasification, microspheres etc.) and the quantity required for the most demanding conditions. In complete safety.

MEETING THE CHALLENGES OF CANADIAN UNDERGROUND MINES

The SCORPION technology, developed by EPC in Canada, is a perfect illustration of adaptation to the most demanding markets. Equipped with a tank with a capacity of more than 5 tonnes of emulsion, the SCORPION can precisely deliver the quantities loaded on a variety of size rounds thanks to a 9.80-metre remote-controlled telescopic arm equipped with a camera. We are therefore able to load holes of more than 40 metres over a 360° slew, affording the operator optimal control of the process while remaining outside the risk zone.

15 explosives & initiation accessory production sites



50% of the group's business

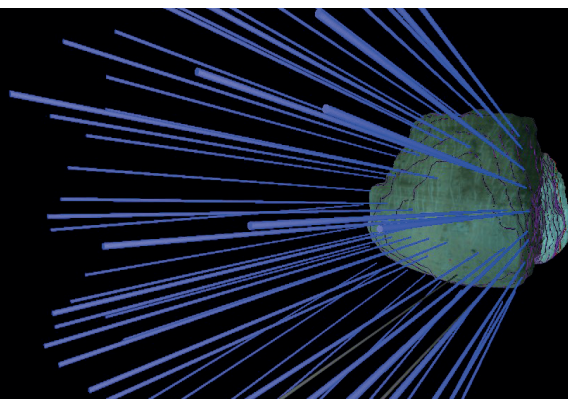




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Results engineering



OPTIMISED ENERGY & BLASTING

EPC Groupe demonstrates its blasting expertise with its EXPERTIR UG® software. The integration of 3D models of the gallery or levels, obtained by photogrammetry, allows for the precise monitoring of the blasting operations with its key parameters: advancement and quality of contour. By compiling geometric information and field data, EXPERTIR UG® provides engineers with everything needed to design a safe blast pattern and adjust the parameters for optimal advancement and contour. All of the blast patterns are integrated into a global topographic model for the continuous monitoring of the blasting activity. Coupled with the intelligent interface of a robotic drilling jumbo, EPC's technology guarantees the scrupulous observance of the blast pattern, loading plan and pre-optimised blasting sequence. We can therefore provide you with a monitoring and control tool for your blasting operations and consequent gains in efficiency. And savings too!

EPC TECHNOLOGY AT THE SERVICE OF SOUTH-AMERICAN MARKETS

With a very dynamic underground market, an EPC office opened in Peru in 2016, as part of a partnership with a renowned local underground drilling and blasting player. EPC Servicios Perú now embodies our world-renowned know-how. Offering the latest technologies and long-standing experience acquired on European, African and North American sites and projects has already made the difference on the Peruvian underground market. An open door to the subcontinent.

2001

First digital simulations using EXPERTIR®



2,500

professionals trained each year





EPC
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Integrated logistics



MANAGEMENT OF THE CLASS 1 LOGISTICS CHAIN

Over the past 125 years, we have accumulated unique experience in the management of class 1 products. EPC Groupe offers its underground customers integrated management solutions handling issues associated with class 1 products for tunnel projects or mining sites. Where applicable, the strictest procedures are applied for the quality control of the bulk products produced on site, the unit traceability of the packaged products (cartridges, initiation accessories etc.) and the management of storage (studies on security, safety, deliveries, inflows and outflows etc.), all across the world thanks to the power of our land/air/sea logistics network (transport routes to the 5 continents, international storage network). Whether mines or tunnels, count on us. We'll handle everything.

