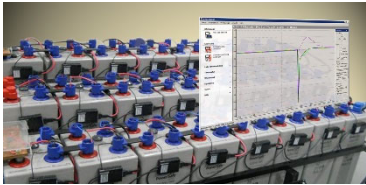




GENEREX News

- „Made in Germany“ / „Made in America“
- Post COVID: The dawn of a Remote New World!
- GENEREX USA – a Backstory
- **NEW**: Massive website update at GENEREX
- **NEW** in the team - International Sales Director: James May



Battery Management

- BACS - Battery Management over Battery Monitoring!
- The BACS Configurator: now with pricing!
- For Telecom Systems & Emergency Lighting:
“Low Cost” versions of all of our BACS WEBMANAGERS
- **NEW**: Halogen-free materials standard for all BACS cables
- **NEW**: The BACSLog Chart, a "BACSVIEWER LITE"



SMARTBATTERY / SMARTLOGGER / iBACS

- The BACS Family: A Chain of Scope
- The SMARTBATTERY
- SMART Battery Monitoring – Monitoring “to go”



UPS Management

- **NEW**: CS141 HW 161 Announcement
- Cybersecurity
- CS121 – Legends Never die – but network products must
- **NEW**: As standard- Remote SYSLOG
- **NEW**: SNMP TRAPS, Freely configurable



Software

- **NEW**: The UNMS Cloud Services – and a request for your input!



Accessories

- **NEW**: Hydrogen Sensor



Click on the bullet points to get there!



„Made in Germany“ / „Made in America“



One stands for quality and adherence to design, the other for muscle, and unparalleled performance. GENEREX and its products, component parts and services can claim these monikers for its own, and in an industry in which the vast majority of imitators and competitors claim instead “made in China”, our ability to do so is a large part of what defines us.

We’re different, because in the pursuit of success we do not turn a blind eye to the principles upon which our company was founded; our products are utilized globally, but we employ and invest locally. We believe that directing our business and flow of capital through our neighbors here in Europe and the North American subcontinent ensures a more long-term and far-reaching economic independence and enduring sustainability—also, we think that the goods and services from “closer to home” are simply better! It’s the driving spirit under which we were founded back in 1993, and it’s how we operate, still. We belong to ourselves, privately owned and family ran as a financially independent entity—no foreign concern is able to twist our arm or dilute our quality.

We derive pride and peace of mind from our principles, but we don’t assume that the client bases their decisions purely upon similar factors; the client who chooses GENEREX does so because of our reputation for product quality and industry innovation, and because of the excellence of our support services. Our pricing is fair, and the stability and durability engendered by the use of our products in critical infrastructure applications ripples forward in time; customer capital is saved proactively, and can be measured in repairs not required, in replacements not made necessary, and in crises averted.

Our marketing is “word-of-mouth” because our satisfied customers inform other customers, and it may be the case that “made in Germany” or “made in America” is mentioned only as an interesting side-point, if at all. Possibly the benefit is internal, only. Pride of origin, though, radiates outwards, and instills that ethereal and golden quality of workmanship into the products and services upon which our brand name is stamped.



An investment in GENEREX is first and foremost an exercise in rational business acumen. It is also an investment in and affirmation of European and North American industry; it signifies that the one making the decision thinks in terms of longevity and dependability.



Post COVID: The dawn of a Remote New World!

The COVID 19 pandemic has revealed much to us about our modern society, about the ways in which we coexist and communicate with one another, and how these things must change in a time when human contact need be avoided where possible.



Perhaps most clearly, COVID 19 has impacted the way in which we conduct business with one another.

It is this last point to which GENEREX finds itself called upon to step forward as a provider of solutions, and it is due to the implications of new workplace priorities that the COVID pandemic has brought about a key increase to demand for GENEREX's products and services.

The market in which we have built our niche is one concerned with critical infrastructure stability—our products and services insure that the power stays on in hospitals, airports, power stations, data centers and communication hubs. In such applications it is imperative that the ever-vital “failsafe” option stands available in optimal readiness in case of unforeseen interruptions to the power supply.

We make sure that the light stays green, and that when it turns red, we make sure that any measures that can be taken to immediately rectify the issue are taken automatically, or that the responsible party is informed quickly and seamlessly. Seconds are precious in such scenarios, and any utility which can be depended upon to prevent the escalation of catastrophic fault must be valued accordingly.

Post-COVID, the ability to remotely monitor, manage and control such utilities has become not only preferred, but requisite. Automation has long since become the general trend in technical services, but since the arrival of COVID, words such as “home office”, “remote”, “online” and “high availability” have become key, and their provision as part and parcel of technical support services has become dramatically more important to clients and service providers alike.

Where unmanned services can be offered and rendered in a trustworthy and efficient manner, it is tantamount that such services be utilized.

Our CS141 WEBMANAGER, our BACS Battery Management System, our SITEMONITOR and SITEMANAGER, our UNMS and RCCMD software solutions; these are products upon which remote service providers may depend. We've been here since before COVID, and in the days and months and years following its arrival we will continue to be here, provider of solutions.



GENEREX USA – a Backstory



In 2013—eight years ago, now!—GENEREX embarked upon a new endeavor, into a new frontier: America.

After several years' successful export trade into the US market, the demand for our products and services increased to such an extent that the decision was made to found a subsidiary office for GENEREX operations, there. Initially established in 2013 in Florida, today GENEREX SYSTEMS Inc. is based in Charlotte, North

Carolina, and with production based out of 2 locations within the continental US it supplies all GENEREX products, under license, for use within the North American market.

Already in 2013 the USA was home to the world's largest datacenter market, and while the American Critical System Infrastructure market had long since been inundated with battery monitoring systems (BMS), they'd not made much of a clear impact – then, like now, “battery monitoring” was understood to be a “luxury” service. The difference between these monitoring devices and GENEREX's BACS - a Battery Management System - was difficult to convey to potential clients at first, and it became all too clear that to establish our foothold, we would need to doggedly compete. Even so, we were game for the challenge.

US Manufacturing and B2B Distribution

Our overarching goal was then—and still is—to provide a product superior to its competition at the same cost. It was clear from the outset that we could save on production capital by manufacturing our products in China or Mexico, but GENEREX's priorities were firmly established: to maintain high quality and low lead times. GENEREX US was planned and subsequently set up to the effect that all manufacturing, distribution, and support would be based within the USA. It was clear as day to us that „Made in the USA“ would be a vital and powerful statement; it runs contrary to the ideology of the vast majority of our eastern-based competition, and it has since become the foundation for BACS' success, and thus also the success of GENEREX in America.

The Monitoring Versus Management Dilemma

The US market in 2013 was already saturated with Battery Monitoring systems. Each of the several existing manufacturers of such systems could boast unique features, but they nonetheless offered the same results to the end-user, “Add more cost to my battery system so that I can more clearly watch them fail!”.

Datacenter standards and service level agreements pushed the user to implement a battery monitoring system (BMS) or traditional quarterly maintenance. There are advantages and disadvantages to both options, but having a BMS that provides a 24/7 status of your batteries—and nothing else!—is unfortunately little more than a costly luxury—a screen door in a storm. More bells

and whistles were being added to these monitoring systems, but the problems inherent to the systems being monitored remained unaddressed. Batteries kept failing and NEVER reached their Design Life!

It was under these stagnated market conditions that GENEREX began to introduce the BACS BMS solution to the US data centers—and immediately, BACS was a game changer. The product fulfilled the requirements for monitoring but also had the key and unique added management function that promoted a higher capacity and service life on the battery system, far beyond simple monitoring. As the “new guy” on the scene, GENEREX and BACS began to instigate pilot programs with different end-users, with study periods ranging from 90 days to up to 2 years.

An influential American financial data center performed such a pilot of the product on two different UPS systems, wherein each UPS system had two strings of sixty 12V VRLA batteries. At the start of the pilot, the batteries were already 5 years old and had a design life of 10 years. Industry practice would suggest replacing these batteries. BACS was installed and successfully found and identified failing batteries within the strings. As a reaction, newer batteries were then introduced into the strings and due to the voltage balancing management of BACS, there was no jar interaction. Subsequently the system was left in place for two years. At the end of this extended use period the UPS and batteries at this site were to be decommissioned, so the end-user decided to perform a final discharge test to determine if BACS could definitively extend the service life of batteries. Now, at the seven-year mark, both battery systems still test at 100% capacity. Because of such dramatic and lasting results, the end-user then decided to specify BACS as the standard within their facilities.

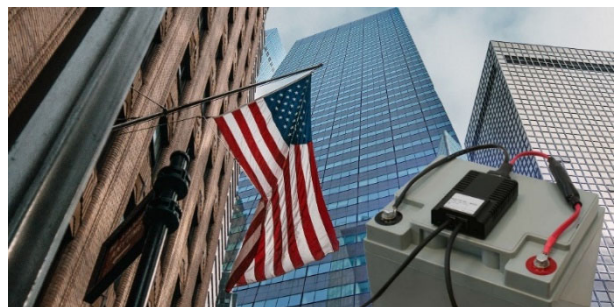
This was not simply data for data’s sake. Based upon the results of this study and others like it BACS has been established as THE standard for all critical banking datacenters in the USA – and later worldwide!

