



SANDVIK TH550B BATTERY-ELECTRIC TRUCK



RETHINK THE FUTURE OF MINING

HALF A CENTURY OF EXPERIENCE COMBINED WITH INNOVATIVE EXPERTISE

TH550B battery-electric truck from Sandvik combines the best of two worlds: half a century of experience in manufacturing underground mining equipment by Sandvik and Artisan® battery packs and electric drivelines. This combination of experience and proven solutions created the 3rd generation of BEV (battery-electric vehicles) technology and is a game changer for any mining site in pursuit of a more sustainable and highly productive fleet.

REPLACE OR REDESIGN? RETHINK

When designing the battery-electric loaders and trucks, it was not enough to replace some components or replace the diesel engine with a battery. This technology compelled us to rethink the whole machine. To best utilize the possibilities that the technology brings, this battery-electric truck has been designed entirely around the Artisan® battery pack and electric driveline. TH550B builds on its predecessor truck, Artisan Z50, but it now also includes proven Sandvik systems and components.



LESS HEAT, ZERO DIESEL EMISSIONS

TH550B utilizes today's cutting edge battery technology, the Lithium-Iron Phosphate chemistry (LiFePO4 or LFP). The fully battery driven truck produces no underground exhaust emissions and significantly less heat than traditional engines, supporting the mines in reaching sustainability targets for example, by means of reduced CO₂ emissions. On a practical level, battery-powered equipment helps to reduce ventilation requirements, significantly reducing costs.

HIGH-POWER ELECTRIC DRIVELINE

Since battery equipment power is not constrained by mine ventilation limitations, we used the most powerful electric motors available for underground use. The electric driveline delivers 540kW of continuous power, allowing for high acceleration and fast ramp speeds for shorter cycle times.

RETHINK THE EQUIPMENT, KEEP THE SAME MINE

MINIMAL INFRASTRUCTURE

We completely redesigned the machine so it can work seamlessly in any mine with only a few changes. Thanks to AutoSwap, a patented self-swapping system for the Artisan® battery pack, TH550B does not require any significant mine infrastructure such as overhead cranes or forklifts to hoist or swap batteries. This can easily be set up in an unused passing bay or old re-mucking bay. When using AutoSwap to change the battery, the operator can remain in the cabin during the process.

SHORT CYCLE TIMES

TH550B by Sandvik offers high speeds, thanks to the high-performance driveline. As there is no transmission or need to change gears, instant torque provides quick acceleration without delays. Battery swaps that are required during long hauls uphill are done in about three minutes, the fastest battery swapping process on the market.



REGENERATIVE BRAKING

TH550B by Sandvik uses the traction motors to decelerate and control speed. At the same time, it recharges the battery as it converts mechanical energy into usable electrical energy. Due to regenerative braking, the brakes are rarely used, contributing to a long brake lifetime.

LFP CHEMISTRY

For safety and reliability in tough underground mining environments, the TH550B truck utilizes cutting edge battery technology, based on a lithium-iron phosphate chemistry (LiFePO₄ or LFP). LFP is designed to be reliable and corrosion resistant and to withstand overcharge, vibration and impacts.

FIELD SERVICEABLE BATTERY CHEMISTRY

The battery is designed to be serviced in the field to avoid expensive downtime and logistics. Full refurbishment with new cells can be done underground in less than one shift. Special attention was paid to arc-flash risk reduction in the system design to protect technicians from the hazards of high voltage. For easy and fast maintenance, it is possible to take one module out from the battery pack to maintain only one part of the pack.

