



# TOP HAMMER XL EXPAND THE LIMIT

TOP HAMMER DRILLING SYSTEM FOR 140–178 mm (5½–7") HOLE SIZE



RD1840C

LT90

PANTERA™ DP1600i

# OPEN UP A WORLD OF POSSIBILITIES

Sandvik's latest innovation is proof that a seemingly marginal difference can make a significant change.

The new, fully optimized drilling system consists of Pantera™ DP1600i drill rig, RD1840C rock drill and LT90 rock tools.

It expands the limits for top hammer drilling, allowing you to drill blast holes from 140 to 178 mm (5½ to 7") with the top hammer drilling method.

At the same time, you achieve faster, more fuel-efficient and more cost-effective drilling, with considerable savings in time, money, and CO2 emissions.





Ø178 mm

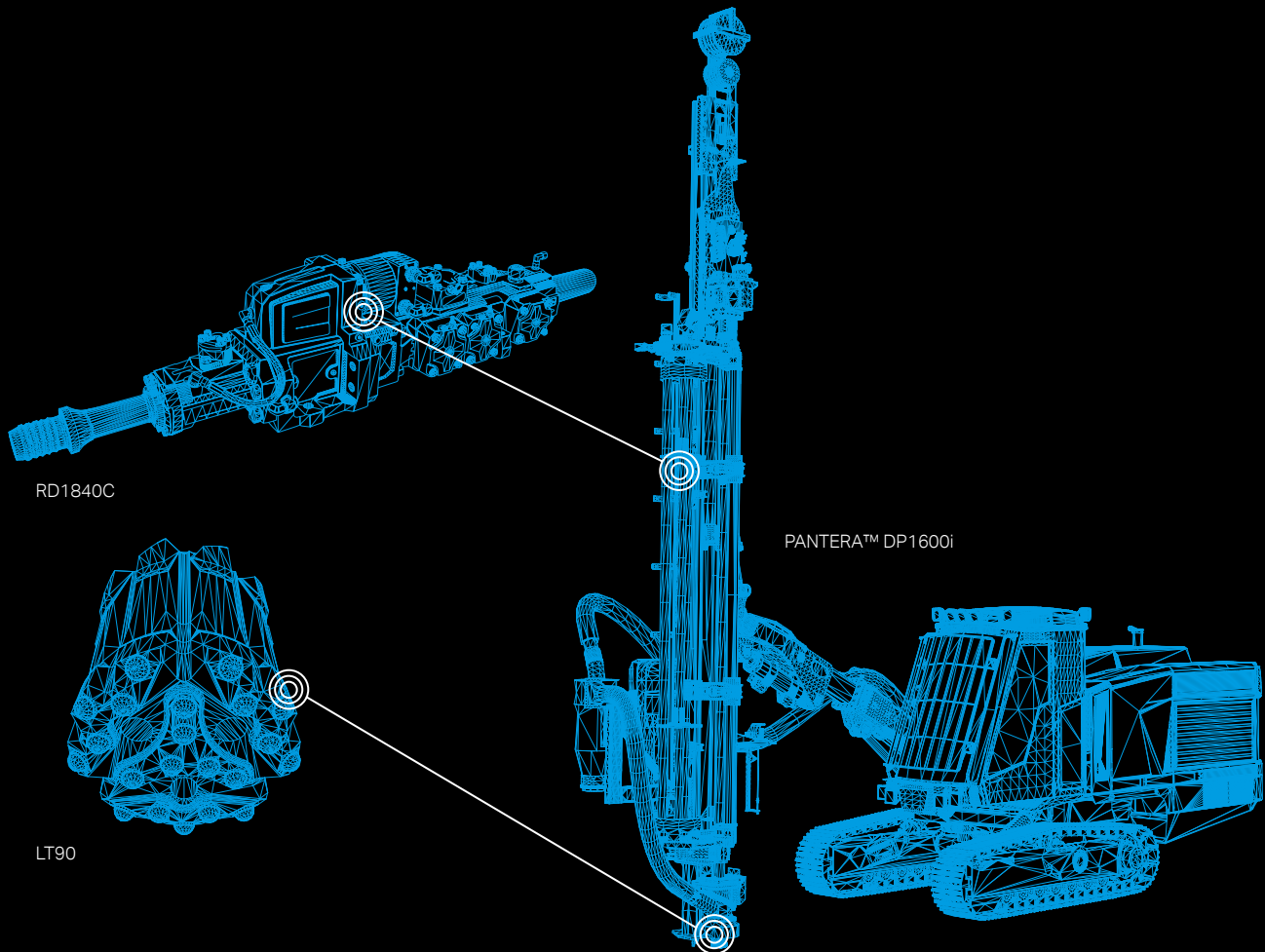
Ø165 mm

Ø140 mm

# THE FUTURE IN TOP HAMMER DRILLING

"A key asset of the Top Hammer XL concept is that all three main components of the drilling system – the rig, the rock drill and the rock tools – have been reviewed, redesigned and mutually optimized. It truly works very well as a whole".

Jukka Siltanen, Product Line Manager,  
BU Rock Drills at Sandvik



Top Hammer XL system complements Sandvik's already wide range of products for large-scale quarrying and surface mining operations. It allows you to find the optimum drilling solution for your application, rock conditions, and requirements. The drill rig, the rock drill, and the tools – mutually optimized for exceptional drilling results – will help to improve your operations and reduce your CO2 emissions.

# INNOVATED TO INCREASE YOUR PRODUCTIVITY

Top Hammer XL is designed and innovated to maximize the power of your drilling.

## HOW DOES IT WORK?

- Long piston technology provides high impact energy with optimal pulse form.