As compared to the luxury of battery monitoring, battery management with BACS has been determined to be a complete necessity for longer service life, higher capacity, and higher availability of critical battery function.

The message was clear: BACS was and is the most complete system for battery monitoring and management, dramatically increasing the reliability, capacity and service life of batteries at the same or indeed lower cost as compared to the traditional battery monitors. Frank Blettenberger, the CEO for GENEREX Germany, said, “We wanted to illustrate that our BMS had more to offer than the competitors. In doing so, we gradually realized its broader value. Equalization (in the US called Balancing) has a dramatic effect on the performance of batteries and extends the service life of batteries used in strings. The more batteries in the string, the higher the positive effect with an increase of at least 30-40% seen in most cases”.

Sales and Growth

Suddenly and dramatically the word was out on BACS, and this led to the development of additional channel partners in strategic portions of the NAM (North American Market). The goal for GENEREX US was to remain a business-to-business company, and to find companies that would buy, resell and provide quality and trustworthy installations of our products.



Although GENEREX US operates in a market capacity through channel partners, we remained active in the data center community with memberships to 7x24 Exchange, Afcom, and Data Center Dynamics. This has provided positive opportunities to connect with end-users in an effort to market our products. This has also resulted in GENEREX’s being specified as an approved BMS product, thus enabling access for our channel partners to bid on specific projects where they otherwise might not be able. Daniel Baileys, who is the CEO for GENEREX SYSTEMS Inc. put it like this: “All we need is the opportunity to compete against the other

BMS vendors. I have no doubts we can beat them all through our product performance, price, and support.” In some cases, companies like Verizon, Flexential, and other large New York Financial data centers choose GENEREX as the only vendor for their BMS requests—such is the strength of our reputation and critical performance.

In successfully establishing the BACS product specification as a known entity and indeed in some cases the BMS standard within key companies, the sales revenue naturally began to grow. This higher demand resulted in the necessity of a second manufacturing facility; it also resulted in GENEREX US moving into a larger distribution center. This has also enabled GENEREX US to double its staff over the intervening period.

The success of the BACS product line also caused UPS manufacturers to gain interest in GENEREX’s UPS management product line. GENEREX has achieved several key OEM contracts with UPS manufacturers stipulating that we provide them with their UPS SNMP cards (CS141), which has since developed independently into a prosperous market of its own!

Conclusion

GENEREX US had a humble beginning back in 2013 when its products were still not well known within the North American Market; since then our BACS has steadily but determinedly expanded to become the third largest representative of BMS market share. Dan Baileys stated “We have come a long way but there is still work to do, and we’re motivated to do it! This could not have been done without the help of our amazing team in the US and Germany. We are also so thankful for our channel partners out on the front line, upon whom we mutually depend and who have made - GENEREX Made in the USA – possible!”



Massive website update at GENEREX

GENEREX is very pleased to have launched our new website over the course of 2020! In addition to an entirely new and revamped webpage structure and design, we have also set about providing a website with our OEM and Reseller clients in mind, suitable to their own usages!

As such, visitors to our website will find a wealth of information about

our various product trees and services; someone interested in Battery Management Systems will be able to intuitively navigate to the appropriate subpage, from where they will have easy access to any peripheral components or products as well as a simplistic pathway to any required documentation or software support, as needed. This applies to each product in our catalogue—more information is a click away!

We are also pleased to present a cleaner, more refined interface into our support features as well—with a few sequential clicks a client or potential client can easily navigate their way to our Download Center, from which they will be able to quickly find any required files or documents.

We're also proud to present our BACS Configurator!

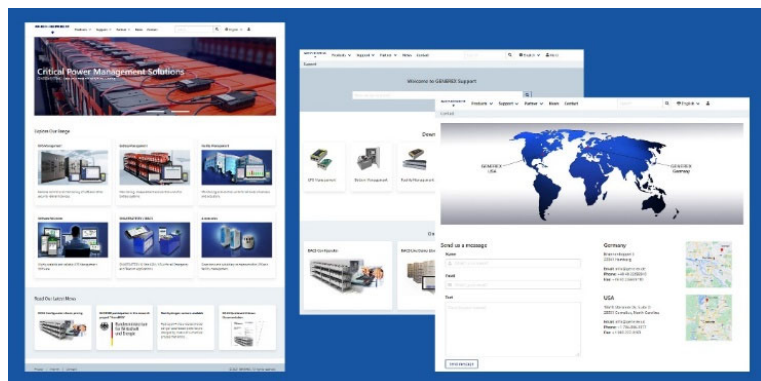
LINK: <https://www.generex.de/support/bacsconf>

This tool is useful to anyone curious about the layout and components included in the installation and use of our world-famous and market dominant BACS Battery Management System—all you need is a skeleton plan for your battery installation, some curiosity and about 5 minutes. Plug in your information into our guided Configurator, and with a couple of clicks you'll be presented with a rough but accurate breakdown of parts and components required for your installation. OEM Partners and Resellers can sign in, first, and any and all pricing associated with their specific ID and password will be automatically applied to the component list!

More information about our Business Model, including a breakdown of the dichotomy between OEM and Reseller, can be found on our new Partner section. Here the client can also find our OEM Portal, a valuable map to our exiting OEM network, including our individualized OEM GENEREX Webpages—custom made for each OEM, including their own specifically tailored download and documentation files—as well as up-to-date contact information, should the visitor wish to contact their preferred OEM partner directly. In fact, we are pleased to announce that we have made it possible for any given OEM partner to include links to these downloads and subpages direct to their own websites; these “deeplinks” are enabled through the coordination of our in-house backend—if you're interested, simply drop a line to support@generex.de and we'll come back to you, directly.

Here can also be found our Reseller Application, should the visitor themselves be a prospective reselling partner with interest in becoming a GENEREX partner. Simply fill out the associated application page and sit tight! One of our representatives will reach out, soon.

We hope that you enjoy our new and improved website! We are always happy to hear comments (and criticisms!).





New in the GENEREX team - International Sales Director: James May

James May has joined our team effective August 2020 and is responsible for international sales activities, key account management and client outreach. He also will be assuming much of the responsibility for our external training courses as well as product presentations.

Born and raised in Rock Hill, South Carolina, but based internationally for the breadth of his career, James brings a wealth of experience and positive energy to the role, and he is proud to be the point of contact between GENEREX and its valued client base, going forward. English is his native tongue but he isn't half bad at speaking German, and his greatest pride and source of motivation is his family. Any and all sales and market activity inquiries can be directed to him, and he is always free for a chat about the Allman Brothers or the Carolina Panthers!



You can reach Mr. May:

- by phone at **+49-40-2269291-190**
- by email at **j.may@generex.de**



BACS - Battery Management over Battery Monitoring!

One of the key topics of the future is the guaranteed supply of power to established and developing IT infrastructures, and closely related is the availability of secure emergency power and the trusted competence of its application.



Due to this need, the demand for "BMS" systems has experienced a massive increase. In most cases the user is offered a "Battery Monitoring System", although they are looking for a full "Battery Management System", which is required, for example, in lithium battery systems.

The prospective buyer is often unaware of the difference between these two system variants and as such might be misled into purchasing a product which does not fulfill the tasks set to it! This disappointed expectation has led to battery monitoring being seen as a luxury over the last 30 years, when in fact customers were looking for battery management to relieve them and automate their monitoring tasks. With BACS, the game changed - in recent years in Germany, Austria, Switzerland, Sweden and Norway our BACS system has established itself as a "true" Battery Management System, often as a replacement to these aforementioned standard battery monitoring systems.

We are proud to inform our customers that BACS has over 60% of the BMS market share in the countries listed above.



Especially in German-speaking Europe, we have used our "home advantage" and are the absolute market leader - albeit in a niche market that is growing every year. Other countries have also noted the advantage of Battery Management over simple monitoring and they are retooling their battery infrastructure accordingly.

Simple battery monitoring provides a focused but inactive feed of data which informs the user but does not itself prevent damage to the batteries; as such it is essentially a "luxury" service,

ineffective and unnecessary. The user pays a premium only to more clearly watch their batteries "die".

Only with the introduction of BACS and its Balancing Technology is it possible to directly and automatically regulate the batteries and also to simultaneously monitor their activity.

Through 17 years of BACS experience our customers have reported a comprehensively positive correlation between their usage of BACS and the health and lifetime duration of their battery arrays. Their reported data clearly illustrates a 50% longer service life and a 20% increase in battery capacity - in comparison to an identical system without BACS.

The advantage of Battery Management compared to the simple "monitoring" is clear – with more than 1.3 million BACS regulated batteries worldwide BACS is the fastest growing system in this market – and that without active marketing. The success of BACS is based on "word of mouth"—BACS speaks for itself!

The most critical data centers in the world have used BACS for years and in this market BACS has established itself as the "Standard".

BACS boasts advantages even in the case of battery failure—when a defective battery is replaced with a new battery, the new battery is quickly damaged via acclimation to the rest of the batteries in the string, leaving the user with little option but to replace the entire string! With BACS this acclimation damage to the new battery and its neighboring batteries is dramatically reduced, thus allowing for single-unit replacement, a process which grants an enormous saving of resources and cost.



