

EPC FOCUS

Concentrated
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news

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**SPECIAL
EDITION ON
THE DIGITAL
TRANSFORMATION**

CENTRAL THEME

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for explosives, drilling
and blasting**

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EDITORIAL / 2021

This issue of FOCUS takes an in-depth look at a fundamental transformation that has significantly and rapidly changed our methods of collaboration, our working practices and our structure within the EPC Groupe: the digital transformation.

An integral part of our strategic vision for several years and fully convergent with that of our new majority shareholder ARGOS-WITYU, this change has been accelerated by the pandemic.

We have taken this direction with the agility, responsiveness and inventiveness that only a genuine culture of technology and innovation allows. This is a strong marker of our identity which we can be proud of.

Digital now fuels each of the group's functions and continues to take root for ever greater safety, and better performance and productivity to serve our customers. There are many examples.

Augmented reality is involved in the commissioning and maintenance of equipment, while virtual reality enriches our training courses. Automation and robotisation, algorithms and artificial intelligence keep our services at the forefront of the industry.

While the finance department capitalises on the benefits of digital to keep its teams up-to-date, our sales staff are successfully integrating new codes from virtual salons. And, without sacrificing their effectiveness, safety audits and HAZOP studies draw on the strengths of digital technology. Even the Safety Oscars ceremony has been revolutionised!

Data has thus become a crucial issue for the group's resilience and growth. Reorganisation of the ISD and its closer cooperation with the Compliance and Regulation functions embody this ambitious vision for management and for security of this essential asset.

With this rapid and profound digital transition, which lays the foundations for our future, the EPC Groupe did better than resist; it continued its active development, with, over the last six months, new locations in Asia, Africa and Latin America and excellent sales performance, two eloquent examples of which can be found in this issue of FOCUS: the remarkable growth of our activities in Saudi Arabia, thanks to our local subsidiary MCS, and the construction of the Château de François I, Villers-Cotterêts, which once again demonstrates, quite rightly, the adaptability of our Salamander.

Olivier Obst
Chairman and CEO

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Vicki SIMPSON and Ben WILLIAMS

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EPC Groupe - Société Anonyme d'Explosifs et de Produits Chimiques [Explosives and Chemical Products public company] Tour INITIALE - 1, Terrasse BELLINI - CS 70222 - 92935 PARIS LA DÉFENSE CEDEX

CENTRAL THEME



→ Hologens headphones, a means of sharing what we see in real time and allowing our operators to interact... while keeping their hands free!

Commissioning and maintenance: augmented reality and quality

Originally designed to meet the travel constraints associated with COVID-19, the use of augmented reality by EPC Innovation quickly became essential. Explanations.

Initially, Bertrand Pougny and Philippe Dozolme had the idea that our latest communication systems could be used to manage the commissioning of MEMU and modular factories remotely, despite the constraints of social distancing. The first experiments were so conclusive that the strategic challenge quickly became integrated with the pandemic.

"The use of augmented reality allows an engineer to mobilise resources in areas outside his or her field

of specialisation with ease" argues Zohar Benbarek, EPC Groupe Project Manager. Actually, this technology is based on known and controlled tools. Equipped with cameras, microphones, speakers and holographic glasses,

the on-site technician will make the inspection live with a team connected via Microsoft Teams.

REALITY, BETTER

With augmented reality, an engineer can test, train or demonstrate the state and performance of the machine that will be delivered to the customer

without the latter needing to move. The result is a saving of time and money by reducing the number of people

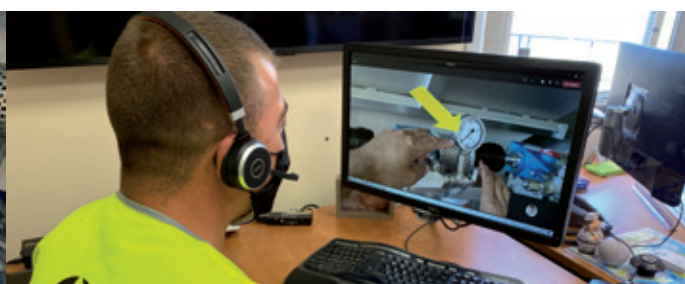
involved. And in the short term a real solution to COVID-19 travel constraints. The engineer can use any relevant document, such as a 3D plan, checklist, photos, diagram, etc. by integrating them into his/her field of vision.

