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Battery Power Supply Stromtank S 2500 Quantum

Author: Andreas Wenderoth Photography: Rolf Winter

The power problem in the high-end range is nothing new. However, it is possible to effectively eliminate interference without loss of dynamics. The most consistent solution is offered by Stromtank, who make a power source which converts the entire system from the wall socket to battery operation. The S 2500 Q is actually only the second smallest of a total of four units – but its effect is impressively large.



Fill her up, please!

As the former head and founder of MBL, Wolfgang Meletzky is a veteran of the high-end scene. Today he is a partner in Winbat, a company that normally produces power storage units for solar and wind power plants, but thankfully also produces them for audio equipment under the label "Stromtank" (which translates to "current tank" or, more idiomatically, "power bank"). Meletzky says that at some point he wanted to create something genuinely new, not just a variation on what already exists, e.g. even better power amplifiers, even better loudspeakers, no, he wanted to recast the foundation of a hifi system.

In Germany, mains electricity is defined as 230 volts AC at 50 Hz. Unfortunately, due to various factors, this 50 Hz is often not constant - with catastrophic effects on sound. When there is a particularly high consumer load, from private customers or industry and commerce, the speed of the generator in the power station decreases, and instead of 50 Hz, it is then perhaps only 49 or 48 Hz. The power station reacts by adding more generators, which can lead to higher frequency outliers and the 50 Hz suddenly becoming 51 Hz.

Another problem is that measurement and control signals are also sent over power lines, for example to switch street lighting or control traffic lights. Also for measurements between switching stations. In addition, there is the well-known HF interference from mobile phones, switched-mode power supply units in computers, energy-saving lamps, hair dryers, refrigerators, PowerLAN adapters and digital electricity meters. But electric cars with their very high charging currents are also becoming – from an acoustic point of view – an ever greater challenge.

The solution, says Meletzky during our long telephone conversation, can only be to make the connection from the power generator to the consumer as short as possible. And not via the socket, cables laid in the wall, to the distribution cabinet, via the fuse to the electricity meter, down through the house, to the substation, and then, sometimes over hundreds of metres, to the next transformer box. Of course, one can make do (and even get quite far) with a good, high-contact wall socket, a dedicated line and an adequate fuse board. But of course the listener's right of



