

EQUIPMENT & TECHNOLOGY OFFERING



DEFINING THE FUTURE
UNDERGROUND

normet

normet.com



DEFINING THE FUTURE **UNDERGROUND**

We are a fast-growing and innovative company with a mission to lead the transformation into a safer and more sustainable tomorrow. We specialize in technologies and solutions for underground mining, tunnelling and civil construction and provide our customers with safe, high-quality equipment, services, construction chemicals and rock reinforcement solutions for projects around the world.

UNDERGROUND EXPERTISE

We support our customers with expertise gained from working on thousands of underground mining and tunnelling projects all over the world. To date, we have delivered more than 14,000 purpose-built underground machines while improving safety and productivity through our range of construction chemicals and rock reinforcement products. We also offer a range of services and support for our customers. Our company employs about 2,000 professionals with more than 50 locations in 30 countries.

SAFETY IS OUR PRIORITY

Safety is our first priority in everything we do. Our goal is to help our customers increase their level of safety while improving their productivity and profitability. We develop our equipment, technologies and solutions with safety, sustainability and the welfare of people as the key drivers, taking the impact on the environment in careful consideration as well.

CONTINUOUS DEVELOPMENT

We constantly develop new equipment, technologies and chemicals to provide additional value for our customers' underground processes. Our development teams consist of world-class experts using state-of-the-art methods and tools. We use our own laboratories to develop our cutting-edge construction chemicals and perform field tests for our entire offering in real-world environments. In all our work, we aim to enhance safety and reduce environmental impact.



EQUIPMENT



SERVICES



CONSTRUCTION
CHEMICALS



ROCK
REINFORCEMENT



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OUR EXTENSIVE EXPERTISE

UNDERGROUND MINING

Due to easily mineable resources depleting, mining is constantly becoming more challenging, requiring operation in greater depths, at greater elevation and in harsher, more remote locations than ever before. We are immensely proud of our long history in overcoming these challenges by developing cutting-edge mining equipment and innovative customer solutions. Since the launch of our first mining machine in 1972, we have gathered extensive expertise in all underground hard rock mining processes and continuously strived to make underground operations safer and more efficient.

TUNNELLING

Extremely tight schedules and high demands are everyday life for tunnellers around the globe and, therefore, our equipment is designed to always deliver the highest possible efficiency and quality to achieve budget and schedule targets in all processes. We aspire to be your partner in tunnelling projects throughout their entire project cycle - from the smallest hydropower or water tunnels to the most magnificent subway stations and storage caverns, our broad offering includes the solutions for your project.

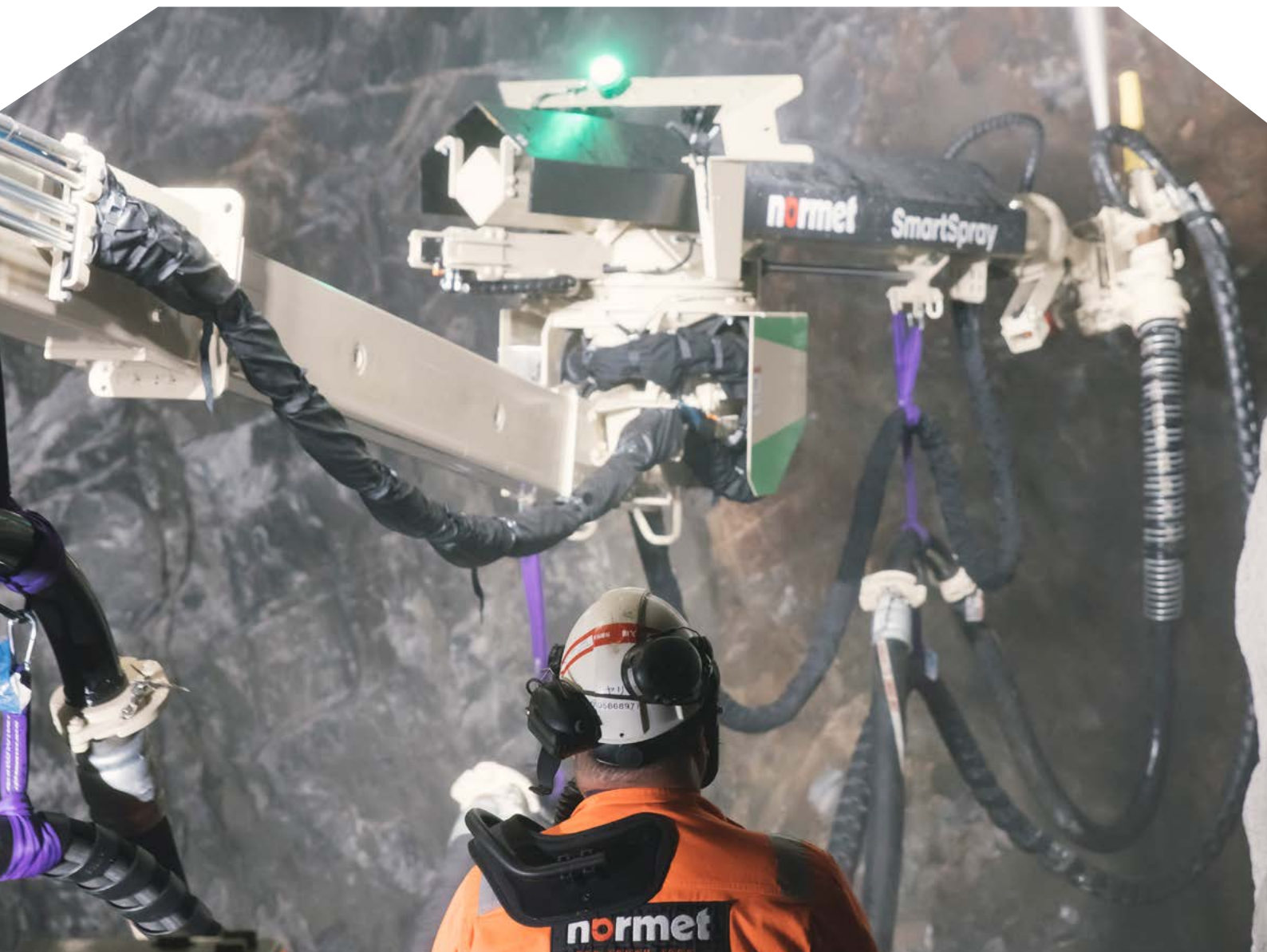


Normet's main production and R&D facility in Iisalmi, Finland.



SPRAYED CONCRETE

We provide everything you need to get the best results with sprayed concrete for mining and tunnelling applications, both underground and on the surface. Our offering includes equipment for both concrete spraying and transportation, construction chemicals as well as supporting technologies and services.



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ENSURING HIGH-QUALITY RESULTS

With our complete process expertise, we are able to ensure consistent, high-quality mixing, efficient concrete transportation and minimized spraying rebound. This gives you the results you need, with strong, high quality sprayed concrete linings and improved operating efficiency, reduced operating costs and maximized productivity. In addition, we can provide you with training, support, problem-solving and technical advice as your expert partner throughout the entire concrete spraying process.

In addition to wet mix concrete sprayers, we offer dry mix concrete spraying machines and rotor-based pumps, wet mix concrete spraying pumps and manipulators and, additionally, supporting technologies to optimize the spraying process. Read more about our industry-leading spraying technologies later in this brochure!