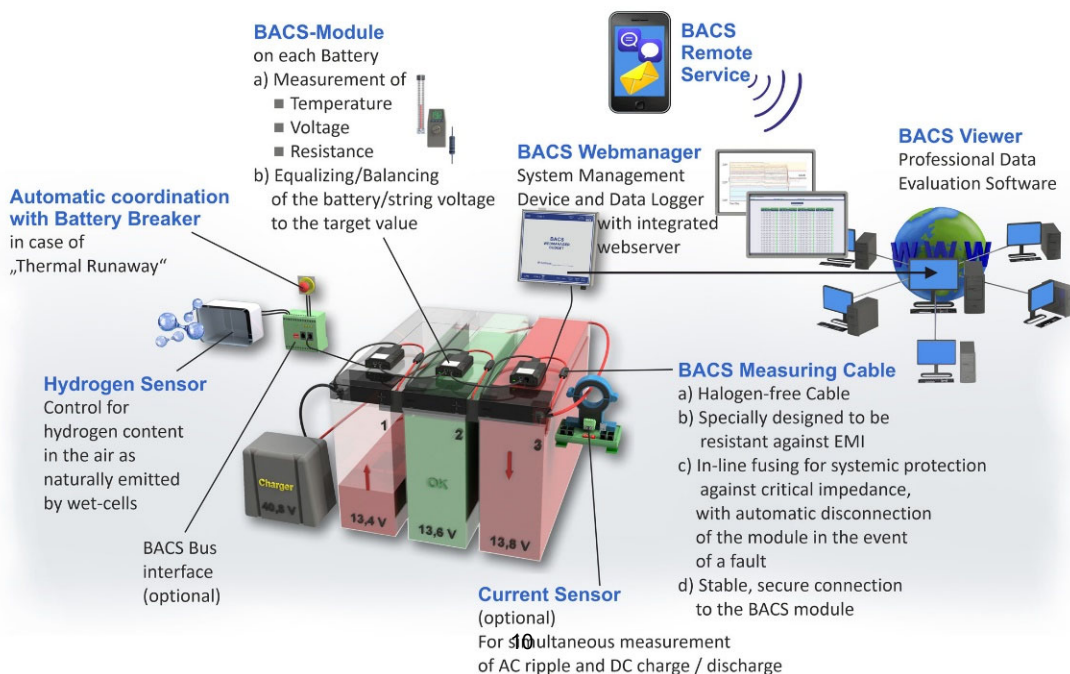
All of the advantages and strengths of BACS-Technology have resulted in the Lead-acid battery coming back into the focus of end-users!

Lead-acid batteries as an inexpensive energy storage medium are increasingly being replaced by the much more expensive lithium batteries, as the historical experience of users with simple battery monitoring of the lead-acid batteries regard this old technology as "inferior". A key issue is that with battery monitoring these lead-acid batteries often only reached 50% of their design life when used in high voltage applications (UPS). Lithium is an attractive alternative to lead-acid as the lithium manufacturers are promoting higher capacities, longer service life, built-in Battery Management System, and smaller footprints. However, this trend towards lithium is not without risk: if on the one hand the lithium's higher storage capacity is praised, it also represents a considerable fire risk! For this reason, the use of lithium batteries is not allowed in some areas and is even strictly prohibited in others (urban areas with high-rise buildings, such as New York). Added to these concerns is another for the future environment: at this time, Lithium batteries are not recyclable.

The negative press that that lead batteries have received in the past is due to the effects of over and undercharging, which reduces service life and lowers the capacity of affected battery strings. Battery systems equipped with BACS see these problems negated. The battery capacity is up to 20% higher and the service life can reach the specified design life. This corresponds to a lifetime increase of up to 50% compared to an unregulated lead battery. These reclaimed benefits as well as the properties of very low risk of fire and high recyclability make the lead battery back to a storage medium of the future, and without an equal in the area of emergency power provision.

BACS, after 17 years, has impressively proven that lead-acid batteries are more reliable and secure than any lithium battery!

BACS - The MOST SECURE Battery Management System





For our OEM customers and authorized BACS resellers: The BACS Configurator - now with pricing!

Determining the “nuts and bolts” of a given BMS array can be daunting, and while our sales and support staff is always willing to lend their expertise as required to our resellers and OEM partners, there are times when an answer is required faster than made possible by the chain of communication; it is for exactly such requirements that we created our BACS Configurator!



As a featured tool for our website, the BACS Configurator is ideal for use in the determination of BACS component selection and quantity; essentially, the user need only input a given set of data as regards system presets and requirements, and in return they receive a list of components specifically calculated for the implementation of BACS to their requirement. Until now, though, this list would have lacked the sales conditions and quantity discounts corresponding to their own specific OEM or Reseller membership or status. The customer would be required to subsequently match each given article to the price on his or her current associated pricelist.

To improve our support for our OEM partners and authorized BACS resellers we've updated this tool to include such integrated pricing, automatically!

We've instigated the optional provision of OEM/Reseller specific login credentials as the first stage of use for the configurator, which in turn enables access to the customer's specific corresponding price list, now logged internally within the website substructure. The component list generated through use of the Configurator now comes complete with the customer's specific pricing and conditions indicated, including any given discounts as corresponds to specific article quantity echelons! In improving this tool, we hope to make simpler and more efficient our clients' efforts to develop and quote for any of their given projects.

Note that quantity discounts are calculated for individual systems—in calculating for a single system as intended for broader implementation across multiple sites or iterations, the participating party will need to manually calculate the implicated quantity and associated discounts.

Of course, our sales and support staff remain more than happy to assist with any calculations or quotations, as well!

The BACS Configurator with login for all OEM customers is available NOW through our website <https://www.generex.de/support/bacsconf> login credentials can be obtained in advance by email—simply send a short message to support@generex.de with your request, and we will investigate and provide the appropriate credentials in a timely manner.



BACS WEBMANAGER for Telecom Systems and Emergency Lighting Available Now: “Low Cost” versions of all of our BACS WEBMANAGERS



Available immediately for all customers, GENEREX has introduced a cost-effective entry to its expansive range of BACS WEBMANAGERS.

The BACS WEBMANAGER is the most complex component of a BACS system and thus also the most expensive. As a compliment to larger battery systems the “full” version BACS WEBMANAGER’s cost is hardly relevant; it’s a comparatively small part of the complete system infrastructure. The impact of this “full” price changes when only a small number of batteries require management, such as in the case of a Telecom DC application, for example, or for an emergency lights system.

BACS is a proven market sensation wherever batteries require sustained care and management, and this includes Telecom and emergency systems installations. In providing valuable feedback about their experiences, end-users and channel partners from these industries have lamented that the broad and powerful scope of our “standard” webmanagers is wasted on the relatively minimized array size associated with their projects, and thus the cost is not representative of their need. To these valued voices: we’ve heard you! After some internal investigation and implementation we are now pleased to offer the “BACS WEBMANAGER LC”!

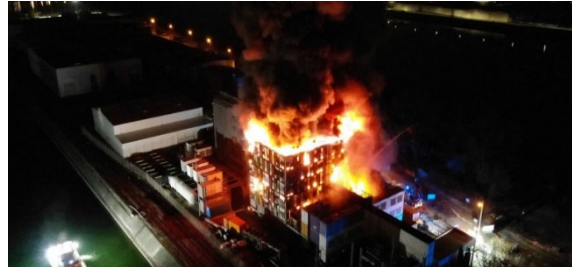
This new “low cost” BACS WEBMANAGER is technically identical to its powerful cousins within the WEBMANAGER product family, but limited in application scope to a maximum of 24 batteries. If and when the number of batteries to be managed increases, the WEBMANAGER can be easily and seamlessly upgraded to its full potential with a one-time additional fee—the BACS WEBMANAGER LC can be “unlocked” via subsequently purchased license key, which will then enable the WEBMANAGER to manage the maximum number of up to 500 batteries. The license key can be ordered directly from us-- similar to the CS141LC models—and is now available together with the delivery of the first BACS low-cost models.



BACS - The safest Battery Management System on the market has gotten even safer

NEW: Halogen-free materials standard for all BACS cables

A recent major fire in Europe's largest data center has dramatically illustrated the vital importance of a secure power supply: at the French cloud provider OVH over 10,000 servers were destroyed, some with complete data loss. Efforts at investigating the precise cause of the fire are still ongoing, but there are increasingly signs that the cause of the fire was the UPS systems implemented on-site, and their batteries. Subsequent to these signs is the sobering realization that the provision of monitoring services to the power supply systems within high availability applications is not sufficient if there is not also a system in place which can automatically initiate adequate countermeasures in the event of a fire:



Simple monitoring—and nothing else—of the UPS and batteries is not sufficient; it is imperative that an automation of these systems be introduced which counteracts in the event of a fire hazard without the user having to intervene.

