# Investigations of hydrodynamically active additions in pumps and vane hydraulic machines

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The simplicity of the construction is the advantage of centrifugal pumps. Increased hydraulic and disc losses are related to the disadvantages in low specific (ns [U+F0A3] 200). For example, in low speed pumps shown losses can be totally 35-40 % of the unit power. Besides it in the condition of stable geometrical sizes it is impossible to increase pump stage head.

In vane hydraulic machines loss of energy can be reduced by the help of hydrodynamic active additions. Power balance can be calculated by the known equation. Power required for a pump, pump power efficiency, full efficiency, angular velocity of shaft rotation, torque, capacity delivery of the pump, total head of the pump are included here. Similarity equation is used for processing experimental data, the main similarity criteria of vane hydraulic machines is specific speed (ns) and maximum efficiency for a pump depends on pump construction and liquid movement regime. Capacity delivery of the pump and total head reduce during the work of the pump on viscous Newton liquid and increase on viscous non-Newton liquid (Toms efficiency).

Equation for determining of specific speed of the pump on Newton and non-Newton viscosities (polyacrylamid, polyisobytilen, hudron and etc additions) are offered in the work.

CONCLUSION

1. Change of the work characteristics takes place in the work of vane hydraulic machines on viscous Newton and non-Newton liquids.

2. In determination of specific speed it is necessary to consider: a) delivery and head efficiency in the work of viscous Newton liquids; b) function of hydrodynamically active additions in the work of non-Newton liquids.