



How MEVCO is innovating the mining industry with innovative Electric Light Vehicle (ELV) solutions

"I want to make the mining industry not only safer through the use of electric vehicles, I want to make the people that work in the industry have a much better quality of life and longevity versus today."

MEVCO CEO, Matt Cahir

Revolutionising your light fleet

How MEVCO's tailored electric light-vehicle solutions can reduce emissions, improve operational efficiency, and contribute to a safer and cleaner mining environment.

This white paper explores the technical aspects of MEVCO's tailor-made vehicles and how they can help to reduce emissions, boost profit margins and contribute to a safer, cleaner and more seamless mining environment.

Introduction: MEVCOs Promise & Expertise

As the goal of 'net zero' looms large, mining companies the world over are looking for solutions that are greener, safer and more cost effective to help reduce carbon emissions.

MEVCO, a portfolio company of Resource Capital Funds, specialises in providing electric light-vehicle solutions for the mining sector. Founded in 2022, MEVCO's electric vehicles are tailored specifically for mining applications and are backed by the expertise and industry know-how that comes from a company focused exclusively on mining.

Far more than simply a vehicle provider, MEVCO offers its partners a 360-degree approach to electric fleet adoption that encompasses 24/7 support, onsite maintenance, bespoke charging solutions and data-driven insights through MEVCO Connect.



For Miners; By Miners

MEVCO's sole focus is the mining sector and its expertise stems from hiring staff with vast levels of industry experience. This brings a deep knowledge of the mining industry and how best to deliver a practical and durable electric light-vehicle solution.

"We are full of mining people – people who have worked in mines, on shovels, excavators, haul trucks, road trains, and haul roads," says company **CEO Matt Cahir**.

"That's a big difference in understanding how our customers operate and their business, as well as understanding the type of product we need to present to the mine for it to be successful in their environment."



Meet Matt Cahir, MEVCO's CEO, Founder and Executive Director

Matt brings over four decades of business acumen to his role as CEO and Executive Director. With his extensive career spanning the technology, automotive and mining industries, Matt has a hard-earned reputation as a respected leader with a strong passion for technological innovation.

Matt's leadership extends to managing large teams, with a proven track record of guiding organisations with over 300 personnel to achieve market success.



Meet Ryan Stimpson, MEVCO's Chief Technical Officer

Armed with an aeronautical engineering degree from Loughborough University, Ryan's career has included stints at Dyson and several of the mining world's leading companies, including Minnovare and Fortescue Metals Group. At Dyson, Ryan worked on the patented Dyson fan, researched the aero-acoustics of turbo machinery and was also involved in the company's then top-secret electric car project, with the latter bringing a wealth of knowledge to his current position as Technical Director at MEVCO. A father of two, 37-year-old Ryan is a firm believer in site visits and working together with mining clients and vehicle operators. He values honest feedback and has experience in providing fast, tailor-made solutions for clients around the world.

Our Vehicles

Mining is a tough industry that subjects light-vehicle fleets to extreme temperatures, rough roads and confined environments. MEVCO offers two electric vehicle solutions, each chosen for their robustness, durability and peace of mind that comes from strategic alliances with market leaders like US electric vehicle specialist Rivian.

"I knew mining needed electric vehicles and that the cyclic nature of mining would lend itself well to them. We just needed to find the right vehicle that could stand up to the test," says **MEVCO CTO, Ryan Stimpson**.

The answer lay in the **Rivian R1T**





Rivian R1T

(Available in USA, Canada & Australia)

The Rivian is a highly capable, purpose-built electric light truck designed from the ground up, offering impressive advances in safety, performance, and capability.

A larger battery pack and dual electric motor provide big boosts in range (up to 656km) and power/torque (392kW/827Nm) while also allowing the Rivian to recharge more quickly. Its braked towing capacity of 4989kg also eclipses the tow rating of most mid-size dual-cab utilities by a significant margin.

MEVCO's mining-specific Rivian R1Ts have been jointly developed with Rivian itself and are purpose built to handle the varying conditions on a mining site, which are some of the harshest on the planet.

