

NEWSLETTER

NOVEMBER 2022



LIFEWATEROIL

The **LIFE20 ENV/BG/001042 LIFE WATEROIL** Project is being implemented by LUKOIL Neftohim Burgas JSC, Burgas Municipality, Prof. d-r Asen Zlatarov University and Eurovix SPA. The Project is co-financed by the European Union under the LIFE program as an initiative improving the quality of the environment.

As of today, a number of research are ongoing as well as the preparation of specifications for the engineering design for the new aeration system at the Refinery's Central wastewater treatment facility. The new aeration system will use modern technologies showing much better energy efficiency. Furthermore, it will provide higher levels of oxygen in the wastewaters throughout the bio-basins. This will save about 7000 MWhs per year, and it will improve the wastewater treatment process as well



LUKOIL Neftohim Burgas JSC specialists and the Biodiversity Expert Veselin Valchanov took the first samples of the Oxidation ponds' water within the scope of works planned under the LIFE Wateroil Environmental monitoring program. The monitoring involves measuring and observation of the environmental indices of organisms, which are the basis of the food chains of Mandra lake eco-system: zoo and phytoplankton, macrozoobentos and fishes. Sampling will be done in line with the international practice and the results will be used to evaluate the

impact of the Project's implementation on the condition of the ponds' ecosystem.



The Italian company Eurovix SPA, which is one of the partners in this Project managed to design and realize in a lab-scale size the formulation of nine different enzymatic and microbial bioenhancers tailored for the specific application in LUKOIL



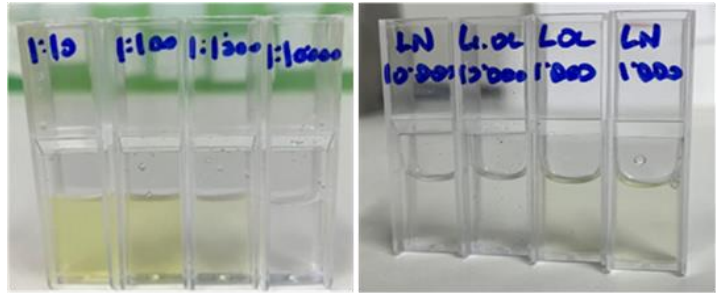
Neftohim Burgas site. Four formulations in powder and five in liquid form were constituted, their qualitative parameters as their stability and effectivity were tested comparing the obtained



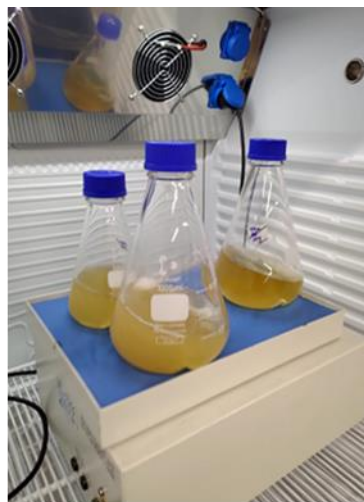
results with internal Eurovix specifications.

All formulations were found to be compatible with Eurovix technical specifications, making them suitable for field application with success.

In the meantime, Eurovix research laboratory is developing multi-enzymatic assay to detect enzymatic activities in powder and aqueous products formulated for LIFE project. This novel developed method will be employed to determine the best liquid and powder formulations based on enzymatic activity, stability and overall efficiency of the bio-enhancer. The most effective formulations (one in liquid and one in powder form) will be employed in the refinery plant. Powder bioactivators will be used in the degradation of wastewater pollutants and employed in closed pipelines, whereas the liquid bioactivator will be sprayed in the air of the WWTP (Wastewater treatment plant) at LUKOIL Neftohim Burgas. Its function is to absorb the molecules causing unpleasant odour, thus preventing their spread in the air.



Moreover, Eurovix selected from its microbial collection a microbial species capable of growing in water solutions containing high concentration of hydrocarbon pollutants derived from the petroleum industry. The selected microorganism, thanks to its metabolic capabilities, is able to efficiently degrade hydrocarbon compounds in an efficient way without the addition of nutritional supplements. The optimal conditions for a sustainable growth of the selected strain at a lab- scale production have been developed and the obtained lyophilized strain has been added to experimental bioenhancer formulations.



Production at lab-scale of the selected microbial strain able to degrade hydrocarbon pollutants from wastewaters

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