- The length of the pulse depends on the length of the piston.
- Rock drill and tools are dimensioned to work together, which offers the best possible drilling dynamics and rock breaking efficiency.

SANDVIK RD1840C

OPTIMAL PULSE FORM  
– THE BEST DRILLING EFFICIENCY

OPTIMUM PENETRATION / IMPACT



# PROVEN EFFICIENCY

The system has been proven in several field tests by drilling more than 100 000 meters in challenging rock conditions.

The test results show:

**25%**

REDUCTION IN  
DRILLING COSTS

**50%**

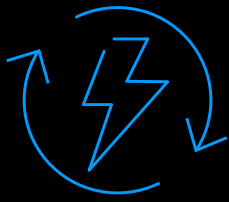
LESS FUEL  
CONSUMPTION

**15%**

HIGHER  
PRODUCTIVITY

\* Calculations presented on this page are estimations based on field test results under specific controlled conditions. The results may vary depending on actual drilling conditions and should not be treated as specifications. Sandvik does not guarantee, warrant, or represent the outcome in any or all circumstances.

# HOW CAN TOP HAMMER XL REDUCE YOUR CLIMATE IMPACT?



## HIGHER SPEED AND PENETRATION RATE

The top hammer drilling method used in the Top Hammer XL system can give you significantly increased drilling speed and penetration rate compared to DTH-methods on the market.



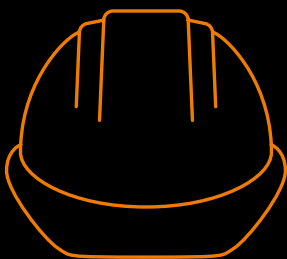
## 50% LESS FUEL CONSUMPTION

With the new Top Hammer XL system, you can save up to 50% fuel due to the inherently more fuel-efficient top hammer drilling method and more productive drilling.



## RADICALLY REDUCED CO2 EMISSIONS

50% less fuel consumption gives you a significant reduction in CO2 emissions, making your business more sustainable. With the Top Hammer XL system you could reduce your CO2 emissions by more than 530 000 kg per year, which is equal to the annual CO2 emissions of 170 family cars.



