

*V. Dyachenko, student*  
*N. Shalova, Senior lecturer, language advisor*  
*National Technical University of Ukraine*  
*“Igor Sikorsky Kyiv Polytechnic Institute”*

## **HYDRAULIC PUMP MODULES**

Hydraulic modules with adjustable feed. This type of pumping stations is equipped with hydraulic pumps and Uken distributors. They are intended for individual and group feeding of hydraulic actuators of presses and forging complexes, rolling mills, arc steelmaking and ore-thermal furnaces, casting machines, hydraulic manipulators and other industrial equipment.

The design of the pump module includes a pump unit, a hydraulic tank and a connection block. The pump module consists of one to four (depending on the customer's requirements for the maximum flow rate of the working fluid) of axial-piston pumps driven by electric motors. Each pump has a built-in regulator which provides almost constant pressure when the pump capacity varies within the specified working volume.

The hydraulic tank is autonomous and is designed to power all installed pumps at the same time. The tank is equipped with a filtration system for working fluid with a device for controlling the level of contamination of the filter element and, if necessary, it is equipped with a cooling system controlling the temperature regime of the hydraulic system operation according to the liquid temperature indicator built into the liquid level indicator in the tank.

The connection block is designed for supplying hydraulic energy from pumps to hydraulic actuators. The connection block is a collector, one per pair of axial-piston pumps. Each collector is equipped with a safety valve that protects the water lines from exceeding the pressure, and two non-return valves to which the pressure lines from the hydraulic pumps are connected. In sections of the collector, channels are made that integrate the flows from the hydraulic pumps, with their output through the system of holes on the lateral flat surface, on which the adapter plate is mounted with further installation of the hydraulic distributors of the hydraulic actuators. A pressure gauge with a switch is installed on one of the manifolds to control the pressure in the drain line (neutral position) or in the pressure lines of each of the collectors (extreme position of the switch).

The block principle of the pump module design creates the possibility of distributing the working fluid both relay and proportional type in any combination, up to 4 distributors per pair of pumps. This provides the possibility of redundancy, as well as the promptness of maintenance and repair or replacement of failed components of the system.

The design of the pump module is basic and can be further developed and supplemented with the necessary components, taking into account the technical requirements of the particular customer.

Pumping hydroelectric power station with electric drive NEI-12-20I100T1 is designed for solving problems of lifting, leveling, fixing and lowering of large large-tonnage objects according to a given algorithm.

It is designed to provide hydraulic energy for lifting systems of building structures, heavy equipment, ships. The executive mechanisms of lifting systems, depending on the

purpose, can be combined in pairs and fed from an individual pumping hydroelectric station NEE12-20I100T1.

The pumping stations and the lifting system are generally controlled by a programmable controller with a liquid crystal tactile panel. The use of a two-axis inclinometer automatically adjusts and maintains the horizon of the object to be lifted, even in the event of uneven subsidence under the actuators of the hoisting and deformation system of the lifting object itself.

### **REFERENCES**

1. Burennikov A. Hydraulics, hydraulic and pneumatic drives / A. Burennikov. – Ball: NTB, 2013. –273 p.