



# O'Reilly Auto Parts

*Super Start Platinum AGM*

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## AGENDA

### What is AGM?

- Construction vs. Flooded
- Features & Benefits

### Why AGM?

- Automotive E-Demands
- Global Trends

### Where is AGM?

- EPM History & Product Line
- OE Focus

## WHAT IS A SUPER START AGM?

### Absorbed Glass Mat

A Valve-Regulated Lead-Acid Battery designed with a micro-porous glass mat separator instead of the polyethylene separator used in flooded designs.



**AGM  
separator**



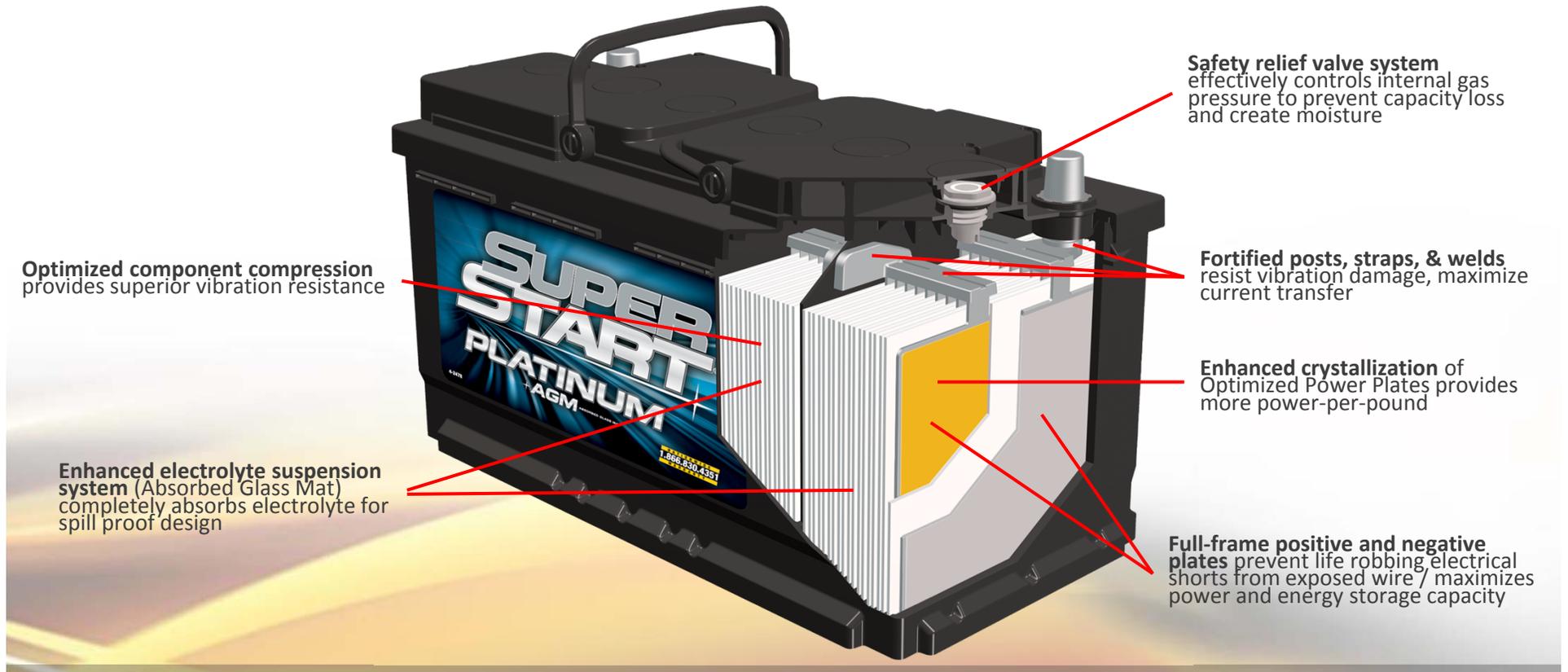
**Flooded  
separator**

## AGM VS GEL

- **AGM** is not **Gel**
- The **AGM** (Absorbed Glass Mat) battery uses technology in which the absorbed glass mat holds the electrolyte between the plates. A **Gel** battery uses a silica gel that suspends the electrolyte between the plates. Example, **Gel** batteries are often used to store solar power.