CONCRETE SPRAYERS

The trend with application equipment is towards self-propelled, mechanized and automated spraying systems that offer high productivity, superior operator safety and outstanding quality. Our mobile sprayers are the result of 50 years of experience in underground operations and close partnerships with our customers across the globe. All Spraymec models are available with an electro- or diesel-hydraulic configuration and an optional on-board compressor. We have sold hundreds of these durable units worldwide, most of which are still in use today!

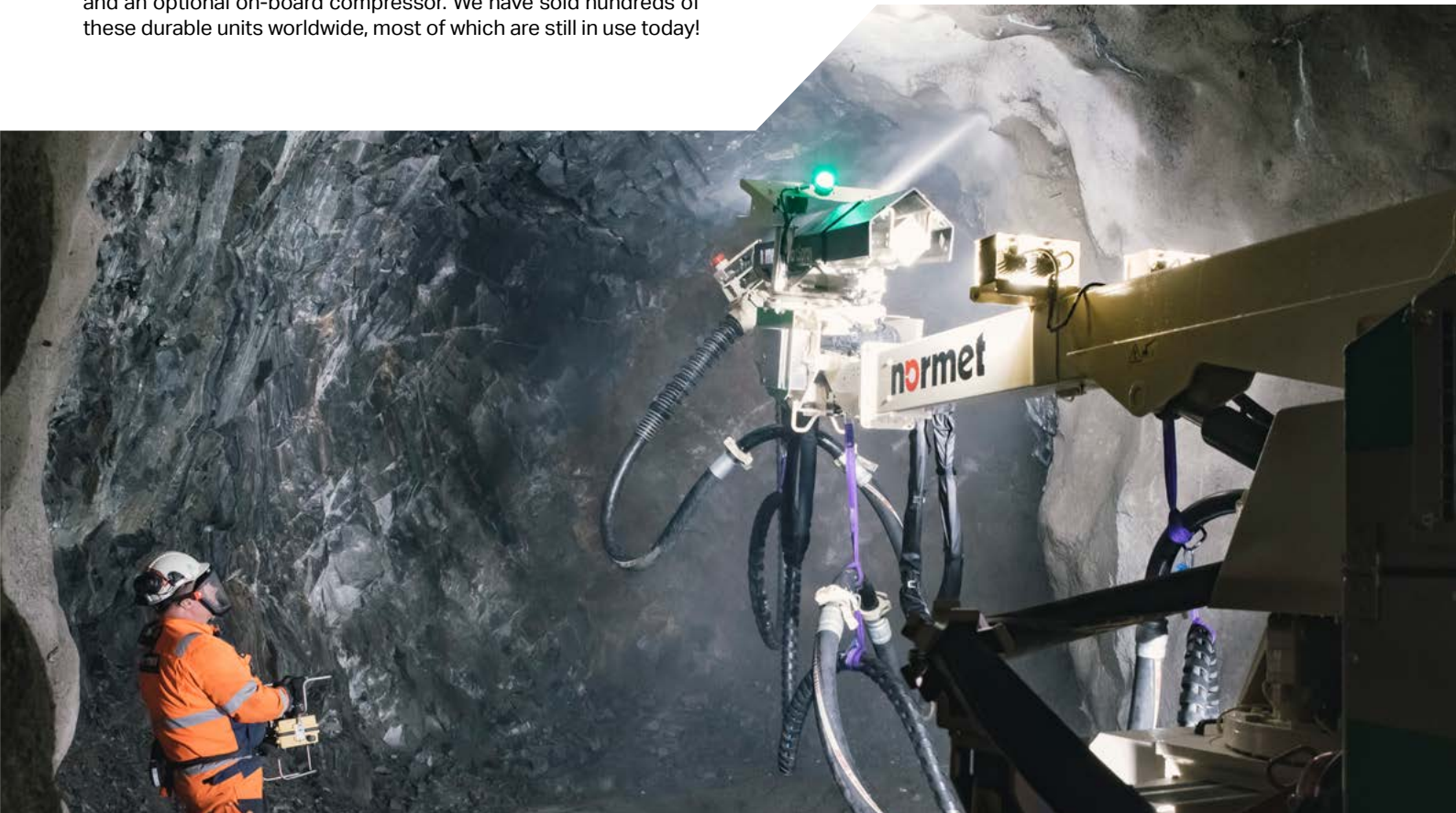
MINING SPRAYERS

Our dedicated wet mix concrete sprayer offering for mining includes three different sprayer platforms for different carrier performance needs. Our concrete sprayers are self-propelled, mobile machines for modern mining operations in small and medium-sized tunnels.

SOLUTIONS FOR TUNNELLING

Our dedicated tunnelling equipment is designed for operating in a large variety of tunnel and cavern profile sizes. From the smallest hydropower or water tunnels to the most magnificent subway stations and storage caverns, our broad offering includes the solutions for your project. Even the most demanding and hard-to-reach targets can be easily covered with our equipment. Our dedicated process equipment always aims to keep material consumption at a minimum, resulting in the lowest environmental impact and total process cost possible.

Spraymec 8100 VC **SD** with our innovative SmartSpray system in Finland.



OUR SPRAYER OFFERING - FOR CONCRETE RESULTS

SPRAYMEC 8100 VC / 5100 VC

Spraymec 8100 VC and 5100 VC are electro-hydraulic, self-propelled mobile concrete sprayers that optimize concrete spraying in tunnel projects with variable tunnel cross sections. They are designed for high performance sprayed concrete applications with alkali-free accelerators and feature our cutting-edge spraying process control system, the NorSmart. The 8100 VC is also available with our SmartDrive architecture for local emission-free operation.



Spraymec 8100 VC SD.

Both Spraymec NorRunners are equipped with SmartSpray Lite and can be updated to SmartSpray Pro or ProPlus. NorRunner 160 DVC with a straight boom in the picture.



SPRAYMEC NORRUNNERS

Spraymec NorRunners are truck-based road legal tunnelling concrete sprayers equipped with the latest spraying technologies. NorRunners come in two variations; The 140 DVC with a maximum horizontal coverage area of up to 28 m and a vertical one of 19 m, and the 160 DVC with a straight boom, allowing for sprayed concrete application on over 11 m of tunnel length at the height of 9 m without repositioning the sprayer.

ALPHA 20, 30 D AND 1430 V KIT

The Alpha 20 and 30 offering is characterized by high reliability, robustness, low maintenance costs and easy serviceability. The hydraulic and electrical components and the diesel-powered powertrain are optimized for the harsh environment of mining and tunnelling projects and can be serviced with on-site workshop equipment. Alpha 1430 includes all necessary components for a spraying installation mounted through a subframe onto a standard truck chassis, resulting in a highly mobile spraying unit that can travel between construction sites on public roads.



Alpha 30.



Our sprayer offering is the result of 50 years of experience in the concrete spraying process.



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Spraymec MF 050 VC SD.



SPRAYMEC SF/MF/LF 050 OFFERING

Spraymec SF, MF and LF are self-propelled, mobile machines, dedicated for modern mining operations in small and medium-sized tunnels. Designed with decades of experience, they all feature the state-of-the-art Normet NSP 30 concrete spraying pump with a maximum theoretical concrete output of 19 m³/h with diesel operation or, alternatively, 30 m³/h with electric operation. They are equipped with SB 500 B spraying boom with strengthened steel structures, modified joints and large-diameter hydraulic cylinders to generate enough power for smooth spraying operations.

Spraymec 8100 VC operating in Norway.



