

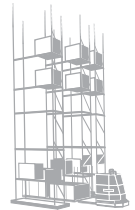
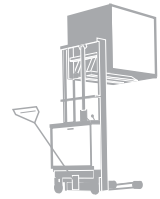


Smart Chargers

Hawker

Lifepus

Powertech



Power/Full Solutions

HAWKER

Lifepius • Powertech

Hawker, European leader in motive power batteries, has pioneered High Frequency charger technology. More than 20 years expertise and a constant study of the customer's needs and requirements has lead to Hawker's new range of smart chargers. With the ability to communicate with the battery we can provide the optimal energy pack needed for all motive power applications.

The optimal solution

• Hawker Lifepius

This range is our premium brand and at the leading edge of smart technology. These three phase, multivoltage and multicapacity chargers are able to communicate with the battery through the Hawker easycontrol or easyplus, the electronic device located on the battery.

• Hawker Powertech

This range offers the ultimate compromise in efficiency and customer value. It is a single voltage and multicapacity charger and it is available in single phase and three phase.

Benefits of HF technology

Optimal availability for use and long service life can only be achieved from motive power batteries when the battery and the charger are perfectly matched.

The HF technology permits:

- compact wall-mounted designs to save floor space
- significantly higher electrical performances.

Thus the necessity for specific chargers is replaced by the capability of multicapacity and multivoltage (with the Lifepius).



The chargers adapt automatically to:

- Capacity of the battery
- Voltage of the battery (Lifepius)
- Depth of discharge of the battery.

These factors plus high energy efficiency, very high and constant power factor, reduced overcharge factor and delayed start of charge deliver significant energy cost reductions.

Our HF charger Lifepius and Powertech ranges match all technologies of lead-acid batteries (vented, gas recombination: gel or AGM), especially for Hawker battery ranges:

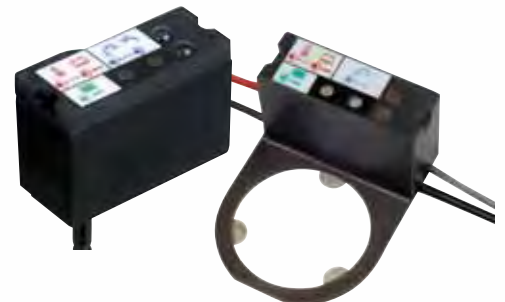
- Hawker perfect plus (vented batteries)
- Hawker perfect plus with electrolyte circulation
- Hawker Water Less® (vented batteries)
- Hawker Water Less® with electrolyte circulation
- Hawker wf200 plus (battery with electrolyte circulation, very low maintenance)
- Hawker evolution (valve regulated batteries with gel electrolyte)
- powerbloc/dry (monoblocs for small traction)

And offer high performances, reliability and multipurpose use.

Hawker easycontrol or easyplus: electronic device

With the Hawker easycontrol (Hawker evolution batteries) or easyplus (flooded batteries) located on the battery, the Lifepius and Powertech are capable of communication with the battery and can display the charge parameters for the last 100 charges.

Automatic profile correction in relation to temperature, when used with Hawker easycontrol or easyplus, ensures correct charge profile to safeguard charging time and optimal service life.



Smart and flexible state of the art technology

Main technical features

- High power factor and efficiency
- Optimal charge factor based on depth of discharge
- Temperature regulation (gel, flooded with or without electrolyte circulation)
- Memory of last 100 charges
- Menu:
 - Deferred start
 - Selection of equalization
 - Selection of charging profile
 - Temperature
 - Selection of cable length and section
 - Rest time of the battery
 - Electrically-operated valve (with control)
- Charging status
(Incomplete Charge, Full Charge, Total Incomplete Charges, Total Full Charges)

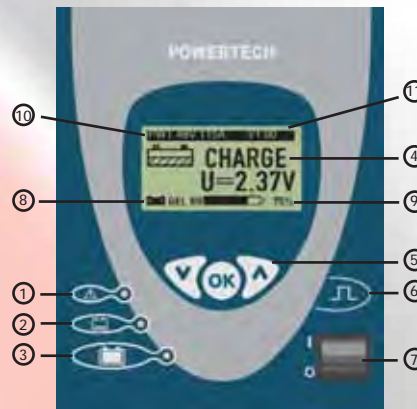
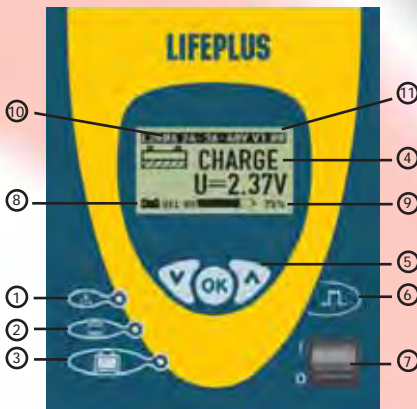
- Download of profiles on PDA through RS232
- Optional extras
 - Red/green light
 - Automatic water topping up kit
 - Pneumatic electrolyte circulation pump kit
 - Download (profiles, memory) on PC, or printer



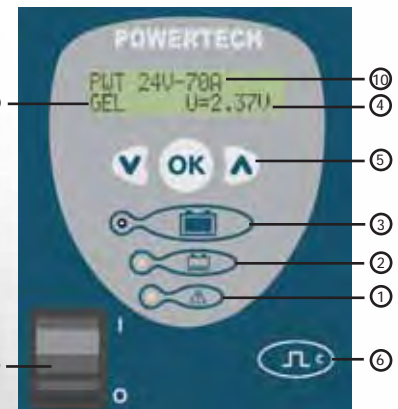
Example of parameters stored by the charger

