VEHICLES HAVE EVOLVED.

ISN'T IT TIME BATTERIES EVOLVE TOO?

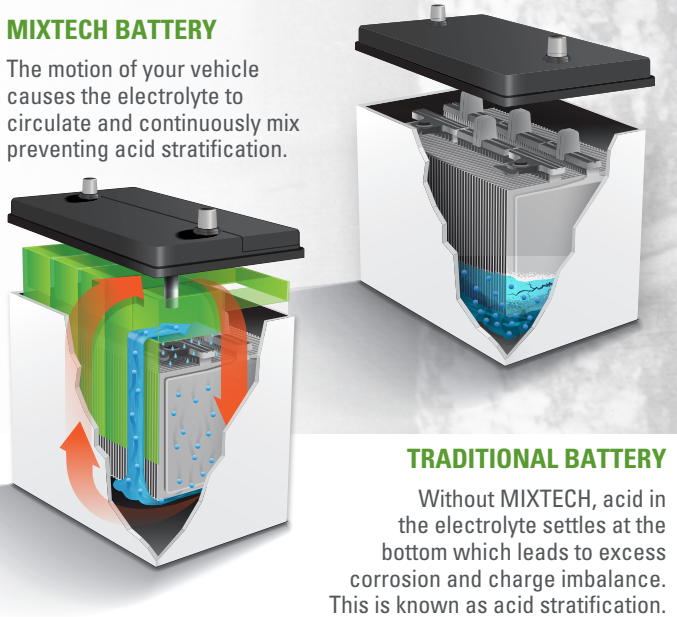
THE MOST SIGNIFICANT IMPROVEMENT IN A BATTERY IN 50 YEARS.

THE #1 CAUSE OF BATTERY FAILURE IS ACID STRATIFICATION. THAT'S BAD. WE FIXED THAT.

It's 100% maintenance free, provides superior sustained performance, and offers the lowest total cost of ownership vs. all other conventional batteries in the industry.

MIXTECH BATTERY

The motion of your vehicle causes the electrolyte to circulate and continuously mix preventing acid stratification.



TRADITIONAL BATTERY

Without MIXTECH, acid in the electrolyte settles at the bottom which leads to excess corrosion and charge imbalance. This is known as acid stratification.

Discover®
MIXTECH

MIXTECH: BATTERIES REMIXED

discovermixtech.com

MIXTECH INSIDE

GREENTEC AWARDS 2017 WINNER

1st PRIZE

automechanika innovationaward

LUXURY ACCESSORIES AND LOWER EMISSIONS TARGETS ARE KILLING YOUR BATTERIES. THAT'S BAD, WE FIXED THAT!

Voluntary and mandated efforts to reduce CO_2 emissions and improve fuel economy are resulting in greater numbers of vehicles being equipped with start-stop or anti-idle engine systems.

Start-Stop engines automatically shut off when the vehicle is at idle and restart when the driver's foot leaves the brake pedal saving fuel and reducing emissions. During this time, the energy needed to power a growing number of electrical loads is provided by the battery rather than the engine alternator. While this saves fuel and reduces emissions, batteries now must do even more, like:

- Deliver 30,000 starts annually vs. 700 a few short years ago;
- Deliver 500 million-watt seconds of energy vs. half that previously; and
- Support micro-cycles as electrical loads run off of the battery instead of the engine.