## TOP HAMMER XL FOR A SAFER AND MORE SUSTAINABLE FUTURE

Top Hammer XL is part of Sandvik's commitment to use engineering and innovation to make the shift that will drive safer and more sustainable business. We understand that our customers share our vision of reducing workplace injuries, health problems, and environmental footprint. That's why integrating EHS into product development and our service offering has long been a part of what we do to create a safer and more sustainable future.

"I was surprised how well the drilling automatics handled adding and removing rods, even in challenging conditions."

A driller's comment





# TOP HAMMER XL PANTERA™ DP1600i

Pantera™ DP1600i is the newest member of the Pantera DPi series family of intelligent top hammer drill rigs. It is characterized by high penetration rates and advanced automation options for data-based fleet management and drilling performance optimization. It fits perfectly for production drilling in large quarries or open pit mines.

The new Pantera™ DP1600i is based on the reliable and proven Pantera DPi series platform, with upgraded key components to meet the needs of the Top Hammer XL system. Together with the powerful RD1840C rock drill and robust LT90 rock tools, the end result is extreme capacity for a larger hole size, without increasing the actual physical drill rig footprint.

With a long track record and proven performance in top hammer drilling, the Pantera DP1600i will bring a true productivity boost to surface mining customers, featuring next-level technical solutions that provide power, fuel economy, more uptime hours and smooth flow of operation.

COMFORTABLE OPERATOR ENVIRONMENT AND EASY-TO-USE TOUCH SCREEN USER INTERFACE.

A GROUNDBREAKING COMPRESSOR CONTROL SYSTEM SAVES FUEL SIGNIFICANTLY PER DRILLED METER WHILE RETAINING HIGH DRILLING PERFORMANCE.

COMPACT RIG CARRIER BASED ON PROVEN AND RELIABLE PANTERA DPi SERIES PLATFORM.

EXCELLENT SERVICEABILITY WITH EASILY ACCESSIBLE SERVICE POINTS AND SMART PLACEMENT OF CRITICAL COMPONENTS ON BOTH SIDES OF THE MACHINE.

INTELLIGENT RIG PLATFORM SUPPORTS ADVANCED AUTOMATION OPTIONS.

HIGHLY RELIABLE INTEGRATED CYLINDER SENSING FOR AUTONOMOUS DRILLING OPERATION.

TECHNICAL DATA	Pantera™ DP1600i T3	Pantera™ DP1600i S5
Hole size	140–178 mm (5½"–7")	140–178 mm (5½"–7")
Drill steel	LT90, 25 m (82 ft)	LT90, 25 m (82 ft)
Drifter	RD1840C	RD1840C
Percussion power	49 kW (66 hp)	49 kW (66 hp)
Engine type	Caterpillar C11, Tier 3	Caterpillar C9.3B, Stage 5
Engine power	287 kW (385 hp) / 1800 rpm	280 kW (375 hp) / 1800 rpm
Air capacity	14 m³ / min 490 cfm twin-pressure compressor	14 m³ / min 490 cfm twin-pressure compressor
Operator cabin	Ergo with air conditioning	Ergo with air conditioning
Weight	23,000 kg (50,706 lbs)	23,000 kg (50,706 lbs)



Ask for Automine® Surface Drilling solutions for Pantera™ DP1600i!

## AUTOMINE® SURFACE DRILLING FOR PANTERA DPi SERIES

AutoMine® Surface Drilling for Boom Drills is an automation system available for Sandvik Pantera DPi series top hammer surface drill rigs including full cycle drilling automatics. It aims to maximize productivity and safety while increasing drilling efficiency.

# TOP HAMMER XL RD1840C ROCK DRILL

Percussion of RD1840C is optimized for large hole drilling. High impact energy together with optimal pulse form gives perfect drilling performance and long rock tool service life.

