

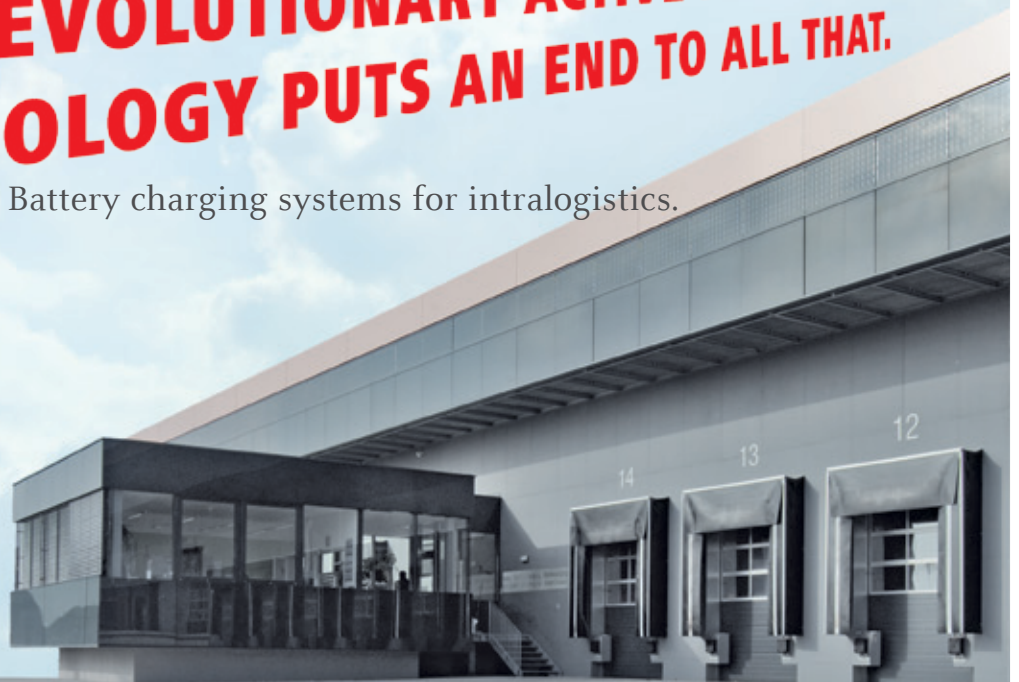


SHIFTING THE LIMITS



**THE LIFECYCLE COSTS GENERATED BY
CONVENTIONAL BATTERY CHARGING
SYSTEMS ARE FAR TOO HIGH.
OUR REVOLUTIONARY ACTIVE INVERTER
TECHNOLOGY PUTS AN END TO ALL THAT.**

/ Battery charging systems for intralogistics.



A woman in a grey business suit is captured mid-jump in a lush green field under a blue sky with scattered white clouds. She has her arms outstretched and a joyful expression. The background shows a line of trees and a dirt path in the distance.

**WE'LL SET THE WORLD IN MOTION
WITH OUR INNOVATIVE BATTERY
CHARGING SYSTEMS. AND WE'LL
STOP AT NOTHING TO DO IT.**

/ Since 1946, we've been developing innovative battery charging systems with plenty of enthusiasm and energy. And in 2005, we even introduced a technical breakthrough. How? By inventing our unique Active Inverter Technology. Today, we're primarily concerned with bringing our vision to life. What we strive for: intelligent energy management systems that ensure mobility stays as economically viable as possible in the twenty-first century. Which is why we'll stop at nothing until we've achieved our goal. International logistics can benefit greatly from this. After all, our battery charging systems offer significant advantages in terms of efficiency, longevity, flexibility and sustainability compared with conventional devices.



WE'VE BEEN BUILDING INNOVATIVE BATTERIES FOR MANY YEARS. NOW WE'VE TAUGHT THE

/ Our revolutionary technologies are constantly astounding the intralogistics sector. Because we hear what the market wants. Because we work closely with battery and forklift truck manufacturers, universities and research institutes. Because we listen to our customers. And because we transform wishes into ideas that are absorbed when we develop new battery charging systems.

