DRY SYSTEMS
TECHNOLOGIES®

Technology for a cleaner and safer Mining Environment™

Dorian Pia, Dry Systems Technologies
Dry Systems Technologies® is the World’s Leading Manufacturer of Diesel Power Packages for underground Mines.

The Dry Systems Technologies® Main Offices and Manufacturing are located in Woodridge Illinois with a state of the art rebuild and installation facility in Vienna Illinois and Price Utah.

The Dry Systems Technologies® team invented and developed the “Dry System®” Emissions Treatment and the Low Temperature Exhaust Filtration Technology.
What is the “Dry System®”

- The Dry System® Diesel Power Packages incorporate the most efficient methods to reduce Diesel Particulate Emissions from existing or new Diesel Engines used in Underground Mines.

- The Dry System® Diesel Power Packages are safe, user friendly and low maintenance and comply with stringent MSHA Diesel Regulations.

- The Dry System® will outlast Diesel Engines through multiple rebuilds and are exclusively available from Dry Systems Technologies®.
Dry Systems Technologies®
The Original – and still the Best™

• Prototypes of the Dry System® have been in operation since 1987 and production Dry Systems® have been in continuous Mine service since 1992.

• More than 850 DST Dry System® Diesel Power Packages are currently in operation worldwide.

• Dry Systems® Diesel Power Packages are Approved and are currently operating in more than 75 Mining and Tunneling Projects in North America.

• Dry Systems® Diesel Power Packages have been in successful and incident free operation for a combined 5,000,000+ hrs.

• Dry Systems® Diesel Power Packages are available for a wide range of new and existing Engine Models ranging from under 50 Hp to more than 350 Hp.
UNMATCHED PERFORMANCE

- 96% DPM REDUCTION
- > 90% CARBON MONOXIDE REDUCTION
- > 97% SULFUR REMOVAL
- NO OXIDES OF NITROGEN
FIRST PRODUCTION DST DRY SYSTEM®

Eimco Personnel Carrier during Surface testing of the first Production DST Dry System® Diesel Power Package

Operated in Colorado and Illinois since 1992
CURRENT SITUATION WITHOUT AFTERTREATMENT
DIESEL EMISSIONS CONTROL
(Traditional Method by Dilution with Ventilation Air)
Smoke emitted from the unfiltered exhaust of a diesel scoop limits operator’s view and contaminates the ventilation air.
DPM COMPOSITION

TOTAL PARTICULATE MATTER

ELEMENTARY CARBON CORE (INORGANIC)

SULFATES

UNBURNED HYDROCARBONS (ORGANIC)

< 1 micron
Engine Ventilation Requirements to meet 0.15 mg/m³ (150 µg/m³) without After-treatment

Typical “Dirty” 30 g/hr (500 mg/min) Engine:

117,655 cfm (3,333 m³/min)

Typical “Clean” 5 g/hr (83 mg/min) Engine

19,591 cfm (555 m³/min)
AFTER-TREATMENT WITH DRY SYSTEMS TECHNOLOGIES® DIESEL POWER PACKAGES
Dry Systems Technologies®
Performance

- Dry Systems® reduces Diesel Particulate Matter (DPM) by 96%.
- Dry Systems® reduces Carbon Monoxide (CO) by 90%.
- Dry Systems® reduces Sulfur Dioxide (SO₂) and Sulfates (SO₄) by 97%. (reference for other markets)
- Dry Systems® reduces the Diesel Odor.
- Dry Systems® reduces Oil and Fuel based Hydrocarbons by 85%.
Engine Ventilation Requirements to meet 0.15 mg/m³ 
(150 µg/m³) with Dry Systems® After-treatment

Typical “Dirty” 30 g/hr (500 mg/min) Engine with Dry System® After-treatment:
4,695 cfm (133 m³/min)

Typical “Clean” 5 g/hr (83 mg/min) Engine with Dry System® After-treatment:
777 cfm 22 m³/min
THE DST DRY SYSTEM®

UP TO 90% CO & HC REDUCTION

CATALYST

COOLS GASES FROM 1200°F to 260°F

HEAT EXCHANGER

DIESEL ENGINE

MORE THAN 96% DPM REDUCTION

DPM FILTER

IT'S SIMPLE - IT WORKS
The Main Components of the “Dry System®”

- Oxidation Catalyst
- Heat Exchanger
- Low temperature Diesel Particulate Filter
- Engine and Exhaust Cooling System
- Patented Onboard Cleaning System
The Dry System®
Applications

- The “Dry System®” Diesel Power Package can be used anywhere where control of Gaseous and Particulate Emissions from Diesel Engines is required.
- The “Dry System®” Diesel Power Package can be used in Underground Hard-rock Mines and Tunnels.
- The Explosionproof Version of the “Dry System®” Diesel Power Package can be used in Coal Mines, gassy Mines and gassy Tunnels where explosionproof designs are required.
- The “Dry System®” Diesel Power Package is equally suited for Surface applications where control of Gaseous and Particulate Emissions from Diesel Engines is desired.
Flow through the patented Dry Systems Technologies Exhaust Particulate Filter.
Converted Permissible 973 and 320 Machines for Tunneling
New DST Model 35-S Scoop Available in Permissible and Non-Permissible Versions
BENEFITS OF RETROFITTING WITH THE DRY SYSTEM

- The Dry System® can be retrofitted to older “dirty” engines as well as newer “clean” engines.
- With an unequalled DPM reduction of 96%, the Dry System® saves cost with low ventilation requirements while providing the best possible ambient environment for miners.
- The Dry System® will last for the life of the engine and several rebuilds with very little routine maintenance.
- The Dry System® can be built to fit any machine with moderate machine modifications.
Thank you for attending our Presentation