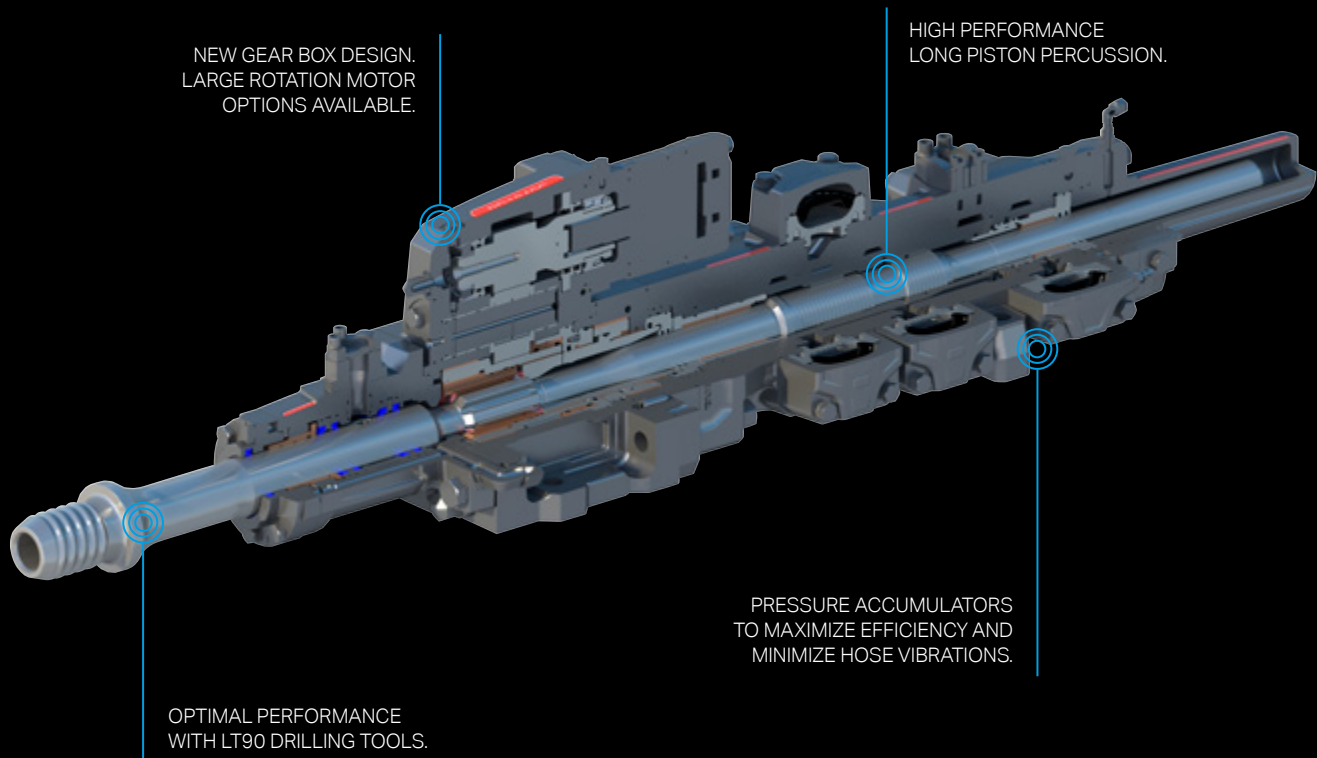
- High nominal drilling power with optimal stroke dynamics.
- State-of-the-art manufacturing.
- Well tested and robust structure.
- Service interval 500 h.
- RockPulse™ option available.

## TECHNICAL DATA

## RD1840C

Hole diameter	140–178 mm (5½" – 7")
Power class	49 kW
Percussion rate	39 Hz
Operating pressure Percussion	140–280 bar
Rotation (max)	150 bar (630 cc) / 110 bar (800 cc)
Rotation motor size	630 cc 800 cc
Drill steels	MF tube LT90
Shanks	Ø80 mm / LT90
Weight	570 kg (1255 lbs)

## DESIGNED FOR LARGE HOLE DRILLING





LT90 SHANK

# TOP HAMMER XL LT90 ROCK TOOLS

Our LT90 rock tools are developed to perfectly match the drill rig Pantera™ DP1600i and the rock drill RD1840C. The tool system, manufactured in Sweden, offers the best possible drilling dynamics and rock breaking efficiency. The patented optimized design increases your productivity, improves the hole straightness, provides great coupling characteristics and longer tool service life. All in all a much better drilling experience.