USERFRIENDLINESS

/ Preprogrammed characteristics and an intuitive display for ease of use.

SUSTAINABILITY

/ Our battery charging systems save energy, make a valuable contribution to reducing CO₂ emissions and promote the concept of Green Logistics.

RELIABILITY

/ The Fronius brand is synonymous with premium quality; our battery charging systems are tested over and over again to guarantee maximum stability.

LONGEVITY

/ Active Inverter Technology delivers a gentle charging process that increases the service life of your batteries by up to 25 %.

BATTERY CHARGING SYSTEMS FOR THEM TO THINK AS WELL.

/ Anyone wanting to shift the limits has to be able to think outside the box. That's why we've combined the advantages of 50 Hz transformer technology with those of inverter technology. The result: Active Inverter Technology, which we use to teach our innovative battery charging systems to think as well. It offers you numerous advantages:

FLEXIBILITY

/ Our battery charging systems are suitable for every conceivable application or charging process within an intralogistics environment. Whether in production logistics or distribution logistics, single-shift or multi-shift operation.

EFFICIENCY

/ High levels of efficiency reduce energy costs by as much as 30 % and shorten charging time.

FUTURE PROOF

/ All systems are modular in design and can be adapted very easily to changing requirements. USB and RS232 interfaces simplify updating of the software, e. g. with new characteristics.

WHAT WE OFFER: MAXIMUM FLEXIBILITY. SO THAT EVERYONE CAN USE OUR BATTERY CHARGING SYSTEMS TO THEIR BEST ADVANTAGE.

/ Regardless of the sector, the requirement, which type of battery or which forklift truck, whether an on-board application or wall-mounted: our flexible battery charging systems make a valuable contribution no matter where they are used. Choose between a standard charge or the I-PULS and AIR-PULS options. I-PULS employs an electronic form of electrolyte circulation that reduces charging time by about one hour. AIR-PULS is even faster: this technology works on the principle of pneumatic electrolyte circulation and reduces charging time by about two hours. The I-PULS and AIR-PULS charging processes allow you to select smaller device classes when purchasing battery charging systems. Both charging processes support interim charging, which means that expensive replacement batteries are not required for some applications.

PERFECT FOR ALL ELECTRICALLY-POWERED VEHICLES: OUR SOPHISTICATED BATTERY CHARGING SYSTEMS.



/ Class 1:
electric motor, front loaders, counterweights
(e. g. counterbalanced lift trucks)



/ Class 2:
electric motor, narrow wheel track
(e. g. narrow-aisle stackers)



/ Class 3:
manually-controlled electrically-powered vehicles
or manually-controlled / self-propelled vehicles
(e. g. low lift or platform stacking trucks)



/ Class 6:
Vehicles with electric motors (e. g. tractors)



INCREASES THE LIFE OF YOUR TRACTION BATTERIES BY UP TO 25 %: OUR INTELLIGENT ACTIVE INVERTER TECHNOLOGY.

/ Intelligent Active Inverter Technology keeps the charging current and voltage constant, ensures that the battery charges cooler so extending the service life of the battery by up to 25 %. A source of significant added value, as a traction battery can cost several thousand Euros. Active Inverter Technology also eliminates the possibility of uncontrolled overcharging, in other words the low and precisely controlled overcharge minimises the risk of detonating gas forming. At the same time, the battery does not have to be topped up with distilled water so often. These measures reduce maintenance costs by around 50 %.



OUR BATTERY CHARGING SYSTEMS ARE EXTREMELY RELIABLE. WHICH IS WHAT YOU'D EXPECT: AFTER ALL, WE KNOW THE DEMANDS OF AN INDUSTRIAL ENVIRONMENT.

