

To : Owners/Technical Managers
Attn :
From : Marinex Management Ltd, Odessa, Ukraine
Ref No:

Dear Madam/Sir:

Please be informed that our company **MARINEX MANAGEMENT LTD** is the **official distributor** of the following products manufacturer:

- The filter is network-free;
- System of three-phase network filters;
- Distribution transformer;
- Transformer dry;
- **Renovator-P;**
- Phase break control system;
- System of PFR (permanently included reserve).

WE KINDLY ASK YOU TO PAY YOUR ATTENTION TO OUR RENOVATORS WHERE OUR FACTORY PRODUCTION IS THE ONLY OFFICIAL MANUFACTURER IN UKRAINE AND BULGARIA (EC).

This is Exclusive information for Owners/Technical Managers of manufacturing companies, factories, mills, plants, firms, Business Centers, Educational Institutions, Medical Hospitals, Cruise Liners, Super Yachts, Restaurants and Hotels, Retail Chains, Solar Electrical Stations, especially for those who operate heavy electric Equipment in sea ports (electrical cranes, elevators, conveyors, etc.) and Pumping stations for pumping crude oil, petroleum products and others types of commodities...

The name "RENOVATOR of the electric network" comes from its main property - renovation of the voltage of a three-phase system under asymmetric modes, up to the breakdown of one of the conductors after the supply transformer. The specified property of the RENOVATOR is based on its low resistance to the zero sequence.

RENOVATORS are designed for use in three-phase four-wire distribution networks with a linear voltage of 380-400 volts with a frequency of 50 Hz or 60 Hz.

Our enterprise is a leading scientific and technical research in the field of power electrical engineering, technical information protection, monitoring of electric networks and the provision of energy audit services offers you a universal tool improve quality and save energy - Phase Stabilizers (RENOVATORS), own development, protected by patents, the application of which will achieve the following results:

1. Guaranteed high-quality power supply.
2. Elimination of phase voltage imbalance.
3. Suppression of higher harmonics that negatively affect the operation of electrical equipment.
4. Elimination of subsidence and power surges in the electrical network.
5. Suppression of intentional and unintentional impulses in the electric network, including lightning and switching ones.
6. Increasing the capacity of power lines.
7. Improving the efficiency of supply transformers.
8. Automatic generation of one of the phases, in case of breakage (during emergency operation of the electrical network).
9. Elimination of the possibility of information leakage on power circuits in a wide frequency range.

The low price of Phase Stabilizers (Renovators) will allow you to recoup their use in a short time due to real savings electricity by restoring losses in the transformer and circuits can be returned to the consumer due to the design **features of the RENOVATOR.**

The use of our devices will ensure the quality of electricity in accordance with the **European standard EN 50160-94** and Interstate standard GOST 13109-97. However, indirect advantages are not taken into account, namely: protection against negative phenomena in the power network (overheating of power cables, **which can lead to a short circuit**), increase the service life of transformers, electric motors, industrial and household appliances, computers, office equipment, production lines, various standard electrical equipment, etc., as well as significant increase the reliability of their work.

Cooperating with us, you will get rid of problems with power supply, recoup costs in the shortest possible time.

Phase Stabilizers (Renovator)

The increase in labor productivity is currently associated with the widespread use of modern energy-intensive technologies. Normal loads are replaced by non-linear and asymmetric, consuming energy in batches; the current curve in the networks thus acquires a pulsed form.

This leads to the following: additional energy losses, the value of which becomes proportional to the power of the energy receivers (computers, guaranteed power sources, air conditioners, compact economic lamps, thyristor drives, motors, etc.); the appearance of higher harmonics of voltages and currents, which not only reduce the efficiency of electrical equipment, but lead to its failure; the appearance of unsafe voltages (up to 50V and higher) in the zero phase wire of the distribution network, which is a violation of the Safety Instructions and leads to energy losses; reducing the quality of electric energy to a level that is below acceptable international and national standards.

To eliminate the negative impact of non-linear, asymmetric receivers and a general improvement in the parameters of electric energy, we suggest using the developed Phase Stabilizers. These devices are also a means of technical protection of information, exclude the possibility of unauthorized access and information leakage in the frequency range 60Hz -10kHz.