# SUPER START AGM BATTERY CONSTRUCTION



**Optimized component compression**  
provides superior vibration resistance

**Enhanced electrolyte suspension system** (Absorbed Glass Mat)  
completely absorbs electrolyte for spill proof design

**Safety relief valve system**  
effectively controls internal gas pressure to prevent capacity loss and create moisture

**Fortified posts, straps, & welds**  
resist vibration damage, maximize current transfer

**Enhanced crystallization of Optimized Power Plates** provides more power-per-pound

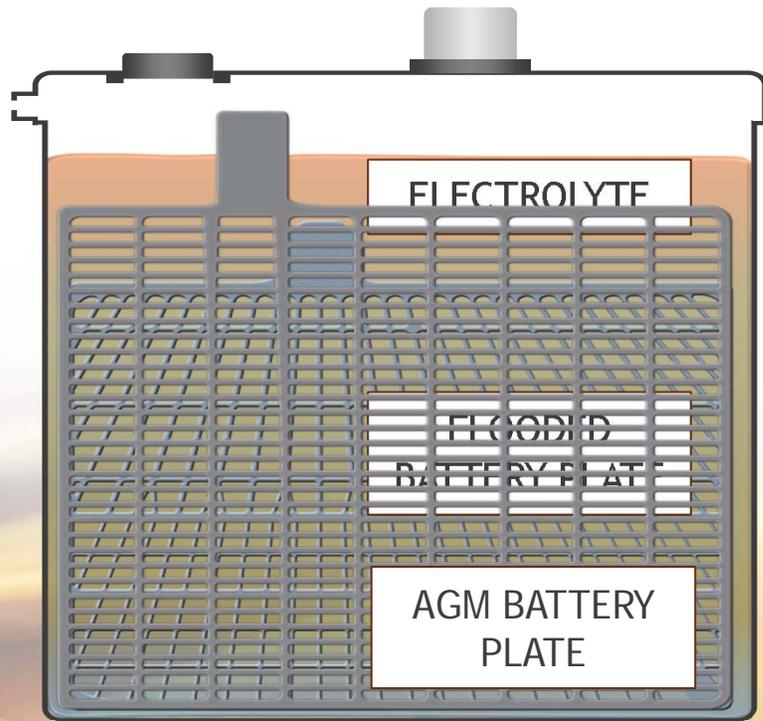
**Full-frame positive and negative plates** prevent life robbing electrical shorts from exposed wire / maximizes power and energy storage capacity



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# FLOODED VS. AGM PLATES



➤ **Taller plate**  
More surface area, more active material



AGM Plate



Flooded Plate

➤ **More surface area**  
More power for crank

➤ **More active material on AGM**  
More capacity for runtime

➤ **More robust/thicker plate**  
Better for cycling

➤ **Grid Path Construction**  
Special AGM design for maximum paste adhesion/retention

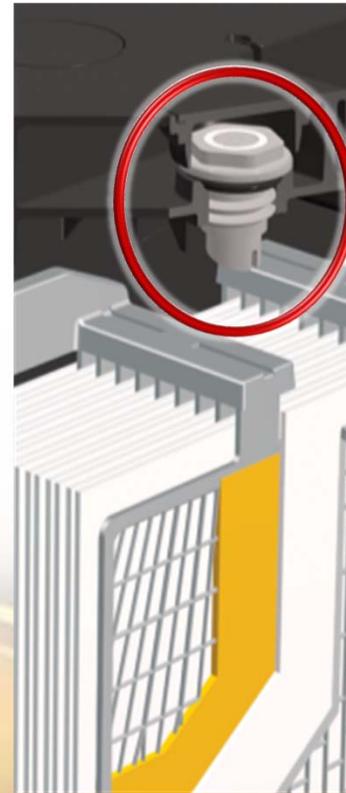
# SUPER START AGM TECHNOLOGY

VRLA (VALVE REGULATED LEAD ACID)



