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XIV ВСЕУКРАЇНСЬКОЇ НАУКОВО-ПРАКТИЧНОЇ КОНФЕРЕНЦІЇ СТУДЕНТІВ, АСПІРАНТІВ ТА ВИКЛАДАЧІВ ЛІНГВІСТИЧНОГО НАВЧАЛЬНО-МЕТОДИЧНОГО ЦЕНТРУ КАФЕДРИ ІНОЗЕМНИХ МОВ

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SECTION 1 INFORMATION AND ENGINEERING TECHNOLOGIES

REDUCTION OF HYDRAULIC LOSSES IN A PISTON PUMP

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The hydraulic losses are the decrease in energy of the fluid due to vortex formation, friction between the fluid and the pipe, changing the flow of fluid. The decrease in energy of the fluid, in turn, leads to the following consequences: decrease efficiency, increase energy consumption and decrease cavitation stock pump.

The main danger in a piston pump is to reduce cavitation stock. This leads to boiling of water by pressure reduction and rapid destruction the flow part of the pump. One method of improving the pump was the reduction of hydraulic losses by improving the flow part. For improving the flowing part instead of a pocket that is standard form it was suggested that these shapes (fig. 1): area, sphere, trapezoid and cone. The calculations were carried out with the help of software product ANSYS SFX, where it has been identified the hydraulic losses and illustrated the flow of liquid and vortex

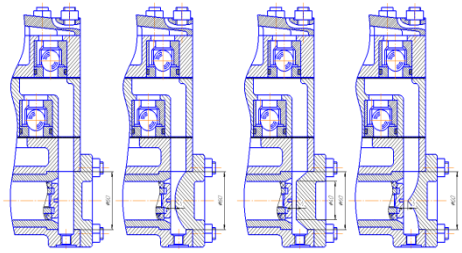

Figure 1 - kinds of caps formation.

After analyzing the data determined that with a temperature of 200C when injecting the smallest loss figure has a cone shape that has the hydraulic losses 0,414 m. And during the suction that has loss 0,292 m. At a temperature of 700C during injection it is best proved by the figure of a trapezoid with losses 0,459 m. And during the suction with losses had 0.301 m. But if we consider the pressure losses during suction and discharge in

the pump, when pumping liquids 20^0C using cone hydraulic losses would decrease by 3% in comparison with the standard pocket. If pumping hot liquid you need to use a trapeze, despite her loss, which in sum will give a reduction of hydraulic losses by 1%. compared to the pocket.

PLANE CODING DEVICE

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While designing a fault protection device, one of the most important tasks is to ensure the high reliability of the transmitted data with the highest possible speed at the lowest possible cost. In order to accomplish this task, it is necessary to use codes capable of detecting and correcting an error. To achieve noise immunity, a combinatorial plane code is often used.

Analysis revealed a number of advantages when using a plane code, one of which is the possibility of detecting and correcting an error at any point of the plane of the combinatorial coordinates system. In the predicted code, the number of control characters *k* is equal to the number of coordinates, and the total number of information symbols *m* is the number of combinations *k* to 2:

$$m = C_k^2 = \frac{1}{2} \cdot k(k-1) \qquad (1)$$

where *m* is the number of information symbols, *k* is the number of control characters.

There are two modes of operation in the designed device, and depending on the number of obstacles encountered in the channel, one of them is used: *k* = 7 (mode I) and *k* = 4 (mode II). Using (1) we calculate that the maximum number of information symbols *m* = 21 (mode I) and *m* = 6 (mode II), respectively.

For heavily noisy channel mode I is used. It is characterized by a higher level of noise immunity than in mode II. If the channel is relatively noiseless, the mode II is used, which is characterized by a higher data rate.