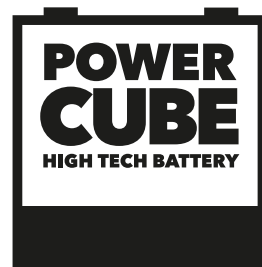


AGM TECH BATTERY



VRLA-AGM Commercial Vehicle Batteries Range

FIAMM
+ — — — — —



FIAMM's experience has led to **POWERCUBE** and **ENERGYCUBE**, the two new series of High Technology batteries for commercial vehicles, created to meet the various energy needs of today's automotive industry. Operation, long life and reliability. These are the concepts that guided us during the study, design and making of this new, rich range of batteries.

✓ = maximum performance

			APPLICATIONS							
Level	Product Name	Technology	Overnight	Long distance	Express Delivery	Coach	City Bus	Small tractor	Big Tractor	Heavy Industrial
1	POWERCUBE AGM	AGM	✓			✓	✓		✓	✓
2	POWERCUBE APC	APC	✓	✓		✓	✓		✓	✓
3	POWERCUBE EHD*	EHD		✓	✓			✓		
4	ENERGYCUBE APC	APC	✓		✓	✓	✓		✓	✓
5	ENERGYCUBE RST	RST			✓			✓		

* flat cover (FLAT) only for A-B-C Batteries

The new application needs generated by the technological development of the latest commercial vehicles, in particular the medium and long-range heavy vehicles, has given rise to increased demand for energy that has gained strength over recent years.

As far as the **starter batteries** are concerned, this means a significant increase in product operation, long life and reliability requirements. In detail, adapting the product to new vehicles and the often critical conditions of use in the field have generated a heavy demand for improving the following technical and functional characteristics:

- > ENERGY AVAILABLE FOR THE ELECTRIC/ELECTRONIC SYSTEM
- > STARTING POWER IN CRITICAL CONDITIONS: LOW TEMPERATURES AND PARTIAL CHARGE
- > LIFE IN TERMS OF DISCHARGE/CHARGE CYCLES
- > RESISTANCE TO INTENSE DISCHARGE CYCLES
- > CHARGE ACCEPTANCE
- > RESISTANCE TO VIBRATIONS

FIAMM DECIDED TO GO BEYOND MARKET EXPECTATIONS

AGM TECHNOLOGY

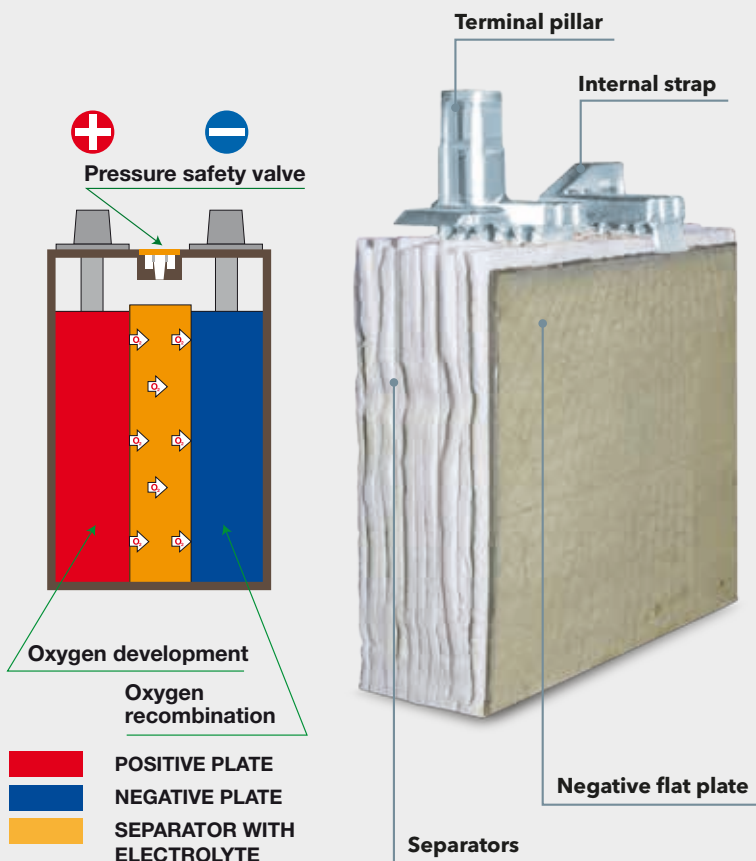
The main feature that distinguishes an AGM battery from a traditional battery is the gas recombination technology. For a traditional lead-acid battery the phase of charging is characterized by the dissociation of water into hydrogen and oxygen. The two gasses leak from the caps, while the level of electrolyte inside the battery decreases.

AGM uses instead the principle of recombination. Thanks to a special microporous separator (*Absorbent Glass Material*), impregnated with a controlled quantity of electrolyte, the oxygen released from the positive plate after the dissociation of water during charging, can migrate to the negative from which is reduced and then recombine with hydrogen, restoring the water that was dissociated. This establishes a closed electrochemical cycle, without any gas emission and without water consumption.

