

# Delivering a groundbreaking future for mining

How Shell Lubricant Solutions can help you thrive today and tomorrow



## Your new reality

### **Evergreen Challenges**

### PRODUCTIVITY

Commercial focus drives decision making. Mines are facing pressure from internal and external stakeholders to increase profits while keeping costs down. SUSTAINABILITY (

Sustainability is consistently a top 10

challenge, and mines do not feel well

equipped to deal with it, particularly

when it comes to reducing CO2

emissions.

### New disruptive forces

DIGITALISATION

Digitalisation and sustainability challenges correlate closely. Mines need to take advantage of digital tools that deliver a positive impact on both sustainability and costs.

### LABOUR

Building on an existing skills shortage, digitalisation will have an impact on future skills – driving an increased need for partnerships to provide technical support.

UNCERTAINTY <

Cost volatility
 Pace and variety of technological advancements
 Rapidly changing standards and regulations
 Supply uncertainty
 Shifts in types of output

### How to drive ground-breaking productivity and sustainability in this changing world?

# **Operational excellence.** Redefined

To overcome their new challenges and deliver on their commercial targets, mines need to operate at peak performance. And in today's dynamic and uncertain world, this requires a broader, more integrated approach. That's why we work with sites to redefine operational excellence in mining.

### DRAWING ON AN INDUSTRY-WIDE SOLUTION SET



An integrated programme that supports your short- and long-term needs, from cost reduction to sustainability to digitalisation.

### **BUILDING ON DEEP** SECTOR EXPERIENCE



Our solutions have evolved through decades of experience supporting miners worldwide.

### DELIVERING THROUGH COLLABORATION



Working closely with you, we carefully tailor our solutions to your specific operations and requirements.

### UNLOCKING BUSINESS VALUE



Our solutions have delivered more than \$63 million of savings, based on demonstrated value records.<sup>1</sup>

Based on savings delivered to Shell Lubricant Solutions customers from 2014 to 2019.<sup>1</sup>



## Our value to you: Shell's technology leadership and innovation



## **Delivering savings and innovation**

OPERATIONAL EXCELLENCE. REDEFINED	HIGH-PERFORMANCE, ENERGY-EFFICIENT LUBRICANTS, INCLUDING ENGINE, AXLE, TRANSMISSION, HYDRAULIC AND GEAR OILS AND GREASES				ON-SI	TE SUPPORT	VALUE IMPROVEMENT PROJECTS	
	Shell Shell Spirax	Shell Tellu	shell Somala	<b>Shell</b> GADUS	Shell Lube	Expert	TCO PROGRAMMES	
SUSTAINABILITY	BIODEGRADABLE LUBRICANTS	RGY EFFICIENCY IMPROVEMENTS			GAS-DERIVED FUELS			
	Shell Naturelle	STE OIL MANAGEMENT			BIOFUELS Shell FuelSave Diesel			
DIGITALISATION	DIGITAL EQUIPMENT MANAGEMENT		OIL CONDITION MONITORING			REAL-TIME CONDITION MONITORING		
	MACHINEMAX		Shell Lube <b>Anal</b> y	/st		Shell Remote	Sense	
PARTNERSHIPS FOR FUTURE GROWTH	DIGITAL TRANSFORMATION CONSULTANCY		LECTRIFICATION TIONS		ELL RENEWA D ENERGY S	-	<ul> <li>Renewable energy</li> <li>Biofuels</li> <li>Hydrogen</li> <li>Nature-based solutions</li> </ul>	

## Our value to you



Our global technologydevelopment network features major centres in the USA, the Netherlands, Germany, India and China.



We use the know-how of experts around the world to deliver products that help enhance equipment efficiency and utilisation.

We're building on 125 years of technological innovation.

Technical partnerships with OEMs optimise oils and greases for the latest equipment technology.

Our lubricants are recommended or approved by more than 3,000 OEMs. Products and services that demonstrate our **technology leadership** include:



click here >

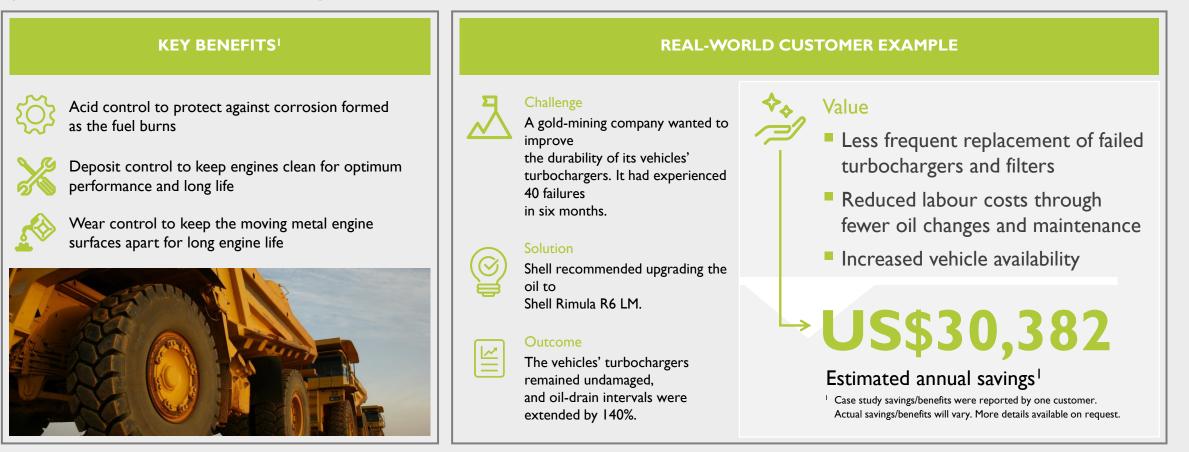
# Heavy-duty engine oils that energise equipment operations





To see products by equipment type, click here >

Shell Rimula oils are formulated with adaptive technology to provide enhanced protection and reduced viscosity.



### Transmission oils that extend oil drain Intervals and improve fuel efficiency





To see products by equipment type, click here >

Shell Spirax oils are designed to provide exceptional protection, extending the life of vehicle components operating in harsh conditions.

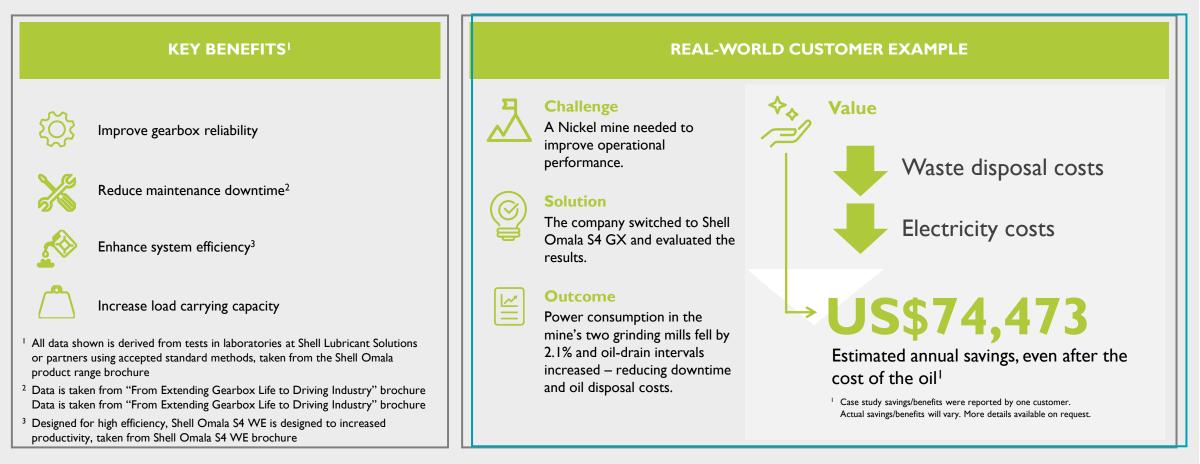


# Gear oils that keep operations running at peak performance



To see products by equipment type, click here >

Shell Omala oils help gearboxes to work harder for longer, increasing productivity and reducing total cost of ownership (TCO).



# A comprehensive family of greases designed to meet varied needs





To see products by equipment type, click here >

Shell Gadus greases are designed to protect open gear systems operating for long periods under extreme loads – especially those in high temperatures or dusty environments.



