VERTICAL DROP

SYSTEM

AECI®
MINING EXPLOSIVES

AECIMINING.COM

SURFACE VERTICAL CONTROL SYSTEM

LEADING INNOVATION IN VERTICAL DROP TECHNOLOGY

What is a vertical drop delivery system?

It is a bulk emulsion delivery interface through which emulsion is transferred from the surface control area through a borehole into the underground storage facility. The tap-off points are situated in relative close proximity to working areas to optimise efficiency.

Storage facilities typically include vertical or horisontal silos, which are digitally regulated from a central vantage point.

How does this solution assist the customer?

Emulsion technology eliminates the constraints of explosive deliveries imposed by legislation. Our vertical drop system has the potential to significantly streamline shaft delivery times and tramming schedules. The fact that storage facilities are in close proximity to the underground production areas, dramatically improves efficiencies by reducing travelling and turnaround time. The main objective of this innovation is to enable miners with better management of explosives and simplify compliance to the regulations.

Rationalised product range

Various diameters and lengths of cartridges are replaced with a singular non-explosive product, impacting positively on stock-holding and control.

Reduced license circle

The classification of emulsions (5.1 oxidiser) vs. conventional explosives (1.1D explosive) has a significant impact on licensing circle sizes.

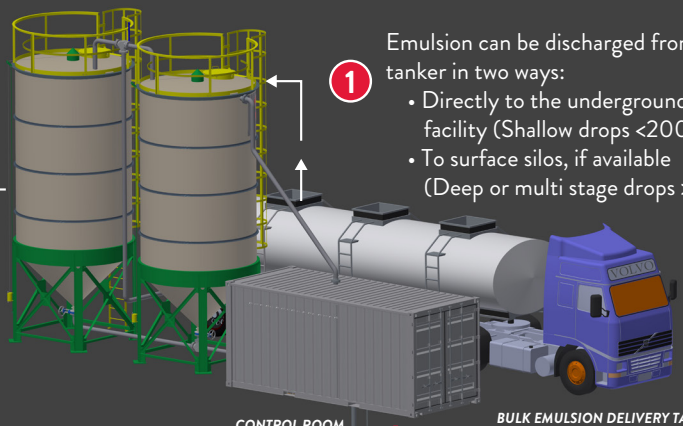
FIT-FOR-PURPOSE INNOVATION

MCU (MOBILE CHARGING UNIT)

OFF LOADING EMULSION

VERTICAL DROP SYSTEM PROCESS

SURFACE AREA EMULSION STORAGE SILOS



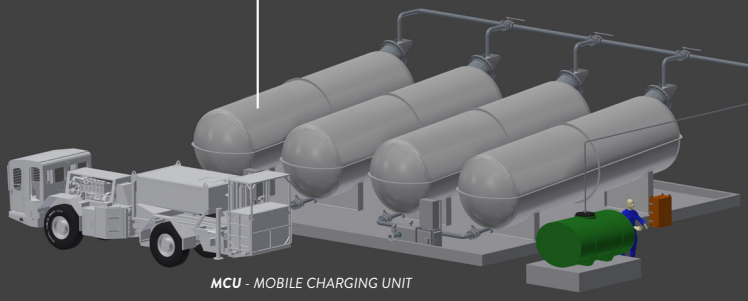
CONTROL ROOM

BULK EMULSION DELIVERY TANKER

1 Emulsion can be discharged from the emulsion tanker in two ways:
- Directly to the underground storage facility (Shallow drops <200m)
- To surface silos, if available (Deep or multi stage drops >500m)

2 Emulsion is transferred from the surface silo to the underground storage facility and managed through a control room.

HORIZONTAL UNDERGROUND BULK EMULSION STORAGE SILOS
PUMP FEED SYSTEM



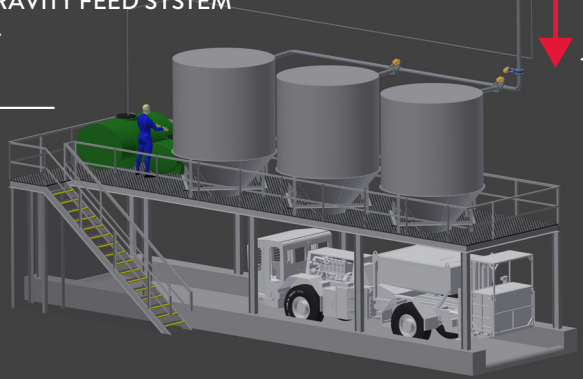
***MCU** - MOBILE CHARGING UNIT*

3 The emulsion is transferred into the Underground Emulsion storage silos from where it is transferred into MCUs/casettes.

≥ 980m VERTICAL DROP DEPTH

a The Mobile Charging Unit (MCU) is loaded with emulsion.

VERTICAL UNDERGROUND BULK EMULSION STORAGE SILOS
GRAVITY FEED SYSTEM



4 The emulsion is transferred into the Underground Emulsion storage tankers (gravity feed system).

b The emulsion is transferred into the Underground Emulsion storage silos from where it is gravity fed into MCUs/casettes.

VERTICAL DROP UNDERGROUND

APPLICATION

It is a delivery system that delivers the base bulk emulsion and sensitiser through a single borehole, directly to an underground storage facility through specialised pipes installed within a borehole drilled from surface.

The storage facility can be in close proximity to the underground production areas, enabling the large-scale implementation of emulsion explosives in underground mining.

BENEFITS

- Significant safety enhancement by reducing logistics flow in main arteries to the mine
- Seamless inventory control
- High level of security and control of products used to manufacture explosives
- Reduced interface with explosives
- Reduced risk of theft
- Significant increase in the lifecycle of assets used for charging
- Significant saving in maintenance, fuel and asset wear on assets used for charging
- Reduction in time and labour resources
- Reduced shaft time
- Bulk emulsion deliveries at any time (Design dependent)

FEATURES

- Pump protection-guarding against dead-heading and dry-running scenarios
- Load cells on all silo's
- PLC Control

SAFETY FEATURES

- Independent electronic pump protection system monitoring and controlling operating pressures and temperatures on critical pumps
- Mechanical pump protection devices installed on all critical pumps
- Silo overflow protection

TECHNICAL SPECIFICATIONS	
VERTICAL DROP SYSTEM	
DESCRIPTION	**DETAILS**
Capacities	
Emulsion Transfer Capacity Depth	80 m-1300 m
Storage Capacity Surface	As required
Storage Capacity Underground	As required
Level of Automation	As required
Maximum Number of Drops	As required

LET'S CONNECT

AECI MINING EXPLOSIVES HEAD OFFICE

Tel: +27 11 606 0000 | AECI Place, 24 The Woodlands,
Woodlands Drive, Woodmead, Sandton, South Africa, 2191

aecimining.com

Follow us on LinkedIn

AECI®
MINING EXPLOSIVES