"The big thing about the Rivian is that it's one of the few purpose-built electrically powered off-road trucks in the world." says **MEVCO CEO, Matt Cahir.**

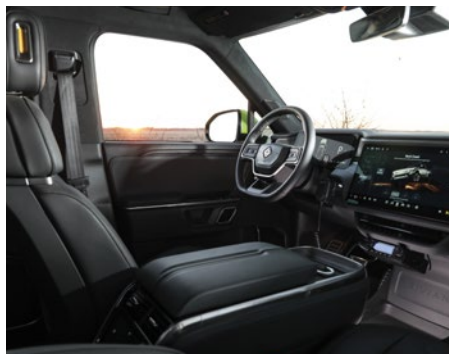
"It has been built for off-road. That is where it lives, breathes and is amazing. It has the highest ride height of any vehicle; it has the highest waterproofness. It has a flat steel Kevlar bottom. Other vehicles don't have half of the technology onboard that the Rivian does, or the performance, and nowhere near the capability off-road."

"It's so capable that it's a bit like having a watch that can go 800-metres underwater," says **MEVCO CTO, Ryan Stimpson**

"Even if you don't go diving, you know that whatever you do the watch will be okay. It's a similar story with the Rivian's power and torque."



Frunk: A sealed, lockable compartment for tools and safety gear, protected from the elements



Enhanced safety and comfort



Gear Tunnel: A tunnel between the cab and bed for longer items like shovels or custom drawers

RIT Technical Highlights



Kevlar underbody protection

A Kevlar plate provides extra protection and reduces the risk of foreign bodies piercing the battery pack or cabin, which could lead to injury for the operator. The RIT's underbody design is also smooth, meaning potentially vulnerable components are less likely to catch on items on the ground. Further, the smooth underbody also provides aerodynamic benefits which can improve the RIT's driving range.



Adjustable ride height/greater ground clearance

The RIT features variable air suspension which doesn't only provide a more comfortable and cossetting ride for vehicle operators, but also means its ride height can be raised or lowered to suit different conditions. In its highest setting, the RIT offers 14.4 inches of ground clearance, a significant increase over a Toyota LandCruiser 70 Series which has a ground clearance of around 11 inches.



Bespoke fit-out

MEVCO offers mining-specific upgrades for the RIT including additional wiring harnesses to incorporate two-way radio communication systems and external lights. Client customisation is also possible, such as bespoke lighting arrangements, reversing buzzer alterations and moving the placement of the battery isolator.



Lockable gear tunnel

The freedoms provided by an electric vehicle platform means the RIT has been fitted with an additional 100L storage compartment behind the rear cab. MEVCO usually configures this as a sliding, lockable set of tool drawers. "Having a waterproof, easily accessed storage location for smaller items avoids storing them on the tray where they can get wet or in the worst case, bounce off," says MEVCO Technical Director Ryan Stimpson.



Built-in air compressor

In the rear tub of the RIT there is an air compressor that can be used for a variety of functions like pumping up tyres or blowing out air filters. This is especially useful in a pre-start inspection, where the operator has the right tools at hand to inflate a tyre that may have lost pressure between shifts.



Wide operating window

Mining fleets need to operate in extreme conditions, including temperatures that can fall below zero and climb north of 50 degrees Celsius. The RIT has been designed and tested to operate effectively in a variety of ambient temperatures. It actively cools and heats its battery depending on how it's used and the prevailing conditions. Testing in Arizona has proven the RIT's effectiveness in temperatures of 50 degrees Celsius making it ideal for locations like the Pilbara in Australia's North West.



Breakout: Key Rivian R1T Specification

30 minutes

achieve a 20-80 % charge on a 150kW DC charger

7.5 hours

charge time on an 11kW single-phase AC charger

392kW/827Nm

R1T power and torque

3.0+ inches

additional ride height in an R1T compared with a Toyota LC 70 Series

The Benefits: Why Go Electric?

Safety, Safety, Safety



Reduced rollover risk

25 percent of all light vehicle mining incidents in Western Australia in the last 10 years involved the vehicle rolling over. In most cases this was due to a loss of control around a bend or on a loose surface. The RIT has sophisticated stability control, and an inherently stable platform due to the low centre of gravity from the placement of the battery in the floor of the vehicle. As a result, vehicle operators are less likely to lose control resulting in a rollover.



Traction management

The instant torque response of electric vehicles enables advanced torque management to ensure wheel spin and loss of traction are more quickly contained on loose surfaces. Combined with the RIT's sophisticated stability control, this means drivers can't lose traction or accelerate as aggressively, meaning they are less likely to lose control of the vehicle. The traction management system also means tyres spin and scabble less over rough terrain, reducing tyre wear and operating costs.



Greater active safety

Cutting edge hardware means MEVCO vehicles are fitted with advanced active safety systems that do not exist in most vehicles used on mine sites today. Features including Vehicle Dynamic Control, Hill Descent Control, Hill Start Assist, Electronic Brake Assist and driver fatigue monitoring systems all play an important role in improving operational safety.