Nb	T°C	Cap	Batt. Serial Number	Technology	U _{init}	Ah+	U _{final}	I _{final}	State of charge Init	Status
1	22	600	AC56123	Gel	2.00	426	2.71	6	29	Complete
...										
100	30	520	AC12562	PbO	2.05	175	2.35	65	40	Disconnect

Front Panels



Three Phase



Single Phase

Clear, easily understood indications of charge parameters on the LCD display for these multivoltage, 3-phase chargers

Clear, easily understood indications of charge parameters on the LCD display for these single voltage, single phase or 3-phase chargers

No.	Function	No.	Function	No.	Function
①	Red « Fault » light: permanently lit, flashing or unlit	④	Digital display	⑧	Battery technology
②	Yellow « Battery on charge » light: permanently lit, flashing or unlit	⑤	Parameter/memory menu	⑨	State of charge
③	Green « Battery available » light: permanently lit, flashing or unlit	⑥	Desulphation button	⑩	Type of charger – Available voltage
		⑦	Start (position I) and Stop (position 0) switch	⑪	Software version

Complete solution



« Smart Pack »

Definition of application fields

1. Low duty

single shift with light operation and discharge lower than 60% C_5 , electrolyte $T^{\circ}C$ about 30 $^{\circ}C$

2. Normal duty

single shift with discharge up to 80% C_5 , electrolyte $T^{\circ}C$ 30 $^{\circ}C$

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

	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 wf200 plus			
Hawker evolution			

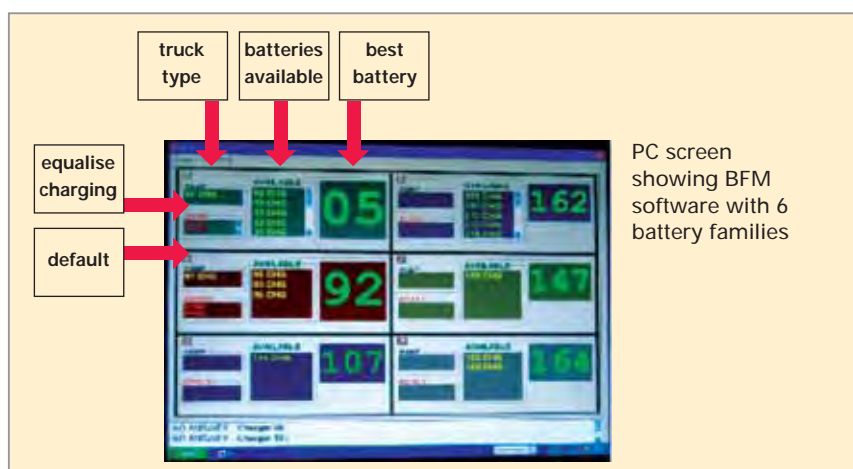
EnerSys battery fleet management

One of the challenges facing many companies today is the effective management of their fleet of motive power batteries. Multi-shift manufacturing operations, longer retail trading hours and the demand for faster logistics solutions are part of everyday business life. Keeping your materials handling equipment running, often times 24 hours a day, to support your business creates the need for battery changing. Selecting the "best bat-

tery" is vital to keep your truck fleet up-time and productivity to a maximum. EnerSys have a solution that makes managing your battery fleet straight forward and affordable. Communication between the EnerSys HF chargers and the pc is automatic and requires no data input from your staff. Battery selection by your truck operators is simple, it just requires them to look at the screen.

BFM Software

The BFM program, which is set up on a pc, is an extremely easy to use "first in, first out" system. The software can manage up to 12 battery families and 500+ chargers. Each truck type or battery family is allocated a name and the pc screen displays the relevant data: "next battery", "batteries available", "batteries equalisation charging", "defaults".



PC screen showing BFM software with 6 battery families

Look at the benefits ...

- maximises battery utilisation across your fleet
- avoids the need to dedicate batteries to specific trucks
- manages charging & battery rotation
- reduces battery changing time
- improve battery service life
- integrates pc controlled automatic equalisation charging

PowerNet

Building on the success of the BFM system, EnerSys has developed the PowerNet software program which adds some great new features for the effective management of your charging room. If you are dedicated to getting the optimum performance and service life from your battery fleet, having visibility and control of your battery charging operation and also controlling the amount of power you use in the battery room then PowerNet is what you have been waiting for!

Additional features

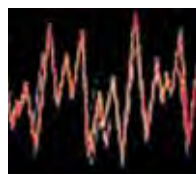
(When batteries are equipped with easyplus devices)

- Check status of all batteries
- Check for over-discharging
- Check for high operating temperatures
- Identify potential faults (before breakdowns occur)
- Identify which batteries require water topping

PowerNet Software

- "First in, first out" Battery Fleet Management
- Allocates "best battery" for each truck type
- Can manage 10 truck/battery families
- Can manage 500+ chargers
- Visibility of other fully charged batteries
- Check status of all chargers
- Visibility of all charge cycles - number, complete, incomplete & equalise
- Remote access to data via internet

Electricity power demand



Fluctuating electricity consumption without power management




Balanced electricity consumption using PowerNet

Controlling the rate at which you use electricity can have a dramatic impact on how much you pay. Peaks in demand above agreed thresholds generally mean large premiums.

PowerNet can be programmed to manage the total power used in your battery room by switching chargers on/off automatically to maintain electricity consumption within desired parameters.





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® and XFC batteries, Lifetech and Lifespeed 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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