Customers ought therefore not simply trust the monitoring measures as apply to a given UPS, but also as apply to the batteries themselves. When conditions deteriorate to the point that a UPS “notices” that its batteries have begun to overheat, the critical period for counteractive measures has already elapsed. Especially in the case of critical applications, it is imperative that the batteries also be actively monitored; better yet, there must be automated counter-reactive measures provided in order to actively prevent the escalation of fire at its source. This very approach has been followed in US-based datacenters for years and has led to the subsequent development of UPS-specific “US Fire Codes”, which instruct that given UPS batteries be automatically disconnected from the rest of the system in the event of overheating in order to prevent such escalation. In Europe such measures have not yet become the norm owing to the relative rarity of such devastating fire events; as such, adequate BMS implementations are currently more the exception than the rule. Following the recent events in France this situation will likely be forced into change, and certainly the rise of lithium batteries in such critical applications will further lead to similar industry regulatory requirements as concerns the management of such battery arrays.

In any case, investment in a battery management system complete with automatic battery disconnection functionality is an important feature of any safe power supply.

A simplistic BMS lacking such functionality is insufficient for critical applications; what use is it to the user if, *following* the occurrence of a fire, it is explained to them that the fire might have been “recognized” earlier through use of a BMS? In the event of a fire, many providers of competing BMS systems fall back upon a version of the following statement: “... *the BMS was purchased to provide warning before a fire breaks out. If the BMS had also been used for consistently active monitoring, then it would not have burned ...*”

This type of response is unsatisfactory for the end customer because it not only succinctly deflects responsibility and subliminally conceals the inferior BMS’s lack of safety-relevant functions, but also

because it argues a point ignorant to the operational reality—in the field, BMS systems are rarely “actively” observed. In practice, only automatically generated alarm messages are given the attention necessary. When it comes to thermal alarms, there is usually very little time available to effectively prevent a fire.

If one delves still deeper into the matter they will find that indeed the monitoring of a given battery is in and of itself not sufficient, as the BMS inevitably has to be physically connected to the batteries in order to integrate the electrical components of the BMS into the battery system. In the event of defective components and short circuits, the BMS itself can become a hazard if it is not immediately disconnected from the electrical circuit. GENEREX has recognized and solved this problem; unlike our BACS, the competitors’ battery monitoring systems do not use high-voltage fuses to carry out this vital disconnection in an emergency, but rather utilize a cheaper, direct-cable connection to the battery for their products. They offset the implied risk incurred by such lack of preventative care by labelling the risk potential as a “fundamental residual risk”. However, it is precisely this fuse—a part of GENEREX’s BMS, and no other! —that is critical in the event of a fault, as lacking this feature, the affected BMS modules cannot separate themselves from the afflicted battery. As a consequence, the BMS module can overheat first and subsequently endanger the battery itself with a short circuit. The electrical fault can thus continue to build up until the fault current discharges in an arc, which ultimately triggers the actual fire. **It is not for nothing that professional fire investigators very often find the electronics in the battery room as a trigger for fires. The prevention of fault currents through the use of high-voltage fuses, such as those used by BACS, is an important safety feature that ought not be missing in any BMS!**

Each BACS measuring cable has 2 high-voltage fuses built directly into the cable structure, protected by fleece and welded far enough away from any given electronic component to prevent an electric arc - which can occur with high currents and voltages. Because of these fuses, each BACS module is effectively self-isolating in case of a short circuit or electrical fault on the battery to which it is assigned. In case of such a fault, any electrical surge which would otherwise reach the module and potentially cause a catastrophic event instead shorts the fuse, thus cutting the affected module off from the rest of the array. BACS senses this event and alerts the system engineer accordingly.

This unique BACS solution is very complex and costly, but our implementation of such technology has resulted in BACS becoming a total nonfactor as a potential source or amplifier of fire within the battery room!

The competition shies away from such an effort because the installation of a high-voltage fuse is very expensive and every single measuring cable has to be specifically calibrated in order not to falsify the internal resistance measurement by integration of the fuse. An enormous effort, indeed - but with the result that BACS is the safest BMS in the industry and is therefore accepted by all safety-critical users; in fact, in many cases (airports) our BACS has become a mandatory inclusion!

That BACS remains the only provider on the market in which 2 x 1000 V-Fuses are included within each individual measuring cable is a troubling fact. The argument given by the competition that halogen-free cables and fire-retardant materials alone make a fire less likely and thus less dangerous is itself a sign of troubling dereliction of responsibility, and is in no way a complete solution.

Halogen-free Cables:

In the event of a fire, halogens contained within electrical components pose a safety risk as they form highly toxic gases when released into the atmosphere as a result of ignition. For this reason, many BMS tenders insist on the provision of halogen-free cables in order to exclude the development of such gases from the outset in the event of a fire.



The use of expensive halogen-free cables would actually not be necessary with BACS, since, as discussed above, a correctly installed BACS can precisely prevent the fire from occurring. However, since many end customers have had negative fire experiences with other BMS, "halogen-free cables" are repeatedly called for in many tenders.

We have therefore reacted accordingly, and now offer ALL BACS bus and measurement cables in exclusively halogen-free versions!

With the standardization of halogen-free measuring and data cables, GENEREX has once again raised the bar for the physical operational safety of BMS systems and, with BACS, are now delivering the safest battery management system on the market for stationary applications.



NEW: The BACSLog Chart, a “BACSVIEWER Lite” in your Web-browser!



As a complement to our groundbreaking BACS Battery Management System, the BACSVIEWER software stands as one of the professional battery technician’s most valuable tools. With this software, the technician is able to export, expand upon and investigate any and all battery data gathered by the BACS system with the utmost attention to detail—each battery, each string, every change in voltage, or temperature, or resistance, or intensity of balancing!

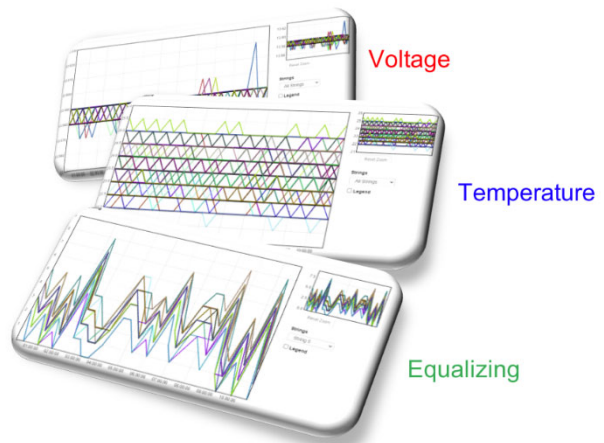
For the end-user or for the interested outsider, such a wealth of information can be both overwhelming and also perhaps unnecessary. Possibly such a person simply wants to have a good hard look at a particular piece of data, without expanding the scope or needing to use a separate piece of software to do so.

We have a solution:

Our “BacsLog Chart”, which functions like a BACSVIEWER Lite of sorts, accessible directly from your preferred Web-browser as a built-in service to the BACS Webmanager!

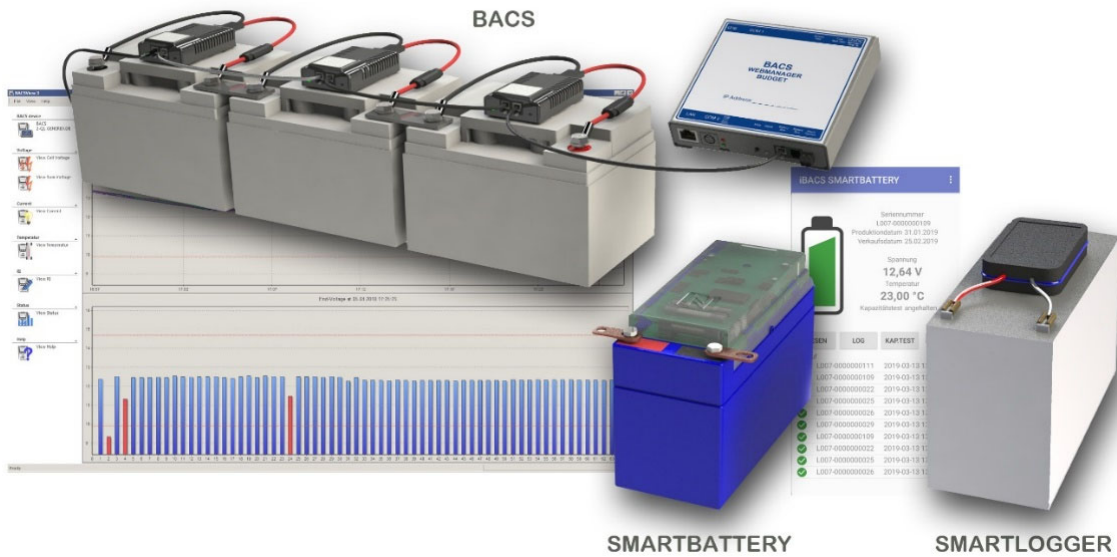
Easily navigable, intuitively presented and highly reactive, this service stands in as the bridge between the end-user and the qualified battery engineer.

There is no need to hassle with downloading and implementing the BACSVIEWER software, since the “lite” version is imbedded into the Webmanager itself. Simply navigate to your Webmanager’s IP address and select “Logfile” → “BACS” → “**BacsLog Chart**”, then select the time window in which you wish to further investigate. Choose between an isolated view of Voltage, Temperature, Resistance or Balancing, or take a look at a combo of all four values. Color-coded and simple to navigate, this function provides an accessible and yet also comprehensive look at the data collected and logged by the BACS modules managing your batteries.