### Hydraulic oils that can lower costs and reduce equipment downtime

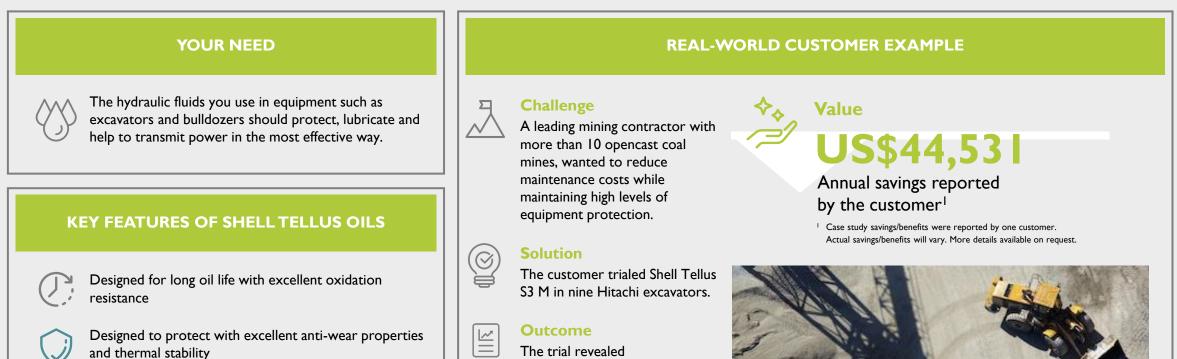




To see products by

To watch the video. click here >

The Shell Tellus range of high-performance hydraulic fluids has set the standard in the field of hydraulic fluids for more than 60 years.



Designed for system efficiency with excellent filterability and air release properties

The trial revealed that it could extend the hydraulic-fluid-drain interval to 6,000 hours.

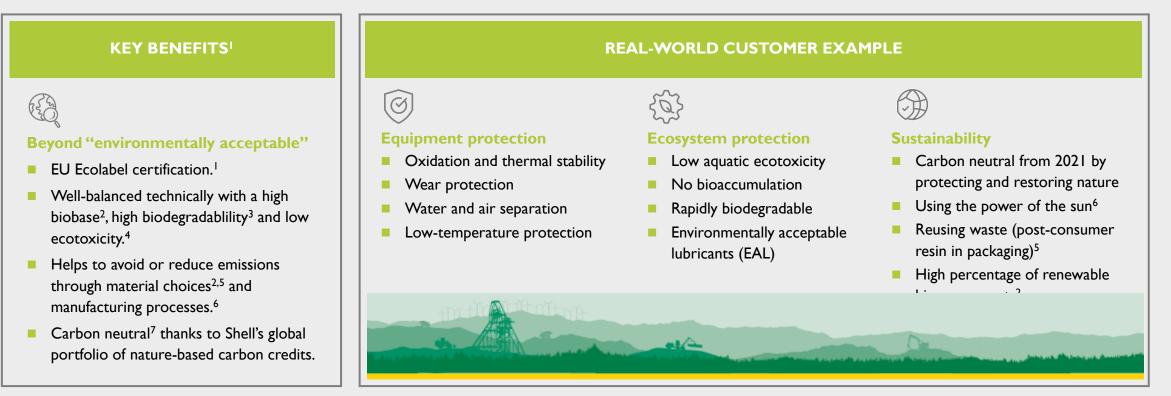


# Biodegradable lubricants that balance sustainability and performance



Shell Naturelle helps businesses to improve the environmental impact of their lubricant operations without having to compromise on performance.

2



<sup>1</sup> 85% of Shell Naturelle volumes sold in 2019 held an EU Ecolabel licence. <sup>2</sup>Tested in accordance with ASTM D6866 standard test methods for determining biobased content; RSPO-certified source materials. <sup>3</sup>Readily biodegradable in accordance with OECD 301 B, >60% degraded by the end of the 28-day test. <sup>4</sup>Meeting the requirements of OECD common acute toxicity tests for assessing EALs according to US EPA requirements. <sup>5</sup>At least 25% post-consumer resin in all plastic packaging, pails and IBCs. <sup>6</sup>Bern, Switzerland, 90 MWh of electricity generated from solar energy, representing 19% of the plant's total electricity use and avoiding an estimated 0.004 kt/y of greenhouse gas emissions (2019 data). <sup>7</sup>In participating locations. "Carbon neutral" indicates that Shell has engaged in a transaction where an amount of CO<sub>2</sub> equivalent to the CO<sub>2</sub>e amount associated with the raw material extraction, transport, production, distribution, use and end-of-life of the product has been avoided as emissions through the protection of natural ecosystems or removed from the atmosphere through a nature-based process. CO<sub>2</sub>e (CO<sub>2</sub> equivalent) refers to carbon dioxide (CO<sub>2</sub>), methane and nitrogen oxides.

### State-of-the-art oil condition monitoring

Shell LubeAnalyst is an oil condition monitoring service helps ensure that your equipment and lubricants are in optimum working order – reducing downtime to maximise productivity.