All skills combined for a successful launch!



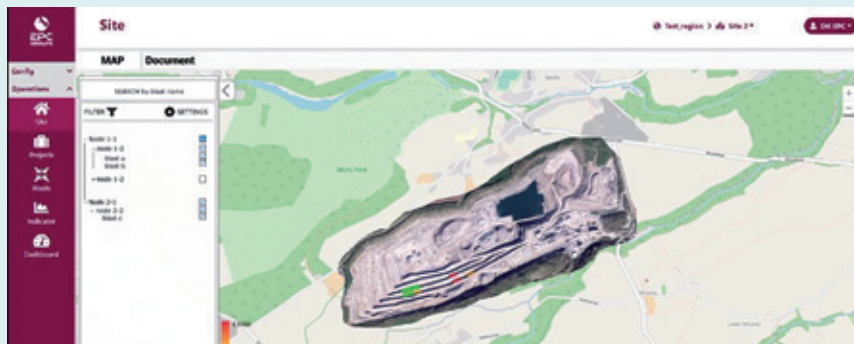
→ Acceptance of facilities or new equipment now requires a good Internet connection!

All while keeping your hands free. Better still, its operators can point to any element by means of an arrow, a circle, etc. Capable of easily bringing together all a project's stakeholders and establishing a constructive exchange, augmented reality brings real added value to standard acceptance and commissioning. It is better to understand why this new tool should very soon also be used for preventive and corrective maintenance within the group. •



→ The on-site view is enriched with additional data shared by all connected users.

VERTEX[®] : open-cast blasting targets summits



→ In September 2021, VERTEX[®] has continued to evolve with a mapping module and visualisation of the pit in order to locate blasts in the space.

"The VERTEX[®] system offers the ability to fully digitise and optimize the entire drilling and blasting process. On EXPERTAB[™], field data, downloadable directly into EXPERTIR[®], for optimal blasting design, is recorded accurately. All data can now be stored on the EXPLORE[™] platform for a comprehensive and detailed analysis of drilling and blasting processes across multiple operations."

Dr Liam Bermingham,
Senior Explosives Engineer,
EPC-UK

A comprehensive IT solution, VERTEX[®] brings together all operations relating to the design, production and supervision of the blast. Objective: to guarantee the highest level of quality for an optimal production process.

The result of extensive experience in drilling and blasting, VERTEX[®] is a constantly evolving software suite. It is structured around three main operations:

- blast design with the EXPERTIR[®] software
- firing with the EXPERTAB[™] tablet application
- supervision with the EXPLORE[™] web platform

Highly "operational control" oriented, VERTEX[®] offers a global approach to blasting capable of adjusting to the specific requirements of each mine. Adaptation of drilling meshes

according to the rock, control of energy distribution, adaptive production of electronic sequences, control of the firing result, backup and monitoring of performance indicators...

Continuous improvement and constant sharing of information

VERTEX[®] combines tools for controlled end-to-end blasting. For continuous improvement and constant information sharing, VERTEX[®] allows