The BACS Family: A Chain of Scope



A Better Battery: Scale-able BMS Solutions from GENEREX!

BACS, or **B**attery **A**nalysis and **C**are **S**ystem – our Battery Management System –has taken the critical systems management industry by storm. In terms of quality, dependability, and especially function, no other system can compare to the services and strengths offered by BACS, but it is important to consider that not all battery systems are equal. In some cases, an array does not require management; in other cases, the array itself may be of a composition precluding the use of external peripheral devices. Even in these alternate cases, GENEREX is proud to present services and products which serve to stabilize and secure critical loads and provide ease-of-mind to both end-users and service providers. GENEREX suggests considering our battery management and monitoring services as a chain of scope, from our SMARTLOGGER to our SMARTBATTERY to, finally, our integrated BACS system.

The SMARTLOGGER – The “On-the-go” Monitoring System

The SMARTLOGGER is essentially a mobile and rapidly deployable battery monitoring system.

Each SMARTLOGGER module functions as an independent and individual monitoring device, feasible both as a part of a system of consecutive data providers and also as single-target relays of state-of-health and state-of-charge information for standalone batteries. As such, the SMARTLOGGER is best considered an inexpensive, easy-to-deploy BMS devices, especially attractive to small-scale Telecom and tester arrays though also applicable to large-scale arrays. The SMARTLOGGER provides instant information as to battery voltage and temperature, and can be prompted to instigate onboard capacity tests, at-will; the responsible engineer need simply connect the device to the battery and fire up the corresponding APP to access and utilize the functions desired.



The SMARTBATTERY – An Integrated Innovation



The next step in the chain of scope involves another exciting product from GENEREX: the SMARTBATTERY. The SMARTBATTERY is essentially a physical battery which from date of production is integrated **with an onboard monitoring system – the SMARTLOGGER** - which functions as a “black

box” for data trend and warranty purposes, set up in a way in which the manufacturer or OEM can opt to include BACS as an integrated “slot” device connected directly to the battery terminal. This integrated BACS is an exciting

new feature which we’ve aptly named “**iBACS**”. Even without the integrated iBACS, the SMARTBATTERY provides at-will information about temperature, voltage and state-of-health; this function is the inherent core design principle behind the SMARTBATTERY! By making available data collection from “birth”, battery manufacturers and OEM providers are able to track usage and function history at their own discretion. Warranty architecture and “fault” management thus become automatic—there need not be anything secretive or unclear about battery performance, ever again.

BACS: GENEREX’s Flagship BMS Solution

And finally, the over-arching and functional “top of the mountain” of the BMS industry is our acclaimed BACS Battery Management System, which likely needs no further introduction. BACS both monitors and manages the battery array to which it is applied, providing stabilizing “balancing/equalizing” functionality through intuitive manipulation of voltage along the string while also making available more classical BMS features such as data provision and alarm provision with regards to individual and string voltage, resistance, and temperature. This is the cream of the crop, the bellcow and the industry standard, all-in-one.



Wherever the end-user’s requirement lay, GENEREX provides a feasible and trustworthy solution to fit the need.



Die SMARTBATTERY

What is the most common cause of battery sudden death?

UPS system vendors and users often run into problems when their batteries fail through “sudden death”—they stop working with little or no clear warning, leaving the rest of the system in the lurch.

Since a sudden death generally results in the destruction of any data or retrievable history, and since for the most part the “death” precludes any sort of evident indication, the battery cannot be used for further investigations. Without reliable measuring data, the reason for a sudden battery death remains unknown and the responsible engineer or user is left in the dark, and it is up to the vendor to decide if a given warranty claim will be acceptable or not based upon scant evidence. The situation until now has not been ideal! But....

Now the SMARTBATTERY has arrived– the world’s first black box-integrated battery!

The SMART technology from GENEREX offers a special method to ensure battery function and data logging “from the cradle to the grave”, beginning with the production and delivery process and including storage conditions, pre- and post-sale:

- Voltage conditions
- Temperature conditions
- Capacity conditions
- Storing time and conditions



Upon initial activation, the SMARTBATTERY begins to write black box data; this data remains stored for the lifetime of the battery, integrated but independent to battery function. Through use of such technology a vendor will always be able to search for hidden signs that may cause a sudden battery death before installation, while also retaining said data well after the battery has ceased to function.

Since the SMARTBATTERY by its very design cannot be reset or tampered with, measured data stands incorruptible as a witness to the battery’s usage and treatment, which makes it invaluable with regards to warranty and other eventual legal disputes.

Pre-installed and expandable by design



The SMARTBATTERY design boasts an integrated LOGGER, which collects and catalogues data over the course of a 10-year period and subsequently makes the data available for interpretation and analysis as required, at-will—this is immensely useful for on-site analysis. Since the SMARTBATTERY's internal memory is specially protected against manipulation by

design, it logs customer use without bias or risk of tampering. The more SMARTBATTERIES in the array, the more reliable will be the information to which a vendor has access.

Manufacturer specifications and use of warranty conditions are held self-evident.

Each SMARTBATTERY also comes complete with a featured “slot” port for expansion cards, into which our iBACS (“Integrated BACS”) slot module can be integrated, as well as any given 3rd party BMS module adhering to the slot format. (Open Source)

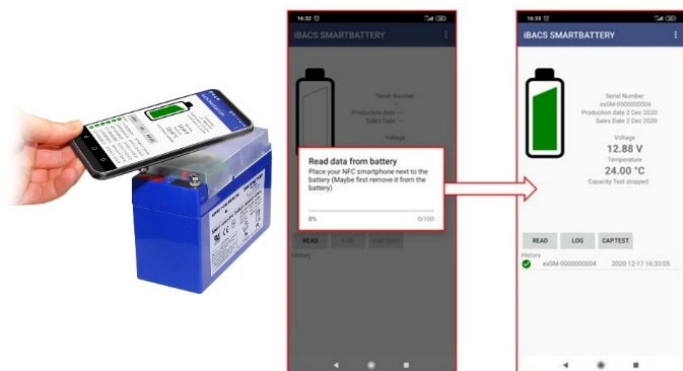
If the interface of the SMARTBATTERY is equipped with "iBACS", the internal data collection and archiving continues, but also serves the "iBACS" module with measurements. This redundant data collection and archiving is a unique feature. And - of course, with this feature, BACS has raised the bar once again in becoming the most modular system on the market.



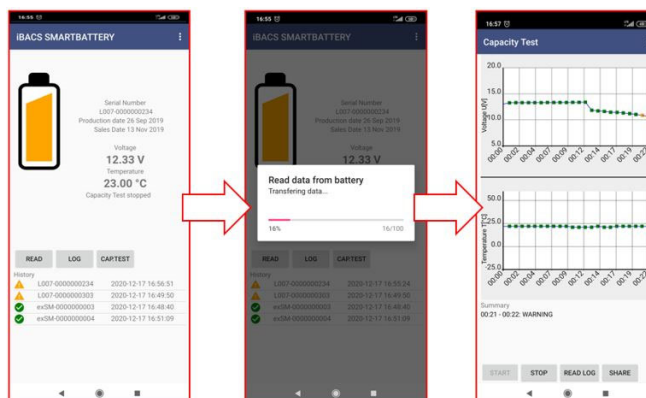
Compatible with commercially available UPS systems

Due to its almost identical dimensions to a standard 7Ah, the 7Ah SMARTBATTERY can be used as an integrated component of any given UPS array.

The operation for the user is very straightforward; simply download and install the iBACS SMARTLOGGER APP and enable the NFC capabilities of the according ANDROID device. After initialization, the SMARTBATTERY status becomes available for a first battery screening:



The selected colour code system allows the user to determine at a glance whether the battery has been utilized within the manufacturer's specifications during the intervening period since its manufacture or commissioning. In addition to contactless data polling via NFC, the SMARTBATTERY provides a touch-protective casing to max out maintenance safety. If required, an external antenna can be retrofitted, which makes the readout point flexible.



For more information about the iBACS SMARTBATTERY APP, please see its corresponding product information page on our website at: <https://www.generex.de/products/smartbattery/phoneapp>

The concept behind the SMARTBATTERY allows battery manufacturers or importers to license the actual SMARTLOGGER technology directly from GENEREX and therefore upgrade their product attractively:

The SMARTLOGGER is a passive system component and, as an integral part of the battery, enables the recording of function and usage data as well as the protection of optional sensors such as the "iBACS" by 2 high-voltage fuses. The measurement parameters can be freely defined by the respective manufacturer - the internal data memory holds data for up to 10 years in the standard version and can also be adapted if necessary, so that the storage periods can be extended or alternatively more data records can be recorded and kept.

Owing to its inherent flexibility, the SMART technology behind the SMARTBATTERY can be used with nearly any battery chemistry or charging concept, from Lithium to NiCd, independent to the size of the battery in use, even with experimental battery chemistries!

The autonomous and maintenance-free SMARTBATTERY technology provides for dependable data logging with application to:

- Individual batteries (voltage, temperature)
- Battery string voltages (sum of individual voltages via the SMARTBATTERY APP)
- Number of charge / discharge cycles
- State of Charge (SOC) automatically determines the battery capacity in the event of a discharge
- State of Health (SOH) is determined by comparing the SOC with the other SMARTBATTERIES

For battery manufacturers:

Increase the attractiveness of your products with the SMARTBATTERY!!