### **KEY BENEFITS**

Shell LubeAnalyst helps you to:

- Identify potential problems at an early stage.
- Optimise maintenance and oil-drain intervals.
- Monitor the performance of equipment over time.

#### WHAT YOU GET

- Equipment-based diagnosis and insights
- Strong support from Shell experts
- An easy-to-use digital platform

#### **NEW FEATURES INCLUDE**

Benchmarking against our extensive database

- Define your oil limits and set your engine's warranty status
- API integration enables the exchange of data from your oil sample report to your CMMS

### **REAL-WORLD CUSTOMER EXAMPLE**

#### Challenge

A mining company wanted an engine lubricant that would give it a longer oil-drain interval (ODI).

#### **Solution**

It switched to Shell Rimula R4 and adopted the Shell LubeAnalyst service to monitor the oil's condition.

### Value

Its ODI increased by 70% and the company has reported a total estimated saving of

### US\$189.000 per year.

'The savings indicated are specific to the calculation date and mentioned site. These calculations may vary from site to site and from time to time, depending on, for example, the application, the operating conditions, the current products being used, the condition of the equipment and the maintenance practices.







To watch the video, click here >

### Your machinery has a lot to say: discover what matters with predictive oil monitoring

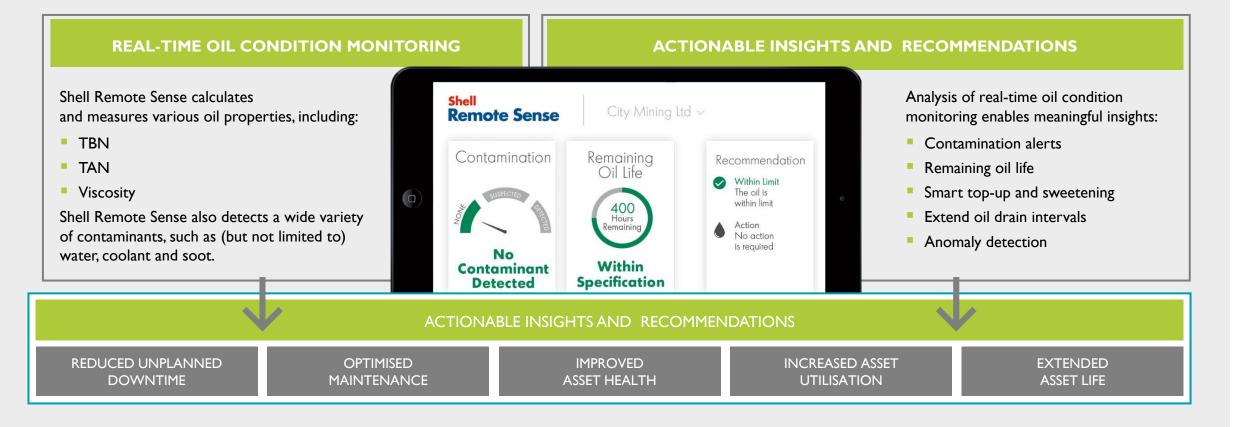
4





To watch the video, click here >

A smart oil condition monitoring service delivering insights for industrial companies to optimise equipment health, lower maintenance costs and increase operational efficiency.





### All your data, all in one place

MachineMax is a wireless telematics solution that gives enhanced visibility over fleet performance.



### **KEY BENEFITS**

A digital equipment management platform for fleets that uses smart sensors and next-generation analytics to help you maximise fleet utilisation, productivity and profitability – all while reducing environmental impact:

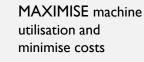
- Track your entire fleet in realtime via a single dashboard
- Non-invasive, wireless sensors installed in less than a minute
- Integrates existing telematics data
- Cut costs by increasing utilisation and optimising maintenance
- Lower emissions by reducing engine idle times



REDUCE wasteful idling times, fuel consumption and CO<sub>2</sub> emissions



IMPROVE productivity and utilisation of your mobile, heavy machinery



### **REAL-WORLD CUSTOMER EXAMPLE**

ſ		
L	— J	

Within two weeks, one customer that tracked its fleet using MachineMax realised that its loading shovels were over-utilised, and that their dumpers were under-utilised.

This helped the company to increase productivity by up to 40%.