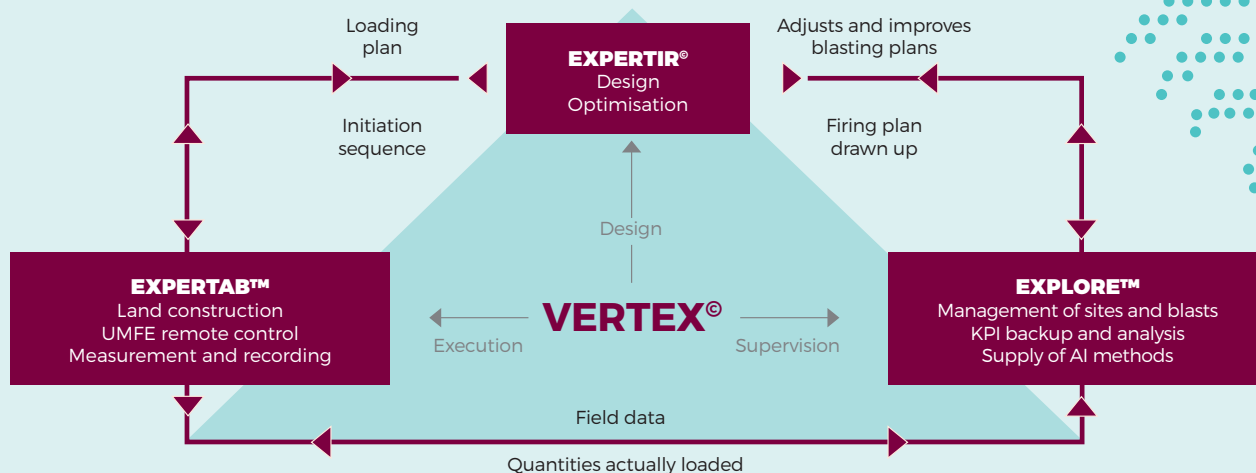
the operator to optimise the results of its blasts and the associated KPIs. •



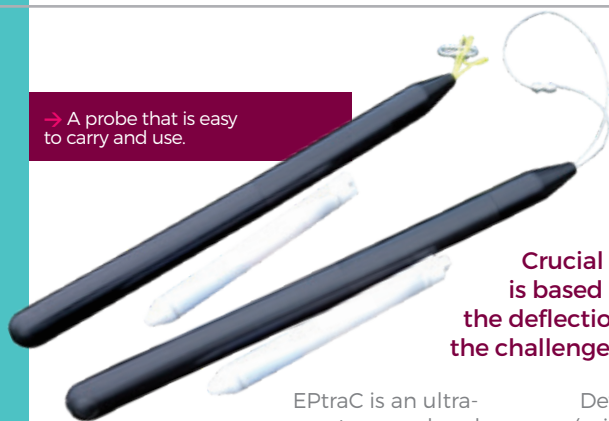
"With EXPERTAB[™], no paper documents are needed to load the explosive. Everything you need is at hand! Once the holes are loaded, the data recorded on the tablet is then transferred to EXPERTIR[®] for the firer and is then the subject of a complete report. This precise and simple monitoring of the different blasting stages saves time and resources."

Daniel Pearson, MEMU Supervisor

A COMPREHENSIVE DIGITAL SYSTEM FOR OPTIMIZING BLASTING



→ A probe that is easy to carry and use.



A probe for more accurate drilling

Crucial in any blasting operation, the quality of the drilling is based on accuracy of the measurements. EPtraC, the deflection probe developed by EPC Groupe, is up to the challenge, hole after hole.

EPtraC is an ultra-compact manual probe (35 cm long by 4 cm in diameter and 290 g) accompanied by an adapter to measure holes of different diameters with no depth limit other than the rope used to lower it! There is no need for a communication cable during the measurement operation: the information is stored in the probe that communicates it when it is brought to the surface via Bluetooth on a dedicated EPC application.

Developed by Jean-François Couvrat (mining development engineer) in collaboration with the group's technical department, this system is intended to be lighter and more flexible than current probes. Its extreme precision was validated by photogrammetric measurements during several tests under real conditions. During industrialisation, the EPtraC innovation will offer EPC a crucial system for all its quarry drilling and blasting services.



→ The manual EPtraC probe is coupled to a dedicated application.

Underground, loading is automated

A true innovation in mechanical and robotic terms, semi-automated loading makes underground blasting operations as safe as possible.



→ Loading the explosive and introducing the detonator remotely!

The EPC Face Charger made its debut in Sweden where it very quickly proved the extent of its potential. From the cab, at a good distance from the blasting front, the operator precisely controls an articulated arm that will help him/her complete the initiation and loading process. Monitors allow him/her to monitor its progress and to adjust the setting up of the detonator and the explosive accurately, from the bottom of the hole to the outside.



→ From a secure environment, the operator controls a robotic arm.

