

## **Theme: «HYDRAULIC DRIVE ELEMENTS OF MECHATRONIC SYSTEMS»**

### **General concept. The principle of operation of the hydraulic drive**

*Hydraulic drive* is a set of devices, which include one or more hydraulic motors designed to drive mechanisms and machines through the working fluid under pressure, a source of mechanical energy, hydraulic transmission, regulating, guiding and additional hydraulic equipment. Thus, the hydrostatic pressure is the basis of the hydraulic drive, and the movement of the working bodies (hydraulic motors) – the result of moving the volume of liquid under pressure in a confined space.

*Hydraulic transmission* is a part of the hydraulic drive designed to transmit motion from the drive motor to the machines and mechanisms. If the hydraulic transmission consists of devices, structurally designed in one body, it is called the *hydraulic transmission of undivided execution*.

Hydraulic drives are classified by the source of supply of working fluid, the nature of the movement of the output link, the possibility of regulating the input or output links and the circulation of the working environment.

According to the source of supply of working fluid hydraulic drives are divided into pump, pump-free, battery and trunk.

*Pump hydraulic drive* – hydraulic drive, in which the working fluid is supplied to the hydraulic motor pump, which is part of this drive.

*Non-pump hydraulic drive* – hydraulic drive, working on the principle of communicating vessels and actuated mechanically. In controlled machines, this type of drive is not widely used.

*Battery hydraulic drive* – hydraulic drive, in which the working fluid is supplied to the hydraulic motor from a hydraulic accumulator, pre-charged from an external source, not part of the drive.

*Main hydraulic drive* – hydraulic drive, in which the working fluid is supplied to the hydraulic motor from the hydraulic line, which is not part of the drive.

In the controlled machines of mechatronic systems, accumulator and main hydraulic drives are not used, only hydraulic drives are used, which include hydraulic accumulators.