Reduced fire risk

Avoiding vehicle fires, especially underground, is a major focus in the mining industry. Electric vehicles bring inherent advantages because they don't have hot turbos, exhausts and other components that can easily cause a fire if brought into contact with fuel or other flammable substances.



Fire-retardant foam

A key strength of the RIT, especially for mining applications, is the construction of its battery pack. Each of the 7000 cells in the battery are encased in fire-retardant foam. In the unlikely event of a battery fire, the foam is designed to retain the fire within an individual cell, preventing what is known as a thermal runaway event.

For Miner's Health

Moving to a low-emissions fleet can bring benefits to the health and livelihoods of mining staff.

- The World Health Organization classifies diesel engine exhaust fumes as a known carcinogen – meaning it is a substance that causes cancer.
- *"There are carcinogenic issues that relate to diesel particulates," says **MEVCO's CEO, Matt Cahir**. "I want to make this industry not only safer using electric vehicles, I want to make the people that work in the industry have a much better quality of life and longevity versus today. Electric vehicle technology is out there and it does the job better, safer, and far more cost-effectively."*

Reduce Fatigue, Improve Operator Conditions

- Electric powertrains bring significant improvements in noise, vibration and harshness compared with diesel vehicles. Long shifts in noisy vehicles can increase fatigue and cause headaches, leading to tired and distracted operators. This inherently increases the risk of incidents. Operators may also increase the volume on their two-way communications in noisy environments which may cause noise-induced hearing loss.
- Electric light-vehicles are not only quieter but also smoother to operate and more comfortable to drive. This is especially the case in the Rivian R1T with its adjustable air suspension.
- Electric vehicles are also better at maintaining a cool cabin temperature due to the absence of exhaust systems and other heat-generating components of ICE vehicles.
- *"One of the key advantages of the R1T for an operator is that it's a very nice place to sit all day, every day," says **MEVCO CTO, Ryan Stimpson**.*

Lower Costs Improve Profit Margins

- While they carry a higher initial outlay, electric light-vehicles can lower a mine's operating costs in several significant ways. Rio Tinto, for example, has found maintenance costs for their electric vehicles were significantly lower than for diesel vehicles thanks to fewer moving parts and less frequent maintenance.
- Lower maintenance costs: Electric vehicles are more economical to run and less complex to maintain due to fewer moving parts and longer servicing periods for key components. *"For regular maintenance, it's likely the RIT will cost less per year than an ICE vehicle,"* says **MEVCO CTO, Ryan Stimpson**.
- Drastically reduce fuel costs: Diesel is a significant cost in the mining industry. The Australian mining sector uses around five billion litres of diesel each year and is exposed to volatile price swings on the global market. *"Fossil fuel price volatility has a significant impact on mining viability but is outside the control of most mining operations,"* said the **Australian Renewable Energy Agency** in a recent report. In the last decade, diesel prices in Australia have swung between AU\$0.40/L and \$1.25/L. Electricity, on the other hand, is around 0.25c per kWh.
- Greater efficiency: In addition to being cheaper to fuel, electric vehicles use their energy more efficiently meaning they can travel further for less. An electric motor, for example, converts around 90 percent of its energy into motion, whereas a combustion engine is far lower at around 20-30 percent.

Dig Deeper / Save on Ventilation

- Ventilation to remove heat and emissions from underground is a crucial aspect of mining infrastructure. It's also hugely expensive.
- Diesel engines are a significant contributor to underground emissions. Using electric vehicles can drastically reduce ventilation costs and improve air quality/lower temperatures for workers.
- This can mean substantial savings on a mine's operating costs. For example, in an Australian mine a Toyota LandCruiser 79 Series with a 151kW V8 diesel engine requires 9m³/s of ventilation. A typical underground haul truck, meanwhile, that produces 565kW requires 33.9m³/s of ventilation per vehicle.
- Using these figures in a real-world example of a small mine with 3 x light vehicles and 5 x heavy trucks means yearly ventilation costs of \$795,000. Replacing the light-vehicles with electric vehicles will reduce ventilation costs by \$185,000 per year. Or \$62,000 per vehicle.
- The savings are even more significant in larger mines. Looking at an example from an underground mine in Western Australia, that runs 9 x underground mining trucks and 8 x underground light vehicles, could save up to \$1.7million per year, or \$200,000 per vehicle, by replacing the 8 x diesel light vehicles with electric alternatives.
- *"The cost of ventilation can be enormous,"* says **MEVCO CEO, Matt Cahir**. *"If you can reduce diesel emissions underground, you're saving massive amounts of money and reducing layers of complexity that exist in mining underground."*

Client-Focused Solutions

MEVCO is committed to providing its clients with the smoothest experience possible when it comes to the performance of their electric fleet.