FEATURES

AUTOSWAP

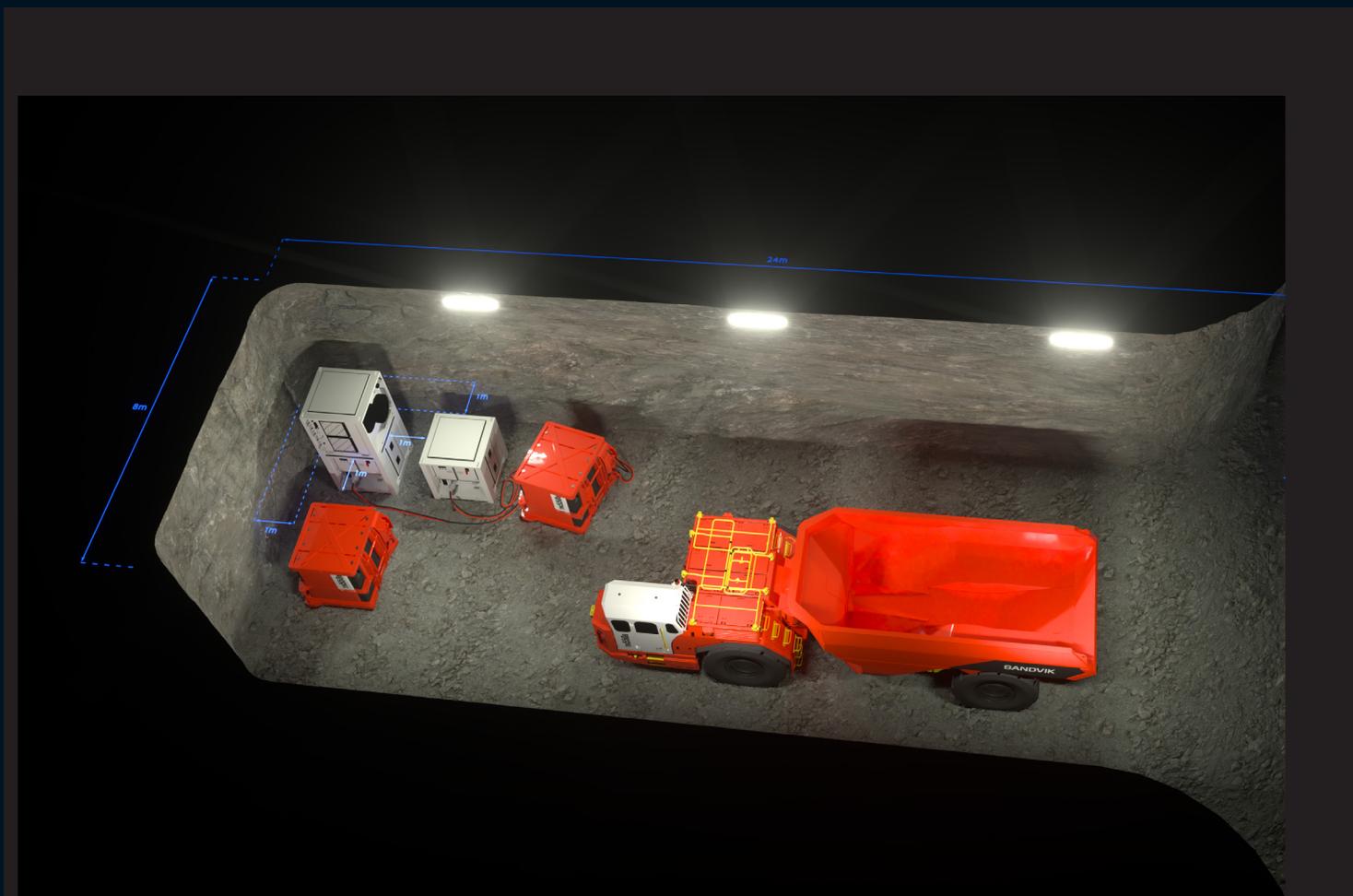
TH550B is equipped with AutoSwap, a patented self-swapping system for the Artisan® battery pack. Battery swapping is fast and easy. The process takes about three minutes and allows the operator to stay in the cabin during the process. With the purpose-designed battery, it will improve safety and productivity. AutoSwap also does not require any heavy mine infrastructure such as overhead cranes or forklifts and the charging bay is easy to relocate as operations advance for added flexibility.