"No more working at height on a cradle or a platform. The operator now works in comfort and safety from the cabin. We are also gaining speed of implementation and efficiency, with the robotic arm making it possible to reach limited access on certain sites" says Per Johansson, EPC Innovation Underground Expert.

ISD and digital transformation

In January of this year, EPC Groupe decided to create an Information Systems Department, with digital transformation its mission. More than an evolution, a revolution consisting of moving from Information Technology to ... information! Emmanuel Baudet and Frédéric Wszolek discuss the issues.



→ Emmanuel Baudet, Group Compliance, Regulations and Information Systems Director

FOR WHOM AND FOR WHAT?

EB : This decision demonstrates full awareness that data is an essential asset for EPC, its employees, its customers and its shareholders.

Of course, digital is already present within the group. The achievements initiated and developed by the subsidiaries are numerous; they are the essential raw material of the digital transformation approach. •

HOW?

FW : At the heart of this global dynamic, the EPC Groupe must now find its collective response to respond realistically to the challenges of an ever closer future. Clearly, our values are an asset in this challenge that we must face, because it is the human being that is the real driver of the digital transformation: listening, training and supporting each colleague is the foundation of our overall approach. •



→ Frédéric Wszolek, Group Digital Transformation Expert, previously Head of Information Systems

OBJECTIVE 1: FLUIDIFY

EB : This means, on the one hand, instantly making available to everyone the information needed on a daily basis, and, on the other hand, disseminating the information collected by some for the benefit of all those to whom it is useful. •

FW : We will propose that the subsidiaries start with a simple question: what would you need tomorrow morning as information to save time and efficiency and improve quality? The decision-making computer systems (BI) that we will deploy will make it possible to improve the gathering, analysis and presentation of information that can be used by sales staff, finance, HR, factories, managers, etc. •

OBJECTIVE 2: ENRICH

EB : Here it is a question of pooling comparable data from all the subsidiaries for the benefit of each to increase the relevance and depth of the information. Another aim is to create new knowledge solely through sharing, a potential reservoir for innovation. •

Data is another name for knowledge and expertise

FW : Recent technologies combining data lakes and scalable management systems that can be adapted to our businesses are opening up a new field of possibilities. In this context, rigorous data identification and verification work remains the best guarantee for creating value. Collective intelligence needs to be equipped and this is also the goal of digital transformation. •

OBJECTIVE 3: SECURE

EB : Here it is a question not only of preserving this asset, which is data, against loss, alteration and theft, but also to ensure reliability of the information so that it is as correct as possible. •

FW : Cybersecurity is now a major issue because computer crime is developing exponentially. It is therefore necessary to secure this common asset, which is our data, and to explain to everyone how to participate in a digital security policy. At the level of a group like ours, the solutions and resources that it is essential to implement to guarantee our resilience are a major technological and organisational challenge. •

Teleworking in the THEODORE era



→ The deployment of the THEODORE pack: a case-by-case organisation in equipment orders and shipments.

Following cases of eye and muscle fatigue caused by the long period of remote working linked to the COVID-19 crisis, a new system appeared in May 2020: the THEODORE pack. Named for "Homogeneous and Ergonomic Teleworking Optimised for the Digitisation of Resilient and Efficient Organisation", it consists of a 23-inch screen identical to that of the office, a keyboard with wrist rest, a mouse, a headset for electronic telephony under Teams, as well as various accessories and cables, all delivered directly to the home of employees during confinement! Founder and organiser of the initiative, Frédéric Wszolek, at the time Group Information Systems Manager, was pleased to note the sustainability of this new teleworking equipment, a guarantee of comfort and continuity of service for the future.



→ Emmanuel Macron, President of the French Republic, visiting the construction site!

ATD at the Château de Villers-Cotterêts

In 2020, the Centre des Monuments nationaux entrusted the demolition division of EPC Groupe with the delicate mission of removing the lead, amongst other things, from this highly symbolic place of the French language.