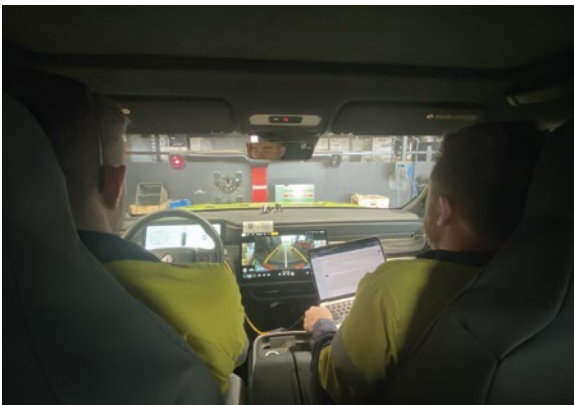
*“Changing to electric vehicles requires more than just providing the vehicles themselves,” says **MEVCO CTO, Ryan Stimpson.***

“Charging infrastructure, fleet optimisation and battery maintenance practices all need to be considered as operations transition too electric.”

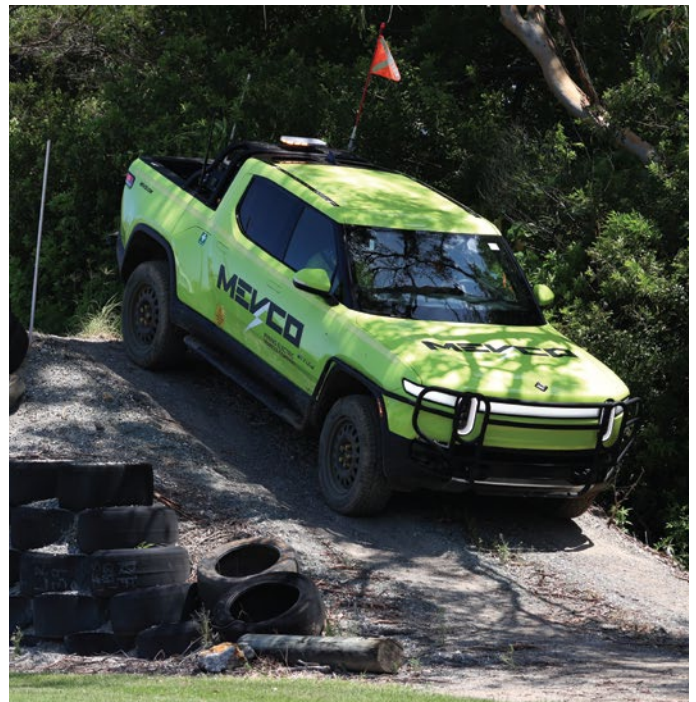
Far from being just an electric vehicle supplier, MEVCO prides itself on being a solution provider for the entire mining electric ecosystem. This stretches from long before the vehicles arrive on site to include detailed analysis and discussion about charging solutions and use case/duty cycle data, through to continual training and maintenance support once the fleet has arrived.



Customer test driving the MEVCO mine-spec Rivian R1T in Brisbane and experiencing the safety features and off-road capability first-hand.



Customer test driving the MEVCO mine-spec Rivian R1T in Brisbane and experiencing the safety features and off-road capability first-hand.



Customer test driving the MEVCO mine-spec Rivian R1T in Brisbane and experiencing the safety features and off-road capability first-hand.

*“The expectation is that mining companies and mining operators can pretty much break anything that you give to them,” says **Ryan Stimpson.***

“Our job is to see how quickly we’re able to get that piece of equipment back up and running.”

MEVCO’s highest priority is the safety of its vehicles but dependability and Total Cost of Ownership run a close second.

“After safety, it’s durability, durability, durability, durability.”

*“We will deploy a technical account manager to our customers and create a service and support environment they’ve never experienced before in light vehicles,” says **MEVCO CEO, Matt Cahir.***

“There will be someone on-site whose only focus is maintenance schedules, helping new drivers, ensuring spares are available and supporting the customer.”