LT90 TUBE ROD

## BITS

Bit Thread	FLUSHING HOLE, MM		BUTTONS, MM		ANGLE		DIMENSION		PART NUMBER
	Front		Front	Gauge	Gauge		mm	inch	
LT90	3 × 15 mm		10 × 14 mm	9 × 16 mm	35		140	5 1/2	7532-4940-S48
LT90	3 × 20 mm		12 × 14 mm	9 × 16 mm	35		152	6	7532-4952-S48
LT90	3 × 20 mm		12 × 16 mm	9 × 16 mm	35		165	6 1/2	7532-4965-S48
LT90	3 × 20 mm		12 × 16 mm	9 × 18 mm	35		172	6 3/4	7532-4972-R48
LT90	3 × 20 mm		12 × 16 mm	9 × 18 mm	35		178	7	7532-4978-R48

## MF TUBE ROD

	LENGTH	LENGTH	TUBE DIAMETER	FEMALE OD	PART NUMBER
Thread					
LT90	4265 mm	14 ft	80 mm	120 mm	7382-1543-85

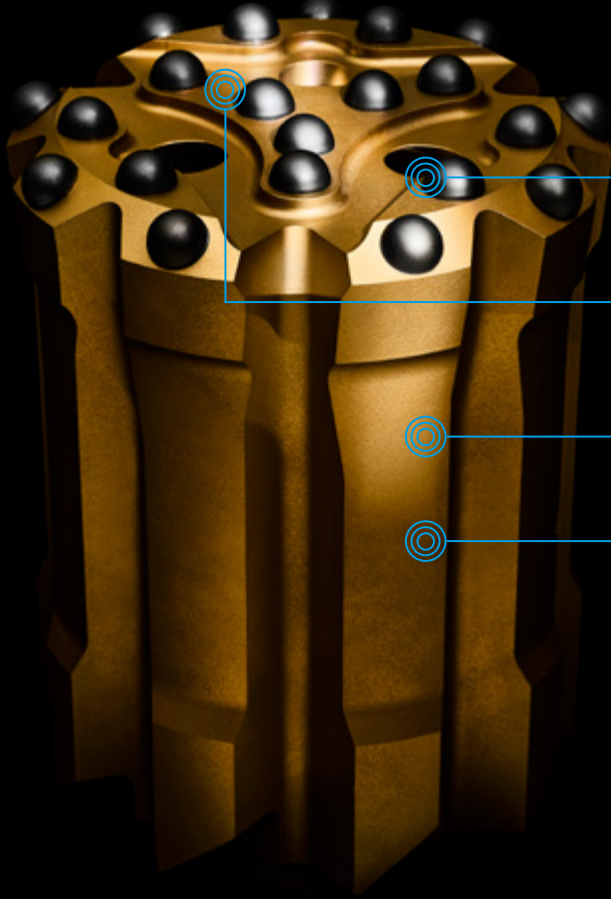
## SHANK

	LENGTH	FLUSHING DIAMETER	PART NUMBER
Thread			
LT90	850 mm	80 mm	7340-6040-15
LT90	850 mm	80 mm	7340-6040P-15*

\*RockPulse™, released in Sept 2021



LT90 DRILL BIT



## LT90 DRILL BIT

FRONT DESIGN WITH STRONG GAUGE ROW, HIGH ROCK BREAKING EFFICIENCY AND EXCELLENT FLUSHING.

AVAILABLE WITH OUR STANDARD AND PREMIUM POWERCARBIDE™ GRADES.

RETRAC SKIRT FOR STRAIGHTER HOLE DRILLING.

PATENTED DESIGN.