/ Our battery charging systems can be used in every type of industrial application. To ensure this is the case, we subject our prototypes to tests that far exceed the requirements of the legal standards. These then form the basis of our volume products that overcome the most challenging everyday situations. Our battery charging systems are manufactured from start to finish in our ISO-certified production facility at Sattledt in Austria. More than 60 years of experience, a real net output ratio of up to 85 % and the use of selected components guarantee the highest levels of quality and reliability. Our Fronius Final Test System provides that extra level of confidence: every single battery charging system is subjected to the most thorough range of tests before it leaves the factory.



FAULT TOLERANCE

/ Fronius battery charging systems demonstrate the highest levels of fault tolerance. They are also extremely robust and suitable for use in the harshest industrial environments.

24-HOUR HOTLINE

/ Should the worst-case scenario ever occur, just call our Fronius Support team on +43 7242 241-0.

WE'VE SIMPLY THOUGHT OF EVERYTHING. WITH YOUR SAFETY IN MIND.

/ We've put a great deal of thought into making our battery charging systems as easy as possible to use. To provide the highest levels of safety for users, the battery and the charger. Some examples? With pleasure:

CHARGE MONITORING

/ The active charging characteristic monitors the entire charging process. The battery is therefore always charged in accordance with its charge status. Defective battery cells or deep-discharged batteries are detected by the charger.

CHARGING STATUS INDICATION

/ An option that lets the user know when charging is complete – and one that the user can see without any problems from some distance away.

PLUG & CHARGE

/ Simply connect the battery to the charging system, which will then use the predefined characteristic to deal with everything else completely automatically.

INTUITIVE CONTROL PANEL

/ All values and functions are set and displayed on an easy to use and highly legible display. In addition, a detailed charging history can be traced and evaluated to obtain important information about the battery, the application and the charger.

AIR FILTER

/ This protects internal components from dirt and increases the reliability and longevity of the battery charging system.

ACTIVE MAINS VOLTAGE MONITORING

/ Fluctuations in the mains voltage are compensated for immediately by the battery charging system during the charging process. If a power failure occurs, the charging process is stopped and the latest charging status is saved. When power is restored, the charging process resumes from the point it was interrupted. This feature prevents a potentially damaging overcharge that would mean starting again from the beginning.

EXTERNAL START/STOP

/ The external Start/Stop function terminates the charging process in a controlled manner to prevent any damage to the plugs.

REDUCE ENERGY COSTS BY AS MUCH AS 30 % AND PROTECT THE ENVIRONMENT AT THE SAME TIME? NO PROBLEM!

PEAK CURRENT MINIMISATION

/ The constant charging current and low levels of energy consumption mean that peak currents are of no concern. In addition, the optional start of charging function with its programmable switch-on times permits the use of off-peak electricity tariffs. You save money and reduce the load on your company's mains supply at the same time.

STANDBY OPERATION WITHOUT ENERGY CONSUMPTION

/ In the event of a stoppage, the battery charging system shuts down completely to prevent costs being created, for example, by the display lighting or other consumers.

ENERGY EFFICIENCY AND CO₂ EMISSIONS

/ Active Inverter Technology achieves efficiency levels of 96 %. This lowers energy consumption, reduces CO₂ emissions and accelerates the whole charging process.

DRASTIC REDUCTION OF EXCESSIVE LIFE-CYCLE COSTS

/ These factors reduce electricity costs by up to 30 % – an invaluable advantage in these times of steadily increasing energy costs. Other benefits of Active Inverter Technology: lower maintenance costs and longer battery service life. Check out our sample calculations overleaf.

INTEGRATED POWER FACTOR CORRECTION UNIT

/ Active Inverter Technology generates very little reactive current, so you do not have to invest in power factor correction units.

SEE HOW MUCH YOU CAN SAVE. TWO SAMPLE CALCULATIONS.

