The modifier “Omega”

Recommendations for use

This document contains information relating solely to the recommendations for use of the modifier "Omega" (including the batteries are already in use).

General information about the modifier "Omega" (characteristics, effects, dosage, etc.) can be found in the “Instructions for use”. Read this information and instructions before using the modifier.

Instructions for use in PDF format can be download here:
http://ntb.com.ua/misc/Omega/Modifier_Omega_English.pdf

The main limitations and nuances of the application of the modifier "Omega":

If you use a modifier to recovery/improve the characteristics batteries that used for some time, there are certain nuances.

Acceptable use of modifier to extend the life of the former is already in use batteries (batteries that used for some time). In this case, the basic is not so much battery life, as its condition.

In such cases, the maximum effects is achieved, if the specific gravity of the electrolyte with a fully charged battery is not lower than 1.26 g/cm^3 (at 20-25 °C), the deviation of the specific gravity of cells in the battery is not more ±0.01 g/cm^3. The electrolyte should be clean, with no signs of a significant shedding of active mass.

In the following cases, the use of the modifier not recommended:

1. Significant darkening of the electrolyte at least one cell (dark, close to black color) – there is a natural wear plates due to active use battery or because of sufficiently high starting currents. As a result, there was a significant shedding of active mass.
2. The electrolyte is more or less clear, but the specific gravity of the electrolyte in the battery does not rise above 1.2 g/cm^3 – there was a large plate sulfation.
3. The specific gravity of the electrolyte at least one cell of the battery is significantly different from the specific gravity of the remaining cells (deviation of the density of cells of more than ±0.01 g/cm^3).

Of course, no sense to use the modifier, when the battery has a unrecoverable failure. For example, a short circuit (including partial – through the damaged separators), break cell connectors of the electrodes, a substantial corrosion of the electrodes, etc.

In other cases, the use of the modifier will be effective. However, how effective will be the use of a modifier, it is necessary to look at each individual case.

The main limitations and nuances of use the modifier "Omega":

Assessment of the status of the battery (simplified):

At the end of charging (when there is abundant gassing) to check the color of the electrolyte. The electrolyte should preferably be clean (not cloudy). The specific gravity should not be less than 1.26 g/cm^3 (at 20-25 °C)***** and should be roughly the same in all cells deviation of the density of banks to no more than ±0.01 g/cm^3).

****** *When measuring the specific gravity at temperatures differing from +25 °C by more than ±10 °C, it is necessary to consider a correction for temperature. To convert the measurement results to the temperature +25 °C can use the formula:*

$$\rho 25 = \rho t + 0{,}0007 \times (t - 25),$$

*– where **t** – the temperature (in °C), at which the measured the specific gravity; **ρt** – the specific gravity measured at the temperature **t**.*

If the battery meets the above requirements, the effect of the modifier will be the maximum (recovery capacity up to 30% recovery of the starting current up to 35%).

Also, if the color of the electrolyte (with vigorous gassing) brownish (but not black!), but the density corresponds to the above values, use of the modifier still acceptable. This is no best option, but allows you to extend battery life for another 1-2 years.

In all other cases, there is no guarantee that the use of the modifier will improve battery performance. I.e. – "Will not be worse", and that is how it will be better – depends directly on the quality of manufacture of the battery (the materials, assembly, etc.), state (some destructive processes, and the extent to which it occurred), modes of operation etc. It is necessary to look at each individual case.

Recommended mode battery charge:

To achieve maximum results (complete all processes associated with the use of the modifier "Omega") immediately after applying a modifier, you must perform a full battery charge.

Typically, 12 V battery charging current equal to C/10 to a voltage of 14.4 V. (e.g., charge current for 100 Ah battery will be 10 A), after this is done then charged battery current C/20 (e.g., 5 A charge current for 100 Ah battery). In this case, full battery charge characterized by the stabilization of the voltage at the maximum level (cessation of growth) for the last 2-3 hours of charge.

