## 12V lead acid battery desulphator

Lead acid batteries often fail prematurely due to over-charging, under-charging, deep discharging and low electrolyte level. All of these can lead to sulphation of the plates which leads to high internal resistance and eventual failure.

Normally, this process is regarded as irreversible but this circuit is claimed to reverse the process by applying high voltage pulses to break down the lead sulphate compounds. The circuit is essentially a high-voltage pulse generator which is powered directly from the battery in question. If the battery is badly sulphated, it will be necessary to connect it to a low power charger as well, say 2A.
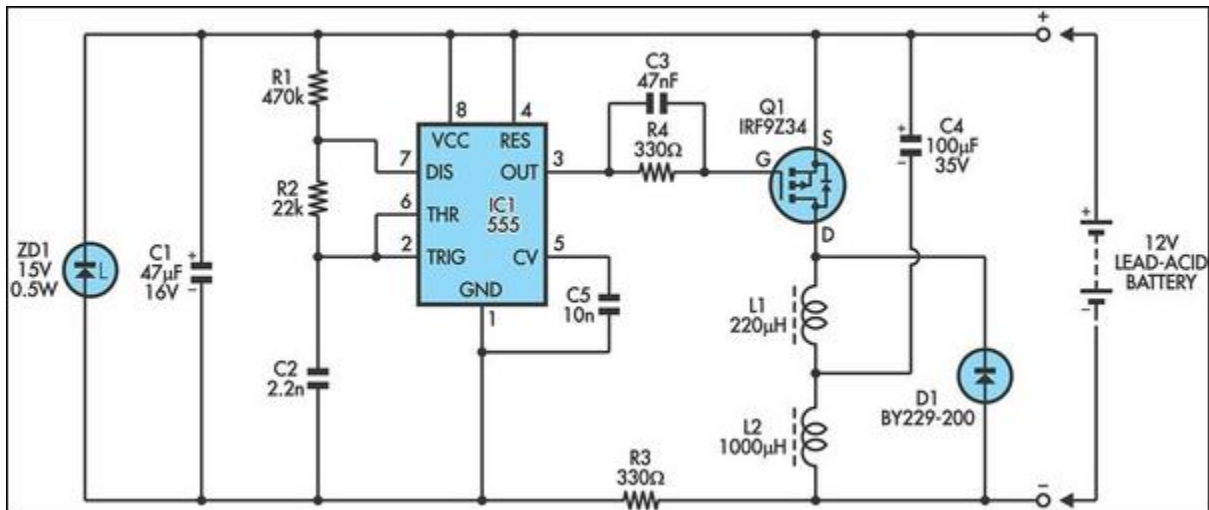
We have strong doubts about whether battery sulphation can be effectively reversed but we are publishing this circuit because the subject is of particular interest. This circuit has been submitted to us from a number of sources so we do not know who is the original designer. More information can be found at http://shaka.com/~kalepa/desulf

The 555 timer is connected as an astable oscillator with its output frequency set by R1, R2 and C2. Its output pulses drive the gate of Mosfet Q1 which turns on to charge inductors L1 and L2. At the end of each pulse, Q1 turns off and the inductors develop a high-voltage high-current pulse which is applied across the battery via fast recovery diode D1 and the 100μF capacitor.

The 555 is protected from the high voltage pulses via its isolated supply, by virtue of the 15V zener diode ZD1, the 47μF capacitor and the 330Ω resistor R3.

Query on the battery desulphator

I'm interested in building the battery desulphator described in the Circuit Notebook pages of the February 2003 issue but I cannot understand why the Mosfet source connection

goes to +12V and the drain goes to ground. It's usually source to earth! Also why use a P type when there are more N types available?

Q1 is a P-channel Mosfet, signified by the arrow from the gate to the source. Therefore, source does go to +12V. Perhaps we should have mentioned that in the short circuit description. You could turn the whole circuit upside down to use an N-channel Mosfet but then you would have to swap R1 and R2 to give correct pulse duty cycle from IC1.

SILICON CHIP