After having demonstrated the full extent of its expertise on the rehabilitation site of the Hôtel de la Marine in Paris (see Focus no. 9), ATD was again requested by the State. This time, the mission consisted of curing and removing lead and asbestos from the entire Château de Villers-Cotterêts, built under François I and intended to host the Cité Internationale de la Langue Française

from 2022. The core of the operations will mainly concern the buildings of the royal residence and the «tennis» court, i.e. more than 6,500 m²! In total, some 100,000 hours of work will be required to expose structures, strip or unseal surfaces in accordance with extremely demanding procedures. The entire ATD team is proud to contribute to this second Renaissance of Villers-Cotterêts!



→ Removal of structural elements.



→ Removal of stairways using a remote-controlled machine.

The value of experience, shared remotely

After successful on-line training during the pandemic, EPC has developed a unique webinar offering based on the group's technologies and expertise.



BRIEFINGS

Starting in November 2020, the EPC Groupe Training Department launched webinars in collaboration with the Technical, Marketing and Key Accounts departments. The aim of these regular meetings is to share technical aspects with a varied audience (customers, administrations, students, etc.).

"We are a long way from lengthy theoretical sessions. Instead, we are getting closer to a briefing aimed at professionals already familiar with the subject," explains Javier Muñoz, External Training Manager.

PROVIDING CONCRETE RESPONSES

Called "Blaster's Briefing", these webinars in English are offered via the Zoom platform in a 30-minute format, in two opposite time zones. Bench Blasting: Am I Wasting my Money on Technology? Do You Really care About Energy in Blasting? Open Pit Mining: Do Not let Blasting Dilute Your Concentration... each session, with a deliberately provocative title, is designed to provide solutions to everyday problems encountered by customers. As Javier points out, "the theory is systematically illustrated with case studies where EPC Groupe has made the difference". •



Virtual reality, just the thing for learning!

In partnership with Uptale, EPC France is developing innovative training via a virtual reality headset. Immersive and interactive, this technology vividly standardises control of the knowledge required for the use and handling of explosives. The simulation immerses the participant directly in the future work environment, whether it is a quarry, a tunnel or the manufacturing plant in Saint-Martin-de-Crau. •



The French Government alongside EPC

Winner of the "Recovery plan for industry – strategic sectors" invitation to tender for projects, our French subsidiary will receive 50% funding from France Relance to develop the Saint-Martin-de-Crau site. A 1,000 m² building will modernise the group's R&D facilities in order to increase its competitiveness by pursuing its strategy of differentiation through innovation. This initiative is being led by Laurent Casagrande, Industrial Director, and Philippe Dozolme, Marketing Director, with the support of Sébastien Rogez, Management Audit Director. It is continuing with a view to obtaining other funding both at the regional and national level. •



→ On 10 May, a visit by some of the political and institutional representatives who played a key role in allocating this aid. From left to right: Laurent Casagrande, Stéphane Paglia (Chairman of the CCI of the Pays d'Arles), Marie-Rose L'excellent (Mayor of Saint-Martin-de-Crau), Monica Michel (Member of Parliament for the Pays d'Arles), Philippe Dozolme and Benoît Mournet (Sub-Prefect for the Relaunch).

More connected to safety than ever!

The new remote working habits created by the pandemic have not distracted EPC Groupe from its commitments to safety.

DIGITAL AUDIT AND INSPECTION

Of the ten safety audits conducted in 2020, seven were conducted remotely. All the subsidiaries concerned have adapted to this new approach by adapting MS Teams to make remote safety audits and inspections possible. For this purpose, detailed presentations enhanced by many photos and videos were shared on-line. This new approach has proved its worth at EPC and has enabled us to adapt against the real background of a pandemic.

VIDEOS ARE PROLIFERATING

Returning to the Oscars in 2020 illustrated a strong desire to continue our safety rituals despite the context of the pandemic. Entirely digital, the ceremony celebrated the many initiatives that showcase our good safety and environmental practices. See you in 2023 for the 3rd edition! Until then, keep filming, nothing is more powerful than a picture!!

HYBRID HAZOP STUDIES

As the strength of the HAZOP studies is based entirely on the cross-referencing of information and experiences, EPC Groupe has focused on a hybrid format for over a year.