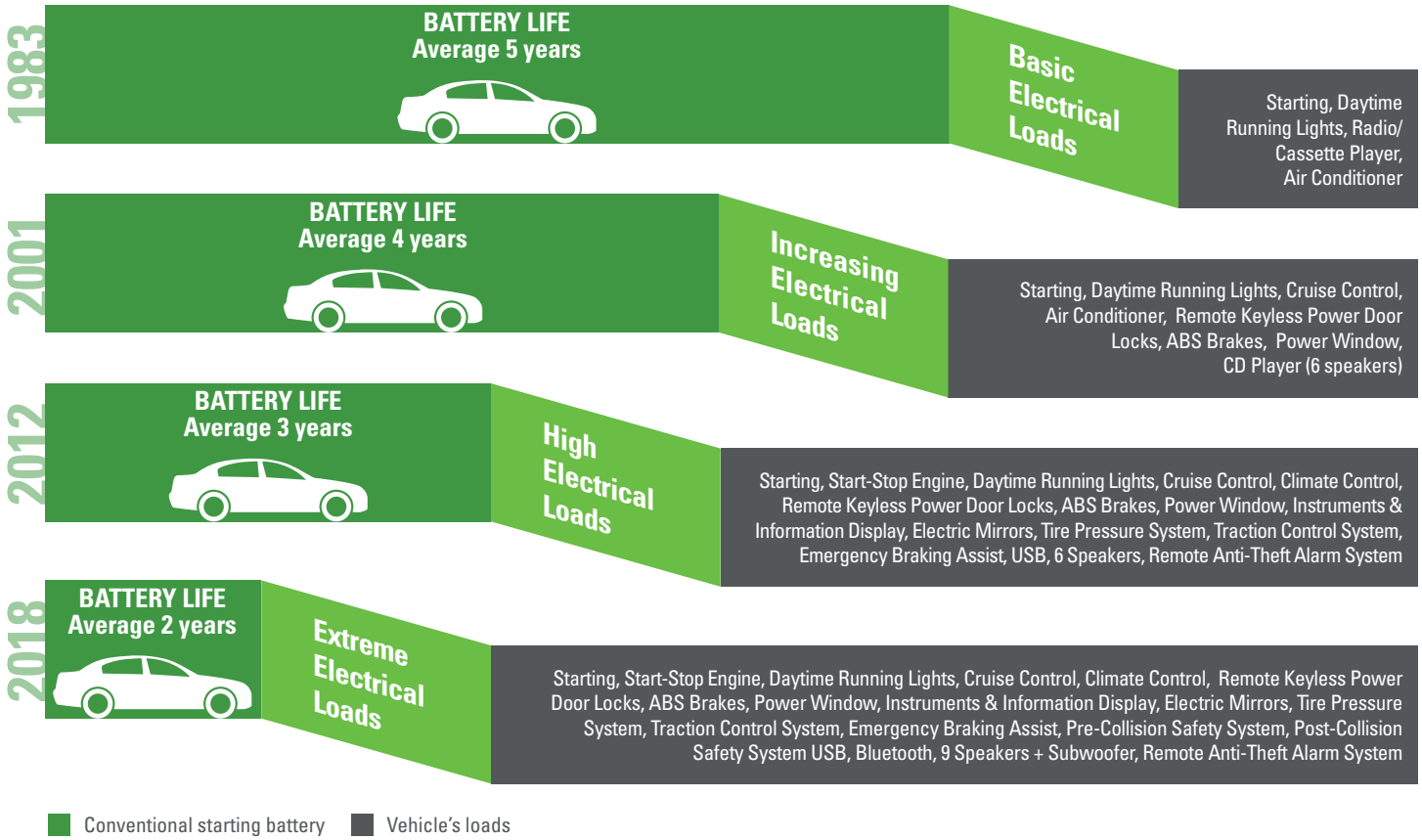
Unlike in the past when batteries were maintained in a fully charged state and charged over time, vehicle batteries today are constantly operated in a partial state of charge and must support rapid recharging between engine on-off periods.

It is not surprising that battery life expectancy has decreased as vehicles have evolved. Isn't it time for batteries to evolve too?

To adequately support new vehicle electrical systems, lead acid batteries must maintain a high Dynamic Charge Acceptance (DCA). Higher DCA allows more energy from the alternator to be recovered and stored faster allowing the battery to support electrical loads and to be cycled more often during periods of "anti-idle" operation.

Typical batteries start with a relatively high DCA, but because of acid stratification the DCA degrades rapidly and within a few short months can stabilize at around 30% to 50% of original.*

Discover MIXTECH batteries utilize patented acid mixing technology to eliminate acid stratification. MIXTECH maintains DCA up to 3.5 times greater than conventional, EFB or AGM replacement batteries, delivers uniform acid density and the highest sustained performance at the lowest total cost of ownership.



* Characterization of Dynamic Charge Acceptance for Lead-Acid Batteries in Micro-Hybrid Vehicles. Heide Budde-Meiwes*1, Dominik Schulte2, Julia Kowal1, Dirk Uwe Sauer1, Ralf Hecke3, Eckhard Karden4, 1Electrochemical Energy Conversion and Storage Systems Group, Institute for Power and Electrical Drives (ISEA), RWTH Aachen University, Germany, Jägerstraße 17-19, 52066 Aachen, *batteries@isea.rwth-aachen.de

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