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ELECTRIC DRIVES AS THE BASIS OF ROBOTICS

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It is well-known that robotics field is aimed at creating intelligent machines which will be able to help people in different ways, to enhance the safety and productivity of human work and, in general to improve the quality of people's lives. And, of course, automated electric drives are a key element in robotics. They provide movement and control of robots by converting electrical energy into mechanical energy. This allows robots to perform various tasks such as moving, lifting and lowering loads, turning, etc. [1].

The electric drive consists of the following main components:

Electromechanical and mechanical converters: They convert electrical energy into mechanical energy, ensuring the movement of the robot's executive organs.

Control and information devices: They control and regulate the operation of the electric drive, providing precise and flexible control [2].

Here are some specific roles that electric drives play in robotics:

Movement: Electric drives convert electrical energy into mechanical energy, which allows the robots to move. This may involve moving a robot arm, turning a wheel, or lifting and lowering an object.

Control: Electric drives allow precise control of the movement of robots. By precisely controlling the speed and direction of the electric drives, robots can perform complex tasks.

Flexibility: Electric drives can be easily programmed and controlled, which means they can be used in a wide range of applications. This makes them ideal for use in robotics, where flexibility and adaptability are vitally important.

Efficiency: Electric drives are generally more efficient than other types of drives. This means that they use less energy to perform the same amount of work [3, 4].

Many innovative trends are observed in the field of electric drives and robotics:

New designs of electric drives (gearless and oil-free technologies), energy-saving (high overload capacity, extended speed control range, high dynamic characteristics of a drive), application of new materials (gallium nitride (GaN) and graphene), etc. [5].

These innovations in the field of electric drives and robotics open up new opportunities for industrial development and improving the efficiency of production processes.

It is safe to say that electric drives play a key role in the future of robotics. This area, which is one of the fastest growing, provides many perspectives for specialists. This makes the specialty in demand both among applicants and for the economy.

It should also be noted that knowledge of foreign languages, especially English, can help future engineers better understand the technical aspects of working with electric drives and robots, as well as improve their professional skills.

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