12" TOUCH SCREEN COLOR DISPLAY

The 12" color display with advanced touch screen functionality has all the needed information and alarms on one large display, giving the operator more time to keep eyes on the road. A dark background and graphics with clear symbols are designed for the underground environment to reduce eye fatigue. The Sandvik Intelligent Control system monitors and warns the operator before failures occur, preventing severe damage and potential loss of production.

ROPS AND FOPS CERTIFIED

The TH550B has a noise resistant cabin that is sealed and pressurized and uses dust resistant materials, has three-layer laminated safety glass windows, emergency exits, an illuminated cabin entrance with three-point contact handles and anti-slip steps. In addition, the cabin is mounted on oil dampened bushings to reduce whole body vibration. The cabin door includes a door lock and latch mechanism and a magnetic interlock switch which automatically applies brakes and inactivates box and steering when the door is opened.



SANDVIK 365 PARTS & SERVICES

PROUDLY KEEPING YOU ON TRACK!

Sandvik 365 Parts & Services offer a variety of possibilities to enhance your Sandvik TH550B truck's performance. As an OEM, we provide the best-suited choices to preserve your machine's high performance throughout its lifetime. These consist of highly skilled service specialists supporting you 365 days a year, all using Sandvik Genuine parts and components complemented by a range of robust tools. In addition, you get to enjoy the benefits of advanced digital services and a global infrastructure dedicated to keeping your Sandvik fleet on track.

BENEFIT FROM OUR 365 SOLUTIONS

Our Sandvik 365 Parts & Service solutions will enable your equipment to function safely at peak condition and allow you to achieve the most demanding production targets. Our aftermarket portfolio attends all possible needs throughout your equipment's lifecycle, ranging from the most basic and traditional offerings to the most sophisticated ones.

YOUR EQUIPMENT UPTIME IS OUR FOCUS – SANDVIK 365 COMPONENT SOLUTIONS

We have all your key components available to you under our various commercial offerings to suit your needs. Whether you have an ad-hoc failure or you are planning your maintenance in advance – we can assist, manage your components to maximize your uptime.

GAIN PRODUCTIVITY THROUGH CONNECTIVITY

365 My Sandvik Digital Service solutions will provide you with visualization of fleet utilization, productivity, safety and health on 24/7 basis. The digital service dashboards can be accessed through the My Sandvik customer portal, where you can subscribe to My Sandvik Insight or Productivity. This way, My Sandvik Digital Service Solutions enable you to minimize unplanned downtime and set exact targets for improvement.

CHOOSE FROM OUR RANGE OF SERVICE AGREEMENTS

With Sandvik Service Agreements, you can improve productivity and minimize unplanned downtime by making use of our expertise, systems and processes. They can be adapted to the specific level of support you require – helping you proactively manage your fleet and avoid any unexpected surprises.



TECHNICAL SPECIFICATION

SANDVIK TH550B

CAPACITIES *SAE heaped 2:1

Maximum Payload	50 000kg
Standard Dump Box	28 m ³
Dump box range	24 - 31 m ³

MAIN DIMENSIONS

Overall Length	11 055 mm
Overall Width	3348 mm
Overall Height	2891 mm

OPERATING WEIGHTS - UNLOADED *Unit weight dependent on selected options

Total operating weight	49 600 kg
Front axle	36 000 kg
Rear axle	13 600 kg

OPERATING WEIGHTS - LOADED *Unit weight dependent on selected options

Total loaded weight	99 600 kg
Front axle	48 400 kg
Rear axle	51 200 kg

SPEED

Level/Loaded	37 km/h
1:7 (ramp - loaded)	13.5 km/h

OTHER SPECIFICATIONS *Speeds over 20 km/h subject to application approval

Maximum Speed	38.5 km/h
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DUMP BOX MOTION TIMES

Discharging Times	10 sec.
Dumping Angle	70°

FRAME

REAR AND FRONT FRAME

Material	High-Strength Alloy (HSLA) steel
Central Hinge	Tapered Roller Bearing Articulation
Central Frame Oscillation for Improved Stability	+/- 8°
Automatic Central Lubrication	
High strength structure with optimized material thicknesses. Reduced machine weight for higher overall hauling capacity and long structural lifetime. Welded steel construction.	
Tanks are stand alone structures bolted onto main frame	