WET MIX SPRAYERS

- Spraymec **SF 050 D**
- Spraymec **MF 050 VC**
- Spraymec **LF 050 DC**
- Spraymec **NorRunner 140 DVC**
- Spraymec **NorRunner 160 DVC**
- Spraymec **8100 VC**
- Spraymec **5100 VC**
- Alpha **20**
- Alpha **30 D**
- Alpha **1430 V Kit**
- Aliva Equipment...?

WET MIX PUMPS & MANIPULATORS

- Minimec **2**
- NorStreamer **30 V**
- SSL **40 Pump**
- SSL **15 Pump**
- Aliva Equipment...?

DRY MIX SPRAYERS AND PUMPS

- Spraymec **SF 040 DCDS**
- Piccola
- GM
- Aliva Equipment...?

TOWARDS AUTOMATED SPRAYING

NORMET SMARTSPRAY

As talented operators are becoming increasingly difficult to find and the quality of applied sprayed concrete can critically vary between operators, we developed the SmartSpray system to minimize the effect of the operator's performance to the end result and increase the productivity of the spraying process.

We offer three different versions of the SmartSpray system: SmartSpray Lite, Pro and ProPlus.

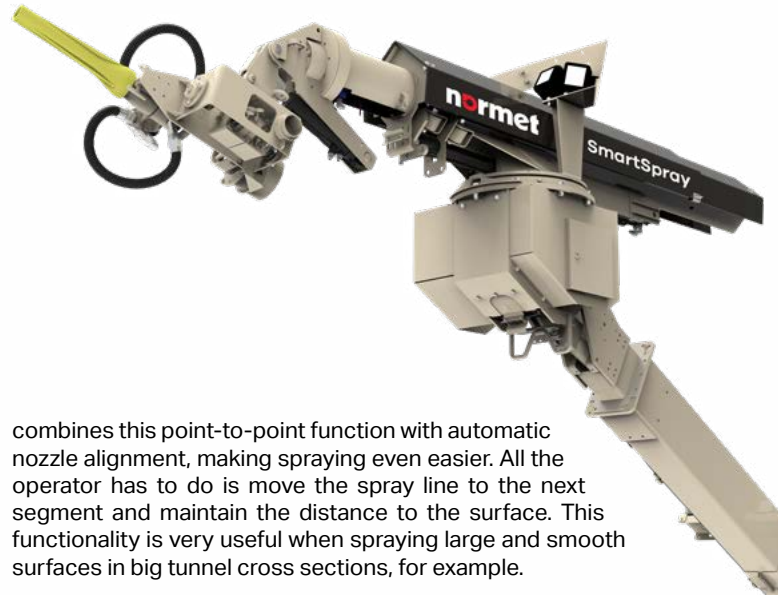
SMARTSPRAY LITE

With SmartSpray Lite, the operator only controls the spray nozzle instead of all joints of the spray arm, meaning that instead of the traditional way of using two or four joysticks, the operator can successfully maneuver the spray arm with only one.

In the Lite version, the nozzle alignment is kept constant in relation to the surface being sprayed, thus ensuring that the nozzle is optimally aligned with the surface. This allows the operator to achieve consistent and high-quality spraying results.

SMARTSPRAY PRO

SmartSpray Pro allows the spray nozzle and boom to be moved automatically to simplify repetitive patterns of movement. In point-to-point control mode, the spray nozzle automatically travels back and forth along a straight line between two defined points. The operator can adjust this straight line or a segment of it during operation with just one joystick. SmartSpray Pro



combines this point-to-point function with automatic nozzle alignment, making spraying even easier. All the operator has to do is move the spray line to the next segment and maintain the distance to the surface. This functionality is very useful when spraying large and smooth surfaces in big tunnel cross sections, for example.

SMARTSPRAY PROPLUS

With SmartSpray ProPlus, a predefined area can be sprayed fully automatically. In this mode, the control system calculates a path for the nozzle movement, maintains the set distance between the spray nozzle and the surface while automatically maintaining the correct speed to achieve the desired concrete thickness. The SmartSpray ProPlus technology turns your novice sprayer into an experienced master.



Our customer in Norway is using the SmartSpray system. Scan the QR code to watch a testimonial video.



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A NEW ERA IN PROJECT DOCUMENTING

Normet SmartScan is an advanced system for measuring and monitoring applied sprayed concrete thickness effortlessly. It utilizes state-of-the-art scanning technology and is specifically designed for the harsh underground environment.

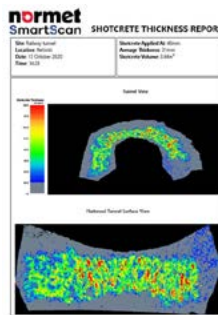
The 3D LiDAR technology eliminates the need for unsafe methods for manual probing of layer thickness by entering under fresh concrete while improving both the efficiency of the concrete spraying process and the safety of underground personnel.

With the touch of one button, the on-board computer can measure concrete thickness and display a color-coded 3D model of it the user-friendly touch screen interface, giving the nozzle operator immediate feedback on the freshly sprayed area. The required concrete layer thickness is achieved quickly and before the concrete spraying machine is moved, thus preventing the time-consuming need to come back and re-spray the area. This significantly increases efficiency, maintains excellent spraying quality and, at the same time, reduces the waste of material.

SMARTSCAN DESKTOP

The desktop software enables advanced analysis of the profile data in a site office, for example, allowing it to be analyzed further by cropping and reprocessing the raw data for documentation.

By including project information and the customer logo, meaningful reports can be created for QA/QC purposes and for archiving or client submission.



Material cost is by far the largest part of sprayed concrete total process cost. Integrated Normet SmartScan system helps you to control the sprayed concrete layer thickness fast and accurately.

SMARTSCAN ALIGN

SmartScan Align enables transferring captured profile data from SmartScan's local coordinate system into any coordinate system used in surveying. Allocating the profile data even after the concrete sprayer has been moved makes data exchange with other equipment and systems operating in the same project possible.

Thanks to a simple calibration process, the distance between the two measurement systems is determined with minimal effort using the known position of targets in the tunnel profile. This process is only required when the measuring devices have been detached or otherwise moved or, alternatively, to ensure that the systems are still aligned well.

With the request for a new profile scan, the second LiDAR sensor, installed on the spraying carrier facing backwards, locates the targets attached to the tunnel walls, allowing the system to transform the profile data into the project coordinator data system.

SMARTSCAN RETROFIT KIT

The SmartScan retrofit kit allows new or existing sprayers to be equipped with the latest LiDAR technology to measure and monitor applied sprayed concrete layer thickness in underground construction projects.

Simple and quick to install, the kit includes all the necessary components to increase the technological level of your concrete spraying fleet, making it even possible to effortlessly utilize older equipment in demanding projects. The SmartScan system does not require calibration after installation and is ready for immediate use. In addition, we also offer installation and training services for the scanner system. SmartScan retrofit kits are currently available for all of our underground sprayers.



LOGISTICS & TRANSPORTATION

Our underground transport vehicles are designed to ensure efficient logistics and high productivity in underground mines and tunnel excavations. They are highly configurable and let you safely and reliably transport a wide range of resources to work sites, including concrete, personnel, materials and fluids.



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THE NEW NORMET 180° CABIN – DEFINING A NEW LEVEL OF OPERATOR COMFORT

A result of our decades-long experience in designing underground equipment is here – the all-new 180° cabin, setting new industry standards for visibility, comfort, ergonomics and serviceability.

