E574

Development of modular water treatment equipment based on MBR technology for the treatment of meat processing industry wastewater

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Due to its high decomposition efficiency and its compact size, the MBR Membrane Bioreactor wastewater treatment technology plays growing role in the treatment of wastewaters highly contaminated with organic material. The membrane bioreactor is a combination of a bioreactor and a membrane filtering technology, and which can operate continuously. The goal of our project is to create a new MBR technology with high reliability and a wastewater treatment equipment, based on the aforementioned technology that can be built in an ISO container, with minimal need for space and that has particularly high efficiency of decomposition. The innovation in this technology is that it will operate using extremely low transmembrane pressure (flux being lower than 35 L/m2xh) to allow for the long-term operation of it, with low maintenance need and without fouling. Usage of low pressure and large specific membrane surface further enables the production of an energy-efficient device.
According to the preliminary studies, this new MBR based technology developed for meat industry wastewater treatment will have an energy demand lower than 0.55 kWh/m3. „The project was sponsored by NKFIH under the “2019-1.1.1-PIACI-KFI-2019-00310 - Húsipari szennyvizek tisztítására, MBR technológia alapú, moduláris szennyvíztisztító berendezés kifejlesztése” project number.

E575

Effect of weight loss on the electrical impedance parameters of lettuce and ice lettuce stored at room temperature

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We bought the lettuce and iceberg lettuce at the local market. The leaves were stored at room temperature. The weight loss of the leaves was measured with a scale. The electrical impedance spectra were determined with HP4284A and 4285A precision LCR meters in the frequency range of 30 Hz to 30 MHz. At a measuring voltage of 1 V, the magnitude and phase angle of the electrical impedance were measured. The measured spectra were corrected with the stray inductance and capacitance values. A homemade needle electrode and ECG electrodes were used for the measurement. The initial moisture content of the leaves was determined from samples dried to constant weight in an oven at 110°C. Both the impedance measurement and the weight measurement were performed at room temperature for each leaf for 10 minutes over 4-5 hours until the leaf completely withered. The measured impedance spectra were approximated with three distributed elements connected in series. We determined the resistance and capacity of the elements of the model circuit, as well as the relaxation time. The change in the obtained parameters followed well the weight loss, i.e. the change in the water content of the leaf.