

Power Solutions

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“A uniquely beautiful and practical design, introduces a new level in performance and safety.”

Geni-Tec™ Power Solutions

Bytec Healthcare specialises in the design of DC Power Systems. Our award winning proprietary management and control system has been developed and tested over several years and is specifically focused on the healthcare market.

Our approach is to design and build the next generation of mobile power systems that not only integrate with our own carts, but can lead the way in introducing a generic standard across the global market. Our Geni-Tec™ power system, with a uniquely beautiful and practical design, introduces this new level in performance and safety.

Our goal is to create a new standard in power delivery and charging. We focus specifically on modularity and ease of integration. In addition, we have also worked to develop a solution that could deliver continuous power 24 hours, 7 days a week. Our patent pending snap-n-go™ battery modules make ‘hot swapping’ batteries an effortless process, completed in seconds. Wall mounted charger bays allow spare batteries the time to charge offline, ready for the next ‘hot swap’.

As a company driven by technology, we are always looking to the future, making our products ready for tomorrow...today.

Our innovative voltage regulation and power delivery provides up to 150W of power, yet maintains total system efficiencies of up to 95%. This is class leading performance, supported and maintained with commitment.

BRITISH DESIGN

The direction of DC power delivery

With computing performance increasing at an incredible pace, and respective power requirements ever decreasing, batteries as a source of power are providing longer and longer run times. However, the need for heavy duty systems, normally delivered by AC solutions are becoming outdated in today's modern environment. In ensuring that our products and services are well in line with this trend, we no longer offer AC power options, focusing solely on the more efficient DC output.

The Geni-Tec™ system is designed to meet the new USB Type - C standards which can deliver up to 100W at 20V, whilst maintaining maximum efficiency.

Our range of battery modules have a capacity of 85Wh to 216Wh. Consequently, high runtimes can be provided for a range of product applications.

Our regulatory compliance

Our products are sold globally and consequently, the need for regulatory compliance, and normalisation is particularly important in mitigating risk within the relevant healthcare environments.

Geni-Tec™ is compliant to various standards. Vigorous testing, validation and certification has been completed to both EN and UL standard, as well as FCC and CE.

The Geni-Tec™ system is an essential sub-system that can be used for medical device or healthcare equipment, we provide regulatory and certification support for OEM and ODM customers to assist them in meeting their own compliance standards. We have compliance packs available, with full details of test results and reports, to support this process.

Our engineering and development teams work in close collaboration with our partners to ensure that the power solution is integrated in the right way to bring maximum benefit to their applications.



"The Geni-Tec™ system is ready for this next step in power delivery."

Geni-Tec™ Modular Eco System

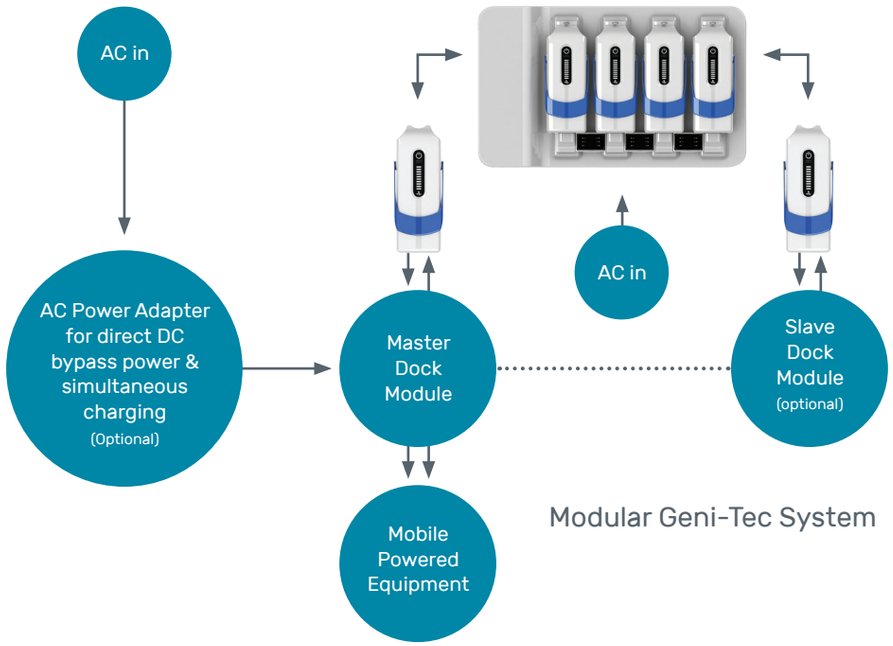
The Geni-Tec™ DC power solution has been developed in a uniquely modular way. Each component is self contained and packaged for simple integration across multiple platforms, forming an eco system across the facility.