The forward-angled windscreen prevents the accumulation of dropping water and dust, ensuring that the windscreen remains clean in harsh underground conditions. The new wide-angle mirrors with three separate sections guarantee an excellent level of visibility in every direction. When it gets dark, the high-intensity LED driving lights illuminate the way ahead.

The high-definition reverse camera with multiple alternative placement options provide real-time video footage from the back or the sides of the vehicle while the large window area with narrow a-pillars allow for a broad, unobstructed field of view.

Our new advanced suspension control allows the operator to glide over rough road conditions with ease for a world-class driving experience, while the low noise level of the new cabin increases comfort and allows speaking at normal voice levels. The cabin's roomy interior design increases space, providing comfortable accommodation for up to three passengers.



NorSmart 3 GUI for SmartDrive vehicles.

Improved comfort and ergonomics

Upgraded visibility and serviceability

Enhanced driving experience

FOPS/ROPS approved

Standardized for our customers' benefit



THE XS OFFERING – COMPACT AND AGILE

Our most compact carrier, the Variomec XS, is designed to minimize total cost of ownership and provide excellent performance with best-in-class safety and payload capacity against current competition in the market.

The versatile Variomec XS carrier fits to a 3.5 m x 3.5 m envelope and can be utilized for multiple different equipment applications. The XS carrier can transport up to 4 tonnes of payload, be it either personnel, goods or both together.

Using the same carrier for multiple purposes generates significant cost benefits since the majority of spare parts, most service tasks and, additionally, the operator environment are the same or similar in all of the different models. Furthermore, this renders both a smaller inventory of spare parts and more effortless serviceability possible. All daily checks can also be carried out from the ground level, improving the safety and efficiency of maintenance work.



PERSONNEL TRANSPORTATION

The Variomec XS 115 PER is a compact underground bus with a carrying capacity of 14 persons. The roomy personnel compartment is FOPS/ROPS approved and can be equipped with heating and A/C for superior passenger comfort.



While The Variomec XS is a compact carrier, it is designed and built with our decades-long experience in the world of underground equipment. Vehicles in the XS offering have similar safety features and are as robust as our larger vehicles.

The FOPS/ROPS approved cabin allows for excellent visibility and ergonomics to ensure a safe and comfortable environment for the operator. The XS units have a fully suspended chassis and a hydrostatic transmission, ensuring a world-class ride in the roughest road conditions and ramps. The brake system, including oil-immersed axle brakes and a SAHR type safety brake, is designed to meet the demands of the underground environment.

The current XS offering includes three different applications, and the offering will continue to expand gradually in the future.

MATERIAL TRANSPORTATION

The Variomec XS 040 Material is a compact service vehicle with a 4-tonne carrying capacity. It is equipped with a crane and a roomy platform with a low loading height. The spacious cabin has room for a driver and one to two passengers.



PERSONNEL & MATERIAL TRANSPORTATION

The Variomec XS 035 Crew is a compact mine service vehicle with a 3.5-tonne carrying capacity, a crane and a spacious compartment for a 3-person crew while also accommodating two to three people in the cabin.



Scan the QR code for a video demonstrating the Variomec XS's agility and features.

VARIOMEC XS MODELS AVAILABLE

Variomec **XS 040 Material**

Variomec **XS 115 PER**

Variomec **XS 035 Crew**



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NORMET MULTIMEC – FOR CHANGING TRANSPORTATION NEEDS

MULTI-FUNCTIONAL CARRIERS WITH AN INTERCHANGEABLE CASSETTE SYSTEM

Our Multimec slide-on/slide-off cassette system is the ideal solution for mines that need carriers that can quickly change function and handle a wide variety of transport requirements. With one Multimec carrier and the right choice of cassettes, each for a specific purpose, you have a safe and economical underground transport system for personnel, materials, concrete, fuel and so on. We offer three different sizes of Multimec carriers and a series of cassettes for different purposes, all of which fit all Multimec size classes. With our hydraulic cassette handling system, these cassettes can be swapped on and off the carrier in just a couple of minutes.

Multimecs are available with a FOPS/ROPS certified open or enclosed cabin for driver and 1-2 passengers, providing superior safety, visibility and comfort for both. The Multimec MF 100 is also available with our battery-electric Normet SmartDrive® technology, allowing for silent operation and zero local emissions.



Fast cassette changing ensures the efficiency of different logistics and lifting & installation works. All cassettes fit all Multimec carriers.



C162 Personnel cassette



C603 Basket boom cassette



C500 Concrete mixer cassette



C490 Fire cassette

CASSETTES

C100 Flat deck	C280 Sludge	C350 Water
C100 Material	C162 Personnel	C350 Lube
C125 Crane	C600 Explosives	C490 Fire
C135 Crane	C600 H explosives	C315 Scissor lift
C300 Mixer	C600 Emulsion	C603 Basket boom
C500 Mixer	C350 Fuel	C100 Workshop

MULTIMEC CARRIERS

Multimec **SF 060**
Multimec **MF 100**
Multimec **LF 100**

NORMET UTIMEC – TAILORED FOR PURPOSE



The SmartDrive architecture suits ideally for underground logistics like concrete transportation. Scan the QR code for a video about its many benefits.

Our Utimecs are tailored for a certain purpose, offering high productivity with clever features and robust structures. Our Utimec offering can be used for any underground transportation purpose, such as fuel, lubrication, personnel or material transportation.

PERSONNEL TRANSPORTATION

Our dedicated Utimec personnel transporters have passenger compartment options for 16 to 32 people. The personnel carriers can be equipped with a full chassis suspension, offering outstanding ergonomics for the passengers.

MATERIAL TRANSPORTATION

Utimec material transporters have a payload rating ranging from 6 to 16 tonnes and different kinds of platforms available. Our material carriers can be equipped with a hydraulic crane to facilitate loading and unloading material on and off the platform.

For lighter rock transportation purposes, we offer two Utimecs with 10 t and 6 m³ or, respectfully, 16 t and 9 m³ carrying capacity. The Utimec offering also includes a unit for transporting explosives and personnel. This vehicle has a maximum payload capacity of 10 tonnes, carries four passengers and comes with a compartment for detonators and primers.

FLUID TRANSPORTATION

For oil changes and refueling machinery at the work site, we offer Utimec fuel and lube transporters with total tank capacities from 4,000 litres to 10,000 litres. All Utimec Lubes and Fuels are equipped with refilling pumps with hose reels, and filling nozzles and can also be fitted with a greasing and tyre inflation system.

For water transportation, dust suppression and fire extinguishing, we offer a dedicated Utimec water carrier with a capacity of up to 10,000 litres and different kind of pumping and nozzle systems.



Utimec MF 100 Material **SD**
with high platform edges.

FOR PERSONNEL TRANSPORTATION

Utimec **SF 205 PER**

Utimec **MF 164 PER**

Utimec **MF 205 PER**

Utimec **MF 328 PER**

FOR FLUID TRANSPORTATION

Utimec **MF 400 Lube**

Utimec **MF 660 Fire**

Utimec **LF 1000 Water**

Utimec **LF 1000 Fuel**

FOR MATERIAL TRANSPORTATION

Utimec **SF 060 Material**

Utimec **MF 100 Material**

Utimec **MF 100 E**

Utimec **MF 060 D**

Utimec **LF 130 Material**

Utimec **LF 090 D**

Battery-electric Utimec MF 205 PER **SD**.