# Enhance operational efficiency through precise and reliable lubrication

Shell Tactic EMV is an electro-mechanical single point lubricator designed to provide optimal lubrication to greased





To watch the video, click here >

machinery components, such as rolling element bearings

### **KEY BENEFITS**

- Efficient and safe lubrication process
- Regular grease purge for accurate dispensing and contamination prevention
- Immediate grease delivery

6

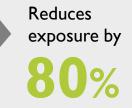
Remote mounting flexibility, Inspection and operational safety

### SHELL TACTIC EMV PROVIDES

- A reliable alternative to manual lubrication;
- A superior solution when compared to gas/chemical type lubricators; and
- an alternative solution where centralised lubrication systems are not practical.

### **HEALTH AND SAFETY**

- Eliminates manual lubrication
- Reduces excess grease losses
- Ensures lubrication at the right time, in the right place, in the right amount
- Workforce optimisation
- Avoids working at heights and operator exposure to moving parts



### **REAL-WORLD CUSTOMER EXAMPLE**

### Value

A mining customer reports saving over

### US\$167,000<sup>1</sup>

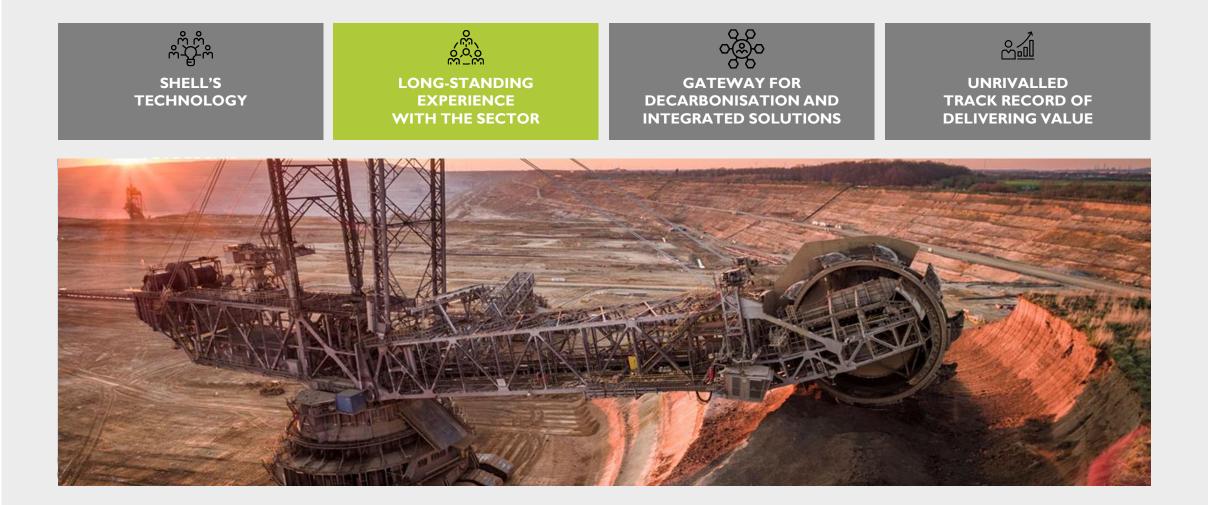
a year through using the Shell Tactic EMV system with a high-quality Shell Gadus grease to increase maintenance efficiency.

<sup>1</sup>The savings indicated are specific to the calculation date and mentioned site. These calculations may vary from site to site and from time to time, depending on, for example, the application, the operating conditions, the current products being used, the condition of the equipment and the maintenance practices.





## Our value to you: Long-standing experience within the sector



## Our value to you



We have a strong team of Lubricant Solutions technical specialists and access to more than 50 product application specialists worldwide, supported by distributor partners that provide a suite of lubrication management services.



ß

Their expertise usually stems from years working for mining companies or OEMs.

We have a strong patent portfolio with 9,449 granted patents and pending patent applications.

We hold more than 150 patents for base oils, lubricants and greases; and carry out millions of miles of field trials every year. Products and services that demonstrate our **sector intimacy** include:







To see products by equipment type, click here >









To watch the video, click here >

Leveraging a comprehensive toolkit of services, our experts help you anticipate and avoid issues. We work with your team to inspect, audit and optimise equipment, systems and processes according to the highest industry standards to address your evolving needs.



- Work on machines and mills
- Provide insight and innovative technology from around the world
- Inspect using strobe-o-scope, thermal imaging and vibration analysis
- Audit lubrication systems and injectors
- Perform injector spectrum sleeve fitment
- Optimise grease onto fixed and mobile equipment

#### THE VALUE TO YOU

- Anticipate and avoid issues
- Boost productivity
- Lower your total cost of ownership

### **REAL-WORLD CUSTOMER EXAMPLE**

#### Challenge

Routine equipment inspection found a propel pinion bush deteriorating abnormally quickly.