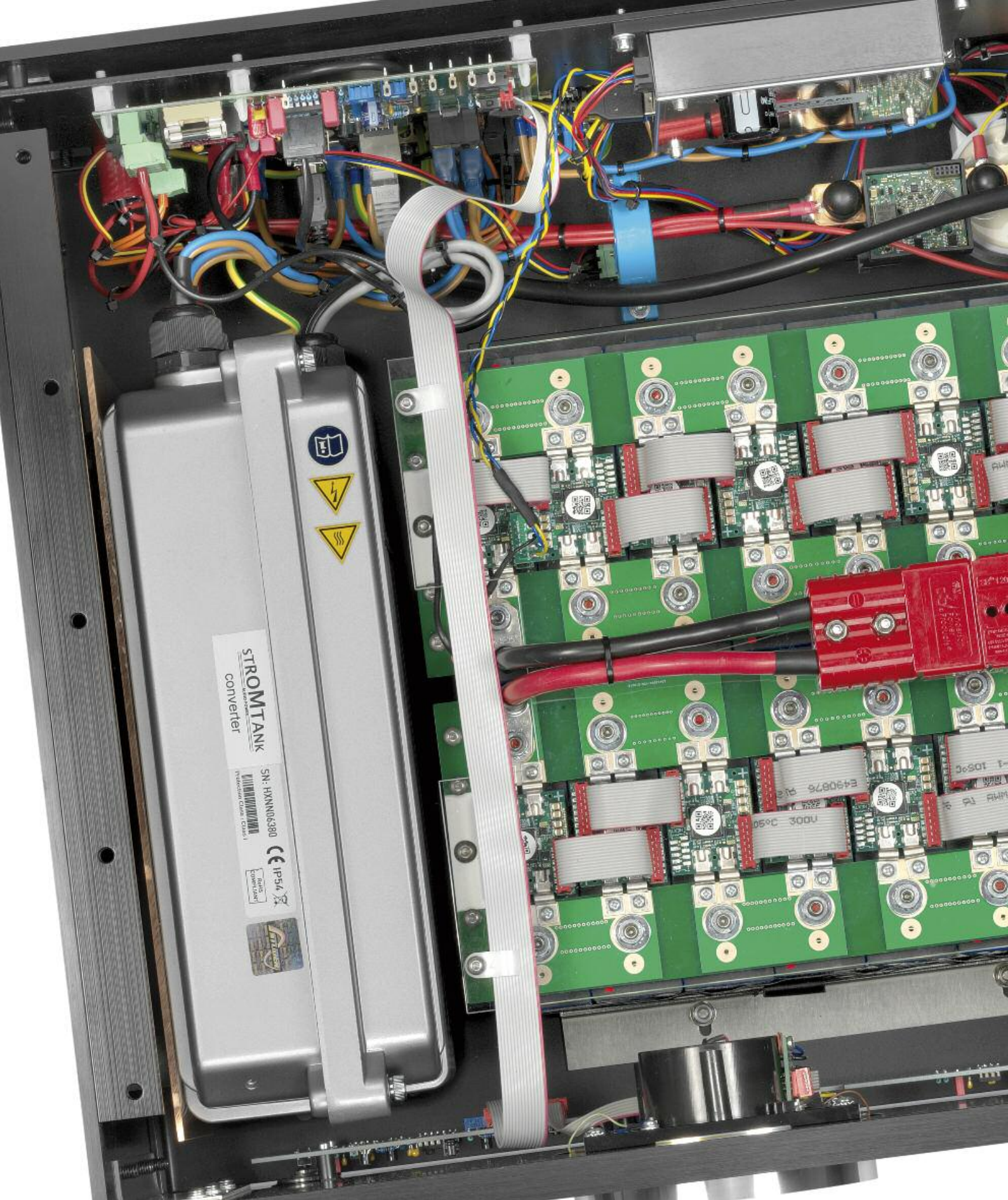
The central dial dominates the front of the colossal yet elegant device.
Below the Quantum lettering, a chain of LEDs showing how full the “tank” is

ownership ends at the meter. He has no influence whatsoever on the long way before that. Unless...

16 batteries with a capacity of 40 amp-hours – there it is in front of me, the promise of maximum clean power: the S 2500 Q (Q stands for Quantum), with its huge dial, illuminated in different ways depending on the operating mode, is reminiscent of a fat Dan D’Agostino power amplifier. Weighing a whopping 61 kilos, it is not exactly discreet, but nevertheless has an all-round engagingly elegant aesthetic. The solid cabinet conveys extreme value. 6-millimetre aluminium side panels and lid, the base for the battery holders is made of 3-millimetre-thick stainless steel. At the front left, externally recognisable by the four screw heads on the side wall, the

inverter is mounted on antivibration mounts and additionally shielded in a die-cast aluminium housing. This makes it so wonderfully quiet that you really only notice a minimal noise when you hold your ear directly to the housing. Below the dial, an LED bar indicates the respective charging status, and there are two push buttons on the left and right.

The road to complete mains decoupling begins at the rear. The unit is put into operation by means of a key switch. There are three Furutech sockets, into one of which I plug my power strip. Now, of course, you might ask, why only three? Three more and you wouldn’t need an additional power strip, but the “Quantum” doesn’t want to be a power strip, it’s a generator and only replaces the wall socket (there