It's a simple system, but to work best it requires great precision in manufacturing and an accurate choice of components. Important are both the whole plate-separators compression and the purity of the components.

... DIFFERENT TECHNOLOGIES FOR A NEW BATTERY

AGM technology



Blocking technology

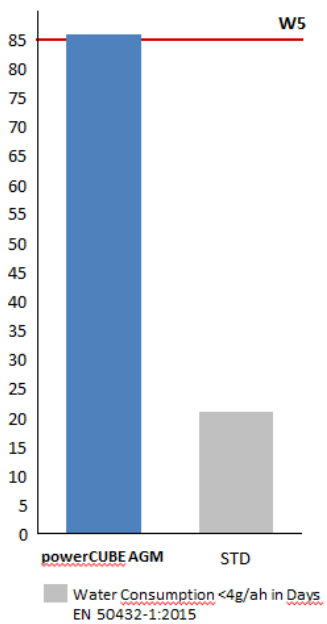
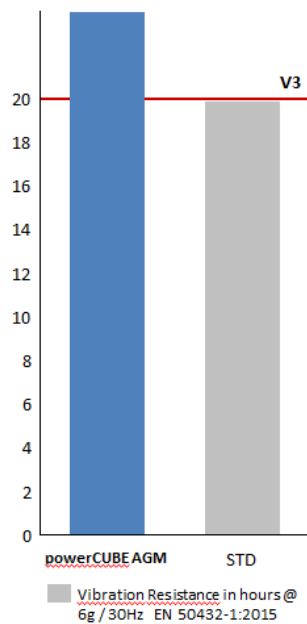
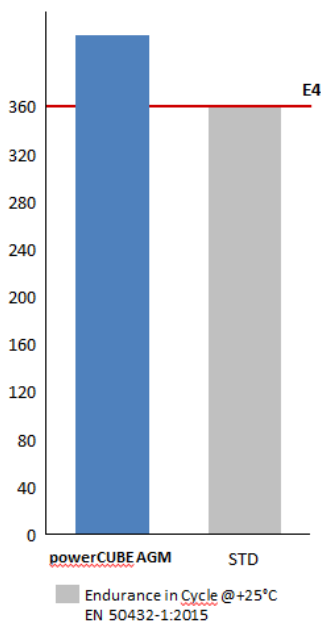


A new Blocking System has been introduced to increase vibration resistance. Cell blocking is ensured thanks to a special resin layer applied on top of plates.

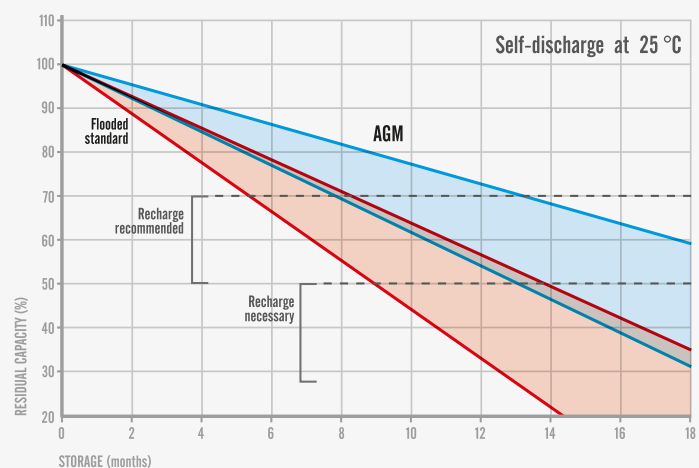
THE RESULTS OF FIAMM R&D DEVELOPMENTS IS

POWERCUBE AGM

- > Sealed LID Valve Regulated
- > Absolutely maintenance-free
- > High Cycling-Ability
- > Reduced Self-Discharge
- > High Vibration Resistance
- > Improved Charge acceptance
- > High Starting Power
- > Deep discharge resistance



SELF-DISCHARGE COMPARISON OVER DIFFERENT TECHNOLOGIES



CODE	Dimens Group	Technology	Short Code	Ah (C20)	CCA (A) EN	Dimensions LxWxH (mm)	Polarity/ Terminals	Hold Down
7904567	D7	AGM	D7 125 AGM	125	1000	266x280x230	2/1	B00
7905609	B	AGM	B 180 AGM	180	1100	513x223x223	3/1	B00
7905610	C	AGM	CX 230 AGM	230	1200	518x273x242	3/1	B00



B 180 AGM



CX 230 AGM



D7 125 AGM

PERFORMANCE MADE EASY
ACCORDING TO NEW STANDARDS*

POWERCUBE AGM




*EN 50432-1	min	max	powerCUBE AGM
Water Consumption	W1	W5	W5
Self-Discharge	C1	C2	C2
Vibration Resistance	V1	V4	V3
Endurance	E1	E4	E4



Headquarters
FIAMM Energy Technology S.p.A.
Viale Europa, 75
36075 Montecchio Maggiore (VI) - Italy
Tel. +39 0444 709311
Fax +39 0444 709878

A Hitachi Group Company

info.starter@fiamm.com
www.fiamm.com
www.fiammnetwork.com

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