



THINK BIG, ACT SMALL

# SCANIA AUTONOMOUS MINING SOLUTIONS



**SCANIA**



# THE PATH TO SAFE AND SUSTAINABLE MINING

Some challenges presented to mine owners and operators might feel overwhelming. Especially those regarding emissions reduction, minimising local and overall environmental impact and meeting new efficiency demands – while still operating safely and maintaining the output of resources greatly needed by the world around us all.

Our modern world is dependent on the resources derived from mining. Without them, development would stagnate, and societies would struggle. Yet at the same time, industry and transport are major contributors to global emissions. Acknowledging these perspectives is key to becoming a major part of the solution, and not just part of the problem. The demand for sustainable operations and logistics efficiency is increasing in every part of the mining industry, and we need to live up to them.

For us at Scania, efficiency and sustainability always go hand in hand. And that is precisely why Scania's autonomous mining solutions are focused on providing you with the most

efficient solution for your operation. More efficient and sustainable vehicles, able to operate in and around more efficiently and sustainably designed mining sites. And using all the technological advances made available to us. Such as complete vehicle autonomy which is expected to contribute to significant improvements on multiple levels.

Scania's Autonomous mining solutions are a future-ready approach that helps you on the road to potential cost savings, increased productivity, improved safety and reduced environmental impact. Always tailored to your specific business needs and operation – and all while maintaining world-leading safety standards.

THE FUTURE OF SAFE, PRODUCTIVE, AND SUSTAINABLE MINING OPERATIONS BEGINS WITH SCANIA



## AUTONOMOUS SMALL TRUCK MINING BENEFITS

The benefits of smaller trucks are many, both regarding productivity and emissions. Operating a fleet with smaller trucks can mean more efficient operations with a lower environmental impact due to less waste and minimised emissions – all while also reducing capital and operating expenses. Not to forget, it's putting fully electric operation within your grasp.

### Driver shortage

While many mine operators see the driver shortage as the most apparent argument against small truck mining – we see it as the exact opposite thanks to the current maturity of autonomous operation. Simply put, autonomous operation is the true enabler of small truck mining at any scale, in any location – with all of the benefits, and none of the downsides.

### Electrification ready

When it's time for you to electrify your mining vehicle fleet – our vehicle portfolio will be ready for it. We already have very capable fully electric trucks in operation in various transport applications – and to put it bluntly, small truck electrification is a lot more mature than the electrification of large rigid mining trucks. When you are ready to electrify, so are we.



# REDUCED EMISSIONS AND FOOTPRINT

When it comes to cutting emissions, an autonomous truck can be a big part of the solution. Driving consistently at an optimised speed level always offers higher efficiency regarding the vehicle's fuel consumption. And since our Scania XT trucks can also operate on road infrastructure with lower requirements, with higher optimal speed on uphill hauls compared to large rigid trucks – that brings an advantage on three fronts.

Using advanced technology such as LiDAR, GPS and a collection of various sensors to gather real-time data, the trucks can follow a pre-planned route, whilst simultaneously making intelligent driving decisions. The trucks will continuously evaluate the road,

terrain and surrounding conditions and always choose the optimal navigation. This helps maintain a traffic flow that avoids congestion, and that is both smooth and predictable – leading to operation at optimal energy efficiency with minimised emissions.

## MORE FLEXIBILITY, HIGHER EFFICIENCY, SMALLER FOOTPRINT

Operating smaller trucks in an open pit means potential to have steeper walls and narrower roads. Road width can in fact be reduced by as much as two thirds. This helps your operation from multiple angles with mines that are faster and cheaper to both construct, maintain and restore, as well as having a reduced land area footprint. Applying this to surrounding road infrastructure, also enables you to more efficiently leverage additional extraction sites, bringing more of the resources into your scope of profitable availability.

- Cheaper, faster mine and road construction.
- Higher output per total square footage of mining land area.
- Minimised environmental scarring and restoration needs.
- More efficient solution for longer hauls.
- Easier access to nearby resource extraction.