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FOR CONCRETE TRANSPORTATION

We offer a wide range of mobile concrete transportation equipment to meet the mining and tunnelling industries' needs for improved safety, increased productivity and higher efficiency.

Our concrete transportation offering covers two different types of equipment with several different-sized concrete drums from 2.1 m³ to 7 m³ practical carrying capacity. Utimec Transmixers with a horizontal drum allow for a very low overall height and Utimec Agitators with an askew drum offer excellent mixing capability with the possibility to fill the drum with a filling hopper.

With hundreds of units delivered worldwide, our concrete transportation equipment has proven its durability and is globally recognized for excellence in quality.

UTIMEC TRANSMIXERS & AGITATORS

A purpose-built underground concrete transportation vehicle, specifically designed to thrive in some of the harshest conditions in underground mines and tunnels from the beginning, offers the highest possible level of safety and the lowest operational costs for the customer.

As the vital importance of operators' safety and wellbeing is becoming increasingly recognized in the underground mining industry, we are continuing to constantly develop safer and more ergonomic solutions such as our completely redesigned, FOPS/ROPS approved front cabin with a fully suspended chassis to decrease operator fatigue.

UTIMEC XL 1100 AGITATOR ED

Utimec XL 1100 Agitator ED with a concrete transportation capacity of 10.5 m³ and a payload capacity of 23 tonnes is designed for concrete transportation in underground mines and tunnels with a tramming height of 3.3 m or more. Built on the new low-emission Normet ElectroDynamic® platform combining the best features of our battery-electric SmartDrive architecture and state-of-the-art Stage V engine technology, it paves the way to the future of more sustainable underground operations.



Utimec XL 1100 Agitator ED with a practical concrete transportation capacity of 10.5 m³.



Utimec LF 700 Agitator is available with a Volvo Penta Stage V engine, helping decrease diesel particles from underground machines. Scan the QR code for a video.

FOR CONCRETE TRANSPORTATION

Utimec **SF 300 Transmixer**

Utimec **MF 500 Transmixer**

Utimec **MF 500 Transmixer SD**

Utimec **LF 500 Transmixer**

Utimec **LF 600 Transmixer**

Utimec **LF 600 Agitator**

Utimec **LF 700 Transmixer**

Utimec **LF 700 Agitator**

Utimec **XL 1100 Agitator ED**

Tornado **S2**



EXPLOSIVES CHARGING

We have gathered extensive expertise in underground charging from the launch of the first Normet charger in the 1970's. Ever since, we have continuously developed our charging equipment and solidified our place as the world-leading underground explosives charger manufacturer.



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Below: Charmec MC 605 VE SD made history by demonstrating battery-electric emulsion charging for the first time in Europe. Scan the QR code for a video.

FOR SUPERIORLY SAFE CHARGING

Our purpose-built, mechanized charging systems improve the safety and productivity of your underground blasting operations. Our charging product range, the Charmec offering, includes equipment for charging with packaged cartridge explosives and bulk explosives like ANFO, water gel and modern, site-sensitized emulsion in environments from different sized tunnel faces to large underground production stopes. In addition to charging use, our equipment comes with built-in storage spaces, allowing for safe transportation of explosives and detonators to the site.

THE NO. 1 CHARGING SYSTEM

Over the past 50 years, we have delivered hundreds of mobile Charmec systems to hard rock mines and civil tunnelling projects all around the world. They meet the highest safety, productivity and quality requirements and ensure that your underground explosive charging processes are cost-effective. You can depend on our chargers for low lifetime costs, superiorly safe and reliable operation and maintenance as well as consistently high resale value.



Normet's twin boom Himecs and Charmecs double the productivity.

CLOSE COOPERATION WITH THE EXPLOSIVES INDUSTRY

In modern emulsion charging processes, the explosive is sensitized on the charging unit at the site. Because authorities usually regard such units as explosives factories, we develop our emulsion charging module, Normet ECM, and related technologies in close collaboration with trusted explosives manufacturers. Even in the case of an external bulk emulsion system, we work together with the provider to accommodate the system into our charging platform in the safest possible way with cooperative processes like common risk assessment, for example. As a service business, we are able to provide you with external bulk system mounting to our platform and grant a full declaration of conformity for the result.

MINING AND TUNNELING REQUIREMENTS

We have a broad offering of solutions for explosive charging processes in both mining and tunnelling. Charging equipment can be generally divided into mining and tunnelling machines based on their size, load capacity, person lifting height and possible twin boom configuration. The RM series, a tunnelling platform with a twin basket boom configuration, is purpose-built to enable efficient operation in wide and high tunnel faces. However, some machine layouts suit well to both, like the Charmec NorRunner, a truck-based charger, for example.

Charmec LF 605 LE with a 10-tonne payload capacity fulfills the needs of stope charging in underground mining and improves productivity by reducing the need to drive back and forth to the explosive warehouse. The new Charmec MF 050 Robot is engineered to support mechanized stoping in underground mining.



PROVEN TECHNOLOGY AND CARRIERS

PACKAGED EXPLOSIVES

In some areas, packaged explosives are still in use, offering some undeniable advantages in perimeter blasting, vibration control and by working in water holes. We provide the safest possible person lifting systems and solutions to carry packaged explosives to the face. Prevention of static electricity and sparks is considered as a vital safety factor when transporting packaged explosives.

ANFO CHARGING

Anfo is still a mainstream explosive in many places, and we can support your operations with a wide offering of different Anfo charging products. Our Anfo chargers are known for their robustness and reliability, but we also have extensive knowledge of handling and delivering different types of powder and heavy and high viscosity Anfo. Uphole charging requirements, in particular, can be extremely challenging, but we can provide you with various technologies to improve process efficiency, increase in-hole density and reduce waste rebound. Our Anfo modules are mostly bolt-on systems, enabling later switch to emulsion or vice versa.



Charmec MF 605 V Long End **SD**
with zero local emissions.



Charmec SF 505 VA for Anfo charging.

EMULSION CHARGING

Normet ECM emulsion charging module is our state-of-the-art technology for modern, site-sensitized underground bulk emulsion charging. It offers emulsion mixing, pumping and delivery technology, designed to work together in the safest and most efficient way. Normet ECM can also be adapted to work with chemically sensitized emulsion. Modern technology enables accurate consistent hole charges, explosive decoupling and comprehensive process reporting. We offer Normet ECM with various tank sizes to both mining and tunneling platforms and a truck chassis.

OUR ANFO CHARGING OFFERING

Charmec **SF 404/504 DA(V)**

Charmec **SF 605 DA(V)**

Charmec **MF 605 DA(V)**

Charmec **MC 605 DA(V)**

Charmec **MC 605 DA(V) Robot**

Charmec **RM 905 TCA**

Charmec **TBC 905 DA(V)**

OUR EMULSION CHARGING OFFERING

Charmec **SF 404/504 D(V)**

Charmec **MF 050 D(V) Robot**

Charmec **MF 605 D(V)**

Charmec **MF 605 LE D(V)**

Charmec **LF 605 LE D(V)**

Charmec **MC 605 D(V)**

Charmec **RM 905 D(V) / T(V) single / twin boom**

Charmec **RM 128 T(V)**

Charmec **NorRunner 705 VE**

Normet **ECM system**



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PLATFORMS FOR EXTERNAL EMULSION UNITS

In addition to our own ECM emulsion charging system, our broad charging offering covers mining and tunneling platforms for external emulsion systems. The platforms range all the way from small basket boomers for small mining headings to rigid frame twin boomers for large civil work site tunnels. For underground stoping, we have dedicated models for superiorly safe mechanization of the process. Depending on the model, our machines have payload capacities from 1 tonne to 10 tonnes for external emulsion units.