Our initial tests and market feedback indicate that the SMARTBATTERY design can be implemented as a configurable manufacturing option for less than 5 € per unit, but batteries so produced thus incur a considerable increase to market appeal and added value, while at the same time increasing its internal range of function and application. Perhaps most vital: such a product implementation grants a truly unique selling point compared to all competitors on the market!

GENEREX is pleased to welcome you as a licensee. Contact us without obligation and let us know your personal design wishes and features that you always wanted to give your battery.

We look forward to your enquiry.



The SMARTLOGGER

SMART Battery Monitoring, in your pocket!

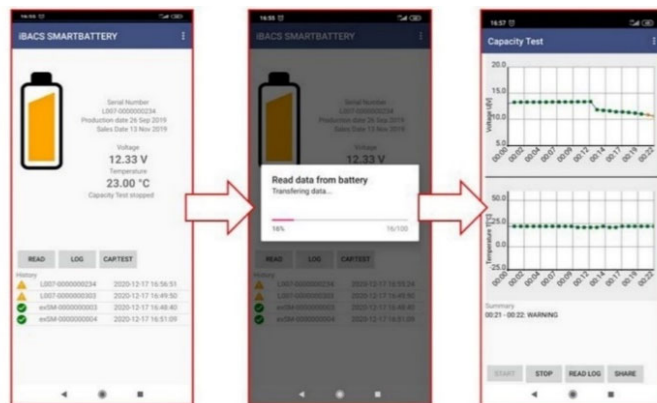
When damage becomes noticeable in a battery, it is often too late to rescue – the real battery damages are often hidden and can only be found over time by specialists with expensive equipment designed for long term measurements. During installation, vendors are not able to predict or control for any hidden battery damages.



By closing the gap between battery monitoring and on-site measurement protocol at installation, the SMARTLOGGER APP helps to protect against costly incidents caused by batteries which develop catastrophic faults or that are defect at delivery.

Offline Monitoring: The Power of a BMS in the palm of your hand!

Picture: The SMARTLOGGER APP reads battery data via NFC and shows the battery capacity results from the battery’s most recent discharge. A snapshot such as this one is usually the result of considerable effort, as pieced together by a given service engineer--here it is available “automatically”!



As a background task, the SMARTLOGGER measures battery data over 24 hours, each day. In case of a discharge cycle, the logging frequency is automatically increased. After this cycle, measured data is available until the next discharge/charge cycle, or until the data is explicitly delivered via NFC to an according terminal device, for example by a service technician with the SMARTLOGGER APP or via the optionally available iBACS module. Thus, a complete record history of the last discharge cycle is available which also includes the battery’s health and indication as to if the capacity is within the nominal value range. Since SOC is directly connected to SOH, the SMARTLOGGER displays both results as pertains to each discharge and provides immediate indications when the performance and thus the battery health decreases.

Because the black box data cannot be changed or manipulated, customers and vendors will use the same data in case of a battery warranty issue. For all parties, this “black box” feature is mutually beneficial.

Advanced Transparency – Stay in touch with your customer

If battery failure occurs at an unusual rate within a specific site or system, something may be fundamentally wrong within the system infrastructure of the UPS or array. With the SMARTLOGGER APP, the vendor and customer are given the tools to work together to find the reason and solution. They can share the platform between them - from the office or on-site, the data can be quickly and easily scanned and shared, all “above-board”, fair and square.

There is no additional network infrastructure required, and the installation can be done quickly and easily, either separately or during standard maintenance work.

The SMARTLOGGER FREE APP

The SMARTLOGGER FREE app (available via google play store) is capable of managing readings from a given SMARTLOGGER or SMARTBATTERY in real time, and provides a powerful offline monitoring interface. This allows for offline monitoring as a service by 3rd party companies as well as internal technical staff. Since the black boxed data is not manipulatable, vendors and customers can work together on any issues or challenges which arise on a basis of shared belief in fair and open data provision:

The SMARTLOGGER can be found as an integrated component of the SMARTBATTERY or as an external device for retrofitting.

The picture to the right illustrates the reading process: the NFC chip’s position is close to the antenna (external antenna extension optionally available) and allows the APP to access and poll the logger status within 1 second. The processed measuring results will be provided by an easy-to-handle colour code. If "green" appears, everything is OK and the smartphone can be moved to the next battery. Reading out 24 batteries of a DC system usually takes 24 seconds - no traditional measurement can provide a faster method to get reliable readouts!



The SMARTLOGGER PRO APP

Advanced features for professionals and manufacturers

With the SMARTLOGGER PRO App, vendors will get an extended scope of function

- **Readout the complete history of a SMARTBATTERY**

With the PRO version of the app, the battery manufacturer can not only see the period since the sale to the end customer, he can also see the period since the production date or first initialization of the SMARTLOGGER. This allows the manufacturer to check and archive the quality of the battery before its having been sold to the end customer – in case of a later warranty request, the manufacturer can use measuring data from the time before the sale, e.g. storage conditions, etc.

The first records of the black box data are taken directly after production and provide valuable insights into supply chains, storage conditions, forming processes, etc.

■ **PRO FUNCTION: “Set Sales Date” for the SMARTBATTERY**

The "Set Sales Date" feature allows manufacturers and suppliers to set the time stamp of the purchase date. By doing so, it finally possible to decide within seconds whether a battery is still covered by warranty. Furthermore, when the purchase date is set, the history of a battery is locked for the user of the SMARTBATTERY FREE APP and can only be read out with the SMARTLOGGER PRO APP. For customers with the Free App, the records start with the date of purchase.

■ **PRO FUNCTION: „Reset“ SMARTLOGGER**

The external version of SMARTLOGGER is specially designed for retrofitting. With this "Reset" function, the SMARTLOGGER can be reset and reinitialized after usage on site. The difference to the hard-wired version within a SMARTBATTERY is, there is no permanent memory to provide data for a maximum limit of about 10 years. The SMARTLOGGER can be used infinitely on site or as a small and easy-to use local offline - backup monitoring.



CS141 HW 161 Announcement

If an IT product does not change to keep up with the times, it will be left behind. If that product functions as the brain of a complex and vital critical system infrastructure, it must not only change to keep up with the times, it must be pre-emptive in doing so!

We at GENEREX understand this truth, and have invested the resources required in order to provide the most cutting edge, responsive hardware and software solutions on the market in an effort not only to keep our products updated and in accord with current data and technology trends, but also in an effort to provide the best and most functionally secure products possible for our clients.



With this in mind, we are pleased to announce that in Summer 2021 we will be launching the latest hardware iteration of our flagship SNMP card, the CS141 HW161.

With this hardware upgrade we are specifically targeting the CS141's security infrastructure; the revised hardware is expected to be available in Summer 2021 as the "CS141 HW161" and will replace the current iteration of the CS141.

The update itself is based purely upon **making the CS141 the most "cyber-secure" SNMP card on the market**, which we see as the natural evolution of the broader product category and industry in Europe, North America and in the expanded global market, in the face of a real or perceived increase of attacks to network infrastructure in critical power installations. As such, the update will be targeting the **Ethernet stack (Gigabit), in addition to a general increase to RAM and ROM**, all of which contribute directly to the functional safety and security of the SNMP card, which itself is the brain and gateway of the system's management and security.

Our clients need to know that their critical infrastructure is managed competently and securely, and we believe that it is our responsibility to make this as feasible as possible, starting with the specific functionality of our SNMP card hardware and software.



Cybersecurity

Industrial espionage via the infrastructure



It would not be a stretch to say that the Spectre and Meltdown issues caused quite the stir in the media back in May 2019. While this stir has led in part to both an increase in general public awareness of such critical vulnerabilities within integral component security as well as several improvements, the problems found to have been inherent to ARM processors are still

not really resolved for many devices. This has resulted in an odd state of affairs in which many decision-makers have been made aware of deficits within the security of the systems to which they are responsible, but no great changes within the security of these systems have come about.

Over the last few years a particular trend has emerged within IT departments in which “classic IT” (servers, laptops and computers) and “OT”—operational technology—are merged beneath a unified controlling substructure. The fact that the “OT” cannot always be relied upon to follow the same sorts of security requirements associated with “classic IT” is often overlooked or ignored, and the result of this ignorance is the formation of unnoticed or uncontrolled gateways into the IT infrastructure. **As a consequence, hackers have more or less ceased their attempts to attack servers directly, instead opting to concentrate their efforts on exploiting intelligent devices within the IT infrastructure in order to attack the servers from a network that may incorrectly be assumed to be “secure”.** The hackers' primary focus has been found to lay increasingly upon the following devices:

- Printers
- Webcams, Security cams and internal microphones, etc.
- Telecommunications systems, Router and Switches
- ... and emergency power systems, specifically through often-unsecured network cards, mostly via SNMP

Problems with IoT

According to estimates by the Statistica Research Department, globally more than 30 billion IoT devices will have been actively networked in 2020. Many of these devices have been produced and put on the market in tandem with very tight budgets, leaving little room for software maintenance. Today, a network card for UPS devices in Asia costs less than 35 USD; of course, customers can not expect a plethora of updates or individual security devices for this price - the ideal scenario for hackers looking to penetrate a network.