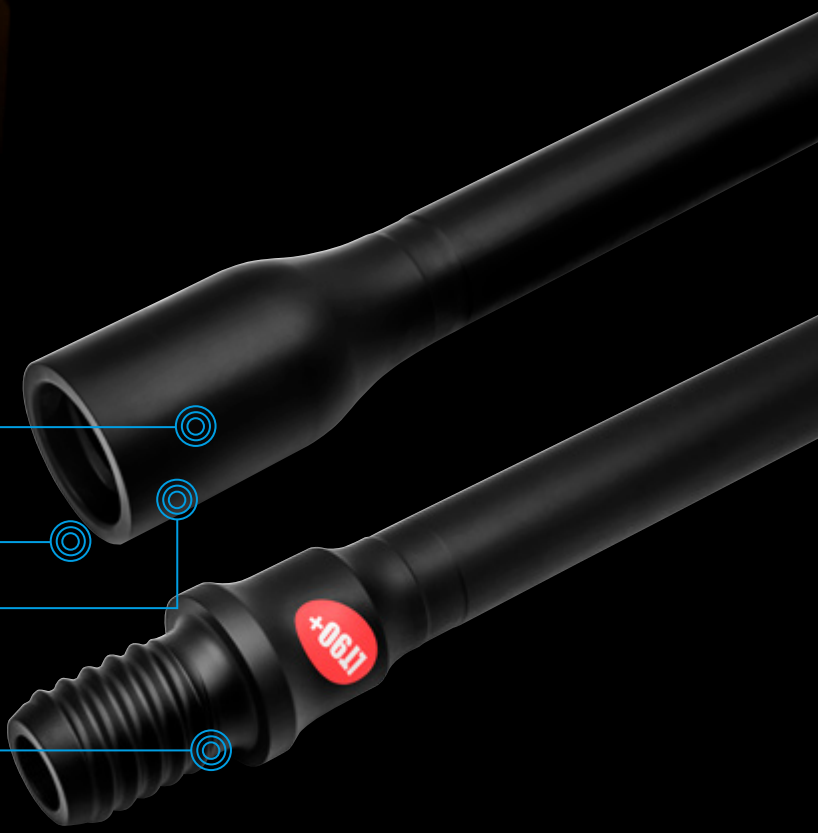
## LT90 TUBE ROD

OPTIMIZED STEEL GRADE AND HEAT TREATMENT FOR LONGER SERVICE LIFE AND RESISTANCE TO THREAD WEAR.

PATENTED DESIGN.

GREAT COUPLING CHARACTERISTICS FOR INCREASED PRODUCTIVITY, LONGER SERVICE LIFE AND IMPROVED DRILLING EXPERIENCE.

DESIGNED TO MINIMIZE THE LOSS OF ENERGY IN THREADS, INCREASE THE RATE OF PENETRATION AND IMPROVE THE HOLE STRAIGHTNESS.



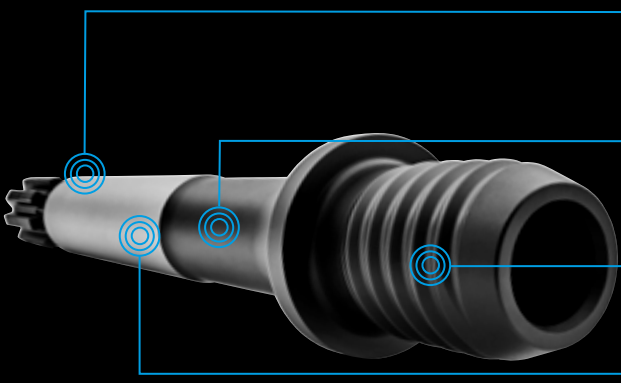
## LT90 SHANK

DESIGNED FOR OUTSTANDING ENDURANCE AND DEPENDABILITY TO WITHSTAND THE MOST EXTREME STRESSES.

HIGH QUALITY STEEL WITH HIGH QUALITY PROCESSES.

SHOULDER DRIVEN SYSTEM WITH DOUBLE PASS THREAD.

