

### Designing a Training Stand of Multiaxis Control through PLC

Industrial automation using industrial controllers has recently developed in Ukraine. Programmable logic controller (PLC) is more often used in any industrial automation system as the core. Sensors and executive bodies are connected to it from the side of the automation object. At the same time, requirements for the staff that control the system have significantly risen. That's why problems of training highly qualified staff complicate the development of process automation. One of the ways to resolve such issues can be the development of training stands for the elementary training. Stands are equally important both for institutions interested in training with experience in applying theoretical knowledge and for various businesses that are interested in training highly qualified personnel to operate this equipment.

In this paper the laboratory stand is designed for the practical skills of a multi control via PLC. Functional diagram is shown in fig. 1.

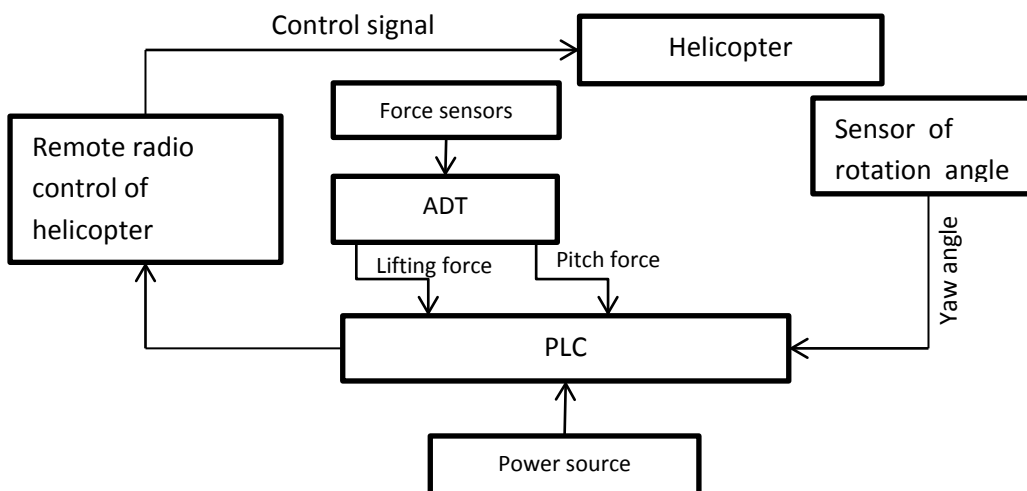


Figure 1. Functional diagram of stand.

A stand was designed on the basis of radio-controlled helicopter coaxial scheme that allows to control the object in 3 degrees of freedom and obtain numerical data: lifting force, the force that causes change the angle between the longitudinal axis of flying machine and the horizontal plane (pitch angle), the angle of rotation with respect to the vertical axis of the model (yaw angle). Working with the stand consists in the development of control algorithm model in three coordinates depending on its of dynamic parameters. Thus, the stand allows you to get practical skills in the use of PLC in terms of simultaneous changes in several parameters of the control object.