## Micro-Porous Glass Matting

- Electrolyte absorbed in a glass matted fibers
- 2X the cycle life - maximizes power for longer durations
- Superior vibration resistance and extend cycling
- Better all-weather performance



## One Way Pressure Relief Valve

- Maintains correct internal pressure
- Release excessive pressure and gas
- Keeps the cell from being contaminated by the atmosphere
- Super Start valves are UL recognized and 100% tested
- Reliable performance and long life

## THE SUPER START AGM DIFFERENCE

### AGM Vacuum Filling Process



Precision filled to ensure saturation of entire glass mat area

- Pull vacuum, release acid into battery.
- Repeated 3 times.
- Acts like “squeezing a sponge”.
- Allows acid to fully absorb into the AGM material quickly and evenly.

# SUPER START PLATINUM AGM VOLTAGE

Battery Voltage		STATE OF CHARGE	Charger Maximum Rate			
FLOODED	AGM		50 Amps	20 Amps	10 Amps	5 Amps
12.6 V	12.8 V	100%	— READY TO USE —			
12.4 V	12.6 V	75%	0.6	1.3	2.5	4.8
12.2 V	12.3 V	50%	1.2	2.7	5.1	10.1
12.0 V	12.0 V	25%	1.8	4.3	7.8	15
11.8 V	11.8 V	0%	2.5	5.7	10.7	20.8



Battery charger must have a designated AGM setting to properly charge an AGM battery.  
 (charging time depends upon battery capacity and efficiency of charger)



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## SUPER START FEATURES AND BENEFITS

### Feature:

- Non-spillable.....
- Maintenance Free.....
- Glass Mat separators..
- Corrosion Free.....
- Vibration Resistant...
- Low self-discharge...
- Made in USA.....

### Benefit:

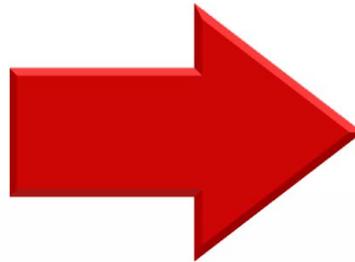
- Will not leak.
- Never needs water.
- Enhanced Cycle Life. **2X!**
- Install anywhere.
- Longer life. **20X!**
- Long storage w/o damage.
- Availability & Quality



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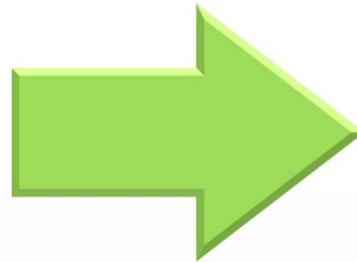
## AGM TECHNOLOGY



Never replace an **AGM** battery with a flooded battery.

Conventional starting batteries are not designed to handle multiple accessory loads like AGM products.

## AGM OPPORTUNITY



Upgrade to **AGM** for all applications.

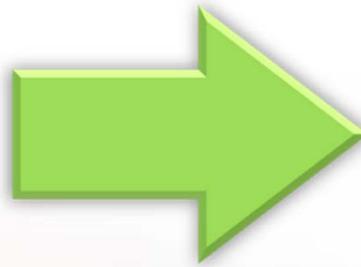


# Super Start

## Why Platinum AGM?

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## WHY SELL UP TO AN SUPER START AGM?



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## SUPER START PLATINUM AGM

### The Highest CCA Rating doesn't make the best battery

- Today's vehicles need **more durability** not just higher CCA's
- Fuel, Injection, computerized starting controls, and other enhancements allow vehicles to start quickly without the need for extended engine cranking.
- Optimized AGM power is not always reflected by CCA rating
- Super Start Platinum AGM delivers **fast-starting**, more **efficient power** beyond what CCA measures.