### Solution

A shutdown was planned, components ordered, contractors and cranes arranged with minimal disruption.

### Value

- The customer avoided hundreds of hours of lost production and the cost of components that would've been damaged had a catastrophic failure occurred.
- The customer reported savings of

Case study savings/benefits were reported by one customer. Actual savings/benefits will vary. More details available on request

### **DID YOU KNOW?**

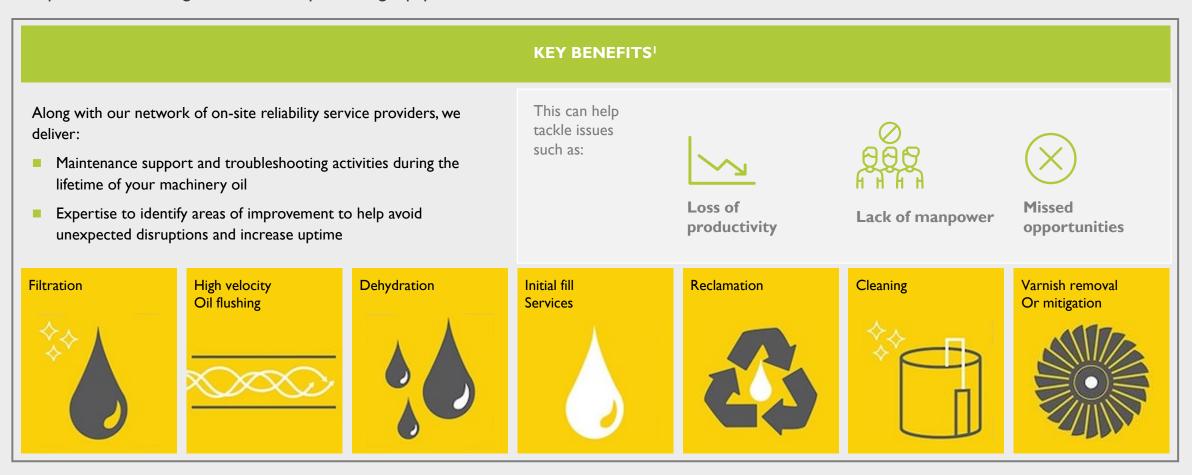
In more than 20 years of operation, the Shell LubeExpert programme has never experienced a lost-time incident.







An end-to-end solution designed to help companies address common challenges, such as simplifying operations, reducing downtime and protecting equipment.







### Give your equipment the support it requires



Shell Lube**Advisor** 



To see products by equipment type, click here >

Shell LubeAdvisor helps you use the right Shell oil, at the right time, every time. Helping you on-site to improve lubrication and maintenance practices can drive productivity and limit downtime.

#### **KEY BENEFITS**<sup>1</sup>

Shell LubeAdvisor is delivered through highly trained Shell technical staff, consisting of:

- Office-based technical helpdesks
- Field-based lubrication engineers
- Helpful and convenient tools

The complete Shell LubeAdvisor service offers you a wealth of engineering, technical and application knowledge.





# Lubrication training designed for your business



Shell LubeCoach is a comprehensive training programme designed to empower your staff to deliver the benefits of a well-designed lubrication plan.

### **KEY BENEFITS**

Optimising the application of lubrication in your operations can play a decisive role in minimising downtime and maximising productivity, which translates directly to your bottom line.

#### **KEY FEATURES**

Modular

4

- Workshop-based
- Tailored to your needs

### WE HELP DELEGATES UNDERSTAND

- Which lubricants are applied to what types of machinery
- How, and how often, these lubricants should be applied
- What the health, safety and environmental issues are



"The learning outcomes will go a long way to improve our employees' skills and knowledge so that they can support our maintenance programme.We are looking forward to working with Shell on future initiatives."

> Victor Asare Gyapong Mine Maintenance Training Co-ordinator, Newmont Ghana Gold Ltd



## Our value to you: Gateway to the wider Shell network



## Our value to you



To support your wider operational and decarbonisation needs, you can benefit from Shell's experience and solutions in areas such as bitumen, lower-carbon fuels, hydrogen or renewable energy for your site. All while providing the core lubrication management programme that you rely on.



\*\*\*\*



Leveraging solutions and insights from the wider Shell network.

When you work with Shell Lubricant Solutions, you're also working with the wider Shell network – some 85,000 innovators, thinkers and collaborators around the globe, who are all eager to help you unlock ultimate business value.

