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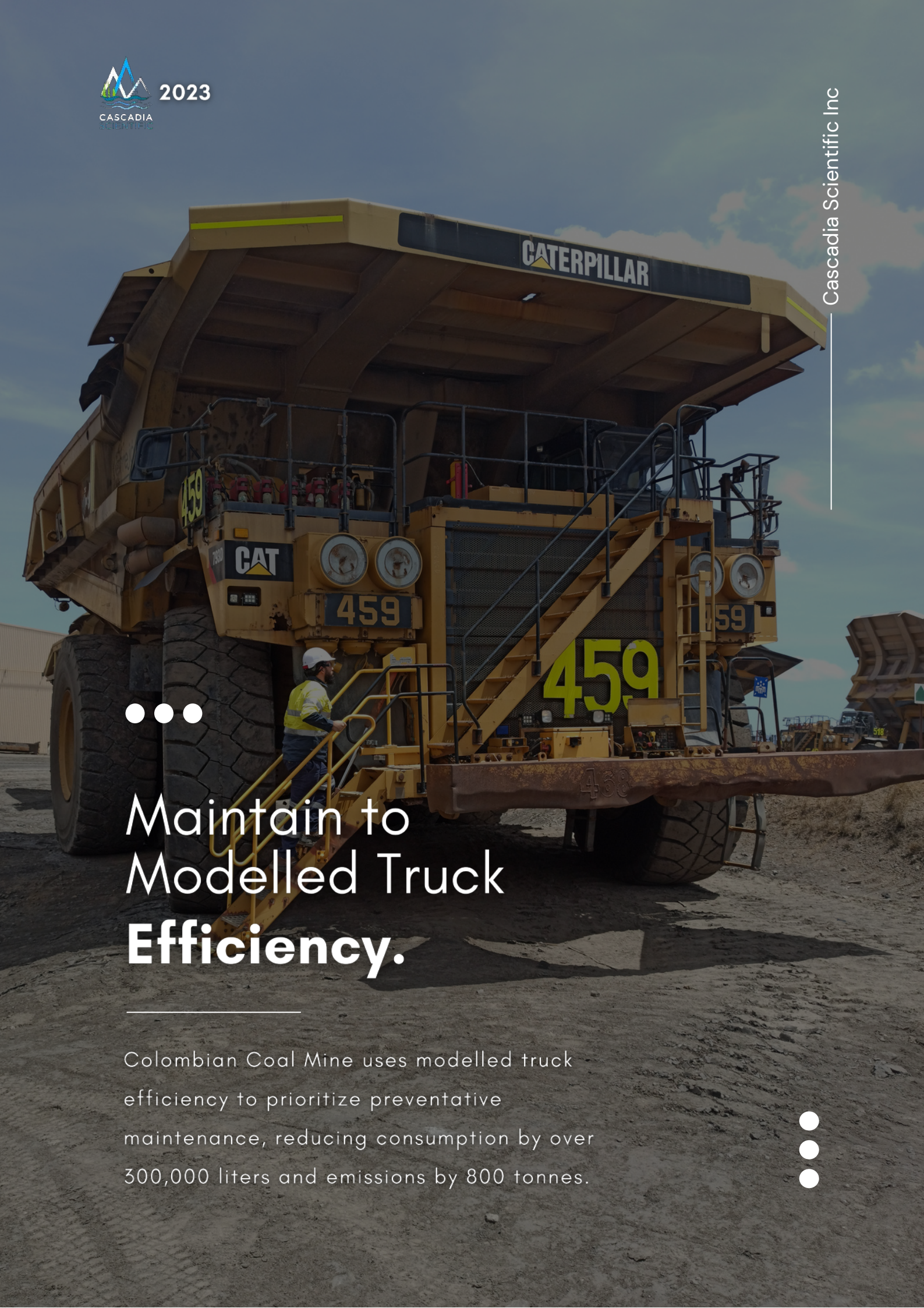
CASCADIA SCIENTIFIC

Cascadia Scientific Inc



Maintain to Modelled Truck **Efficiency.**

Colombian Coal Mine uses modelled truck efficiency to prioritize preventative maintenance, reducing consumption by over 300,000 liters and emissions by 800 tonnes.

What is Maintain-to-Efficiency?

Measure

Cascadia collects high-accuracy sensor data to train machine-learning models on haulage activity. Cascadia includes custom hardware to ensure robust and accurate data collection. This includes direct fuel measurement, vehicle network integration, motion, altitude, and position sensing.

Model

The models relate consumption to work performed, predicting how much fuel should be burned for the work being performed.

Analyze

Trucks that are consuming more fuel than the model predicts are highlighted to the maintenance team.

Act

With this intelligence, the mine maintenance inspects the truck and performs an efficiency recovery service.

Validate

Cascadia then models the truck's performance after an inspection to ensure truck efficiency is re-established.

Operation: Colombian Coal Mine
Timeline: 4 months
Truck type: CAT 793B,C,D
Trucks fitted with Cascadia Scientific: 60 trucks
Total Interventions Detected and Acted Upon: 17

- Fuel Leaks: 6 Occurences
- Engine Problems: 3 (Injectors, Exhaust Leakage, overheat)
- Air Intake System: 4 Occurrences
- Inconclusive: 5

Average Impact of Intervention:

- 2.3 Liters per Cycle
- 3.9 Liters per hour (0.59-hour cycle average) per intervention

Total fuel saved (4 months – 17 interventions) = **335,593 Liters**
Total cost savings (USD $0.7 per liter) = **USD $234,915**
CO2 reduced (CO2 per liter of fuel = 2.639 KG) : **882 Tonnes**

Analysis Example: Modelled truck efficiency after a maintenance intervention.
4 weeks of data on either site, resulting in a reduction of 3.2 Litres/ Cycle