Technical details

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|--|---|
| 1. Number of phases: | 4 (3-linear, 1-zero). |
| 2. Rated phase / line voltage, V: | 220/380 |
| 3. Frequency (Hz): | From 50 to 400. |
| 4. Rated power(kVA) : | 4; 25; 40; 63; 100; 160. |
| 5. The energy savings, with non-linear loads arbitrarily distributed between the linear phases of the network. | Significant eliminating Reactive Energy and improving consumption of Active Energy |
| 6. Multiplicity of suppression of higher harmonics voltages, multiple of three: | From 4 to 25. |
| 7. Multiplicity of suppression of currents of higher harmonics, multiples of three: | From 4 to 25. |
| 8. Multiplicity of voltage pulse suppression: | From 4 to 25. |
| 9. The increase in network bandwidth,: | Not less than 6. |
| 10. Insertion attenuation of the signal, in the frequency range 60 Hz-10 kHz, | Not less than 30 db |

Phase Stabilizers (Renovators) are protected by three invention patents.

Purpose of phase stabilizers type **СФТЦ3** TU U 30267382-004-2001.



1. Equalizes the magnitude of the phase voltages in the phases of the network.

For example, if the phase voltages in a three-phase low-voltage network are 170, 207, 250 V, then after connecting the Renovator to the network, these voltages will have values of 202, 207, 212 V. That is, Renovator effectively reduce the asymmetry of phase voltages by no less than 10 or more time. If powerful switching devices are connected to the electric network, the Renovator completely neutralizes their harmful effect on the consumer's industrial and domestic equipment.

2. Suppresses high voltage pulses.

In an industrial network often (up to 1000 times a year) voltage pulses occur with a duration of 1-100 μ s, amplitude from 1000 to 12000 volts. These pulses are of commutation and lightning origin (artificial ones are also possible - the purpose of which is to disable the object). Such pulses are not measured or monitored on the network. Similar impulses through the network pass to consumers and lead to the failure of industrial and household electronic equipment.

Experimental studies have shown that after the Renovator is connected, the voltages of switching and lightning pulses decrease by 10 or more times.

3. Suppresses higher harmonics that are multiples of three (3, 9, and etc.)

In networks, especially at peak times, the level of higher harmonics of voltages and currents increases, which worsens the work of industrial and household appliances, communications (noise), etc. When connecting the Renovator, the higher harmonics are suppressed no less than 10 or more times, depending on the version of the network and the supply transformer.

4. A device that saves energy.

It is known that when connecting asymmetric (single-phase motors, welding machines, industrial and household appliances, production lines) and non-linear (computers, air conditioners, televisions) loads in the electric network and supply transformer (10kV / 380V), losses of active energy increase, especially in countryside. The consequence of this is additional heating wires and a transformer whose insulation is aging 1.5-2 times faster.

Connecting the Renovator to the network practically eliminates currents and higher harmonics in the phase wires, including zero, which reduces the loss of electricity in the low-voltage network and the supply transformer (the heating of the magnetic circuit and the tank of the transformer decreases), significant energy savings are achieved, which depends on the nature of the load.

5. The conversion of two phases into three.

Blown one of the fuses leads to the disappearance of voltage in one of the phases of the network or in the neutral wire.

Connecting the Renovator provides automatic voltage recovery in the phase where the fuse is blown, as well as generating zero. In this case, the consumer of electricity and network staff may not even notice that the phase has disappeared in the network or zero has disappeared.

6. Reduces transient voltages and voltage dips.

When industrial and household appliances are turned on, the brightness of incandescent lamps can change, a crack is heard when the radio equipment is working, protection systems are activated, etc. After the Renovator is attached, such phenomena disappear.

7. Means of technical protection of information.

Eliminates the possibility of unauthorized access and removal of information on power circuits in the range of 60 Hz - 10 kHz.

N.B. Please see *Video about Renovator on YouTube* <https://youtu.be/F-1o0Ewl2pM>

Thus, the Renovator (Phase Stabilizer) improves the quality, safety and reliability of power supply, and significantly saves electricity.

Made in EC.

If your Leadership/Management is interested to know more details about our equipments, then please keep in your mind that we have a special demonstration site in Sofia, Bulgaria with a presentation renovator's work of all its useful functions. And we are ready to organize a meeting of your experts in Sofia and demonstrate for them a fully working Renovator with all the necessary functions.

Please do not hesitate to ask us for **additional information** about all our offers.

Cooperating with us, you will save from problems with the Electrical power supply of your Clients / Buyers.

Sincerely yours,

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