OPERATIONAL CONDITIONS AND LIMITS

Environmental Temperature	From 0 to +45°C
Standard Operating Altitude	Altitude capability from -1500 m to + 3000 m

REQUIREMENTS AND COMPLIANCE

Compliance with 2006/95/EC Low voltage directive
Compliance with 2004/108/EC Electromagnetic compatibility directive
Compliance with 2006/42/EC Machinery directive (Equipment for EU area, achieved with relevant options)
Design based on ISO 19296:2018 Mining - Mobile machines working underground - Machine safety
Design based on MDG 15. Guideline for mobile and transportable equipment for use in mines. (Equipment for Australia, achieved with relevant options)

POWER TRAIN

ELECTRIC/TRACTION MOTOR(S) X4

Locations	Wheel hubs
Motor Type	Permanent Magnet, AC
Continuous Power Output	180 kW each
Regenerative Braking	Equipped
ATF cooling system volume	38 l
Cooling system volume	35 l
Power (continuous)	720 kW

AUXILLIARY MOTOR

Torque, Continuous	1200 Nm
Power	200 kW

PRIMARY BATTERY

(Skid consisting of 2 battery packs)	
Nominal Energy	354 kWh
Nominal Capacity	576 Ah
Continuous Power	540 kW
Dimensions (LxWxH)	1800 x 2130 x 1680 mm
Approx. Weight	8255 kg

TRAMMING BATTERY

Nominal Energy	22 kWh
Nominal Capacity	72 Ah
Dimensions (LxWxH)	270 x 640 x 1250 mm
Approx. Weight	280 kg

TIRES

Tire size (Tires are application approved. Brand and type subject to availability.) 875/65R29

HYDRAULICS

MAIN COMPONENTS

Door interlock for brakes

Filling pump for hydraulic oil

Hydraulic oil tank capacity 156 l

Oil cooler for hydraulic and transmission oil with capability up to 45°C ambient temperature

ORFS fittings

Sight glass for oil level, 2 pcs

STEERING HYDRAULICS

Center articulated, power steering with two double acting cylinders

Hydraulic Cylinders - 140mm, 2 pcs
140mm, 2 pcs

Pilot operated steering main valve

Variable displacement steering piston pump

DUMP BOX HYDRAULICS

Fully hydraulic system, equipped with variable displacement piston pump. Oil flows to box hydraulic system from the steering hydraulics. Oil flow from the brake circuit pump is divided to the brake system and oil cooler motor.

Fully hydraulic system, equipped with variable displacement piston pump. Oil flows to box hydraulic system from the steering hydraulics.

Control valve Solenoid operated

Cylinders 170 mm, 2 pc

Hydraulic pump Variable displacement piston

Main valve Solenoid operated

BRAKE HYDRAULICS

Automatic brake application, ABA

Electrically driven emergency brake release pump

Foot Operated Brake Pedal valve

Neutral brake

Service brakes are spring applied, hydraulically operated multi-disc wet brakes on all wheels. Two independent circuits: one for the front and one for the rear axle. Service brakes also function as an emergency and parking brake. Brake system performance complies with requirements of EN ISO 3450, AS2958.1 and SABS 1589.

ELECTRICAL EQUIPMENT

MAIN COMPONENTS

24 V Low voltage Batteries 2 x12V, 180Ah

24V Solid-state Power Distribution System for improved reliability and diagnostic capabilities

Camera system 7 Point Camera System

Control System 12" colour display with Sandvik integrated control system hardware modules

Driving lights LED lights:
4 pcs in front
2 pcs in rear

Flashing Beacon

Marker lights

Parking, brake and indicator (blinkers) lights LED lights:
2 pcs in front
2 pcs in rear

Reverse alarm (CEN)

