



Low Maintenance Battery



**Fiamm Motive Power
energy LM 200**

Fiamm Motive Power energy LM 200

The perfect combination of performance and freedom from maintenance for 200 cycles

The Fiamm Motive Power energy LM 200 is a very low maintenance battery. Suitable for a wide spectrum of applications, from light to normal duty, it allows maintenance free operation without water topping up for up to 200 cycles.

In a single shift operation this can equate to a period up to 1 year. This range has the same performance and maintenance criteria as other conventional free electrolyte batteries. Integration of the electrolyte circulation system using the Airsystem principle and the unique Fiamm Motive Power cell design of the battery give striking proof of its efficiency and its economy. This range meets dimensions of standards DIN/EN 60254-2 and IEC 254-2. The Fiamm Motive Power energy LM 200 is capable of accepting boost charges thanks to its electrolyte circulation system fitted in series. Thus the user can benefit from charging during rest periods and increase the availability of the battery fleet. Due to its low gas emission, the Fiamm Motive Power energy LM 200 offers the possibility of decentralised charging. High cost charging rooms are no longer a necessity.

Compared to the former Fiamm Motive Power energy LM 200 range, the Fiamm Motive Power energy LM 200 cells provide higher efficiency in discharge achieved by advanced components used in the construction of the positive plates. The sizing of the positive and negative plates has been optimised according to the volume available in the cell boxes. All these technical enhancements have enabled an increase in the cell capacities while keeping the same exterior dimensions. The Fiamm Motive Power energy LM 200 range is at the highest technology level and has a very high efficiency. This improvement integrates the European harmonisation of the DIN range.

Cell construction

The Fiamm Motive Power energy LM 200 is based on the robust design of the Fiamm Motive Power energy plus and is distinctive for its important features. All Fiamm Motive Power energy LM 200 cells use the robust tubular vented technology (PzS). The positive electrodes are diecast tubular plates (PzS), the negative electrodes are flat pasted plates. The separator is of the microporous type. The cell box and lid are made from high impact, temperature resistant polypropylene and are heat-seal welded to prevent electrolyte leakage. Fiamm Motive Power has optimised the internal design to maximise the electrolyte reservoir.

Cell connectors

The cells are linked together with fully insulated flexible and halogen free connectors. The bolt-on connectors allow cells to be replaced or moved without excessive work and the use of heat welding equipment.



Benefits

- Water top up intervals 200 cycles or 1 year in single shift operations
- Fast recharge time and accurate charging profile
- Decentralised charging possible
- Charging factor of 1.04 for minimal gas emission and a significant reduction in battery temperature rise
- Recharge energy savings of up to 20%

The Fiamm Motive Power energy LM 200 battery brings major cost benefits to the user.

Fiamm Motive Power energy dry

Fiamm Motive Power energy plus

Fiamm Motive Power energy with electrolyte mixing

Fiamm Motive Power energy LM 200

Fiamm Motive Power System energy LM 70

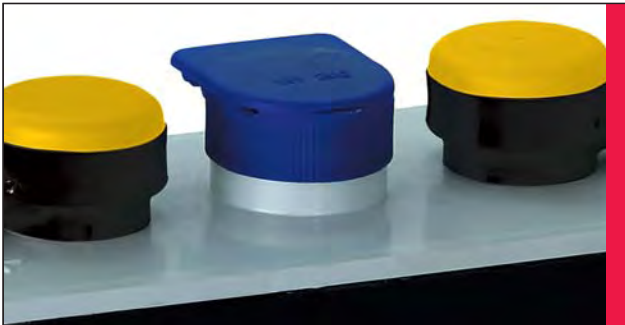
Low duty

Normal duty

Heavy duty

Spray retaining plugs

The specific spray retaining plugs avoid any emission of acid spray while charging and minimise electrolyte losses. They also guarantee a dry and clean battery surface and further reduce the maintenance requirements.



Alloy

The alloy used for the electrodes has a decisive influence on the consumption of water and the cycling stability. Fiamm Motive Power use a special alloy which minimises water consumption without impairing the life or performance of the battery.

Charging

Fiamm Motive Power has developed special characteristic charging curves which bring about minimum gassing and thus minimal water consumption for the Fiamm Motive Power energy LM 200 battery.

Low electrolyte indicator

Adherence to the regular top up intervals after 200 cycles is ensured by a low electrolyte indicator mounted on the battery. An indicator light shows when it is time to top up the water.

Definition of application fields

1. Low duty

- Single shift with light operation and discharge lower than 60% C_5 .
- Electrolyte T °C about 30 °C

2. Normal duty

- Single shift with discharge up to 80% C_5 .
- Electrolyte T °C 30 °C

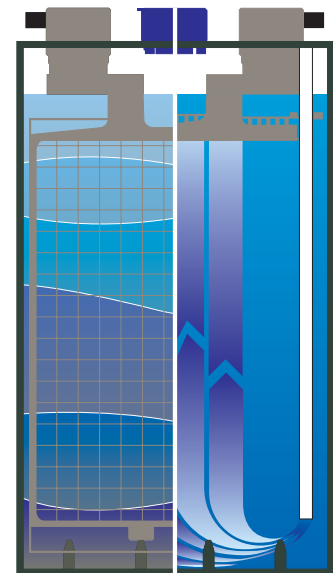
3. Heavy duty

- Single shift with discharges of 80% C_5 and high discharging currents
- Opportunity charging to augment the useable capacity
- Multi-shift operation with or without battery changes
- High ambient temperature

energy Low Maintenance 200

Electrolyte mixing

The Fiamm Motive Power electrolyte circulation system, using the Airsystem principle, consists of a pipe system which is fitted in the cells. A diaphragm pump sends a low rate airflow into the cell which creates a circulating air stream inside the cell box. This system prevents electrolyte stratification and the battery charging is optimised.



Stratification of the electrolyte at different specific gravity levels

Electrolyte circulation



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