

# Greasing the Wheels of Industry Success: The Critical Importance of Lubrication for Mine-Site Machinery



## Introduction

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Mining is a cutthroat industry when competing globally, with success or failure determined on threadbare margins. As our extraction industries brace for uncertain economic fortunes, declining overseas investment, and an unprecedented slump in ore prices, it is crucial for today's Australian businesses to extract the maximum productive potential from one's workforce and dependent machinery.

Production, indeed, is the number one concern for today's mining companies<sup>1</sup>. Yet with an increasing dependence on mechanical processes, driven by ever-larger and exponentially more productive machinery (from draglines, drills and dumptrucks to heavy-duty excavators), any failure along the extraction chain

could strike a savage blow to productivity and, as a result, a severe dent in profits.

As such, the reliability and availability of on-site equipment is paramount to the success of today's mining and heavy manufacturing industries. On-site vehicle maintenance and preventative maintenance are no longer optional.

Proactive maintenance will ensure optimum levels of equipment availability are achieved to meet business objectives<sup>2</sup>. Conversely, poor maintenance procedures will not only affect equipment availability, but will stunt production, increase maintenance costs and negatively impact workforce morale<sup>3</sup>.

## Greasing the Wheels of Industry Success

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Friction is the prime culprit in mechanical failure<sup>4</sup>. Proper and timely lubrication is crucial to reducing friction on moving parts, thus mitigating the risk of component failure, particularly in remote and demanding workplaces where conditions are far from ideal.

Lubricant is the lifeblood of modern machinery. Without it, vital mechanical components, including gears, bearings and air compressors, are placed at great risk of frictive stress and catastrophic failure. Yet lubricants offer a host of other crucial benefits to mechanical processes: sealing out contaminants (such as abrasive dirt and water); dissipating operational heat; rust and corrosion prevention; and efficient energy transference<sup>5</sup>.

## The Critical Importance of Lubrication in Mine-Site Environments

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Whether the arid climes of the open-cut mine site, or the acrid, dust-prone confines of the subterranean mine, our workhorses of industry are expected to operate with optimal efficiency, with minimal downtime or disruption.

Mine site machinery must endure high concentrations of dust, damaging particulates, grime, as well as extreme ambient temperature variations (frequently in excess of 40°C)<sup>6</sup>. While most are built to withstand the environmental extremes of remote mine sites, these inclement conditions remain a chief contributor to machine wear and mechanical failure.

Indeed, no matter how rugged our machines are built, all mechanical systems depend on constant and effective lubrication to minimise the risk of friction- and contaminant-related damage, and ensure consistent operating temperatures for optimal performance.

**“Production is the number one concern for today's mining companies”**



## High-Tech Tools for Superior Fluid Delivery

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Once heavily manpower-dependent, today's fluid-delivery systems are a marvel of technological innovation and safety-first design<sup>7</sup>.

Today's range of advanced fluid replacement systems are specifically designed for Australia's harsh climes, delivering continuous lubricant, oil and fuel replenishment on-site to ensure continuity of operations and minimal downtime.

The proliferation of computer-controlled remote lubrication systems has greatly reduced the need for lube technicians in the field<sup>8</sup>. These digital systems are capable of automatically dispensing the right product, in the right amount, to the right point and at precisely the right time, protecting delicate components, preventing fluid overflow, and ensuring maximum safety provisions for workers<sup>9</sup>.

Today there exist a number of value-adding fluid delivery systems, helping to deliver to timely, precise and direct oil/grease supplies to your field-based machinery and vehicles.

## Innovative Technologies for 'On-Board' Lubrications

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Most mine-site Operational managers and Maintenance managers would be familiar with 'lube-trucks', these are purpose build trucks that carry oils and greases, pumps, hose reels and meter/dispense systems to service the mining fleet / fixed equipment on-site.

More and more mining equipment (mobile or fixed) however nowadays carry dedicated 'on-board' lubrication systems. These are 'smart', active grease/oil dispensing systems that can be programmed to any lubrication cycle as prescribed by the maintenance schedule.

### *Electric Pumps for on-board lubrication systems:*

On board lubricators traditionally were powered from the hydraulic system of the vehicle, due to the high pressures required to move any grease (pneumatic systems are not powerful enough or too bulky to install on-board).

The 'primary' hydraulic system however generally also is linked to critical components such as brakes, steering, dumping, hence often reserved / dedicated to safety, rather than maintenance.



Innovative 24V electric pumps, specifically tailored for the mining and heavy manufacturing industries, require no hydraulic/air supply, allowing low-cost and safe off-road support for vehicles and machinery. They run off the 'secondary' electrical system

These new Electric pumps & gear boxes feature fewer components; this ensures durable, longer-lasting service, while being able to provide ample pressure to move and dispense heavy greases. Electric pumps can easily be PLC controlled, delivering precise and automated lubrication to all mechanical points. An on-board lubrication system with programmable Electric pumps, such as the Graco 'Electric DynaStar' (EDS) offers one of the most cost-effective returns on your investment.

### *PLC Controllers:*

Programmable Logic Controllers (PLCs) can directly manage automatic lubrication systems, allowing users to customise and measure lubrication times, pressures, cycle counts and machine counts for maximum precision and productivity. A simple and intuitive interface allows for easy setup and operation.

**“Digital systems can automatically dispense the right amount of the right product, at precisely the right time”**

## The Graco Solution: Superior Fluid Replenishment Solutions for Today's Heavy Industry

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Graco Inc. is the world's leading manufacturer and supplier of fluid handling solutions for today's heavy manufacturing and extraction industries.

As your one-stop-shop for expert fluid-replacement systems, Graco can recommend the precise lubrication and fluid management solutions that deliver high-performance results and optimal conditioning for your dependent machines. Graco understands the challenges of today's industrial processes, and has specifically designed their systems to meet the rigours of inclement work environments. A global network of dedicated Graco Distributors and Service agents provide consultancy, training, installation/commissioning and maintenance services to keep your onsite equipment moving smoothly.

In Industrial Lubrication, Graco offer industry-leading systems, components and accessories for the automated lubrication of industrial and commercial equipment, compressors, turbines and on- & off-road vehicles.

An expert in robust, high-tech, design, Graco invests over \$USD 50m in R&D annually, to ensure superior quality products for the world's most demanding industrial processes, that complies with relevant regulations. The current series of Graco on-board lubrications systems are the result of substantial R&D investments, that can benefit your mining operation in today's production phase.



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