### Products and services that can be accessed from the wider Shell network include: Carbon compensation Shell Decarbonisation solutions: Electrification Renewable energy Hydrogen Biofuels GTL 3 Shell Bitumen Shell Chemicals Shell Commercial Fuels: 5 High-efficiency fuels (e.g. Shell FuelSave Diesel)



# Accelerating the electrification of off-road mining vehicles

**Shell's Mining Electrification Solutions for Off-Road Vehicles** aims to help the mining industry to break new ground with their climate goals by reducing emissions without compromising on operational efficiency or safety.



### **KEY BENEFITS**

Mobile equipment is currently responsible for 40–50% of mining's  $CO_2$  emissions. By 2030, it's estimated that a battery-electric haulage truck will:



Lower total cost of ownership



Involve 20% lower maintenance costs



Incur 40% lower fuel costs than existing diesel trucks

Consortium companies: Skeleton, Microvast, Stäubli, Carnegie Robotics, Heliox, Spirae, Alliance Automation, Worley and Shell

### Shell Commercial Fuels: High-efficiency fuels

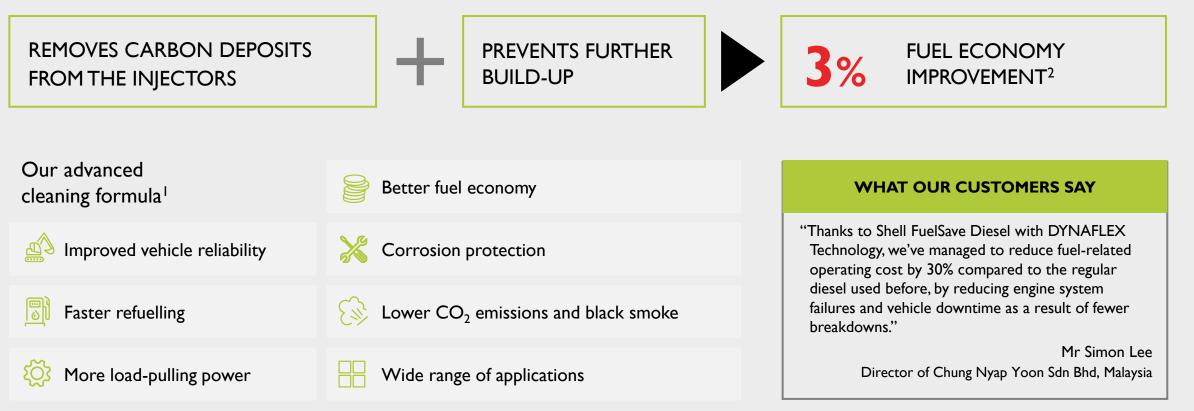




