

آذران ماشین



**Traction
batteries**
Hawker
Water Less®



**Water Less® –
Less Watering –
More Customer Benefits**

EnerSys
Power/Full Solutions



Water Less® Plug

**More operating time –
Longer topping up intervals**



Less is More – More Benefits

EnerSys® is focused on rapid innovation and new products get to market fast. Our whole team is driven by the desire to build the best energy solutions and works closely with our customers and suppliers to identify development opportunities. Hawker Water Less® is a new efficient traction battery with state of the art technology and appealing features.

Water Less® provides more flexibility and more time due to longer topping up intervals of 4, 8 or 13 weeks depending on charging technology. This means reduced labour costs for topping up batteries – up to 60 % (with Hawker® 50 Hz chargers) and up to 75 % (with Hawker HF smart chargers). The Hawker Water Less traction batteries provide a high level of power and reliability for all industrial truck applications. Hawker Water Less range is at the leading edge of battery technology and brings added efficiency to your business. A low electrolyte level indicator fitted on the

battery informs the user of the battery when water topping up is needed.

Cell construction

All Hawker Water Less® cells use proven PzS technology. The positive electrodes are diecast tubular plates (PzS) and advanced components used in their manufacture provide increased efficiency. The negative plates are flat pasted plates. The separator is of the microporous type. Constructional specifications like a larger electrolyte capacity, a reduced prism height and new flip top plugs ensure added value for our customers. Hawker Water Less - Less is More. Less Watering - More Benefits.

Options

- **Hawker Aquamatic™:** The aquamatic water refill system makes it possible to top up all the cells from one central point through an integrated system.
- **Electrolyte circulation:** Most cell types

(not available for BS cells 2 and 3 plates) Provides optimum performance and maximises battery service life in heavy duty operations.

- **Easyplus:** HF chargers Lifeplus are capable of communication with the battery. A led on the easyplus will indicate when the battery requires topping up. An added safety feature is that if the battery is not topped up when requested, the charger will not operate after a given number of cycles. The easyplus will provide data on the battery: identity, capacity, temperature, voltage.
- **Battery Fleet Management:** EnerSys has a solution that makes managing the battery fleet straight forward and affordable.



Advantages

- More Time: Longer topping up intervals
- More Flexibility: Suitable for 50 Hz and HF chargers
- More Savings: reduced electricity cost when used with Hawker® HF
- More Duties: Suitable for all applications
- More Dimension: Full DIN range; 4 BS sizes
- More Capability: Many options

Low duty	Normal duty	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		

• **Low duty:** single-shift with light operation and discharge lower than 60% C₅. Electrolyte T°C about 30°C

• **Normal duty:** single-shift with discharge up to 80% C₅. Electrolyte T°C 30°C

• **Heavy duty:** single-shift with discharges of 80% C₅ and high discharging currents; opportunity charging to augment the useable capacity; multi-shift operation with or without battery changes; high ambient temperature

Charging



50 Hz charger; Charging Factor : 1.2

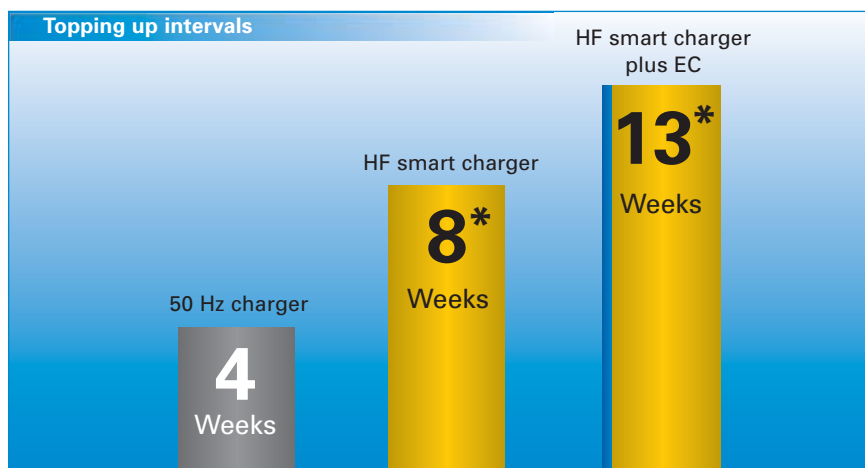


HF smart charger; Charging Factor: 1.10 - 1.12



HF smart charger plus Electrolyte Circulation; Charging Factor: 1.07

Topping up intervals



* Longer topping up intervals can be achieved with BS cell types

Electrolyte circulation (EC) (see Options)

The Hawker electrolyte circulation system, using the AirLift 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.

More Flexibility

The charging technology must be tailored for the characteristics of the battery and the application. This is a crucial factor for the economic operation of the batteries. Hawker Water Less® traction batteries are suitable for 50 Hz and HF smart chargers. The Hawker HF chargers adapt automatically to: capacity of the battery, voltage of the battery (Lifeplus), depth of discharge of the battery. This means a high level of flexibility for the customer. The topping up intervals (based on 80%DOD C₅, 1 cycle per day, 5 days per week) can be achieved as follows:

- **4 weeks** with conventional 50 Hz chargers with a 1.2 charging factor
- **8 weeks** using Hawker HF chargers with a 1.10 - 1.12 charging factor*
- **13 weeks** when the battery is equipped with electrolyte circulation and when using Hawker HF charger with a 1.07 charging factor

* Contact Hawker if you have an existing HF charger.





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: Hawker XFC™ and Water Less® 20 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.



European Headquarters:

EnerSys EMEA
EH Europe GmbH
Löwenstrasse 32
8001 Zürich
Switzerland
Phone: +41 44 215 74 10
Fax: +41 44 215 74 11

Local contact:

EnerSys Ltd
Oak Court
Clifton Business Park
Wynne Avenue
Swinton
Manchester M27 8FF
Phone: 0161 794 4611
Fax: 0161 727 3809

Please refer to the website address for details of your nearest EnerSys office: www.enersys-emea.com

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