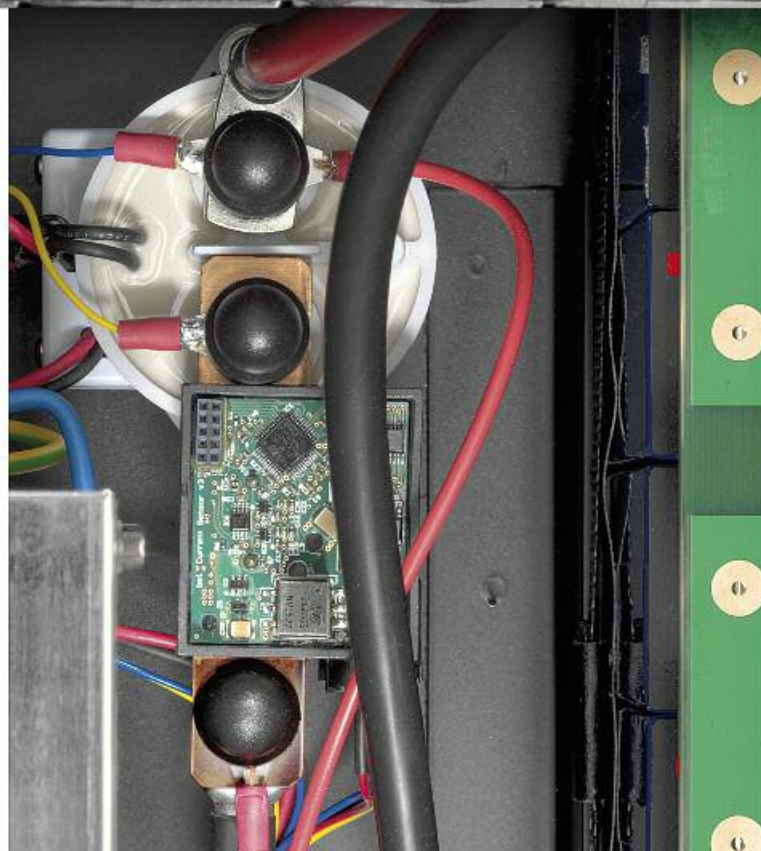
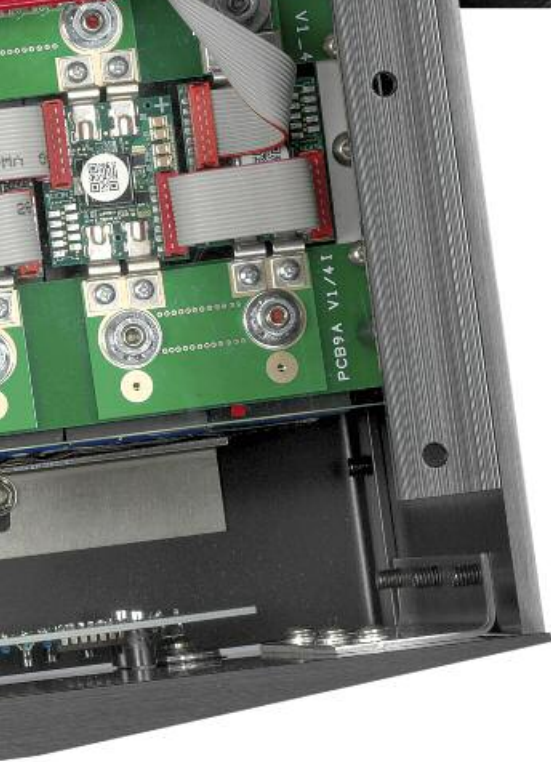
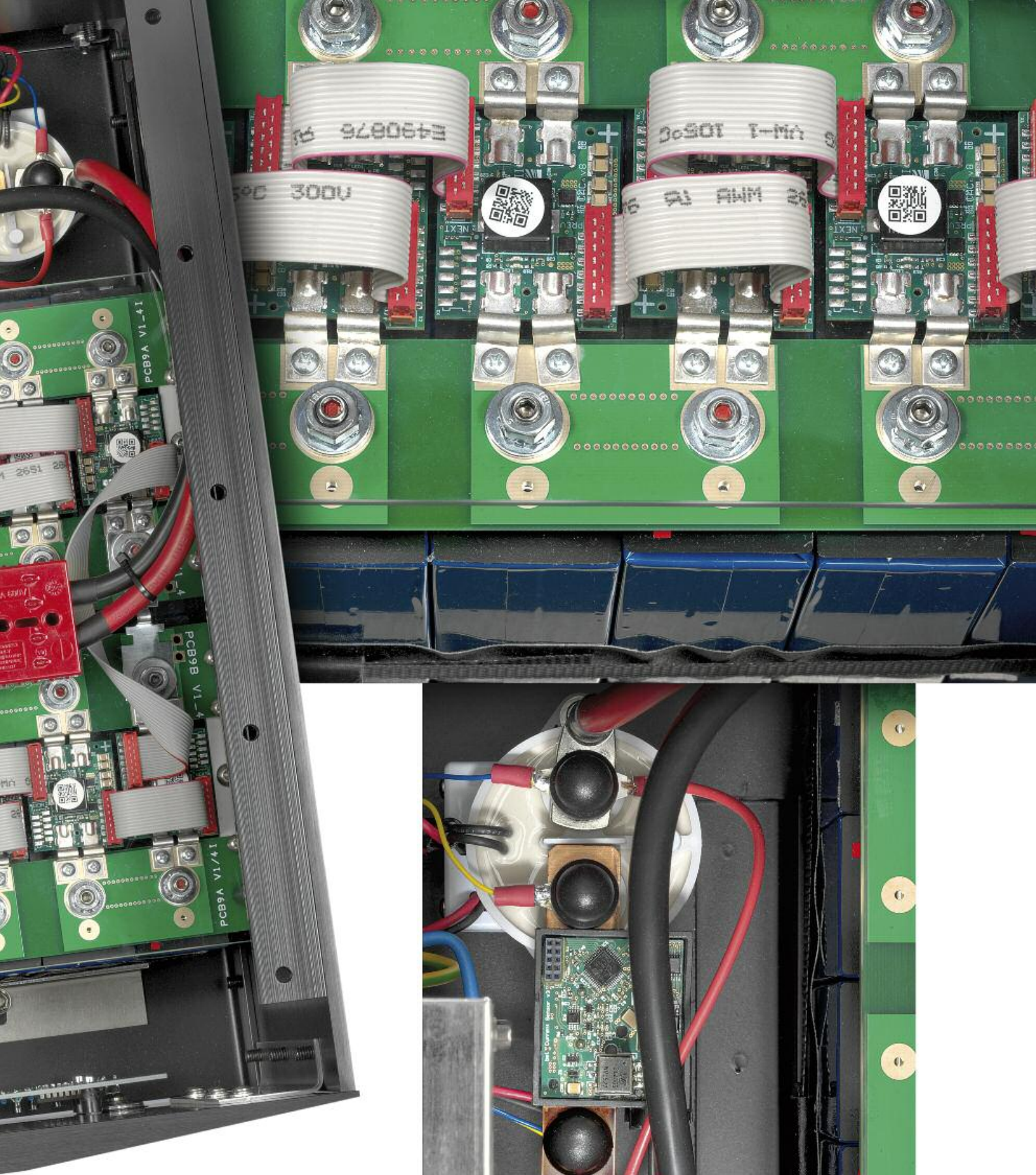
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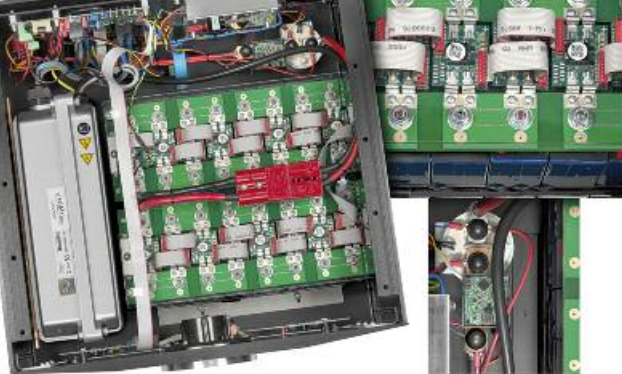
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Top:

Large photo: The inverter on the left side of the picture generates a perfect 230V/50Hz AC voltage from the battery's DC voltage. The screwed green parts are the 16 lithium ferrophosphate (LFP) batteries, which are closely monitored by microprocessors (the small boards in between). In the upper part of the picture are the control boards with the battery management system

Middle: The heart of the device: Cut-out enlargement of the microprocessors for the LFP batteries

Bottom: Neatly constructed: current sensor and relay

are only a maximum of three sockets as well!). So it is definitely meant to be connected to a good mains strip (provided it is not filtered, partly because filters do not fit with the Stromtank sound philosophy and partly because they would also consume reactive current!) According to the manufacturer, the only solution better than this is if preamplifiers and power amplifiers are connected to separate Stromtanks, but let's stick to the "small" solution here, which is the normal case - and anything but small.

The easiest way to hear the difference is to switch from blue to green (battery mode) with the push button, because this happens within 10 millise-

conds. It is a little more difficult the other way round, from green to blue mode takes longer because the Stromtank needs a few seconds to synchronise with the mains. So when listening for comparison, you have to include this pause and be able to abstract a little. Or you can make it easy on yourself and choose the first variant. As soon as the crystal-stabilised frequency appears in green mode, the exact amplitude, you hear: more and less. Less background noise, less distortion, more music. But each in turn.

First listening test: Violin Solo, Partita No. 1 in B minor by J.S. Bach, on the recording by Gidon Kremer (Eurodisc, 27 258 KK, Germany 1975, LP). A piece that places the highest demands on the equipment and, as we shall see, also on the power supply. On battery power, the violin sounds more open, more airy, more playful, less strained. It really sings, Kremer's playing becomes even more flowing, lively, clear. The complicated double stops, especially in the last movement, which sometimes slide into the slightly atonal (Bach is not a well-behaved church musician, this is avant-garde!) lose their harshness, the residue of harshness that they otherwise still have. Its sound becomes rounder and the special character of Guaragnini's master violin, finely resolved, now emerges even more strongly. The music, even in the fast passages, takes on a great inner calm. Of course, even without the

Partnering equipment

Turntables: Artemis SA-1, Raven LS, Bauer Audio DPS 3 **Tonearms:** Acoustical Systems Aquilar, Bauer Audio DPS tonearm, Schröder No.2 **Cartridges:** Sound-smith Hyperion, Kiseki Blue, Lyra Skala **Phono-Pre:** Synästec Igniculus, Aurora-sound Vida Supreme, Tom Evans The Groove 20th Anniversary MK II **Preamp:** Audio Research LS 28 **Power amp:** Pass XA- 30.5 **Loudspeakers:** Sehring S 916 curved **Cables:** Acoustic Revive Power Sensual and Power Absolute (mains); Gut-wire Uno-S (XLR); Gutwire Ultimate Ground (earth); Harmonic Technology Amour (RCA); Harmonic Technology Pro-9 (loudspeaker) Power strip: CT Audio Resonance Technology Mirage Bleu **Accessories:** Furutech FT-SWS NCF wall socket, Giga-Watt G-C20A circuit breaker and LC-Y MK3 + 3X4 in-wall cable, Quadraspire Reference rack, CT Audio-Resonanz Technik - Steppness I + II, Doppio, Pace, Songer; Woopies, Acoustic System Resonators, Audiophile Räume Resonatoren, Audiophil Schumann Generator, Audio Magic Beeswax Ultimate + Audio Magic Premier Ultimate Fine fuses, Lyra SPT stylus cleaner, Onzow ZeroDust, Acoustic Revive ECI-50 contact cleaner, Cardas Frequency Sweep and Burn-in record

Stromtank, it is clear that we are not dealing here with displayed virtuosity, but always with soulful, some would say divine, music, even in the most difficult passages. But the Stromtank brings one even closer to this realisation, which is not an intellectual one, but springs from a deep feeling of being touched, a (listening) experience. When I switch back to the wall socket, it sounds comparatively less gripping, harder, almost a little compressed. In terms of playing, yes – I apologise to Mr Kremer for this, because I sincerely admire him! – a little more effortful. And back again via the battery operation of the Stromtank: now gliding, sparkling, light. The Stromtank does not lend rose-tinted spectacles that make something more beautiful than it is, but it helps the music to its core.