TOTAL UNIT TRACEABILITY

Our traceability system is based on a unique identification system for products manufactured in the EU. The integrated solution covers the entire logistics circuit, from leaving the production chain to delivery to the site, including return flows. The solution includes a secure portal, EUROITRACE, where each customer can obtain accurate reports on their orders. **"We have moved from traceability by batch to unit traceability. The project has harmonised and optimised all our logistics processes."**

Frédéric Wszolek, Head of Information Systems, EPC Groupe

60
million
traced logistics
events for Europe



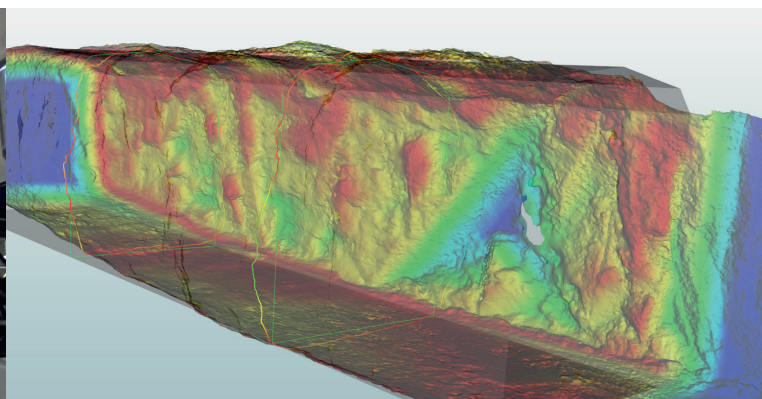
71 warehouses
operational across the world



EPC
GROUPE



Underground mining



MEETING YOUR REQUIREMENTS

For EPC, to serve a customer means firstly listening and adapting to their requirements, integrating itself into their production process and anticipating potential problems. A trusted partner with safety as priority. Having, or specifically developing, the products adapted to their operating system (development, uphole, down the hole etc.) and to the nature of the site (reactive ground, temperatures, gasification). And guaranteeing product availability and ISO quality. Our customers also come to us for our drilling and blasting expertise, a fundamental link in the production chain (control of the mineral dilution, fragmentation, vibrations; impact of the blast on operating costs or the environment). Engineering services which make the difference, at every blast.

A CUSTOM SERVICE

For the Björkdal gold mine (Mandalay Resources) in Sweden, EPC Groupe developed an innovative automated loading system for up holes (30m). The intelligent retraction of the cannula (hose) allowed for the precise dosage of the quantity loaded for each hole of a specially developed emulsion formula (density and viscosity). **"The experienced personnel on the ground worked proactively, meaning problems could be solved before they even became problems!"**

Bo Österstrand, Underground Superintendent at the Björkdal mine, Mandalay Resources

5 underground mines
delivered in Ontario,
Canada

9,500 tonnes
of matrix applied
in Sweden, 4,800 in
up-loading applications



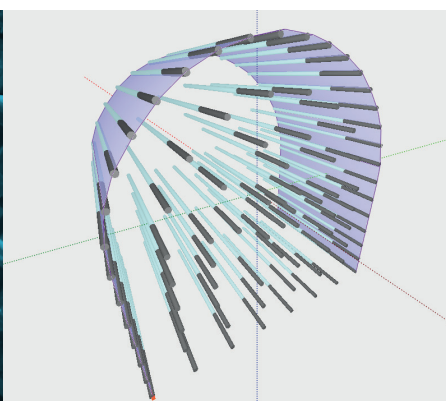


EPC
GROUPE





Your partner in tunnel projects



EXPERIENCE IN THE PARTICULARITIES OF TUNNEL PROJECTS

We put our experience acquired over time on the tunnelling market to the service of our customers, from design of the blast patterns to rock reinforcement. Our tunnel emulsion formulas have been developed to reduce your cycle times (O₂ balance), while our SPUR loading technology doses the necessary energy in order to reduce stress on the rock and achieve a better contour. You reduce your anchoring and concrete coating costs. Down-the-hole production and sensitization drastically reduce the quantity of class 1 products transported, stored and handled. Specially developed formulas minimise the passage of nitrate compounds into groundwater and gas emissions on contact with concrete (-30%). Based on these gains, an integral blast excavation solution: entrusting a key part of your project to specialists to ensure optimal advancement, in complete safety.

