

Pulse charging batteries Patents:

The technology for using fast pulses or high frequencies for battery charging is mainly used with the aim to rejuvenate lead-acid batteries, see : https://en.wikipedia.org/wiki/Battery_regenerator or <http://www.megapulse.net/technology>

There are also many products on the market like

<https://www.svb24.com/en/novitec-megapulse-battery-pulser.html>

which guarantee e.g. **electricity saving** by **increasing charge acceptance**, so that batteries recharge faster and with better quality.

Selection of patents

US4829225

Rapid battery charger, discharger and conditioner

An improved method and device for **rapidly charging a battery** by **providing a charge pulse** to the battery, **followed** immediately **by a depolarization pulse** ... By optimizing these time and current characteristics ... **the battery may be charged most rapidly** while **prolonging the life of the battery**

EP0657983 (A2) – 1995-06-14

Pulsed battery charger circuit.

A pulsed battery charger circuit (11) for charging a battery....

US5463305 (A) – 1995-10-31

Fast battery charging system and method

... The system may also convert a regulated charging current to **a pulsed and modulated waveform to provide efficient net charging to the battery...**

WO9611522 (A1) – 1996-04-18

LEAD ACID BATTERY REJUVENATOR AND TRICKLE CHARGER

A combination rejuvenator and trickle charger which is **more efficient** and more flexible in removing the lead sulfate deposits from battery plates to extend the useful service life and reliability of lead acid batteries.

The device is powered by **A switching circuit...** produces ... **a fast rise time current pulse** for application to a battery...

US5525892 (A) – 1996-06-11

Pulsed battery rejuvenator having variable trailing edge shaped pulses

„ The rejuvenator circuit generates a **positive voltage pulse train** (characterized by a fast rise time spike followed by a non-uniform hump-shaped trail-off) that is combined with a DC charging current output by the charger...

US5670863 (A) – 1997-09-23

Lead acid charger with ratioed time-out periods and current pulse mode of operation

A battery charge controller (50) is provided which includes a **PWM switch controller** (36) that is operable to ... **provide** a constant voltage mode, a dual-current mode and **a pulse-current mode**.

US2001019257 (A1) – 20011-09-06

Battery charging controller and conditioning system for lead acid batteries

The current invention ... provides superior maintenance and conditioning of all lead acid batteries ... by means of **generating a high frequency pulse** of sufficient amplitude and repetition rate... removes lead plate sulfate **deposits** ... **maximum available battery power is obtained**. There is also a subsequent **increase in battery life** ...

US2003117111 (A1) – 2003-06-26

Device and method for pulse charging a battery and for driving other devices with a pulse

... A potential charge is allowed to build up in a capacitor bank, **the capacitor bank is then disconnected** from the energy input source and then **pulse charged at high voltage into the battery to receive the charge**. The momentary disconnection of the capacitor from the input energy source allows for a free-floating potential charge in the capacitor....

US6075342 (A) – 2006-06-113

Fast battery charging system and method

.... **The system may also convert** a regulated charging current **to a pulsed and modulated waveform to provide efficient net charging to the battery**...

US2008129250 (A1) – 2008-06-05

Circuits and related methods for charging a battery (Inventor. John Bedini)

...With this circuit (inductive voltage generator), a power source that generates less voltage than the fully charged capacity of a rechargeable battery can be used to recharge the battery.

....**Current is delivered** to the battery **in the form of high energy impulses** which can **improve the proper removal or deposit of material** from/on an electrode of the battery. **Consequently the life of**

the battery being charged by the circuitry employed by the present invention **is significantly extended...**

US2014327388 (A1) – 2014-111-06

Battery conditioning apparatus

The present invention relates to a battery conditioning apparatus for conditioning a battery. The apparatus includes a pulse generator circuit for generating pulses to be applied to the battery. A loading circuit is provided for loading the battery. The apparatus also includes a controller for controlling the pulse generator circuit and loading circuit to concurrently apply the pulses to and load the battery.

US2016344197 (A1) – 2016-111-24

Pulsed Energy Battery Charger

A **battery charging process** for lithium-ion or other types of rechargeable batteries **that utilizes ... a wave train of periodic energy pulses** whose frequency, wave shape, and amplitude are based on battery type and formulation characteristics.... resulting in **faster charging times** and **fewer detrimental effects** on the subject batteries.

CH106849294 (A) – 2017-06-13

High-frequency intelligent rapid charging method of mine lead-acid storage battery

The invention relates to the field of a charger, in particular to a **high-frequency intelligent rapid charging method** of a mine lead-acid storage battery. The charging method involves a **pulse width modulation** (PWM) rectifier...

The charging method has the beneficial effects that ... **the service lifetime of the storage battery is prolonged, the application efficiency of the storage battery is improved**, the mine lead-acid storage battery has a discharge function, **energy waste is prevented, energy saving and environmental friendliness are achieved**, the explosionproof performance and the application safety performance of the whole product are improved, and meanwhile, the mine lead-acid storage battery has high practicability.