Charmec NorRunner 705 VE is a road-legal emulsion charging truck.



NORMET ECM SYSTEM

Normet ECM emulsion charging module is Normet's cutting-edge technology for site-sensitized underground bulk emulsion charging. It supports emulsion mixing (sensitizing), pumping and delivery technology, all designed to function together in the safest, most efficient way. Normet ECM can be adapted to work together with your chemically sensitized emulsion. Our modern charging technology makes accurate consistent hole charges, explosive decoupling and comprehensive process reporting possible. At the moment, we offer Normet ECM with various tank sizes to both dedicated mining and tunneling platforms and a truck chassis.

EXPLOSIVES CHARGING WITH ZERO LOCAL EMISSIONS

Normet SmartDrive® BEV technology suits particularly well to emulsion charging applications by not only enabling emission-free operation, but also allowing for a comfortable, quiet and ergonomic work process with a possibility for battery-electric explosive charging without plugging into an electric supply.

CHARMEC MC 605 V(E) SD

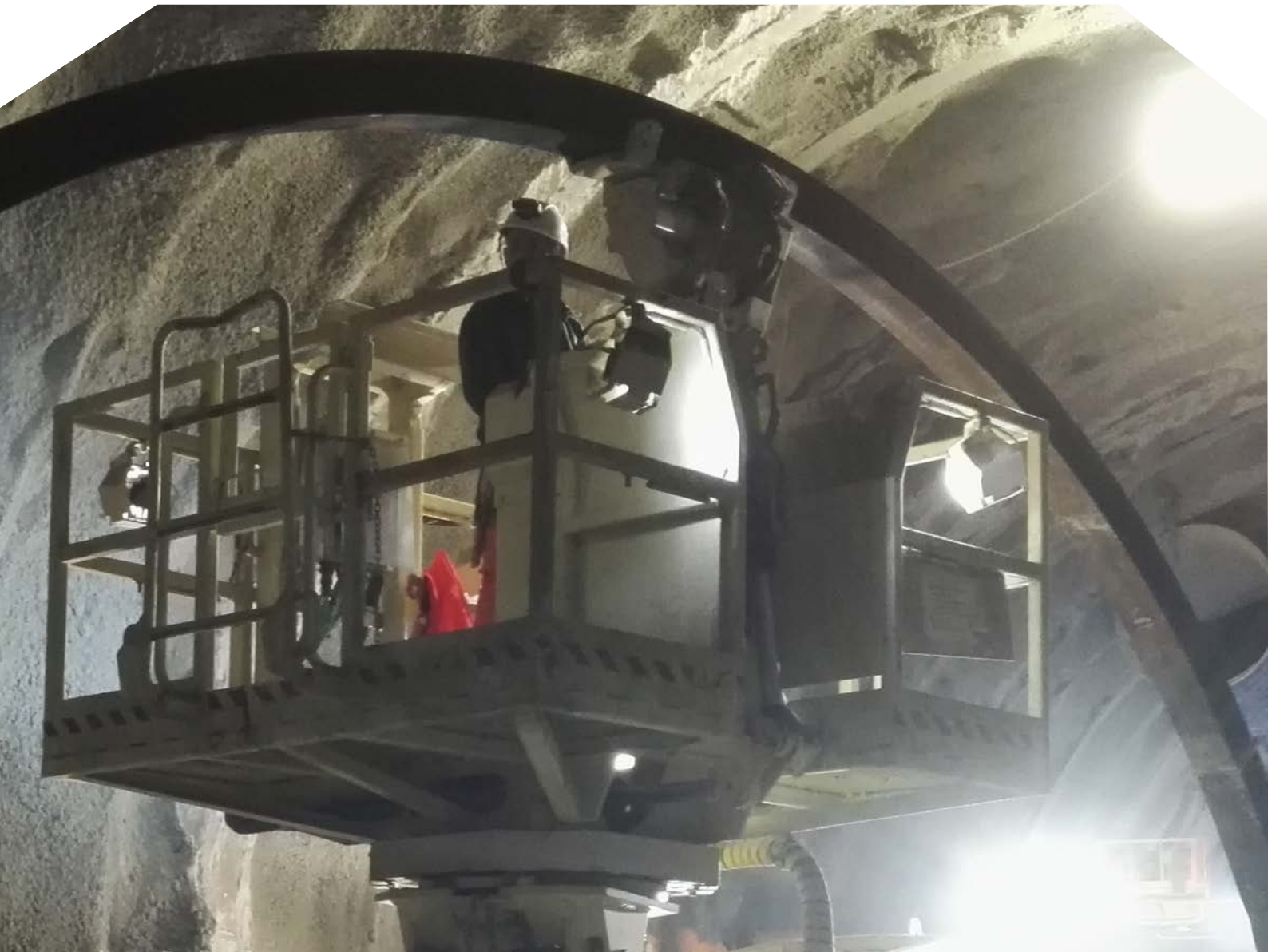
The Charmec MC 605 V(E) SD marks the start of a new era of explosives charging in underground mines. Normet SmartDrive® battery-electric architecture, integrated into state-of-the-art emulsion charging technology, offers the most value in terms of safety, ergonomics and productivity.

The charging technology of the Charmec MC is proven in the harshest conditions and the machine is well-known on a global scale. The Charmec MC 605 V(E) SD can be equipped with a full range of optional accessories to support and improve modern underground development and production charging operations and to increase the value the machine can provide. It is available both with Normet's own emulsion charging module ECM and as a carrier for a third-party emulsion kit.



LIFTING & INSTALLATIONS

Our versatile lifting & installations offering allows for efficient lifting operations with maximum working reach in practically any tunnel and mining profile. Lifting both people and material as safely as possible – a challenge we rise to!



normet

THE OPTIMAL REACH FOR ALL ENVIRONMENTS

We offer everything you need to lift people and materials underground as safely as possible. Our lifters are easily adaptable, giving you the flexibility to handle a broad range of lifting and installation operations, including roof reinforcement, explosives charging and installation of cables, pipes and ventilation.

Whatever your load is, from medium to heavy-duty, we have the equipment you need to get the job done. We have products suit-

able for most locations, including mines and tunnels with different profiles, even low-profile tunnels, and both soft and hard rock environments. Our wide offering includes Himec boom lifters and Utilift scissor lifters, both of which are built on our proven and purpose-built mining carriers. All of our products are available with a range of standard options and accessories to fulfill your needs. We can also design and manufacture custom equipment to meet even the most specific lifting and installation requirements.

HIMEC

Our CE approved Himec offering is an outcome from a long collaboration between our engineers and global tunnelling customers and experts. This cooperation has resulted in a holistic understanding of our customers' lifting and installation equipment needs in both hard and soft rock environments.

The Himec range is engineered for high-reach lifting and installation work in tunnels with medium and large cross sections. With their impressive reach, Himec units are ideal for medium to heavy-duty load lifting with a large working coverage. The machine comes with an extensive range of platform configurations and standard features to suit specific lifting and installation applications. Our platform load-sensing system and other built-in personnel lifting safety features comply with the latest safety regulations.



Himec MF 905

UTILIFT

Our Utilift scissor lifters are designed for lifting and installation work in mining and low-profile tunnelling. Utilift vehicles are suitable for roof reinforcement works, explosive charging and installation of cables, pipes and ventilation equipment.

