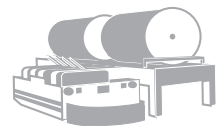
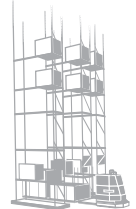
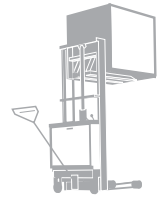




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**Traction batteries**  
**Hawker evolution**

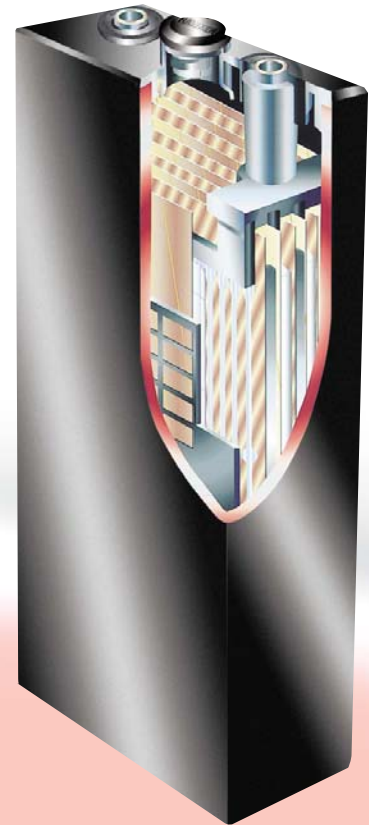
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**Maintenance free energy with reduced charging time (8 hours at 60% DOD)**



The Hawker® evolution is a new valve regulated gas recombination battery with gelled electrolyte, accepting up to 80% DOD/C<sub>5</sub>. This range is suitable for use in materials handling equipment in low to medium duty applications. The cells have an enhanced capacity compared to most other maintenance free batteries on the market. In combination with the high frequency Hawker Lifeplus allowing a short charging time in 8 hours at 60% DOD and in 12 hours at 80% DOD, the full benefit of its high performance can be used in an optimised way. The Hawker evolution battery range is available in DIN and BS dimensions. It meets the dimensions of the standards DIN/EN 60254-2 and IEC 60254-2.



### Features

The gelled electrolyte of the Hawker evolution battery is based on a highly dispersed mixture of sulphuric acid, water and silica. It not only prevents any acid leakage, but also ensures that there is no stratification of the acid during cycling.

### Maintenance free

The Hawker evolution battery is maintenance free over the whole operational life; water topping up is not required. Through the internal oxygen circulation and the special charging regime, the very low gas emission permits decentralised charging of the truck or equipped machine, or makes the use of a simplified charging room possible. From this significant cost benefits arise, because of low investment and operational costs.

### Construction

The Hawker evolution motive power battery is the result of considerable research and development effort and combines the features of a valve regulated battery with the robust design of a traction cell with tubular positive plates (PzS type). Alloy (lead calcium with tin for the positive plate), the active mass and separator are adapted for the performance requirements of the battery. The valve of the Hawker evolution cell has pressure working range with low tolerances and

ensures a highly efficient internal oxygen circuit. This specific design allows a high gas recombination rate, preventing any premature electrolyte dry out. Through this, the optimum life cycle for maintenance free batteries can be achieved.

### Cell connectors

The cells are joined by 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.



## Charging

Hawker® has developed for their high frequency chargers, Hawker Lifeplus, a specially designed charging regime, which ensures a safe and gentle full charge of the Hawker evolution battery with a low charging factor. With these chargers, charging time can be reduced to 8 hours with 60% DOD.

On the weekend automatically 8 hours after the end of charge an equalizing charge is actuated. A complete charge shall be carried out every working day. Through the high efficiency of the Hawker Lifeplus, additional energy cost savings can be realised.



## Benefits

- **Maintenance free**  
No water topping up necessary over the complete battery life
- **Depth of discharge**  
Depth of discharge up to 80% of the nominal capacity  $C_5$  for a 12 hour charging time and up to 60% of the nominal capacity  $C_5$  for a 8 hour charging time
- **Electrolyte**  
No risk of spillage, utilises gelled electrolyte
- **Charging**  
Gentle and safe 8 hour charge for 60% discharge  $C_5$  or 12 hour charge for 80% discharge  $C_5$ , thanks to Hawker chargers.
- **Charging factor**  
The highly effective charging profile of the Hawker Lifeplus charger ensures a full charge with low charging factor and avoids damaging overcharge.
- **Decentralised charging**  
Decentralised charging safeguarded through low hydrogen emission. Thus reduction of investment costs.
- **Efficiency**  
The system Hawker evolution and Hawker Lifeplus guarantee a high energy efficiency and make energy cost savings of up to 30%.

## 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 about 30°C

### 3. Heavy Duty

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


1. Low duty	2. Normal duty	3. Heavy duty
Hawker perfect plus		
Hawker perfect plus with electrolyte circulation		
Hawker Water Less®		
Hawker Water Less® with electrolyte circulation		
Hawker Water Less® 20		
Hawker evolution		

## Field of Applications

For applications with low or normal duty in one shift operations (6 days max. a week) on these trucks :

- Pallet trucks (24V, 36V, 48V)
- Order pickers (24V, 36V, 48V)
- Pallet stackers (24V, 36V, 48V)
- Counterbalanced trucks 24V, 36V, 48V with the limits of capacity 420 Ah max\* and 1.8 T max.
- Retractable mast trucks and cleaning machines under condition of a technical study and approval

\*For higher capacities a technical study by the Hawker technical team must be carried out and approved.



Wherever you do business, EnerSys® can support you with motive power energy. The Hawker® branded battery range, matched chargers and systems provide trouble free performance under the most demanding service conditions. Our strategically located manufacturing plants are efficient and responsive with a culture of continuous improvement and added value for our business partners.

EnerSys has an enviable position in technology leadership and with significant investment in research and development we intend to stay at the leading edge in product innovation. The recently developed energy solutions: Water Less® 20 and Hawker XFC™ batteries, Lifetech and Lifespeed IQ™ HF chargers, have defined new benefits for our customers: faster recharge, more machine availability, lower operating and investment costs, reduced carbon footprint. Our team of development engineers is driven by the desire to build the best energy solutions and works closely with our customers and suppliers to identify development opportunities. Our bias for rapid innovation means we get new products to market fast.

EnerSys's integrated sales and service network is dedicated to providing our customers with the best solutions and after-sales support for their business. Whether you require 1 battery or a complete fleet of batteries, chargers, a battery handling system and a state of the art fleet management system, you can count on us. EnerSys is the world's largest industrial battery manufacturer and we are dedicated to being the best.



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