FRONIUS LIFECYCLE COSTS CALCULATOR I-SPOT

/ Want to know how much you could save? Then take a look at I-SPoT, our lifecycle costs calculator. It considers energy costs, maintenance costs, CO₂ emissions and battery service life and calculates how much Fronius battery charging systems will save you each year compared with conventional chargers. Drop us an e-mail at: battery.chargers@fronius.com

/ Multi-shift operation with changes of battery (5 days per week, 2 battery charges per day)

/ Charging time: 7.5–8.5 hours

/ Cost of electricity: 0.120 €/kwh

/ Distilled water: 0.30 €/litre

/ Engineer: 50 €/hour

/ Price of battery: 2,300 € each (example 1) or 3,000 € each (example 2)

EXAMPLE 1: 48 V 750 Ah BATTERY, I-PULS CHARGING PROCESS:

SAVINGS AFTER	1 ST YEAR	2 ND YEAR	3 RD YEAR	4 TH YEAR	5 TH YEAR
Reduction in CO ₂ emissions	3,500 kg	6,990 kg	10,490 kg	13,990 kg	17,490 kg
Energy costs saving	790 €	1,700 €	2,750 €	3,950 €	5,340 €
Water costs saving (distilled)	170 €	340 €	510 €	680 €	850 €
Maintenance costs saving (engineer)	580 €	1,160 €	1,740 €	2,320 €	2,900 €
Battery costs saving (service life)	130 €	260 €	390 €	520 €	650 €
OVERALL COST SAVING	1,670 €	3,460 €	5,390 €	7,470 €	9,740 €

EXAMPLE 2: 80 V 575 Ah BATTERY, I-PULS CHARGING PROCESS:

SAVINGS AFTER	1 ST YEAR	2 ND YEAR	3 RD YEAR	4 TH YEAR	5 TH YEAR
Reduction in CO ₂ emissions	4,590 kg	9,180 kg	13,770 kg	18,360 kg	22,940 kg
Energy costs saving	1,040 €	2,240 €	3,610 €	35,190 €	7,010 €
Water costs saving (distilled)	210 €	420 €	630 €	840 €	1,050 €
Maintenance costs saving (engineer)	710 €	1,420 €	2,130 €	2,840 €	3,550 €
Battery costs saving (service life)	170 €	340 €	510 €	680 €	850 €
OVERALL COST SAVING	2,130 €	4,420 €	6,880 €	9,550 €	12,640 €

/ In addition to the cost savings shown here, using Fronius battery charging systems with Active Inverter Technology will also result in one or two fewer device classes.

In the above examples, Fronius Selectiva battery charging systems rated at 100 A (example 1) and 70 A (example 2) are used. To achieve a similar level of charge over the same charging time in these examples, conventional chargers rated at 180 A (example 1) and 120 A (example 2) would be required.



WE HAVE THREE DIVISIONS AND ONE PASSION: SHIFTING THE LIMITS.

/ What Günter Fronius started in 1945 in Pettenbach, Austria, has now become a modern day success story. Today, the company has more than 3,000 employees worldwide and owns 737 active patents. Since the very beginning, our goal has not changed: to be the technology and quality leader. We shift the limits of what's possible. While others progress step by step, we innovate in leaps and bounds.

BATTERY CHARGING SYSTEMS

/ We started a technological revolution with Active Inverter Technology and are now one of the leading suppliers in Europe. We are driven by the aim of providing intelligent energy management systems that ensure mobility stays as economically viable as possible in the twenty-first century.

WELDING TECHNOLOGY

/ We develop welding technologies, such as entire systems for arc and resistance spot welding, and have set ourselves the task of making impossible weld joints possible. Our aim is to decode the »arc welding's DNA«. We are the technology leader worldwide and the market leader in Europe.

SOLAR ELECTRONICS

/ The greatest challenge of our time is to make the leap to a regenerative energy supply. Our vision is to use renewable energy to achieve energy independence. With our mains-connected inverters and products for monitoring photovoltaics systems, we are now one of the leading suppliers in solar electronics.



Further information about all Fronius products and our global sales partners and representatives can be found at www.fronius.com

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