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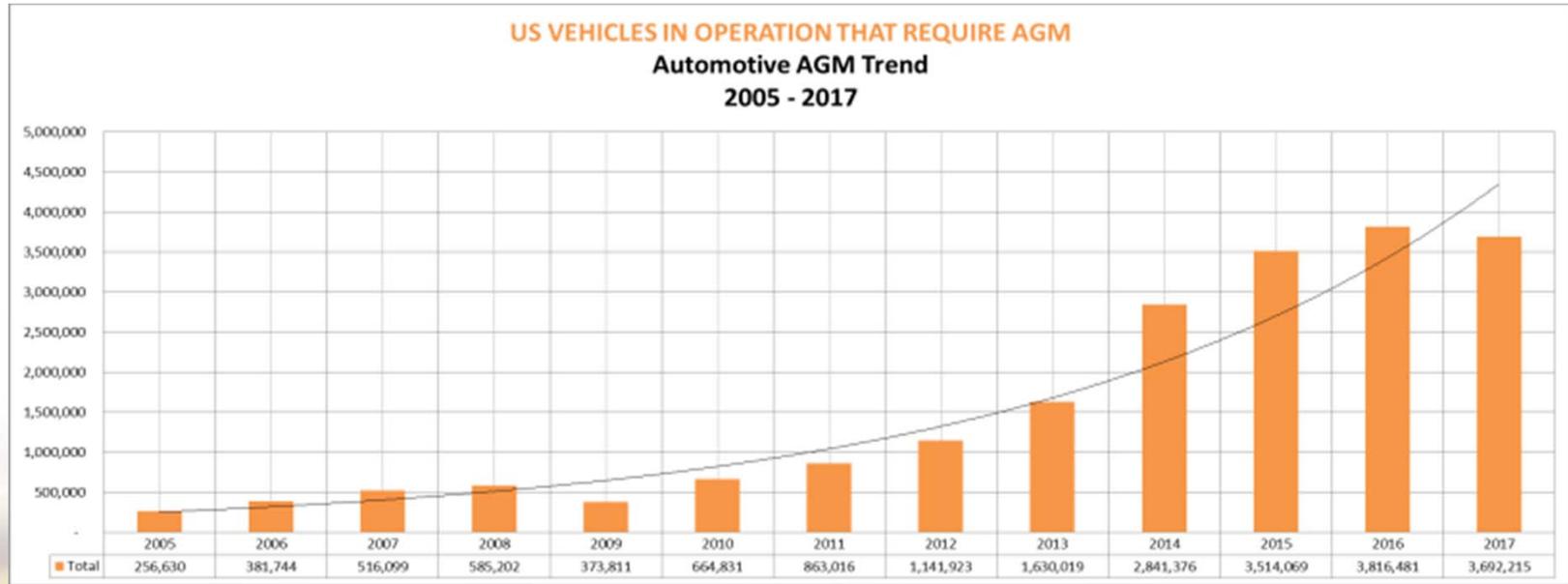
# ELECTRIFICATION AND ADDED FEATURES



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# US VEHICLES IN OPERATION THAT REQUIRE AGM



The 12 year Compounded Annual Growth Rate is 24.88%

Since 2005 Original Equipment Manufacturers have utilized AGM batteries in 20.4M vehicles.