MEVConnect

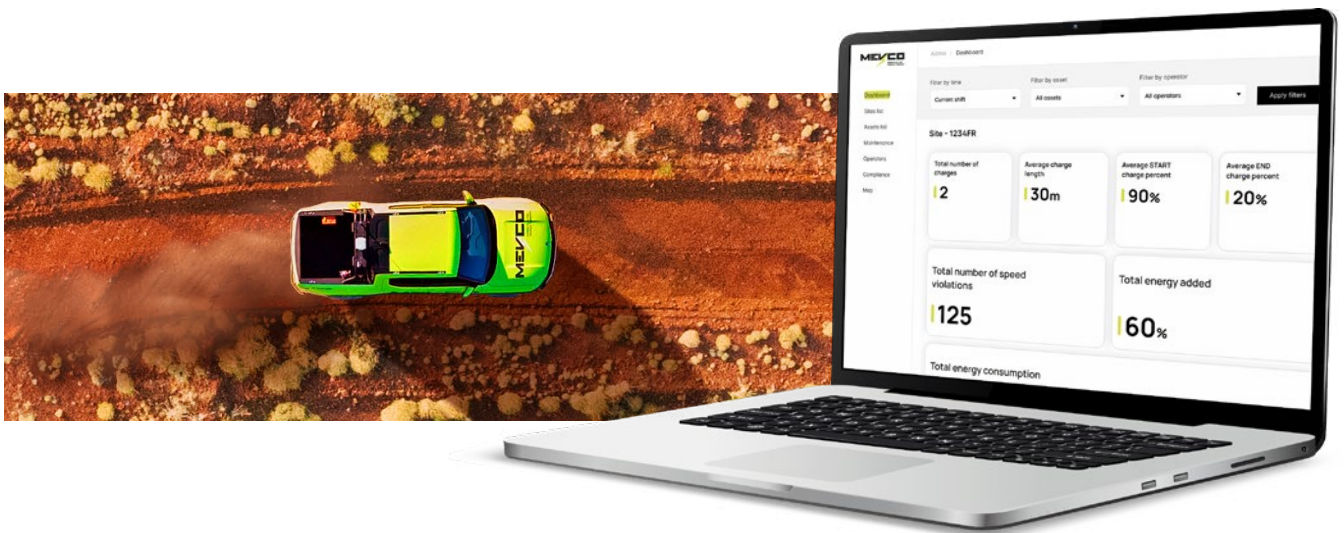
Organisation and pre-emptive management are core to the success of an electric light-vehicle fleet. And the key to that is MEVConnect. A proprietary software, MEVConnect acts as the brain for your electric vehicle fleet, providing data on everything from duty cycles to predictive maintenance and, crucially, recharging requirements.

The transparency of MEVConnect data allows mining companies to see exactly how their light-vehicles fleet is being utilised, enabling the operators to optimise service and maintenance schedules as well as charging times.

*"It's true that electric vehicles have less range than diesel counterparts and they take longer to fill back up," says **MEVCO CTO, Ryan Stimpson.***

"But MEVConnect data creates a charging plan that can make sure range anxiety is dispelled by ensuring vehicles are always at 80 percent or more when it's time for the next shift."

MEVCO is dedicated to continual improvement of its software system and is working with its clients to trial beta versions in real world scenarios.



Ryan

Partner Focused

MEVCO's electric light-vehicle fleet brings the backing of some of Australia's leading experts in the automotive and charging space.

Alliances with partners like **Rivian** offer the peace of mind of OEM-backed vehicles, while MEVCO also partners with expert mining equipment supplier **Murray Engineering** to provide charging solutions.

With a broad offering spanning from 7kW AC chargers to ultra-rapid 360kW DC charging stations, Murray Engineering can provide portable or permanent solutions to suit a variety of needs and locations.

"In our partnership with Murray we are calling on their decades of experience in producing and installing technology in underground mines and surface environments,"

says **MEVCO CTO, Ryan Stimpson**.

Another burgeoning partnership is between MEVCO and the **Walkinshaw Automotive Group** to remanufacture the Rivian R1T from left- to right-hand drive. Walkinshaw brings a market-leading reputation for OEM-level conversions and has a proven track record with popular vehicles like the RAM 1500 and Chevrolet Silverado in Australia. Converting the Rivian R1T to right-hand drive will further enhance the usefulness and capability of MEVCO's flagship product.



Electrify Your Fleet Today

Don't let the future of mining pass you by. Join the electrification movement with MEVCO's electric light utility vehicles and propel your operations into a new era of efficiency and sustainability.

Call to Action

Electrifying your mining EV fleet is not just about compliance with sustainability targets; it's about reaping tangible benefits in safety, cost reduction, and operational efficiency.

MEVCO stands ready to partner with you on this transformative journey, providing the expertise, support, and technology needed to make your transition seamless and successful.

visit www.mevco.com



MEVCO