Clean electricity, says Meletzky, is a bit like water. would you prefer to drink dirty water or the clear water at the source of a mountain stream? The

answer is not difficult. For a long time, however, a technically correct response was hardly possible. The principle of battery power actually sounds quite simple. Take batteries and put an inverter on the end. However, this was doomed to failure as long as lead-acid batteries were all that was available. With the advent of lithium-iron-phosphate (LFP, lithium ferrophosphate) batteries about a decade ago, there were suddenly more powerful batteries available which weighed less than their lead-acid counterparts and, in contrast to pure lithium batteries, which can produce oxygen if handled incorrectly and thus burn and explode, were completely safe for the first time.

However, LFP batteries need a so-called battery management system because they do not behave as benignly as lead batteries and would otherwise charge and discharge unevenly in an uncontrolled manner. Each battery in the Stromtank therefore



has its own microprocessor that monitors its functions, voltage and temperature, and all the microprocessors in turn are connected to a central processor. Meletzky says: "All the cells must have the same energy content, otherwise you won't get a clean pulse." Stromtank developed the software together with the renowned Fraunhofer Institute. "The system is technologi-

Car style: the unit can only be switched on after the key has been turned on the back of the Stromtank



Four sockets seem few at first glance, but the unit sees itself as a generator, not as a power strip. The highest possible quality power strip can (and should) be plugged in here. Seen in this light, the four sockets seem almost excessive

cally very sophisticated because it can balance in both directions," says Meletzky. "Not just when charging, but also while discharging."

The result of this effort: absolute reliability with a very long service life. Stromtank indicates about 6000 cycles (one cycle = fully charging and discharging again)! If you listen intensively every day, you will use up to 365 cycles a year. Which means that the batteries only need to be changed after about 15–20 years. If, on the way there, a single battery should give up the ghost (which, according to Meletzky, is extremely unlikely), it can of course also be replaced individually. By the way, the battery cells are charged at just 8 amps, because in terms of service life, it's not about fast but gentle charging. One battery charge lasts four to 40 hours, depending on the load of the equipment, the volume at which you listen and the type of music. One day, just for fun, I tried to drain the Stromtank by running it continuously – and did not succeed. Had my power amplifier had 1000 watts instead of 30, things might have been different (but in that case there are also larger Stromtank models!).

But now I'm going to listen again. Bohren & Der Club Of Gore, "Sunset Mission" (PIAS, PIASD5013LP, D 2016, 2-LP), my favourite album by the guys from Mülheim, the first track is called "Prowler." At first I think less is happening, because it has become quieter, but not in the sense of a slowed down dynamic, rather the exact opposite: the bass becomes more substantial, feels even deeper, the saxophone more alive, more real. The space seems clearer, the location of the instruments more distinct. This music, which already lives from its reductionism, stands out even more, which also means: even less happens. But that little is more intense. And that is exactly the band's claim, which is sometimes said to be almost devilishly gloomy. I myself find them decidedly meditative, with at the same time the greatest inner musical tension – which the Quantum reveals most wonderfully.

On the next track, "On Demon Wings", the music is also a little more to the point, the timing even



more coherent. The bass pushes as if the power amp had gained a few watts. The hi-hat is a bit clearer, the impulses are faster, everything sounds a bit more purified (when switching to wall socket power, the sound seems almost bloated in comparison). The saxophone is a touch softer with an even sine wave, the little aggressiveness it held before seems to have disappeared. "Rounded" would be the wrong word, because nothing has been glossed over or clipped, it just seems a touch more real. A little less "recording". I should mention that I listen with what I think is an exceptionally good power strip, and I'm pleasantly surprised at how it too benefits additionally from the Stromtank. But perhaps it's better to put it this way: anyone who has a system for which a Stromtank is a possibility will most likely also use an adequate power strip. No, he is actually obliged to do so. Because otherwise he will soon nullify the benefit he can extract from the Stromtank. But of course the purchase price also makes it clear: we are talking about the highest standards here. And corresponding hifi systems.

