

# Diesel Emissions Control Systems Evolution and Optimization


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## Overview

- AirFlow Introduction
- Historical Perspective
- Diesel Emissions Control Overview
- Technology Changes
- New Technology Performance Review



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## AirFlow Catalyst Systems, Inc.

- AirFlow Catalyst Systems, Inc. is a manufacturer of diesel emissions control equipment
- Our goal is to provide value through innovative technologies that are unique to the industry
- AirFlow has been conducting research on emissions control technology for over 15 years



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## Historical Perspective

- Catalytic emissions control systems have historically been actively regenerated or manually maintained
- Current emissions technologies are moving toward passively regenerating technology
- Additionally, the level of emissions control has increased



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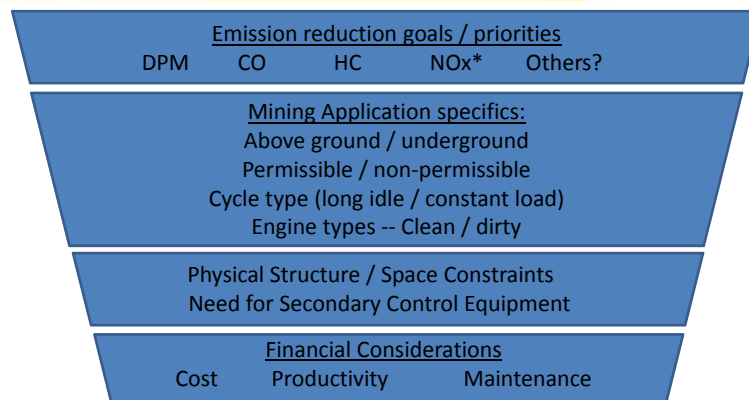
## Reasons to use a system