From its headquarters in Hamburg, Germany, GENEREX develops its own firmware with a permanent in-house staff of experienced developers and regularly releases hardware, firmware and software updates for its products. If a vulnerability issue becomes known, a customer can be sure that it will be closed as fast as possible.

Securing an IoT operating scenario is challenging in and of itself, but aspects implicit to the now emerging 5G technology and IPv6 are increasing this challenge. Such new options will consequently intensify the pressure on IoT devices and OT systems, because all devices will eventually be accessible on the internet! While absurd to the point of comedy, a scenario in which an intelligent but hacked coffee machine sends spam emails to a refrigerator has in fact been a reality for some time now. A much less humorous scenario arises if a compromised security camera is used to spy the password as keyed for access to the remote systems of an emergency power supply. The matter is further complicated by the fact that the 5G network additionally allows individual devices to communicate directly via LAN, WLAN and an "anonymous 5G cloud" - unnoticed hacked devices may be reachable in real time and outside any administrative sovereignty by unknown users through such high-speed connections.

It is thus logically foreseeable that in the near future numerous security and safety updates will be made requisite. It is thus also to be expected that such updates will not be forthcoming on behalf of the "cheap" UPS network cards—the resources simply cannot be expected to have been invested, and what's more, the correspondingly cheap hardware will not be able to meet future requirements of security algorithms and safety features.

GENEREX has recognized this problem for some time now. In order to meet these future requirements, a revised hardware platform—the CS141 HW161—will be released in target Summer 2021. The CS141 HW161 will replace the current model.

The "Component Conundrum": Cheap direct imports vs. locally produced components

In 2021, political and industrial interests are finally beginning to realize the implications and ramifications implicit when network technology, from chips to smartphones and LAN adapters to 5G transmission systems, is developed and produced almost entirely outside of Europe or America. China, Taiwan and Korea are the real big players when it comes to the production of such critical products and components. Such imbalanced trust in global production chains as a concession to debatably short-sighted expectations of inexpensive product options will naturally increase this sharp dependence upon such a relatively limited scope of manufacturing territories.

The Coronavirus crisis of 2020 / 2021 and its subsequent effect upon global trade has impressively illustrated the degree to which this dependence has intensified.

Companies like GENEREX, by tradition and on principle relying upon local suppliers and on-site production wherever possible, have reported comparatively little disruption to service in the wake of this Covid-related temporary collapse of international supply chains. On the contrary: because its ability to deliver remained intact throughout 2020, GENEREX has engendered the trust of its customers as a reliable partner!

GENEREX makes no excuses for its price tags; in fact, it stands proudly behind them. Ours is a product which stands up to the increasingly stringent security standards of our modern age. Those "cheap" alternatives are attractive in the short term, when there is a budget by which to passively abide and little concern for the future. But what about 2 years' time from now? When the cheap solution is unable to provide any capacity for updates or the availability of spare parts, and when the support is subpar and cause for conflict and internal tension; then, the cost will be balanced.



CS121

Legends Never die -but network products do!

It's a testament to the quality and endurance of our discontinued CS121 SNMP Manager that now, even some 5 years after its having been made obsolete by its successor the CS141, customers are still happily using their CS121s.

When we first produced the initial iteration of the CS121 back in 2002, our primary goal was to break free from the inadequate durability of the hardware imported from China as noted on earlier hardware iterations (CS 110, CS111, CS122).



It was impossible to explain to end users that their UPS hardware could work for 10 years and more, while our imported hardware would begin to irreparably fail shortly after the end of the given warranty period. Our investigations showed that the cause was clearly due to the inferior components inherent to these imported devices. *The logical answer stared us in the face: if you want it done right, you'll have to do it yourself.*

With the CS121, we launched our first self-built unit with components sourced specifically to avoid the use of Chinese components—and eureka!—the problem was solved. **The failure rate dropped dramatically and for more than 10 years the CS121, with its unsurpassable durability, was the best and finest device on the market.** However, now in 2021 the CS121's outstanding quality has become the source of a new and unique problem—customers don't want to give them up! Though contrary to current technological trends and security advice, customers seem hesitant to part with their seemingly well-functioning devices, holding to the old adage "If it ain't broke, don't fix it". Unfortunately, this strategy runs contrary to today's requirements for network security. **The CS121 was designed in the last millennium and is as such unprepared for modern cybersecurity threats.**

We must announce once more, however, that since it is a discontinued product we no longer provide technical support for the CS121!

This means that its firmware and software is no longer maintained or updated, which also means that the CS121 is inherently a security risk, as such. Clients continuing to utilize the "old reliable" CS121 do so at their own risk.

We recommend that customers contact their preferred GENEREX reseller or OEM partner and discuss an upgrade to the official successor, the CS141.

Please note: In 2021 the 2nd CS141 generation will be launched; this new generation, the "CS141 HW161", is a device specifically designed for "cybersecurity", and its target is to exceed all current system security requirements.



NEW: Remote SYSLOG

From FW1.88, the CS141 supports Remote SYSLOG

Your clients request it; GENEREX delivers:

In implementing Syslog—a standard for the transmission of log messages in the IP-based computer setting—the CS141 / BACS has fulfilled the desire of many network administrators.

GENEREX deploys "Remote Syslog" as a standard for all CS141 and BACS systems.

When the firmware update is done, this function is available. The webmanagers will offer the option to transmit alarms and relevant system messages in a standardized format to a central collector within the network. Higher-level software can then access the centrally stored log files and provide the user with a filtered overview of all devices on the network without the need of contacting and reading out each device individually.



The Syslog has always been displayed on all models of our CS141 product family: This file has been processed, filtered and displayed via the web browser as the "event log". With the implementation of **Remote Syslog**, another powerful tool is available for the integration of key data into far larger networks in order to centralize the management of critical devices.

What features do you think are missing from the CS141? Your opinion matters to us!

Let us know! Our development team is happy about new challenges and ideas and we would appreciate your feedback. OEM Partners and Resellers can contact us at the support department support@generex.de or via their "personal" OEM email address at GENEREX.

Our development team appreciates new ideas!



NEW: SNMP TRAPS, Freely configurable

The customer asks for it – and we implement it:

Normally, an SNMP TRAP will only trigger when the status of a given system is altered. Due to this fact, testing SNMP traps is complicated because an alarm actually has to be triggered to send the trap. With a UPS or battery system, it is quite difficult to trigger an alarm without endangering the system or the user.



Some customers have asked whether there is a possibility to send these SNMP TRAP messages independently of status changes. They want a save method to test their alarm centers without having to trigger a real alarm on a UPS or battery system.

The GENEREX development team has addressed this issue and implemented a new function.

Now, with the Scheduled SNMP Traps, this will be possible!

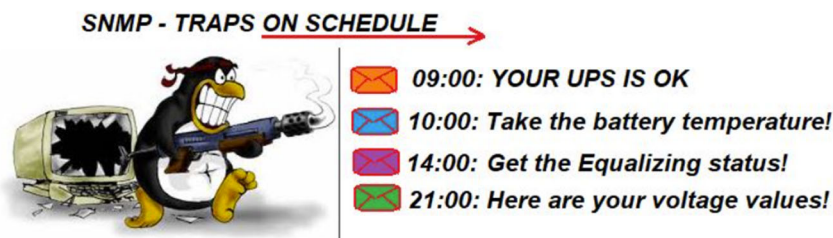
The CS141/BACS/SITEMANAGER can simulate an alarm in a time-controlled manner and send out the corresponding SNMP traps. Due to the scheduling, the user can easily see whether this alarm was sent at the time of simulation - or if not - it is a real alarm.

These days as well as in the age of remote monitoring, it is important to be able to test all functions without having to have an employee on site at the terminal.

How do you get this new feature?

1. Download the latest firmware version for your device from the GENEREX Download Center or from the homepage of your GENEREX partner
2. Carry out a firmware update - done - the new function can be found under SNMP.

Starting immediately, this new function will be available for ALL CS141 based products at no additional cost!





NEW: The UNMS Cloud Services – and a request for your input!

In our 2020 newsletter we reported in detail on the given requirements for a remote monitoring of UPS systems. As numerous support requests from end customers have since made clear to us, a great deal of capital has been and is being invested in the efficiency and data monitoring capabilities within data centre infrastructures in recent years; and yet, efforts to increase the value and expertise of in-house staff associated with such infrastructure has been comparatively non-existent!



As a result, there is a lack of skilled technical staff in the associated fields; this inadequacy of service staff is compounded by what seems to be a bias against committing the financial resources required for the implementation of in-depth training measures to allow existing staff to run these systems as needed.

In the course of 2020, this trend has been exacerbated by the pandemic

A modern UPS system has long since left behind the days of being considered a simple "black box" - it is now a highly complex infrastructural concept which consists not only of the UPS, itself; it also functions in an expanded capacity as hub to numerous interconnections with the company's IT system. However, specialists who can provide the "double knowledge" required to service such a device - IT know-how and UPS battery know-how – are an increasingly rare breed.