I should mention that the mains cable, which is a very simple standard lead (thus demonstrating that the connection to the wall socket is no longer important), should not be simply unplugged. This is precisely because the Quantum's green mode is completely disconnected from the mains. If the battery charge drops, the following happens: when it is only about 10 per cent charged, the Stromtank automatically switches back to the mains - for recharging. If, however, the mains cable has been disconnected, i.e. there is no mains power, the unit continues to discharge until, in the second safety stage, all outputs are switched off so that no more power is consumed. If the unit is left like this for an extended period of time, it will eventually discharge completely and must be restarted via the emergency charging socket on the back of the unit. This is no big deal, but it is a hassle you can spare yourself.

Because it's so nice, let's finish with a little music. Classical music again, because in this kind of music

the difference to conventional listening is the greatest: Beethoven's Seventh in the magnificent recording by the Deutsche Kammerphilharmonie Bremen with Paavo Järvi (Acousence Records, DDKB LP01, D 2010, 9-LP box). One of the characteristics of this exceptional orchestra is that it is so easy to differentiate the separate elements, and it is precisely this requirement that the Quantum fulfils so wonderfully. The space opens up into the depths. You can breathe in the magnificent acoustics of the Funkhaus Nalepastrasse, literally see the wood-panelled walls and the parquet floor in front of you. The musicians and the conductor, who can get more out of this orchestra than anyone else. The melody-leading oboe appears live in the room with great clarity, the other instruments well staggered, in even stronger, almost compelling coherence. The basses rumble, but not as somehow just low notes, but with wonderful nuances. The plucking of the strings is audible, as are other details such as breaths or the occasional turning of the pages of the score.

The calm in the string section in the Allegro comes across well, the instruments no longer "stick" to each other. The organism of the orchestra, which "breathes" more strongly through the Stromtank, now opens up directly, the fine communication of the instruments, their interrelatedness. Overall, by the way, the music seems a little louder, even though I didn't touch the volume control. The result of a gain in dynamics, which also makes the quiet passages quieter (which in turn is in keeping with the orchestra's intention, because there is hardly any other orchestra in the world that can play as quietly as the Bremen orchestra!) But the reverse is also true: because there is less distortion in the system in battery mode, you CAN now listen louder than you normally would. And longer, because it seems less fatiguing. Of course, you have to practice this new way of listening: Some of the effects you may have grown to love fall by the wayside, sounding a touch leaner, by no means fleshless, but freed from superfluous dross.

Conclusion: If you have a very good system, you should definitely try out the Stromtank. Of course, simpler systems also benefit considerably. But everyone must judge for themselves whether in this case it does not make more sense to replace one (or more) components first. With some justification, of course, one can also see it the other way round: only with a good power solution will one really be able to adequately assess one's components. Theoretically (and given the appropriate financial means), one can therefore also start with a Stromtank and build a system around it that is worthy of it. ☐

Battery power supply Stromtank S 2500 Quantum

Operating principle: power supply via LFP battery cells **Special features:** multi-level safety system, active cell balancing through sophisticated battery management system. Remote control optional **Nominal battery capacity:** 40 Ah **Nominal battery voltage:** C16/48 Vdc **Charging current:** 8 A dc **Output frequency:** 50 Hz \pm 0.05 % quartz-stabilised **Power:** 2600 VA (5 seconds), 650 VA (continuous power) **Finishes:** Housing: black. Front panel: silver or black anodised. Practically any other colour possible at extra charge **Dimensions (W/H/D):** 48/31/45 cm **Weight:** 57 kg **Warranty:** 3 years **Price:** 23 900 Euro

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