Source: IHS Markit & BCI – 2018

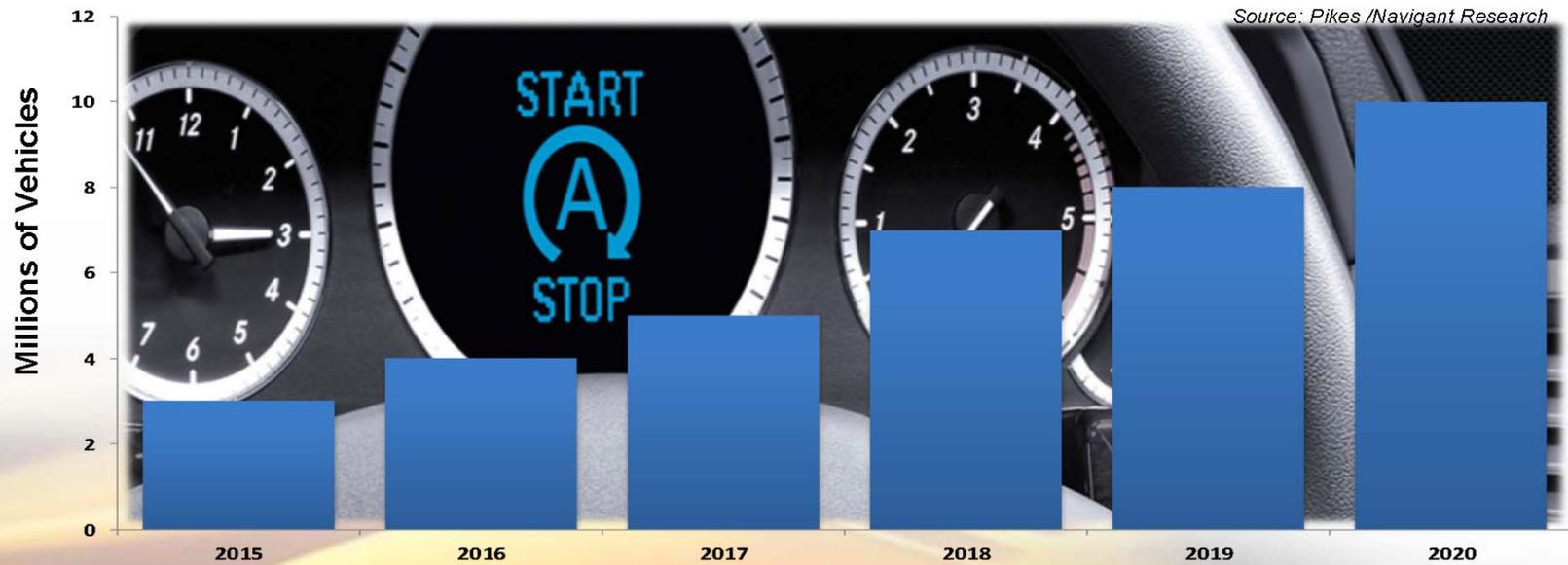


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# START/STOP SYSTEMS

## U.S. PROJECTED START-STOP SYSTEMS GROWTH



*Start/Stop Systems: ~17% in 2017; by 2020 = 57% of new cars sold in US*

Source: EPM VIO Data – July 2019



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## START/STOP SYSTEMS

- Also called “Micro-Hybrid”
- 3-10% Fuel Efficiency gain
- Depending on the car manufacturer could be a larger AGM battery or two batteries (AGM Starter & AUX AGM)
- Global Start Stop Systems:  
~55.4 Million Engines

Source: [engineeringinsider.org](http://engineeringinsider.org)



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# ENVIRONMENTAL REGULATIONS

## Driving OEMs to Technology Adoption

- **Start-Stop Systems**  
(12V / 48V)
- **Enhanced Energy Management**  
(Coasting, Regen Braking, Turbo)
- **Component Electrification**  
(E-booster, Water Pump)
- **Weight Reduction**  
(Battery Downsize, Carbon Fiber Bodies)