At what level is stabilized voltage, depends on the current state of the battery, the design features, used technologies, the quality of materials (raw materials) and build quality of the battery. Even for batteries that are do not treated with the modifier "Omega", the final charge voltage can reach 16 V. However, for batteries in which the modifier is applied, the final charge voltage (voltage at which the battery charge stops receiving and passes in a electrolysis mode) increases on average 0.4-0.5 V (for 12 V batteries). I.e., in this case, the voltage can be stabilized at a level in greater then of 16-16.5 V (some battery take charge and up to 17 V).

Accordingly, the recommended scheme of application of the modifier "Omega" (for comparative tests) as follows:

1. Preliminary charge (recharging) the battery before the addition of the modifier

Need to charge (recharging) the battery before use modifier. 12 V battery is charged to a voltage of 14.4 V, charging current equal to C/10 (10% of the battery capacity), continues charging with charge current equal to C/20 (5% of the battery capacity) – up to full charge.

2. Adding modifier "Omega" in the battery cells

After the battery is fully charged and began electrolysis mode (started intensive gassing of all cells), without disconnecting the battery from the charger (the battery should be under charging current), to make the addition of a modifier in each cell of the battery.

Given the chance to control the specific gravity of the electrolyte to determine the state of optimal to add the modifier can rely on density. Add modifier recommended when in the process battery charging specific gravity reached 1.25 g/cm^3 (at an air temperature of about 25 °C).

3. Full charge (recharging) the battery after the addition of the modifier

During the 30-40 minutes (for wet batteries) after the addition of the modifier will be observed gradual voltage drop – by 1-2 V.

Moreover, if the charger does not support the charge constant current (the constancy of the current during charge), within the aforementioned period will be observed parallel increase in the charging current. In this case, it may be necessary to compensate (typically – decreasing) the level of charging current to C/20 (5% of the battery capacity).

After 20-40 minutes after adding the modifier, battery will begin to take an additional charge.

An additional charge of continuing the current C/20 (5% of the battery capacity) until the battery is fully charged. Full battery charge is characterized by the stabilization of the voltage at the maximum level (cessation of growth) for the last 2-3 hours of charge.

If the charger does not support the constant charging current, required periodic monitoring of the charging current and maintain it at the level of C/20 (5% of the battery capacity) by increasing the current. Typically, the charging current correction is necessary when it falls by 25-30% from baseline values (C/20 or 5% of the battery capacity).

Notes:

1. In the charging process must periodically monitor the temperature of the electrolyte or batteries. If the temperature of the electrolyte exceeds 45 °C (battery: 35-40 °C), it is necessary to temporarily stop the charge (additional charge). Continue to charge (additional charge) recommended only after reducing the temperature of the electrolyte to 30-35 °C.

   A consequence of increasing the temperature of the electrolyte (battery) during charging (additional charging) may be a voltage drop on the battery during the charging process (despite the fact that the charging current of sufficient magnitude). In this case, charging the battery also should be suspended – to reduce the temperature of the electrolyte (battery) to the permissible limits.

2. If you are using a modifier in batteries is already in use and significantly lost characteristics, in addition to control the battery charge by the voltage (voltage stabilization), it also recommended making the control of the specific gravity. In such cases, the battery can accept a charge even after the voltage stabilization. If during additional battery charge there is an increase specific gravity of the electrolyte (despite the stabilization voltage) should continue charge the battery to stabilize the specific gravity of the electrolyte at the highest level (in the range recommended by the manufacturer of the battery) during the last 2-3 hours of additional charge.

Forum: http://forum.tehport.com/forum4/

Video: http://www.youtube.com/playlist?list=PLDD7A6A51C6E0E12B

See also:

Automatic Charger-Discharger with the Cycle Service regime (for battery capacity 40-190 Ah):
http://ntb.com.ua/misc/Omega/Pribor_KTC_19A.pdf

Automatic Battery Charger (for battery capacity 1-210 Ah):
http://ntb.com.ua/misc/Omega/Pribor_SH_20-25.pdf