OPTIMUM ENERGY TRANSFER FROM THE ROCK DRILL PISTON INTO THE DRILL STRING.



# THE STORY OF THE TOP HAMMER XL SYSTEM

Optimizing drilling operations and cutting costs is a constant focus of surface mining companies. At Sandvik, we now have a powerful solution for this: the Top Hammer XL system with Pantera™ DP1600i drill rig, RD1840C rock drill and LT90 rock tools. The Top Hammer XL drilling system expands the hole size range of top hammer drilling up to 178 millimeters (7 inches). It provides a faster and more fuel-efficient drilling method that can considerably reduce CO2 emissions.

The new, groundbreaking drilling system, targeting large-scale quarry and surface mining customers, offers a faster, more fuel-efficient, and more cost-effective way of drilling holes in 140 to 178 millimeters (5.5 to 7 inch) diameter. The system's components – a new Pantera™ DP1600i drill rig, new RD1840C rock drill, and new LT90 rock tools – are all optimized to work together seamlessly for exceptional drilling results. When developing the Top Hammer XL system, the challenge was clear. Sandvik wanted to achieve a maximal penetration rate with minimal energy losses.

"The new rock drill, designed especially for the Top Hammer XL system, tackles the challenge of increasing the percussive energy of drilling action without increasing the drill's physical size. The innovative design results in improved drilling dynamics, where the rock drill is optimized for the rock tools and the target larger hole size", explains Jukka Siltanen, Product Manager, BU Rock Drills at Sandvik.

"With the Top Hammer XL system, we have more energy in the whole system", says Fredrik Björk, Product Manager Rock Tools Surface Drilling at Sandvik. The challenge was mainly solved by improving the drilling dynamics, which in turn requires careful balancing of several potentially conflicting parameters. One of these is the stiffness of the drill string to achieve straight holes, while at the same time avoiding excessive stiffness to

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**"With the Top Hammer XL system, we have more energy in the whole system".**

Fredrik Björk,  
Product Manager, Rock Tools Surface Drilling

prevent breaking of the tools under bending. This also means avoiding too large rod diameters because that will result in higher stresses in the thread joints under bending. Another key balance is between wear resistance and hardness because excessively hard tool steel will also be too brittle. A major asset for Sandvik in this respect is the steel grade and heat treatment expertise available in-house at Sandviken, Sweden.

The new carrier is based on the reliable and proven Pantera DPI series platform, with upgraded key components to meet the Top Hammer XL system's needs. Jarno Viitaniemi, Product Manager Surface Drilling at Sandvik, concludes.

"Sandvik has a long track record and proven performance in top hammer drilling. Therefore it was natural for us to upgrade the existing, well-known platform to the next level for this new solution."

The efficiency of the new Top Hammer XL drilling system stems from the three components. The proven carrier offers a solid base for the extremely powerful rock drill that generates an optimum pulse for the effective tooling system, which in turn transfers the high-energy shock wave with minimum losses to the rock. The Top Hammer XL system has been thoroughly tested and proven in several field tests by drilling more than 100,000 meters in challenging rock conditions. The test results in the given conditions show a 50 percent reduction in fuel consumption, 25 percent reduction in total drilling costs, and 15 percent increase in productivity compared with the down-the-hole (DTH) drilling method\*.

\*Calculations presented on this page are estimations based on field test results under specific controlled conditions. The results may vary depending on actual drilling conditions and should not be treated as specifications. Sandvik does not guarantee, warrant, or represent the outcome in any or all circumstances.

# TRY THE TOP HAMMER XL CALCULATOR

Compare your down-the-hole (DTH) set-up with the Top Hammer XL and calculate your annual savings. Our calculator can show you how to save fuel, reduce CO2 emissions and increase your productivity.

Get better insight into your unique benefits and savings by trying out our calculator or contact your local sales representative.

Visit <https://www.rocktechnology.sandvik/th-xl>



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ROCKTECHNOLOGY.SANDVIK/TH-XL



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