Off-the-shelf accessories and mounting options are available to further simplify additional design in solutions by other healthcare manufacturers.

The system can be incorporated in various configurations including column, pole, panel and wall. Retrofit solutions are also available if integration is not possible.

"Every time a battery is added or taken away, every time the system is powering, event logs are created."

Power System Architecture



Modular Geni-Tec System

Power management firmware and hardware

Extensive development and testing provides a robust, and safety-centric firmware and hardware platform, including multiple safety gateways and redundancy.

The design of both the hardware and firmware focuses not only on the safety aspects of the system, but also on the way the system feels and operates. Every detail has been considered, allowing for complex use models to be implemented for a range of different applications.

Master dock data logging

The Geni-Tec™ system incorporates a real time clock, to allow it to record time and incident driven event logs. Every time a battery is added or taken away, every time the system is powering, event logs are created and at each event a snapshot of the system's 'vital signs' are recorded.

Each record is stored and indexed in an onboard non-volatile memory. This also includes information on the associated battery modules fitted and their critical information, including serial number, temperature, cycle count and more.

Battery charging stations

Although various configurations are available, chargers work essentially in the same way as a master dock module in the way they charge the batteries.

They also have an embedded logging system, so that irrespective of whether the batteries are being used or charged, information is being collected on their use.

Future proofing

As with any technology, innovation and progress is inevitable. That is why Bytec has implemented an Intelligent Battery Module Power System™ (IBMPS™), using SMBus protocol to integrate each battery module with its chemistry, operating and charging parameters, firmware and OEM configurations. This means that the system will adapt to accommodate future advancements in battery technology.



Battery modules - the source of power

At the heart of the eco system are the battery modules. Available in 4 different capacities depending on application and frequency of use.

Every aspect of the design has been carefully considered and planned for the best possible result. From the ergonomic feel of the handle, the aesthetic styling of the casing and practical considerations such as weight, the ability to carry two batteries with only one hand, and the ease with which the snap-n-go™ mechanism works when removing or fitting a new battery module.

The battery modules are tested to IEC 62133 and UN38.3, with the 216W capacity battery module also tested to UL2054. The cells used are all UL 1642 tested and use the latest in NMC Li-Po technology.

Safety first

As with any source of power, especially those with high capacity, safety is of prime importance. All aspects of the safety circuits have been designed in-house and have been extensively tested and validated, including provision of single fault testing required by UL certification. In safety critical areas, second or third level protection has also been included. All safety critical circuits remain under our control.

Class leading fuel gauge system

The battery modules use the latest in impedance tracking algorithms for the monitoring of capacity, run time and charging. The system continuously monitors the state of the batteries and undergoes self-calibration to provide a level of accuracy of up to 99% over the life of the product.





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Battery logging

Although the Geni-Tec™ master dock modules and chargers can log information to a centralised database, a copy of the most important information is also stored in the battery module's internal memory. Up to a year of historical information can be accessed at any time directly from the battery.

Storing data locally in the battery modules serves two purposes. Firstly, it allows for independent interrogation for local diagnostics, and secondly, when fitted to a charger, or other dock, the information can be extracted and sent to the centralised database. This is of value for systems that do not have WIFI access. Although it will not provide the same level of information, it will still offer a useful level of diagnostics and analytics.

Cleaning and infection control

The Geni-Tec™ battery module is the first fully submersible power module of its kind, and has been tested to IP67 (NEMA6). Although it is not recommended, or necessary, to submerge the battery module, it is safe to clean it thoroughly as there are no live power terminals on the exterior surface. Everything is smooth and easy to clean, and in exceptional cases, the battery module can be rinsed briefly under running water and dried before re-use.

Software integration

From the battery modules all the way to the host equipment, data is collected, recorded and passed to a centralised database, this data is accessible by service and maintenance teams. The end user system is made up of three main components:

Geni-View Agent

This runs as a service on any Windows based platform, and will expand to other platforms in due course. It serves as the intermediary between any third party apps, and the Geni-Tec™ hardware platform.

It also controls the local database of data, and synchronizes it to the Cloud based master repository.