Source: Roland Berger Research Consulting Company



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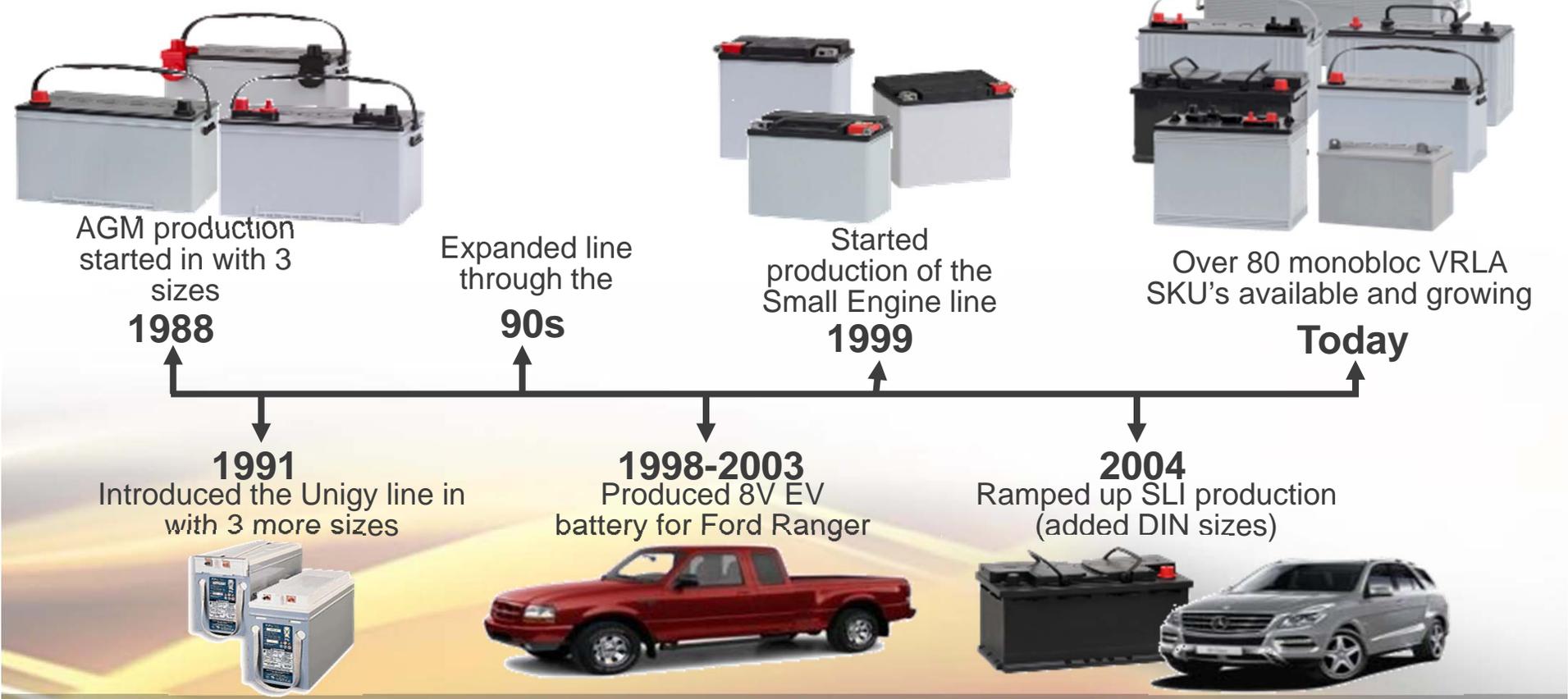




# Super Start

*Where is AGM?*

# EAST PENN HISTORY OF VRLA PRODUCT



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# TRANSPORTATION PRODUCT LINE - AUTOMOTIVE



## Super Start AGM Batteries

- The Super Start AGM battery series delivers highly efficient energy storage and power delivery solutions for the evolution of your battery needs.



## Super Start EN Exact Fit Series

- The Super Start EN Exact Fit international battery line consists of the most popular EN (European Norm) sizes for a worry-free exact fit.



## Super Start AUX AGM Batteries

- Super Start AUX batteries are specially designed and uniquely capable of delivering dependable auxiliary support to critical vehicle functions.



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Thank you!