The various safety officers involved in a new facility convene by video-conference, some getting together physically on the same site. An effective approach to dealing more effectively with major incidents.

The winners of the 2nd edition of the Safety Oscars



GOLD OSCAR: EPC-UK, for the video "Are you OK?" You are not alone! which deals brilliantly with the prevention of 'mental ill health' in the workplace, for which each of us has a role to play.



SILVER OSCAR: MCS, for a video that brilliantly and creatively highlights the importance of safety for teams on a daily basis.



BRONZE OSCAR: EPC GABON, for the video "Working with heat", which realistically emphasises the risks inherent in working outside in very hot and humid conditions.



NEWS / Business

Hillhead: digital in the spotlight

On 30 and 31 March 2021, the 1st 100% digital version of the Hillhead trade fair, dedicated to the quarrying industry in the UK, was held.



EPC-UK was one of 350 exhibitors to take part in this unique experience. On a virtual stand, eight EPC-UK representatives were able to interact with visitors via the discussion and video-conferencing functions. The meeting ended with a live presentation on the digital quarry concept presented by Dr Liam Birmingham and watched by more than 120 people! For Ben Coppock, General Manager - Blasting and Explosives, "this new format represented an opportunity to raise awareness among a wider audience of the multiple digital solutions implemented by EPC-UK". Almost 5,000 visitors attended Hillhead 2021. •



NEWS / Finance

No distance too far for Jeudis de la Finance!

Due to the pandemic, the traditional finance seminars usually held in France could not take place. However, the training work necessary to maintain the high level of our finance was

retained thanks to a new concept. With more than 80 participants (French and English-speaking), Jeudis de la Finance takes the form of a mini-show with speakers on stage. Significant technical means of recording and delivery associated with a Teams forum guarantee genuine interactivity for exchanges in a very lively manner on subjects as technical as insurance, tax audits or IT security. With three versions already on the clock, Jeudis de la Finance are well underway! •



Winning partnerships for MCS

Born from a joint venture with MCC, our Saudi subsidiary MCS combines field experience with the latest EPC technologies, in a partnership that could only give rise to great collaborations as evidenced by the recent signing of these new contracts with Ma'aden.

4 gold mines

Ma'aden Gold and Base Metals Company (MGBM)

 **5 years**  **15 tonnes of gold per year**



Installation of a matrix production plant (EMP type- EPC technology) on site



→ EPC Groupe technology and engineering at the service of Ma'aden in Ad-Duwayhi, the largest gold mine in Saudi Arabia.

2 phosphate mines

Ma'aden Wa'ad Al Shamal Phosphate Company (MWSPC)

Ma'aden Al Jalamid Phosphate Company (MPC)

 **5 years**

 **3 years**  **3 M tonnes of phosphate per year**

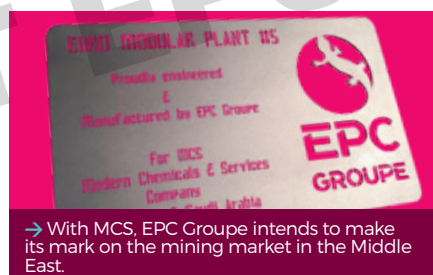


→ MCS staff hosting the new modular emulsion manufacturing plant built for MGBM.

1 copper mine

Ma'aden Barrick Copper Company (MBCC)

 **5 years**  **60 tonnes of copper per year**



→ With MCS, EPC Groupe intends to make its mark on the mining market in the Middle East.



"These new contracts, one of which the largest ever signed by our group on a gold mine, are a perfect illustration of the development prospects opening up to us in Saudi Arabia and beyond. The technical differentiation of our offer and synergy with our partners are the keys to affirming ourselves in these markets and respecting our commitments".

Pascal Lacourie, EPC Asia and Pacific Director





EPC GROUPE

Tour INITIALE
1, Terrasse BELLINI - CS 70222
92935 PARIS LA DÉFENSE CEDEX
Tél. : +33 1 40 69 80 00
Fax : +33 1 40 69 80 50
contact@epc-groupe.com