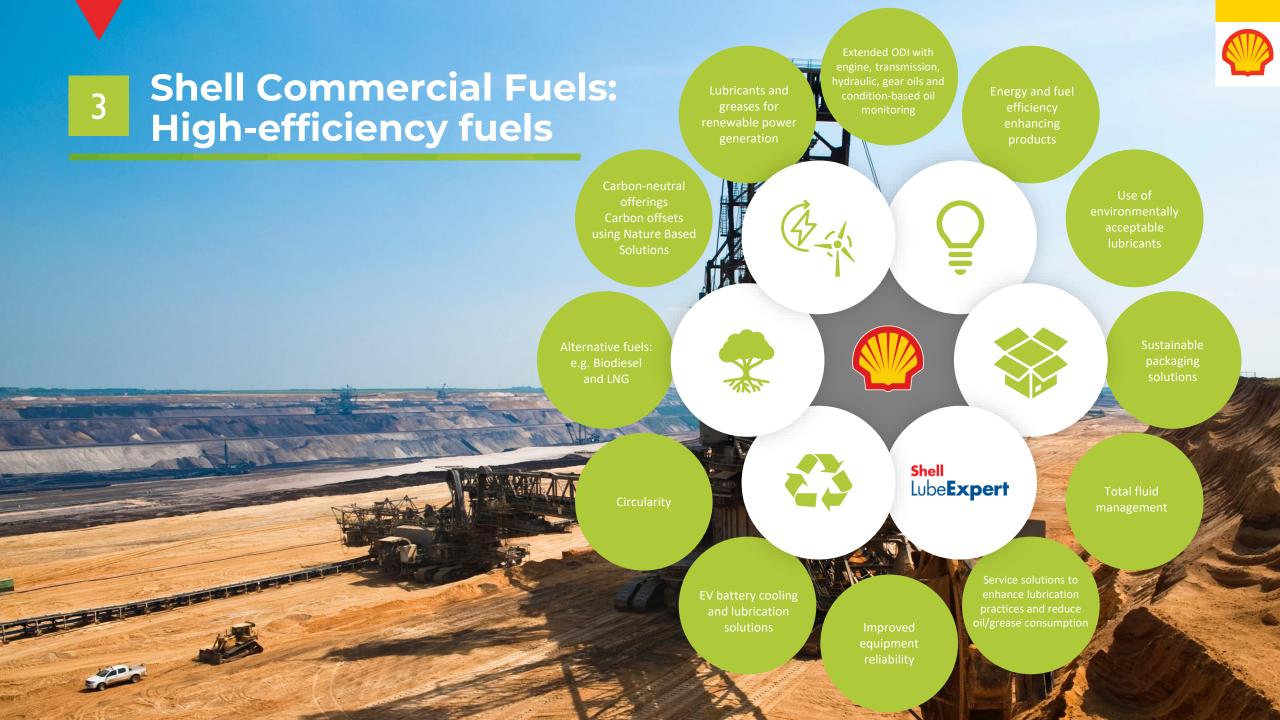


To see products by equipment type, click here >

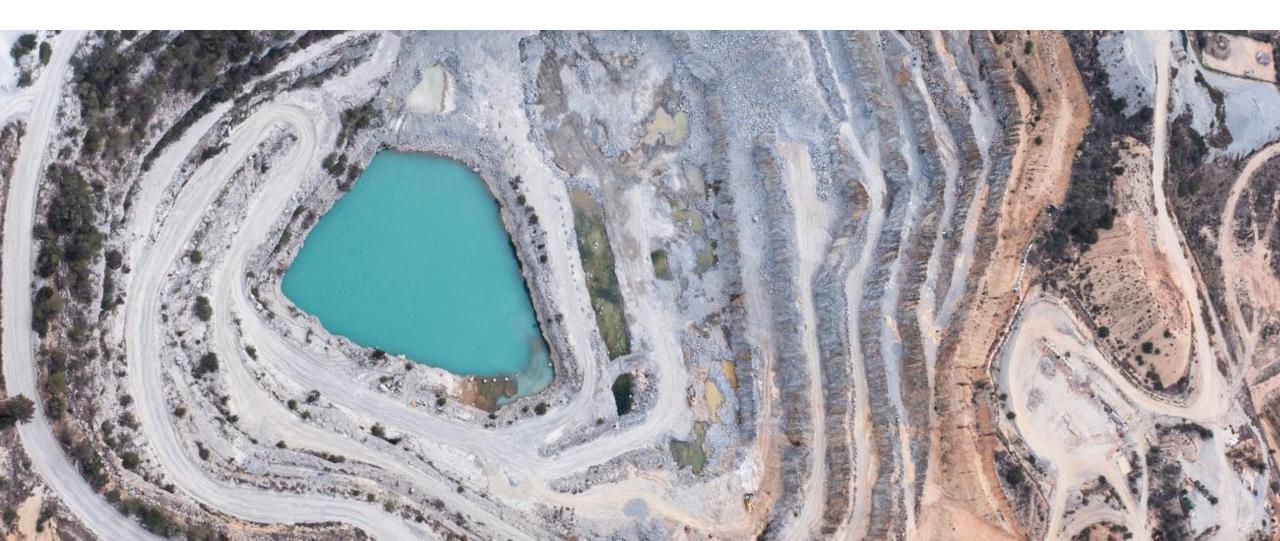
Your fuel choice ultimately impacts your total cost of ownership and operating efficiency. Shell FuelSave Diesel, with our most advanced DYNAFLEX Technology I, can help reduce your operating costs.



<sup>1</sup>DYNAFLEX Technology or DYNAFLEX formulation are our names for our latest generation of advanced formulations for gasoline and diesel fuels. \*Customer statement. As experienced by customer rather than Shell protocols. Compared to regular diesel without fuel economy formula. Customer benefits vary according to type of operations, vehicles, driving conditions and driving style. <sup>2</sup>Compared to regular diesel without fuel economy formula. Actual savings may vary according to vehicle, driving conditions and driving style. Internal Shell tests and with our customers have shown a range of fuel saving depending on age of vehicle and type of operations.



## The new Mining differentiators – our lubricant solutions





# Thank you