SOME RESEARCH DEFINED IN HYDRAULICS BY MODELS

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In the article the basic models used in theoretical and experimental research in hydraulics. Based on the analysis adopted by use in hydraulics models, namely the model of an ideal fluid model fluid as a continuum, shows practical study concepts such as model and fluid forces acting on it. Violation of model fluids leads to new concepts, phenomena such as cavitation, the disclosure of this phenomenon and measures for possible consequences.

Key words: model liquids, theoretical and experimental methods, ideal liquid, solid medium, the method of similarity

At present almost all fields of technology are different hydraulic devices based on the use of hydraulic laws. The main areas of application of hydraulics - Hydraulic Engineering, Irrigation and Water Management, hydropower, water supply and sewerage, water transport, machine building, aviation, etc. In the study of hydraulic phenomena in hydraulics apply theoretical and experimental methods.

In theoretical mechanics equations method used for mathematical description of almost all processes in a moving fluid. Given the complexity of the structure of liquids theoretical studies conducted to model fluid that facilitates the use of equations of mechanics. For example, using the model residual fluid that unlike existing in nature devoid of real fluid properties viscosity. This method led to the creation of theoretical fluid mechanics, which has a strictly mathematical nature. However, the use of mathematical models tsiye not always possible to solve practical problems. This is due, on the one hand, the complexity of the mathematical relationships used, on the other hand - with the need to take account of the impact of a large number of structural factors.

Experimental studies in hydraulics are essential. Leonardo da Vinci (1452 - 1519 years) who wrote the work "of the movement and inspection of water", which was published after more than 400 years after his death, has said: "Whenever

you're dealing with water first turn Thou unto experience, and then talk. " The study of hydraulic phenomena in models that are based on similarity theory using certain modeling techniques, can retrieve data about the parameters, which will be characterized by a phenomenon in the real world. The optimum combination of theoretical and experimental studies provides a result that accurately describes the phenomenon.

Thus we see that the only reasonable model is the key to practical and theoretical study of hydraulic phenomena.

The purpose of research. Open to model some definitions in hydraulics.

Materials and methods of research. Model continuity environment, the model of an ideal fluid and some provisions in hydraulics, namely the forces acting in the fluid cavitation.

Results. Liquid. Model fluid continuity. The forces acting in the fluid. Dissolution of gases - cavitation.

In the hydraulics fluid deformed system is considered as material points (particles) that continuously fill the space in which they move.

Continuum is a model that is successfully used in the study of patterns of rest and fluid motion.

Because it is a liquid yield not accept concentrated forces because there are only divided by volume or by surface forces. Therefore, the forces acting on the fluid divided to mass (volume) and superficial.

Let the flat surface area ΔS a force ΔR (Fig. 1.1). Silas ΔR can be decomposed into normal and tangential T P components.

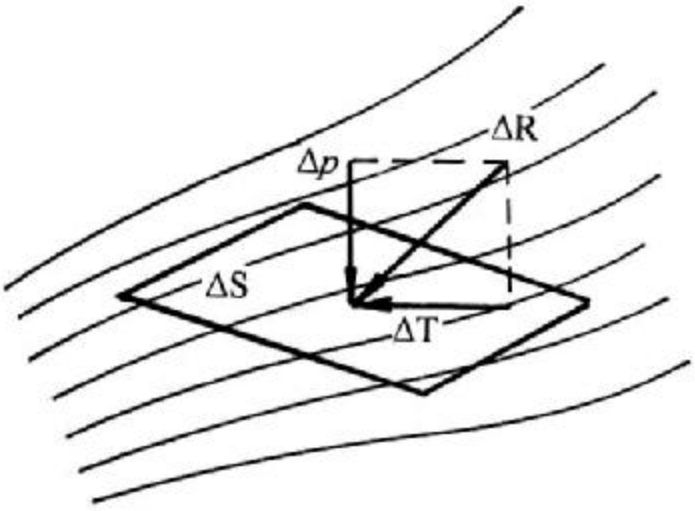

Fig. 1.1. Scheme of surface forces

Conclusion

Based on the analysis adopted by use in hydraulics models, namely the model of an ideal fluid model fluid as a continuum, shows practical study concepts such as model and fluid forces acting on it. Violation of model fluids leads to new concepts, phenomena such as cavitation, the disclosure of this phenomenon and measures for possible consequences.