Typical standard features include a side-shift platform, platform tilt, crane, pipe installation equipment, air compressors, an electrically driven power pack for platform hydraulics, ANFO charging kits and helper platforms.



Utilift MF 330 SD

OUR LIFTING & INSTALLATIONS OFFERING

Himec **SF 605**

Himec **MF 904**

Himec **RM 128 T**

Himec **RM 905**

Himec **RM 910 REX**

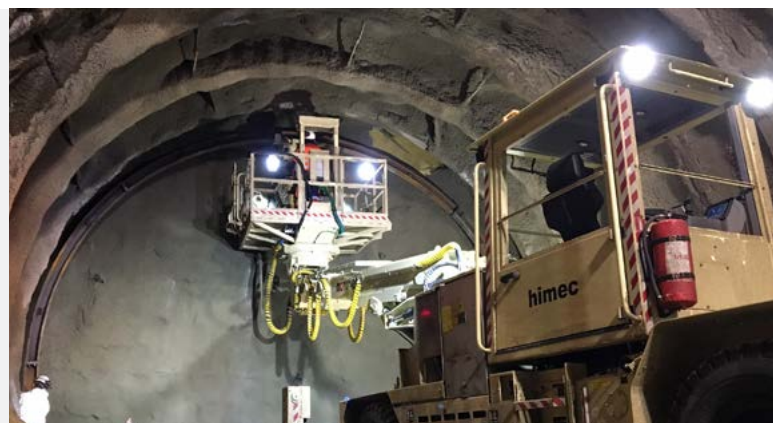
Himec **RM 915 A**

Utilift **SF 330**

Utilift **MF 330 SD**

Utilift **MF 540**

Utilift **MF 540 SD**



UNDERGROUND SCALING

Designed with our decades-long experience in the underground scaling process, our purpose-built scalers are built to exceed customer expectations by offering superior productivity and, most importantly, making the most challenging of underground operations safer than ever before.



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A NEW ERA IN UNDERGROUND SCALING

SCAMEC LC THOR

The Scamec LC Thor marks the start of a new era of underground scaling operations. It is designed in close collaboration with our customers, combining Normet's decades-long experience in developing cutting-edge underground equipment with scaling operators' invaluable experience in everyday scaling work.

As a result of that collaboration, this purpose-built machine brings boom accuracy and handling, work area visibility and operator ergonomics – and, consequently, safety and productivity of the whole scaling process – to a higher level than ever before.

The Scamec LC Thor has an effective vertical reach of 9.5 meters and fits tunnels measuring 4 meters wide and 2.4 meters high.

SUPERIOR SAFETY, VISIBILITY AND ERGONOMICS

The machine has an extremely safe FOPS/ROPS cabin with excellent visibility due to the carefully designed structures, a reversing camera system and heated wide-angle mirrors. The cabin's wind-screen is built with 22 mm thick multi-layer glass and fitted with a protective grille to safeguard the operator from falling rock debris. Furthermore, the new boom is designed to minimize the risk of rockfall hazard by projecting debris to the side with guiders fitted on both longitudinal boom sections. The machine can also be equipped with an emergency escape function, starting an emergency sequence for guiding the operator into safety.

Operator ergonomics has been a focal point in the entire design process of the new Scamec LC Thor. As a result, the cabin is highly comfortable with low noise levels and dust sealed with replaceable air filters. It is equipped with air conditioning and cabin heating and comes with three-point contact rails and non-slippery steps, ensuring safe passage in and out of the cabin. The operator's seat with ergonomic armrests is comfortably cushioned and fully adjustable to the operator's weight and size. In addition, the cabin can not only be lifted 600 mm for an even better view, but also tilted back 15 degrees to minimize the strain to the operator's neck.

NEW, AGILE BOOM AND PROCESS EQUIPMENT

The machine is fitted with a completely new, agile and accurate boom with state-of-the-art kinematics, precise control features and robust structures. The boom can be equipped with multiple different scaling tools for maximal versatility. Its advanced dust suppression system increases visibility even further and significantly improves air quality underground.

HIGH-QUALITY POWERTRAIN COMPONENTS

The Scamec LC Thor is available with the latest Volvo Penta's Stage V technology or, alternatively, with a Stage IIIA emission-rated engine, both producing 185 kW of power and allowing for excellent performance in incline driving along with upgraded retardation features with an automatic engine brake function. The automatic gear shifting of the Dana 4-speed lock-up transmission enhances driving safety, allowing the operator to concentrate on steering the machine in underground tunnels.



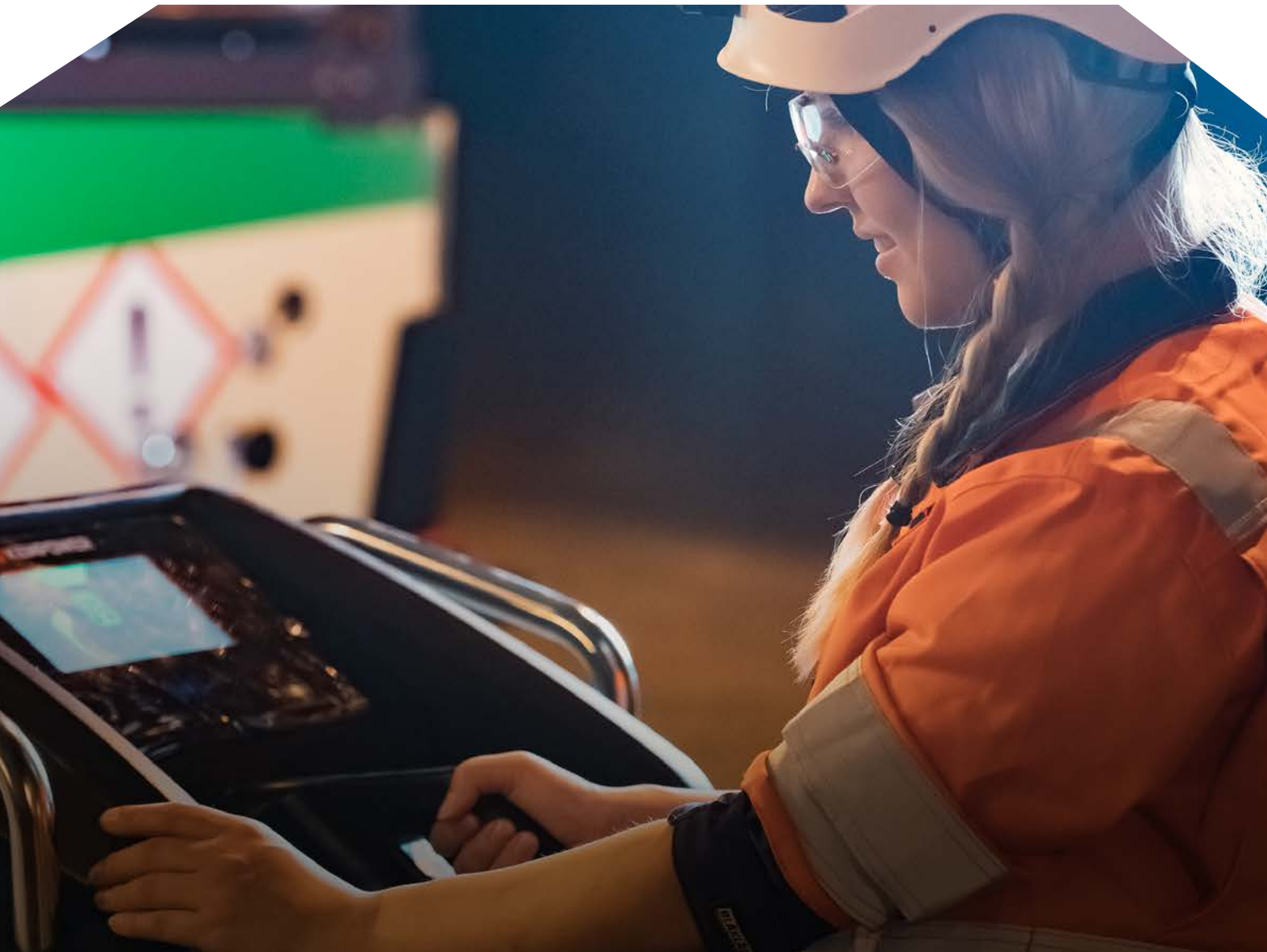
The cabin defines new levels of operator ergonomics and visibility.



