

## Battery technology is evolving, here's the proof

Lost in the discussion of electrification, Lithium Ion batteries and Absorbent Glass Mat (AGM) batteries is the fact that most diesel truck fleets are still using the industry standard flooded lead acid batteries. All OEMs are still using this traditional battery technology as standard, and fleet managers still hold batteries as one of the top factors in downtime and increased maintenance.

There are many reasons why flooded lead acid batteries do not coexist with AGM batteries in diesel trucks. Extreme temperatures, constant load requirements, suboptimal charging, extended periods of downtime—these are all contributing factors to why a battery fails. What exactly happens to a battery that causes a premature failure? To understand this, you first need to understand what happens to a battery during normal operation.

A traditional lead acid battery contains lead and sulfuric acid. When the battery discharges, a chemical reaction happens between the lead and sulfuric acid, which converts to lead sulfate and water and thus creates electricity. Charging the battery requires the reverse process: You apply electricity to the battery (via the alternator) to return the battery to separate lead and sulfuric acid. Under the hard conditions of typical commercial truck operations, this process does not happen as efficiently or effectively as it could. Premature formation of larger, more stable lead sulfate crystals that cannot be reversed back to lead and sulfuric acid often occurs because of the less than optimum available charging voltage of the truck. (This is commonly referred to as sulfating or sulfation.) This charge level is described best as the vehicle's application capacity. Over time, the

formation of these larger, more stable crystals will prevent the battery from receiving a full charge and ultimately lead to the failure of the battery.

For diesel and gas-powered fleets, the only option to the traditional lead acid battery is AGM technology, which has a lower propensity for sulfating due to the battery design. The general experience with AGM technology and good maintenance practices is a threefold extension in battery life expectancy compared with the flooded lead acid equivalent. This is significant for a vehicle that is running 100,000 miles or more per year without having to worry about non-starts and unanticipated downtime on the road. This insurance policy comes at a price, however: Expect to pay about \$900 to \$1,000 more for a set of AGM batteries over the price of a standard lead acid battery. Many fleets balk at this price tag, although it can seem like a pretty low insurance premium against downtime.

So, are there any other options?

A technology called Battery Desulfation has been developed by Canadus Power Systems of Twinsburg, Ohio, which relies on a continuous high-voltage microsecond spike at the battery to continuously break down (and prevent) the formation of larger, more stable lead sulfate crystals resulting in more efficient and effective charging and significantly



reduced premature failures, according to the company. This technology complements the vehicle's charging system.

"The growing use of the Canadus Battery Reconditioner in Europe is in both OEM and aftermarket, across multiple brands, and our product can be found in all commercial vehicle platforms, including trucks, construction equipment and buses," explains Dana Cassidy, president of Canadus Power Systems. "We are expecting similar acceptance in the North American markets, with one OEM already using the technology for the benefits of North American customers."

"We developed the system for the benefit of OEMs and their customers that are seeking to maximize uptime and lower overall maintenance costs," said Dr. Jack Scott, chief executive officer of Canadus Power Systems.

From the results of its own testing in commercial vehicles, Canadus Power Systems expects its product's longevity to rival that of AGM battery technology, meaning that flooded lead acid batteries may last three years in commercial truck applications without failure. Furthermore, the incremental price tag is a fraction of the premium that comes with AGM batteries. Finally, this technology works with all lead acid batteries, including AGM, and is a simple installation directly on the battery pack. ▀



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