Reverse camera

Working lights

AXLES

Front axle Proprietary direct drive

Rear axle Proprietary direct drive

INCLUDED SAFETY FEATURES

FIRE SAFETY

Portable fire extinguisher, 12 kg (CE)

ENERGY ISOLATION

Automatic discharge for pressure accumulators (brake system and pilot circuit)

Emergency stop push buttons according to EN ISO 13850: 1 pc in the cabin
2 pc in front frame
2 pcs in the mid-ship

Frame articulation locking device

Lockable main switch, ground level access

Mechanical dump box locking device

Wheel chocks and brackets

OPERATOR'S COMPARTMENT

CABIN

12 V and 24V outputs

Air conditioning unit located outside the cabin to reduce noise inside the cabin

Cabin mounted on rubber mounts to the frame to reduce vibrations

Cyclone pre-filter for A/C device

Drive by wire ergonomic joystick

Dump box up alarm buzzer in the cabin

Emergency Exit

Floor washable with water to reduce dust

Inclinometers to indicate operating angle

Remote circuit breaker switch

ROPS certification according to EN ISO 3471

FOPS certification according to EN ISO 3449

Sealed, air conditioned, over pressurized, noise suppressed closed cabin

Sound absorbent material to reduce noise

Safety glass windows

Three-point contact access system with replaceable and colour coded handles and steps

OPERATOR'S SEAT

Adjustable lumbar support

Adjustment according to the operator's weight

Fore-aft isolation

Height adjustment

Low frequency suspension

Padded and adjustable arm rests

Selectable damping

Three-point seat belt

CONTROL SYSTEM, DASHBOARD AND DISPLAYS

12" display with adjustable contrast and brightness

Illuminated switches

Instrument panel with illuminated switches

My Sandvik Digital Services Knowledge Box™ on-board hardware

MEASURED VIBRATION LEVEL

Whole body vibration was determined while operating the truck in a simulated working cycle consisting of loading, unloading and driving with and without load. The value is determined applying standards EN 1032 and ISO 2631-1.

Maximum r.m.s. value a_w [m/s²],
driving with load 0.82

VDV_w over 15 min period [m/s^{1.75}],
driving with load 7.31

DOCUMENTATION

STANDARD MANUALS

Operator's Manual	English and other EU languages
Maintenance Manual	English and other EU languages
Parts Manual	English
Service and Repair Manual	English
ToolMan	2 x USB stick in pdf format, includes all manuals
Decals	English and other EU languages

OPTIONS

Blue flashing beacon
ANSUL 210 fire suppression system
Clear flashing beacon
Cold Climate package
Connection for external 24V power supply
Cover grills for lamps
Driving direction lights (red / green)
Emergency steering (CE)
Integrated weighing system (IWS) for trucks
Monitoring camera system
Proximity Detection System Interface
Safety rails
Spare rim
Tyre Pressure Monitoring System
Wiggins quick filling set for oils

AVAILABLE BOXES (OPTIONAL)

Box capacity SAE heaped 2:1 (m ³)	20	22	24	26	31
Height (mm)	2590	2610	2760	2910	3010
Total height (mm)	3370	3420	3540	3690	3840

* According to SAE 1363/ISO 6483

GRADE PERFORMANCE*

Assumed 3% rolling resistance

Empty

Percent grade	0.0	2.0	4.0	6.0	8.0	10.0	12.5	14.3	17.0	20.0
Ratio					1:12	1:10	1:8	1:7	1:6	1:5
Speed	38.5	38.5	36	33	30.4	28.5	26.2	24.5	22.5	20.5

*Speeds are performance estimates based on the new 482kWh battery system design available in 2023 and may be subject to change

Loaded

Percent grade	0.0	2.0	4.0	6.0	8.0	10.0	12.5	14.3	17.0	20.0
Ratio					1:12	1:10	1:8	1:7	1:6	1:5
Speed	37	32	27.5	24	21	18	15.5	13.5	12	10.5

*Speeds are performance estimates based on the new 482kWh battery system design available in 2023 and may be subject to change

DIMENSIONS WITH 28 M³ BOX

The dimensions are indicative only