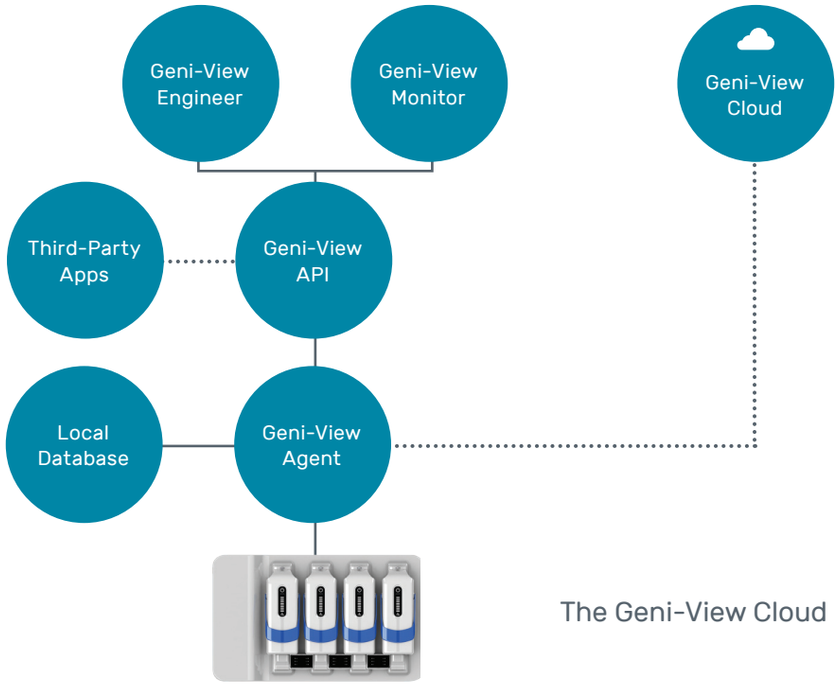
Geni-View apps

The user app runs in the system tray and allows the operator to monitor system performance and remaining runtime information. It also provides useful pop-up information.

Cloud based asset management suite

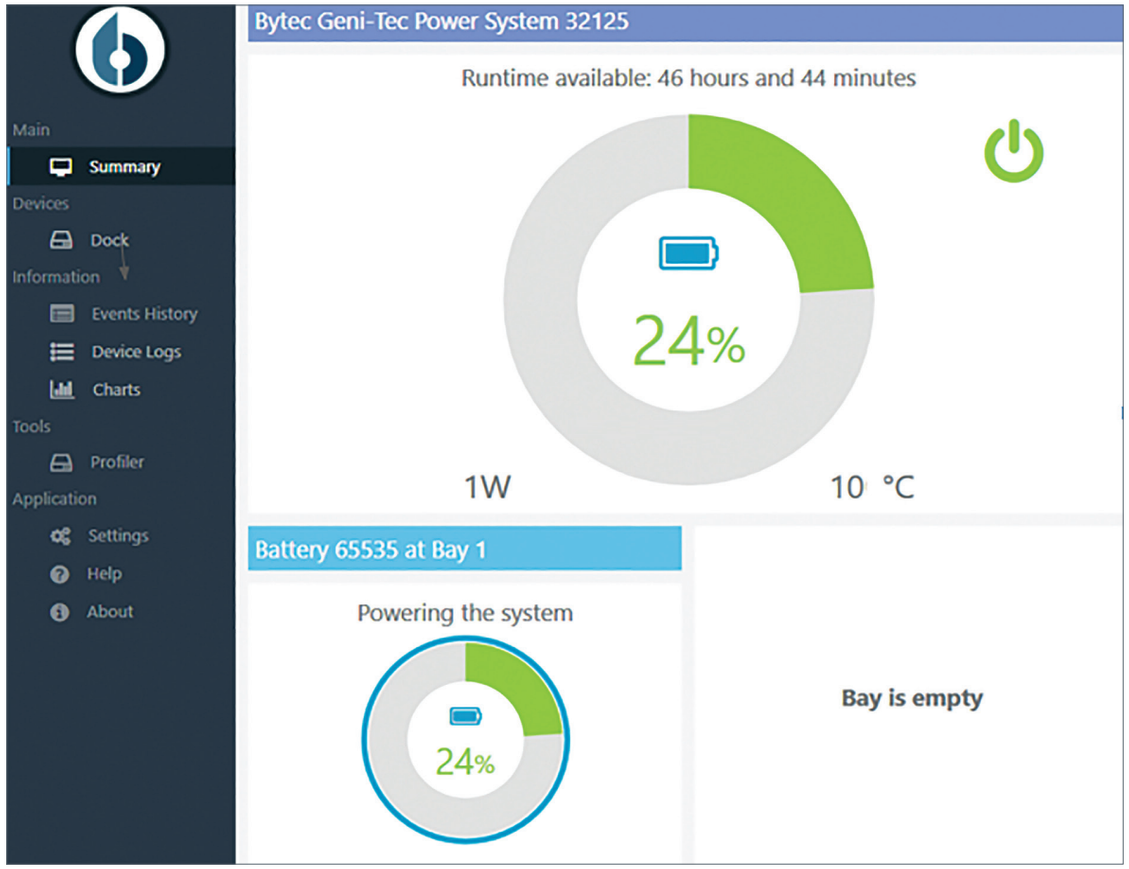
From a centralised repository, clients will have access to the data collected from their estate and will be able to set-up departments, users, and assets tracking information. A simple dashboard will provide near real-time information of the status of all the devices being used (devices require WIFI access and local setup using the Geni-View Agent).

