

EXCITATION MECHANISM OF THE CONVENTIONAL ROTATING CAVITATION IN THE PUMP WITH THE THREE BLADE INDUCER

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Key words: rotating cavitation, inducer

In the article there are introduced results of numerical computations of the net positive suction head of the pump with the inducer shown in the Figure 1. Computations were carried out for two configurations:

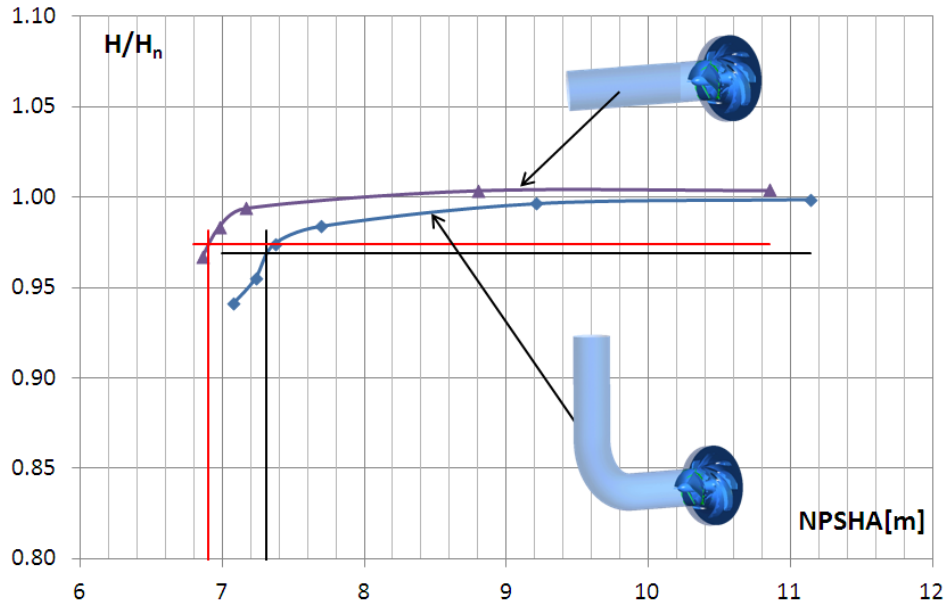
- axially symmetric inflow,
- asymmetric inflow induced by the presence of the elbow in the suction piping immediately upstream the pump inlet.

It was pointed out that the critical NPSH for the pump is higher than in the case of axially symmetrical inflow (Fig. 2.).

Asymmetrical inflow at the inducer of the pump causes a formation of so-called rotating cavitation, described in [3] manifesting itself by pressure pulsations and vibrations with the characteristic pump vibration spectrum measured in the real system and show in the Figure 3. This spectrum is characterized by harmonic frequencies $1.6f_0$, $2 \times 1.6f_0$ and $3 \times 1.6f_0$.



Fig. 1. View of the three blade inducer of the studied pump



Rys. 2. Net positive suction head of the studied pump with the inducer
a – axially symmetrical inflow, b – asymmetrical inflow

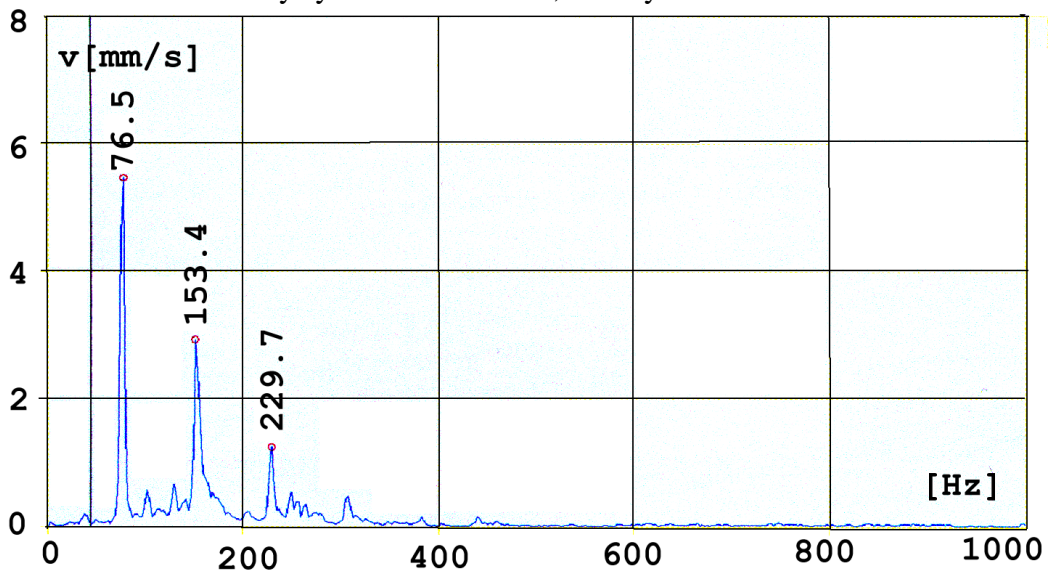


Fig. 3. Vibration spectrum measurement at the pump casing

References

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