Abstract:

The problem of hydraulic modelling of liquid near-critical flows has its peculiarities. For instances of flows with increased turbulence we have analysed the contribution of large, medium and small vortexes into Karman number for the elongated component of pulsating speed in similar points of natural and modelled flows. It is shown that characteristics of flow turbulence with parameters modelled by Reynolds number are similar completely and in the case of modelling by Froude number dimensionless characteristics of natural flow are larger than characteristics of modelled flow, i.e. there is observed a scale effect. Research carried out allowed determining that for an instance of modelling near-critical flows with wavelike surface the minimum flow depth is to exceed the value of 0,56 cm.

Key words: near-critical flows, modelling, turbulence, Karman, Reynolds, Froude numbers.