

TESTS ARE PASSED AND CERTIFICATION IS PENDING

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PRESSURE SYSTEMS

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SUITABLE FO EMULSION rmi

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RMI PRESSURE SYSTEMS IS A MEMBER OF ARMSTRONG FLUID TECHNOLOGY

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. . 1 **/\GILIS**[™] A FULLY PATENTED, 0 **INTEGRATED SYSTEM** FOR MINING (Australian Patent No's. AU 2015250633, AU 2015250634 and AU 2015250635)

SOLUTION OUTLINE

File No: 1180aus Date: April 2019 **REVISION: 3**



CHANGING THE FACE OF COAL MINING

Reduced labour cost

Agilis is a unique integrated system, specifically designed to increase the productivity of longwall coal mining. Using innovative industry-leading technology, Agilis achieves unrivalled performance capability and efficiency that delivers enhanced value and profit at a lower installed cost.













CAPABILITIES

Increased productivity through maximised uptime and improved performance

Enhanced energy efficiency and cost savings through variable speed, demand-based control and the use of enhanced motor technology.

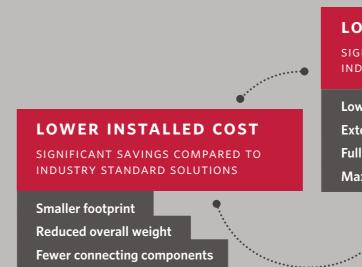
Extended product life and reliability through the benefits of parallel pumping

Improved maintenance through connected performance management

Digital mining through connectivity to Scada monitoring

VALUE

	MINE OWNER	MINE MANAGER	MINE OPERATOR
Lower first install cost	×		
Extended system life	~	~	
Lowest operating costs	~	~	
Increased productivity up to 5% through greater efficiency and availability of the longwall system	~	~	
Minimum 25% space saving; compact, integrated solution providing single source accountability		~	~
Quick and easy commissioning through plug and play technology		~	~
Enhanced productivity due to instantaneous responsiveness to demands		~	~
Maximum energy efficiency and redundancy through demand based control		~	
Real time performance through Scada connectivity		~	
Increased reliability, availability, uptime and efficiency		~	~
Improved redundancy of controls and pumps		~	✓
Improved environment and safety through reduced noise and vibration			~





LOWEST OPERATING COST

SIGNIFICANT SAVINGS COMPARED TO INDUSTRY STANDARD SOLUTIONS

- Lowest maintenance costs of any pumping configuration
- Extended high-efficiency performance
- Fully connected for Scada monitoring
- Maximum uptime

HIGHEST CAPABILITY

SIGNIFICANT SAVINGS COMPARED TO INDUSTRY STANDARD SOLUTIONS

Maximum reliability Maximum flexibility



INCREASED REVENUE AND PROFIT THROUGH ENHANCED PRODUCTIVITY

Instantaneous Response Time

The Agilis fully integrated system enables instantaneous action allowing coal face productivity to increase by up to 5%.

When you consider a typical coal face extracts 8 million ton of coal per year, Agilis could deliver an additional \$5.6m a year revenue (AUD).



> Proactive Intelligent Control

The addition of ODIN patented technology (AU 2011201510) enables Agilis to anticipate the movement of the roof supports and be ready in advance, preventing pressure drops occurring and providing instantaneous response, enhancing productivity, availability, and up time. (ODI Remote Mode AU 2011201509).

> Boosted Labour Efficiency

Intelligent controls virtually eradicate system lags and delays to allow for optimised speed of continual shearing.

Increased Availability Through Enhanced Reliability

Core components of Agilis are specifically designed as 'plug and play' for quick and easy replacement to maximise uptime.

THE TRUE POWER OF **PARALLEL PUMPING**

The traditional approach to control used in longwall systems involves staging of pumps based on pressure lag.

With our vast industry experience, we know the majority of longwall systems perform well below peak productivity most of the time.

Agilis technology removes the hydraulic lag by using intelligent controls and synchronised pumping to increase coal face productivity and energy efficiency.

The Agilis fully integrated system operates simultaneously with the shearer and roof support system using the minimum energy required to deliver optimum flow for the current system demand.







> Full Capability Back-up

Agilis has full mechanical and control capability back-up built-in. By having the all the pumps working simultaneously at lower speeds, in the unlikely event of a failure, the other pumps simply step up to deliver the load required and eliminates the need for dormant stations.

Whilst the simplicity of plug and play control modules ensures quick and easy replacement, ensuring system uptime is maximised.

REDUCED COSTS AND IMPACT ON THE ENVIRONMENT:

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Reduced water consumption as external

- cooling is not required
- £37

Reduced energy cost and consumption at all load conditions





Reduced emulsion waste due to minimised pressure spike effects on hydraulic components



LONGWALL SYSTEM WIDE MAINTENANCE RECONFIGURED

EXTENDED PRODUCT LIFE AND MAINTENANCE INTERVALS

Increased efficiency and availability uptime means panels are cut quicker so maintenance intervals can be extended

Synchronised pumping and ODIN adaptive intelligent technology reduces pressure surges and wear of key components, extending system longevity.

Increased up time with simple plug and play repairs and full control system redundancy

Continuous system activity performance monitoring for proactive maintenance.



• Reduces train size by up to 25%

 Quick and easy commissioning and compatibility testing with plug and play components reduces onsite assembly requirements and the risk of connection issues, as well as time and labour costs

Eliminates cost for a duty stand by pump station