Applications of Computer Modeling for Elaboration and Adaptation of the Equipment for Waste Water Treatment

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In the Kharkiv oblast and many others places of the Ukraine the ecological situation is strongly impacted by industry, agriculture, transport etc. In spite of certain stabilization in the ecological situation in the region caused by decline in production and also by implementation of measures aimed at the environmental situation improvement, the level of pollution remains unacceptably high. In particular, filtration fields of the Kharkiv municipal sewage treatment works occupied about 130 hectares of lands, daily volume of sediments after waste water treatment is above
8 000 cub. m. In case of retaining of the existing techniques potentially bogging areas will extended and negative impact on the environment will grow.

Putting into operation of the special equipment for dehydration of the wastewater sediments will allow reducing the filtration fields and wetlands areas, to increase ecological safety, to prevent bogging and pollution of territories around the treatment works facilities.

One of the important tasks of the industrial and municipal wastewater treatment is a choice of the specific equipment for dehydration of thickened sediments. These kinds of suspension refer to difficult-to-filtrate substances. Our Scientific & Industrial Company “East Ukraine” developed and manufactured the special types of the chamber filter-presses with vertical plates, adopted to special characteristics of the different kinds of wastewater and sediments.

Computer modelling during the elaboration and adaptation of the equipment for wastewater treatment makes a possible to find the environmentally friendly technology solution.

We are developing now a geometrical computer model of filtration process into closed filtration chamber, including into consideration the described above problems. We plan to elaborate an automatic device for remote control of the conditions of filter press operation. It will allow to significantly increasing the efficiency of chamber filter presses applications for dehydration of industrial and municipal sediments on sewage works.

Computer modelling also will assist to Ukrainian communal and industrial enterprises to meet the requirements of international environmental standards etc.