*We will discuss off-highway equipment, focused on the mining industry*

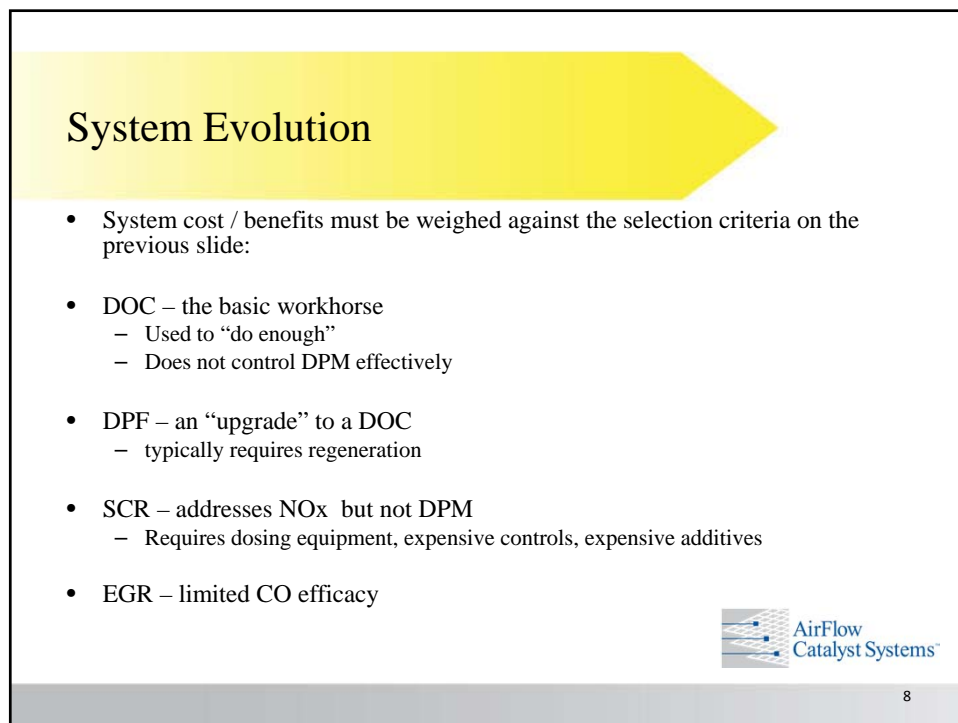
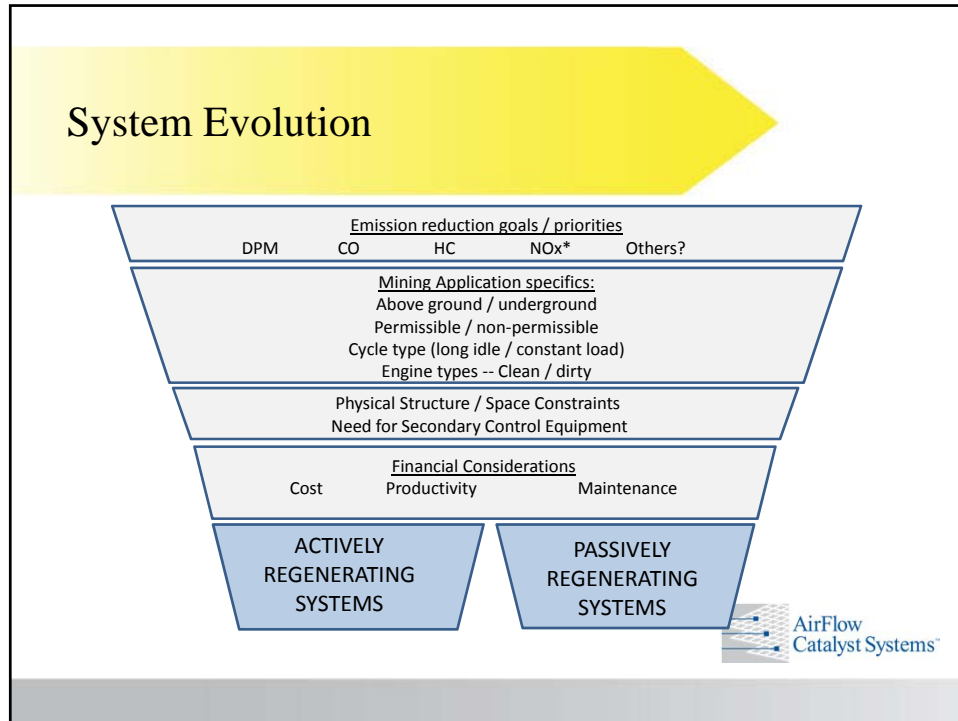
- Worker Health and Safety
- Financial Benefits
  - Operations efficiency / minimizing downtime
  - Reduced maintenance costs
  - Reduced health claims
- Regulatory Environment
  - MSHA
  - EPA
  - CARB
  - Canadian MOL



## System Selection Variables



\* NOTE: As of the publishing of this paper, DeNOx reduction is currently not mandated in the Mining Industry



## Unique AirFlow Technology meets Industry Requirements

- Move to PASSIVE REGENERATION, HIGHLY EFFICIENT, FLEXIBLE SOLUTIONS



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## AirFlow Technology meets Industry Requirements

- AirFlow innovations include two comprehensive diesel exhaust emissions control systems that are proven effective, as well as a basic workhorse DOC
- All units passively regenerate
- Many units have been running for 1000's of hours with no maintenance
- Wide application range – 20hp to 6,000hp



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## Proven Performance

- Companies can increase the amount of emissions reductions to the benefit of the company and the workers

	<b>EZCat</b>	<b>MinNoCat</b>	<b>EZDoc™</b>
DPM removal	93%	95%	22%
Average CO reduction	94%	94%	94%+
NO Reduction	39%	9.6%	1.54%
NO2 Reduction	-104%	70%	-7%
NOx Reduction	31%	15%	3%
Temperature Activation point (min)	175°C	225°C	150°C
Temperature Activation point (max)	700°C	700°C	700°C
Exhaust Temperature - baseline	692°F	730°F	692°F
Exhaust Temperature - with aftertreatment	738°F	723°F	696°F

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## Technology Has Evolved

- Over time, everyone is forced to do more with less.
  - More passively regenerating technology at lower temperatures
  - More gas specificity using new technology
  - More elimination of critical pollutants for same budgets
  - More efficient equipment in less space, single unit
  - More productivity, less downtime



## QUESTIONS / COMMENTS



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