# WORLD-LEADING SAFETY STANDARDS

As our vehicles become smarter, the safety increases. Thanks to new vehicle intelligence we can offer improvements in productivity and more efficient routing – while minimising injuries and accidents.

Operating the vehicle without a driver heavily reduces the risk of accidents and injuries, eliminating the factor of human errors due to fatigue or distractions. Autonomous vehicles can also both quickly detect possible threats or obstacles, and respond faster and more accurately than a human driver. One could even say:

The more vehicle automation there is, the safer it will be for vehicles and humans alike.

With an approach that also includes keeping the technology safe from cyber threats – our safety offers are always tailored to your business needs and your specific operations.

# AUTOMATED PROFITABILITY

With autonomous operation, running a fleet of small trucks to cover a specific daily transport tonnage doesn't have to mean a huge number of vehicles. 24/7 operation without increased salary costs allows you to maximise the total transport capacity over time.



### Capital and operating expenses

Smaller trucks have a lower initial capital cost and lower ongoing maintenance costs such as for components and more conventional off-road tyres with a vastly lower unit cost.



### Potential cost saving

Minimised energy and infrastructure requirements, as well as reduced driver expenses means potential cost savings across the board.



### Increased productivity

With automated performance monitoring, the trucks will notify or directly schedule maintenance themselves, with reduced downtime and maximised efficiency as a result.



### A solution to driver shortage

Autonomous trucks that operate without a driver is an obvious solution to driver shortages, while also heavily reducing or eliminating the risk of accidents and injuries.



### 24/7 profitability

Autonomous trucks can operate 24/7 and benefit from operating at times where traffic congestion is lower. And when it comes to electrified operation, the same applies to lower energy pricing during what is normally considered off hours.



### Operable in all weather conditions

The ability to operate in demanding terrain combined with the array of capable sensors that enable automation, allows our trucks to safely and consistently operate even in sub-optimal weather.



# VERSATILE ELECTRIFIED OPERATIONS

Scania's commitment for electrification also applies for transport within mining.

There are already a range of battery electric vehicles in live operation across several mining sites worldwide, and autonomous technology can be applied to any vehicle, electric or not. This means that investments you do into autonomous driving with a Scania small truck solution today, sets a future proof direction for your operations.

With electric energy infrastructure in terms of grid capacity access and charging in place, the only difference for Scania trucks is another driveline.

And thanks to the Scania modular system approach, we are primed to electrify many of our current vehicles as soon as the driveline and energy storage technology meets your needs. When you are ready to electrify on your terms and according to your requirements, we'll be there with the electrified solution to make it happen.

**Small truck operation, autonomy, and electrification**  
Electrification will provide a huge leap in terms of the transport sustainability

we strive for. With a combination of agile small truck mining, autonomous efficient operation, and sustainable electric vehicle drivelines, we can enable the most significant advance in emissions reductions and minimised climate impact on the horizon for mining transports.

# OUR SERVICES OFFERING

All vehicles need to work in a context, which requires a holistic approach. This is achieved with a tailored portfolio of smart digital services, repair and maintenance contracts including facilities if needed, financing and insurance as well as implementation consultancy and support.



#### On-site services

Scania's On-site services offer includes driver services, consultancy services, our world-leading repair and maintenance coverage as well as remote field workshops and temporary accommodation and supporting facilities. Available where and when you need them.



#### Parts guarantee

Scania's parts guarantee has you covered, by ensuring 95% parts availability within 24 hours, no matter which Scania Service Point is closest to you.



#### Connected services

With real-time insights and control of your fleet, Scania's connected services enable you to maximise your operational efficiency and stay one step ahead of any needs or issues.



#### Financial services and insurance

Scania offers financial and insurance solutions tailored for your business needs, throughout your vehicles' lifecycles. All under one roof and without surprises along the way.



#### Deployment and operations support

We will help deploy the autonomous vehicles on site, including installation, commissioning and training, and then provide 24/7 remote support for operations.