An expanded evaluation of GENEREX's incoming support requests has shown that end customers repeatedly request a "fully automatic monitoring service" from their UPS providers. Such requests are becoming increasingly standard, and where smaller UPS providers are unable to provide such services without dramatic changes to their business models, Chinese manufacturers are more than happy to step in; ultimately, end users are beginning to switch to often Chinese providers. End-customers accept that Chinese market participants prefer doing businesses directly, bypassing the traditional trade channels in which dealers and locally based electrical companies provide such intermediary services. This not only has a dramatic impact on business models throughout the supply chain, it also puts direct pressure on pricing structures. If, in addition, it is suggested to the end customer that Chinese direct suppliers also "take care of the service" from a distance, then offering at least an equivalent service will be crucial for the survival of the local UPS and UPS Service industry.

NEW from 2021: GENEREX Cloud Services – On-Site Services Offered – Direct Monitoring, through the End-User!

Since its conception, our Windows-based UNMS software has given all OEM partners and resellers the possibility to stay in contact with their customers and offer them comprehensive remote services - thanks to the "email trap" function, and the inclusion of teleservice in 2020, it has been possible to offer the service of remote monitoring, even without VPN or overt involvement of the customer's IT

department. However, until now such services have required a UNMS-specific operating staff, which is particularly difficult for small companies.

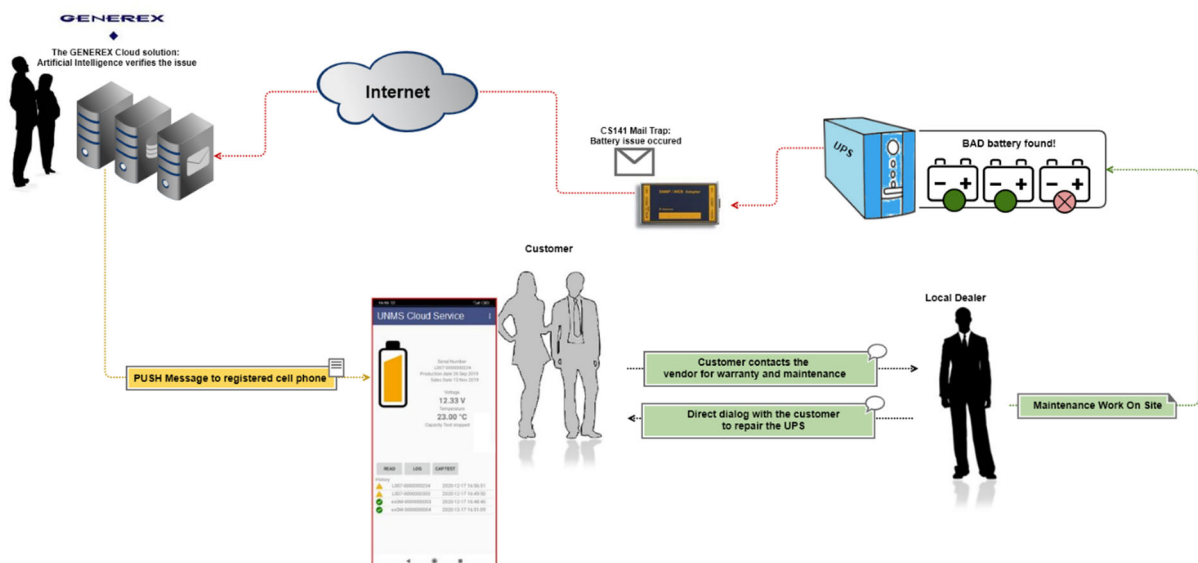
With the cloud services we are now moving forward with industry requirements, step by step: From January 2022, your customers will be able to register their SNMP adapters and BACS systems in the GENEREX Cloud. After registration, they will be informed DIRECTLY via SMARTPHONE APP about general system status as well as individual alarms!

This will eliminate the need for our partners to operate a UNMS service team, themselves. The UNMS Cloud ensures the constant surveillance of qualifying devices at the customer's site and, in the event of an alarm, the end customer can immediately contact their vendors and request a service tag. The UNMS Cloud saves the most important data of the systems so that the cause of an alarm is available even without further contact to the end customer. With this service, GENEREX seeks to strengthen the local structures between its partners and the end customers on site, thus initiating a channel for direct dialogue between both parties. A customer who receives an alarm on his APP may require technical assistance; our partners are ready for this eventuality, and GENEREX takes care of monitoring and mediates the service request. By doing so, the comprehensive information needed to run a UNMS is not required, and the onus of providing for specially trained staff can thus be avoided by our partner. The customer, on the other hand, does not require any additional training measures and feels well looked-after with a modern mobile APP for his or her UPS or battery system.

As announced in the 2020 newsletter, we are now asking for your feedback: **Do you want to offer your end customers your own remote monitoring services via UNMS or some alternative monitoring concepts? YES/NO**

YES: Our business model is B2B ("Business to Business") and any partner who can offer a 24/7 service with a UNMS does not need the GENEREX UNMS Cloud services. In this case, should your customer ask us directly, we would redirect their request directly to your own representatives and withhold the login to the UNMS Cloud and the use of the APP. The devices will be delivered preconfigured by our partners (CS141 / BACS / SITEMANAGER / SITEMONITOR) and can only run with your own UNMS service (e.g. email trap address).

NO: In case we do not receive a rejection from you, we will pre-configure all devices to be delivered to you from December 2021 to allow for the transmission of associated data to our UNMS Cloud, and customers will be able have the measured values and alarms transmitted via the associated APP. In accordance with DSGVO, the end customer must then agree to access our UNMS Cloud Server in order to transmit UPS and battery data to his mobile phone via MMQT protocol (Message Queuing Telemetry Transport). Note: This new standard will be used in all GENEREX products in the future; the UNMS Cloud is the first application in which this will be implemented. GENEREX only provides the service of communication with the end device and the end customer's APP—the maintenance business remains with the provider of such maintenance services





NEW: Hydrogen Sensor

Hydrogen – the underestimated danger

Lead-based batteries as well as any other type of “wetcells” like NiCDs are charged by a chemical process. As a side effect of this chemical process, the battery emits hydrogen, which is either subsequently recombined or lost into the surrounding atmosphere. Depending on the design of the battery, this hydrogen escapes from vent valves or is released directly into the environment. With AGM batteries such a case is negligible, but it occurs to a significant extent with “wet cells”.

Hydrogen is odorless, colorless and lighter than air - in smaller concentrations it is nothing unusual in nature and does not constitute any risk.



It is a different matter in battery rooms:

If insufficient safety measures have been taken, the hydrogen will be unable to escape the immediate area surrounding the battery. The percentage of hydrogen that must be released into the environment inevitably increases in parallel to the number of batteries.

Hydrogen is lighter than normal air, so it rises and collects in the form of “bubbles” in poorly ventilated locations within a given room or enclosed area:

- In ceiling areas or in dropped ceilings
- Storage areas such as shelves
- Static air vortices in the ceiling area due to ventilation

As soon as a general air saturation of at least 4.1% hydrogen to 75% air is reached, a highly explosive gas mixture is formed. Even small sparks from switches or electrical discharges can be enough to cause ignition, which could lead to disastrous results.

Since hydrogen saturation in the air is colorless and odorless, special sensors are needed to detect the formation of such a gas mixture thus allowing for adequate reactive measures. A battery monitoring system displays the battery parameters but would not detect liquid losses due to gas formation. Therefore, larger UPS solutions that are placed inside poorly ventilated areas should use a hydrogen sensor as an additional safeguard. The new H₂ sensor “SM_H2_LC” from GENEREX is operated standalone; alarms are triggered via the alarm contacts and optically and acoustically (optional), but can also be connected to CS141/BACS via the GX_R_AUX.

New for the European market

With the SM_H2_LC, GENEREX has introduced an incomparably favorable high-performance hydrogen sensor to the European market!

The highlights of the SM_H2_LC include:

■ Easy installation and centralized configuration

The sensor heads are pre-configured and calibrated –No additional configuration work on the sensor station is required.

■ Power supply from the base station

As the central control unit, the BACS Webmanager in combination with a GX_R_AUX module also manages the power supply to the sensor. Up to 15-meter-long cables can lie between the Webmanager and the sensor for structured cabling.

■ Daisy chains and visual warning behavior

Up to 5 sensors can be coupled in a daisy chain. When the Webmanager indicates an error, the cause of the warning or alarm can be identified through a simple on-site visual check.

■ Flexible

In addition to hydrogen, the standard sensor also responds to other gas accumulations such as nitrogen. The internal sensor technology can be easily exchanged as needed and thereby adapted to the respective operating environment with its particular gas mixtures.

■ Calibration

In general, all gas sensors on the market must be calibrated at regular intervals. A special feature of the SM_H2_LC is that this calibration can be carried out particularly easily. The sensor head is replaced by a spare part: Open the housing, loosen the screw from the sensor head and replace the sensor module as a whole. The replacement can be carried out as part of regular maintenance work! The uncomplicated replacement of the sensor by the user also makes calibration much more cost-effective than with other H2 sensors on the market.



The new SM_H2_LC is now available!

*) The sensor is not UL-certified and is therefore not permitted to be used on the American market