Scan the QR code to learn more by watching the official launch video of the new Scamec LC Thor.

NORMET SMARTDRIVE® OFFERING

The latest battery-electric technology combined with our decades-long process expertise takes underground operations to the next level. Our SmartDrive offering allows for increased performance with zero local emissions.



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START YOUR ELECTRIFICATION JOURNEY TODAY!

Normet SmartDrive® is a modular battery-electric vehicle (BEV) architecture designed to optimize energy consumption and performance in underground mining and tunnelling applications.

Our SmartDrive equipment allows for higher productivity, lower operating costs and, most importantly - zero local emissions. Easiness of use and carefully engineered controls guarantee that

SmartDrive machines are safe and effortless to operate. The electric motors both reduce tramming time to reach work sites faster and recover energy in downhill driving.

In addition to complete turnkey solutions, we can also offer flexible services to integrate SmartDrive equipment step-by-step into existing operational models.



Scan the QR code to watch a video explaining the SmartDrive architecture in more detail.

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SmartDrive®

0 % local emissions

High productivity, up to
25 % faster cycles

Lower operational costs

Even **30 %** less maintenance costs

75 % lower driving energy consumption

Up to **50 %** energy recuperation in downhill driving

Long-life industrial grade Li-ion batteries
with a lifespan of 20 000 full charging cycles

No hot exhaust gases and very
minor heating of surfaces

Significantly reduced service brake wear

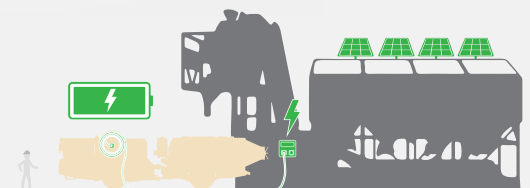
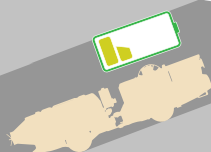
>100 % increased uphill tramming
speed and fast acceleration

Easy and pleasant one
pedal driving

Low noise levels

Fast charging capability

Standardized battery charging
interfaces



INCREASED PERFORMANCE WITH ZERO LOCAL EMISSIONS

SMARTDRIVE ARCHITECTURE

Normet SmartDrive® battery-electric vehicle (BEV) architecture utilizes the latest fast-charging capable Li-ion battery technology. It is powered by high-torque electric motors, providing instant torque and efficient operation without any local emissions. The fully reversible 4WD ensures safe and sure movement in the most difficult underground conditions while the built-in energy recuperation technology maximizes the storing of regenerative

braking energy during downhill driving and deceleration. In addition, the efficient dual-circuit and oil-immersed hydraulic brakes provide additional braking power when it is needed.

Our experience has taught us the importance of reliability for our customers and, therefore, SmartDrive machines are built with durable industrial grade components for maximum availability.

SMARTDRIVE MODELS AVAILABLE

Charmec **MC 605 VE SD**

Charmec **MC 605 V SD**

Charmec **MF 605 V Long End SD**

Spraymec **MF 050 VC SD**

Spraymec **8100 VC SD**

Utimec **MF 100 Material SD**

Utimec **MF 205 PER SD**

Utimec **MF 500 Transmixer SD**

Multimec **MF 100 SD**

Utilift **MF 330 SD**

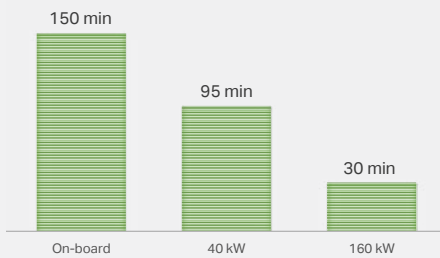
Utilift **MF 540 SD**



Normet SmartDrive® architecture for mining and tunnelling machines is optimized for their specific working environments.



normet



Approximate charging times from 0 % to 80 % State-of-Charge for 90 kWh batteries

POWER WHEN AND WHERE YOU NEED IT

FAST CHARGING

For demanding operations where tramping distances are long, we provide fast charging solutions. Our optional fast chargers can charge batteries astonishingly quickly during operation or a break – no need for costly battery swapping.

With strategically placed fast chargers, battery charging can become a part of everyday underground operations. We offer easy-to-use fast chargers for on-site installation.

Based on the CCS (Combined Charging System) standard, our fast chargers are specifically designed for challenging underground environments and can be used to charge any CCS capable vehicle. Our CCS compatible battery charger offering includes three chargers that are described in more detail later. SmartDrive batteries can also be charged from typical underground AC sockets at any time.

Additionally, we also offer a charging service concept to help you maximize the value of your investment. The service includes charging infrastructure design consultancy, installation services, start-up training, spare parts and maintenance services.

SMARTDRIVE CHARGER OFFERING

Our CC160 charger cabinet with 160 kW power output provides fast charging power where you need it the most. Its robust and durable design is tailor-made for harsh conditions.

In addition to the regular CC160, we also offer a multi-voltage version, the CC160 MV, which is equipped with a step-down transformer to suit typical grid voltages in underground work sites and the CT40, a state-of-the-art fast charging capable DC charging trolley that does not require permanent installation.

SMARTDRIVE CHARGERS AVAILABLE

SmartDrive **CT40**

SmartDrive **CC160**

SmartDrive **CC160 MV**





Scan the QR code to find out more about our offering.



NORMET AMERICAS
SALT LAKE CITY (USA)

NORMET FINLAND
HISALMI (FINLAND)

NORMET CHINA
SHANGHAI (CHINA)

NORMET INDIA
NOIDA (INDIA)

NORMET CHILE
SANTIAGO (CHILE)

NORMET SOUTH AFRICA
JOHANNESBURG (SOUTH AFRICA)

NORMET ASIA-PACIFIC
ADELAIDE (AUSTRALIA)

NORTH AMERICA
Canada
Mexico
USA

SOUTH AMERICA
Brazil
Chile
Colombia
Peru

EUROPE
Finland
France
Germany
Norway
Sweden
Switzerland
United Kingdom

AFRICA
Democratic Republic of Congo
Ghana
South Africa
Zambia

MIDDLE EAST
Qatar
United Arab Emirates

EURASIA
Kazakhstan
Mongolia
Uzbekistan

INDIA
CHINA

APAC
Australia
Hong Kong
Indonesia
Japan
Singapore
Taiwan

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GLOBAL PRESENCE. LOCAL SUPPORT.

We are looking forward to telling you more. Please contact your local Normet representative, visit normet.com for contact details.

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