Statistical information can be used to determine best use of the assets and provide clear feedback of any event, issue or preventative measure.



The Geni-View Cloud

Geni-Tec™ Dock or Charger



Developers and integrators

The Geni-Tec™ Eco System goes beyond the simple provision of mobile power, our sophisticated architecture allows for close integration with third party apps, and the ability to gain access to key information directly from the hardware via the Geni-View Agent.

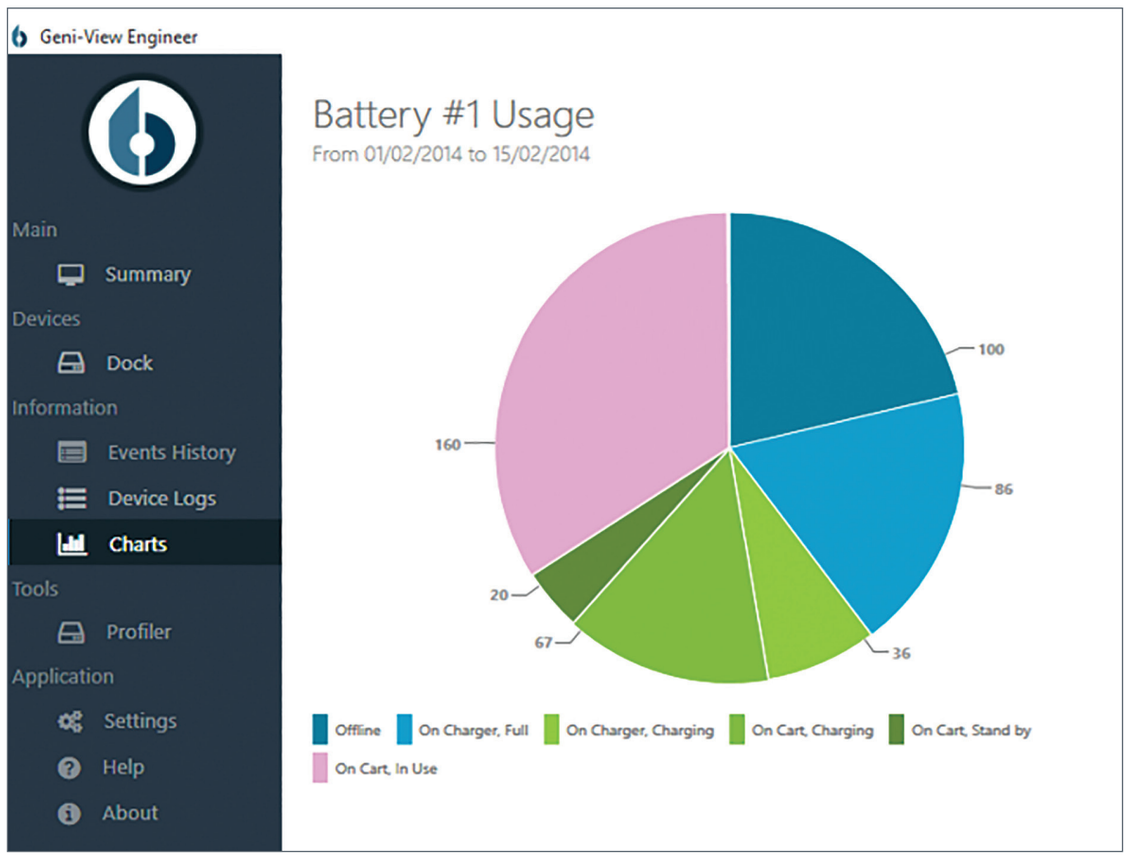
Geni-View engineer app

For system integrators, a more comprehensive app is provided, allowing real time diagnostics and data acquisitions during validation and test phases.

The experienced Bytec technical teams provide consultative and technical assistance to OEM to support the integration of the Geni-Tec™ IBMPS™.

Geni-View application protocol interface (API)

Depending on the developer tier level, various levels of API access are permitted, allowing greater control and access to support applications or client specific requirements.



"Support when and where you need it."