



HYbrid Energy Station HES Mini

Datasheet issued 25 March 2014



Application:

- Site Loads up to 400 A possible (48 V DC)
- Recommended load factor is < 50% for optimum CapEx / OpEx balance
- Increased fuel efficiency can be achieved by reducing load factor further
- There is NO MINIMUM LOAD

Genset Style Enclosure:

- 2200mm x 900mm x 1350mm (w x d x h)
- Folded steel panels
- Painted finish
- Three separate equipment compartments, engine compartment, electrical panel compartment and battery compartment
- Engine Compartment:
 - 3 doors
 - Forced ventilation
 - Acoustic insulation 65 dB @ 1m
- Electrical Panel Compartment:
 - 1 door
 - Sealed and insulated
- Battery Compartment:
 - 1 door
 - Sealed and insulated
 - Forced Ventilation
 - Removable fork lift pockets

Battery Management System:

- Up to 180 cells
- 900 V max
- Cell balancing to within 10 mV
- Charge and discharge enable supervision and control
- State of charge, health, current, temperature, cell resistance monitoring
- Multiple strings of cells in parallel for battery redundancy*

Battery:

- Lithium Ion*
- Advanced rare earth chemistry
- Light weight and compact
- Low maintenance, sealed for life construction
- Up to 600ah capacity
- 15 x 3.2 volt cells = 48V DC
- 4 times longer cycle life than pure lead
- Very high charge and discharge capability

Or

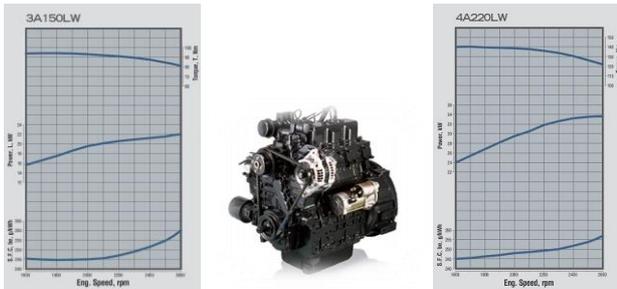
- NSB 170FT Blue+
- Ideal for demanding environments with unstable AC power or off grid
- High potential for fuel savings when used with hybrid generator systems
- High cycling and fast recharge performance
- 10 year float life at 25°C
- High modulus PPO plastic materials designed to withstand extended elevated operating temperatures
- Partial State of Charge (PSOC) cycling technology

Due to HYbrid Energy's policy of continuous improvement, these specifications are subject to change without notice

*Indicates optional equipment

Engine:

- Kioti 3A150LWS
- Interim Tier 4 / Stage III A compliant
- 4 stroke compression ignition
- Diesel Fuel
- Vertical, 3 cylinder
- Water cooled
- Naturally aspirated
- In-direct injection, vortex chamber combustion



Or

- Kioti 4A220LWS
- Interim Tier 4 / Stage III A compliant
- 4 stroke compression ignition
- Diesel Fuel
- Vertical, 4 cylinder
- Water cooled
- Naturally aspirated
- In-direct injection, vortex chamber combustion

Alternator:

- Permanent Magnet type
- Operating speed 2,200 – 2,800 RPM
- Rated power up to 20kW*
- Thermal protection
- Overcurrent protection
- Overspeed protection
- Simple construction; 1 moving part, no bearings or sliding contacts
- Voltage ripple < 1%

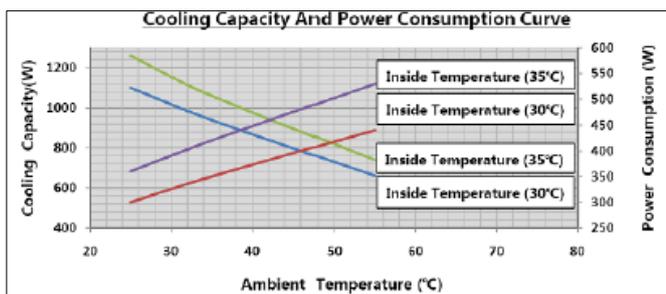


Control System:

- Microprocessor controlled
- Fully automatic, autonomous operation
- Remote monitoring, diagnosis and control
- Historical data trending
- Monitors and controls all major operating parameters of the HYbrid system
- Expandable to monitor clients equipment or relay signals to client's system*

Air Conditioning*:

- Free air cooling unit, Thermosyphon
- DC air conditioner
- Hybrid free air cooling / DC air conditioner
- Up to 3,000 Watts cooling @ 48 V DC
- R134a Refrigerant
- Quiet (65 dB @ 1.5m)
- Variable speed compressor and fans
- Microchannel heat exchangers
- High efficiency



Remote Monitoring*:

- On-board GPRS modem
- Full remote control and monitoring
- SMS alerts
- Web based interface
- Historical data recording
- Alarm list and fault reset
- Fleet status at-a-glance





*Indicates optional equipment

System	Feature	Benefit
Fuel	Up to 1000 litre tank*	-Up to 3 months between refuelling
	Fuel purifier*	-Removes large particles and water from fuel supply before engine fuel system
	Secondary Racor turbine filter*	-Increases fuel filter life where there is heavy fuel contamination
Lube oil	Water in fuel sensor*	-Shuts down engine safely if fuel is contaminated with water
	Bypass oil filter with evaporation chamber*	-Removes contaminants and acidic by-products of combustion. Increases oil life. Ideal for areas with poor fuel quality
Electrical System	400 A rating*	-Service interval up to 1,000 hours
	Solar Array*	-Peak loads of 400 A possible
Alternator	400 A rating*	-Increase fuel efficiency by using solar energy to charge the battery pack and power the site load during the day
	PMG	-Max continuous DC load possible, 400
Enclosure	All steel construction	-Robust, simple and reliable. High efficiency
	Forklift pockets*	-Secure and vandal resistant
	High quality paint finish	-Easy to handle
	Good access, lighting*	-Life expectancy >10 years in tough environments
	Separate electrical, battery and engine compartments	-Reduced maintenance cost
Controls	GPRS communication*	-Different operating environments to suit the equipment therein
	Flexible	-Web based remote monitoring
	Protection functions	-Remote fault diagnosis and repair
Battery	NorthStar lead acid	-Increased availability
	Lithium Ion*	-Configurable to client's requirements*
		-Monitors HES performance and protects the equipment from damage in the case of a malfunction
		-Wide operating temperature range
		-Faster recharging
		-PSOC technology
		-Increased fuel efficiency
		-Longer life
		-Maintenance free
		-Reduced OpEx