

ALTERNATIVE ENERGY SOURCES: ELECTRIC CURRENT FROM LIVING PLANTS

Polina Chirva, Iryna Pleshkova and Marina Shamray

*State Educational Institution "Dniprovsky Transport and Economics College", Dnipro, Ukraine
anyram@ukr.net*

Today we would venture to say that the global changes of the twenty-first century evoke the need for alternative, environmentally friendly energy sources. From ancient times people used the energy of the sun, water and wind. At present, supporters of the traditional energy, which became a symbol of mind and science, are against the return to the past. But the world has come to another point of view, where the less harmful to the environment production comes to the fore. Therefore, it is worth talking not about returning to the past, but about rethinking the present and innovative look to the future.

Ukraine is rich in renewable sources of energy, which are available throughout the whole territory of the country. The main components of "green" energy include solar, geothermal and wind energy, bioenergetics. Alternative energy brings energy with less negative consequences for the environment and human health than conventional energy. It does not increase the average temperature of the atmosphere, leaving the area of glaciers without alteration and does not lead to global climate change on the planet. It is practically inexhaustible, and that's why it will provide energy for more than one generation of descendants.

We have developed an active mini-model of an alternative energy source that uses the energy of photosynthesis to obtain an electric current from the plant vital activity as the natural biological process in which the respiration of plants, roots and the decay of organic residues in the earth occur. Carbon dioxide is the gas which is both emitted and connected with water during the mentioned process, and only then it forms a carbonate acid that in its turn dissolves the compounds of calcium and magnesium. The carbonaceous acid is subjected to reversible hydrolysis, creating at the same time the acid medium. Also, the process is contributed greatly by the introduction of mineral fertilizers (nitrogen, for example, sulfuric acid ammonium), which is also useful for the growth and development of plants, and for the acidity of the soil.

This peculiar battery consists of eight plastic containers in which specially designed electrodes are embedded, which are connected in series with wires. The electrodes are separated by a ground, and from the top the plants are being planted. Soil is a unity of three phases: solid, liquid and gaseous. Between tiny particles of minerals there are drops of water and air bubbles. Moreover, the elementary unit of the ground – a micelle or clay-humus complex – is a compound system through which the potential difference arises. On the outer shell of such a system a negative charge is formed, on the internal one a positive charge is made up. The negatively charged micelle shell attracts positively charged ions that are in the medium. So that electrical and electrochemical processes are constantly occurring in the soil.

Thus, in plastic containers mosses have been planted that grow well in the acidic medium. Each container has a volume of 0.4 cubic decimeters, from which 0.5 volts were received, and from 8 containers with a total volume of up to 3 cubic decimeters – about 4 volts, enough to ignite LED.

This way the electricity is produced without any harm to the plant and this process is continuous. In conclusion, the method is environmentally safe, and it is possible to use large areas of fields for electricity production, which can be used for lighting, power supply of various devices, charging of batteries.

Key words: Soil, Plants, Electric current