ICONIC PROJECTS

As part of the extension of line B of the Lyon Metro, an 18-metre wide and 30-metre deep exit shaft was blast excavated in the Oullins town centre. Besides the observance of the seismic constraints, vehicle and pedestrian traffic flow had to be maintained in the adjacent streets. Another project, this time on a European scale: Lyon-Turin high-speed railway. The big construction and engineering players wanted a trusted partner: EPC. The challenge: to blast excavate the Saint-Martin-la-Porte 4 decline, a 4.5 km structure estimated at EUR 391 million. A total of 900 tonnes of explosives and 180 detonators per round were required.

20 tunnel projects
totalling

40 km

in 10 years



100%

of French tunnels
excavated with bulk
emulsions since 2004

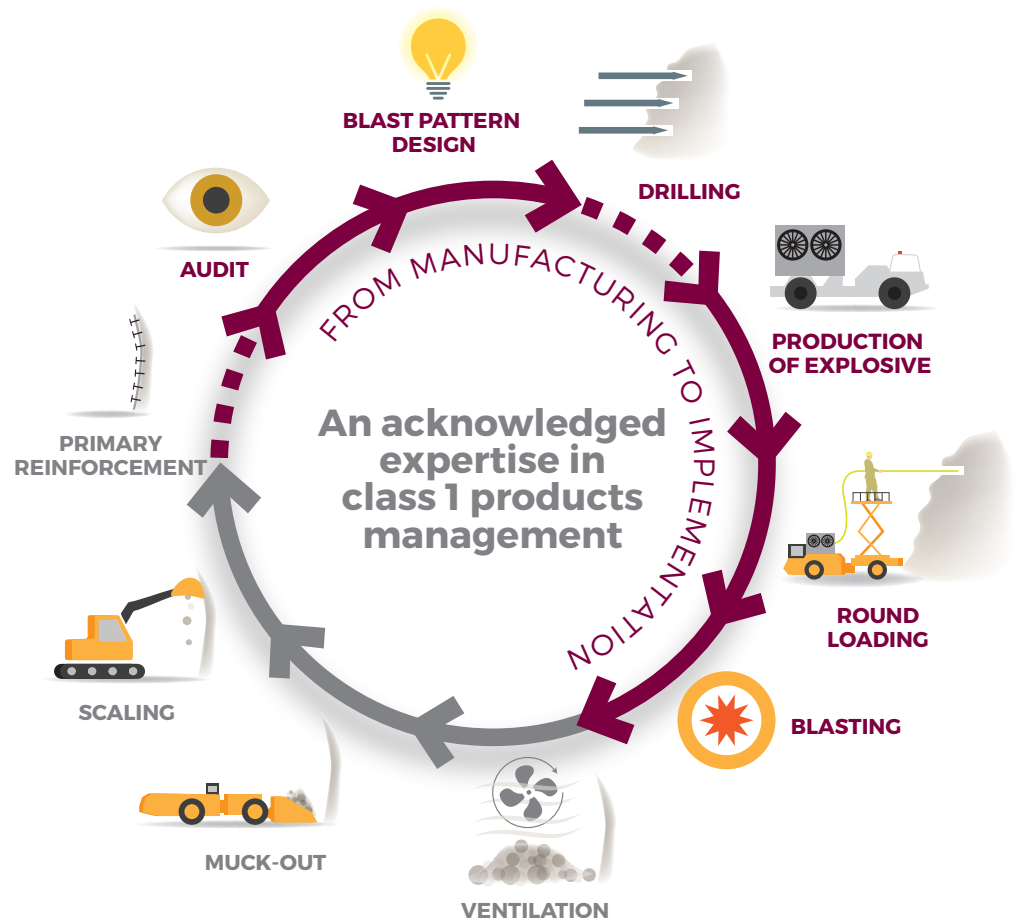




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An integrated solution





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