Практическое занятие № 9

Тема: Автоматизация и робототехника
Цель: активизировать лексику по теме в разных видах деятельности: чтение, аудирование, говорение.

Ход занятия:

1. **Изучите лексику для обязательного усвоения** (Glancing at Vocabulary):
   automation – автоматизация
   previously – ранее
   sequence - последовательность
   aid – помощь
   sensor – датчик
   efficiency - эффективность
   steam engine – паровоз
   punched – перфорированный
   to substitute - заменять
   to resemble – походить, напоминать
   simplification - упрощение
   to monitor - контролировать
   non-manufacturing –
   handling – обращение с чем-л., обработка
   facilitate - способствовать
   assembly plant – сборочный завод
   household thermostat – бытовой термостат

2. Выполните задания:

Задание 1. Переведите предложения:

1. Robots can do operations previously done by people.
2. Automation is widely used in car body assembly lines.
3. Computers can be of great aid in automatic processing lines.
4. Handling of heavy parts can be done by robots.
5. Motions of a robot resemble those of a man.
6. Robots can substitute people in some monotonous operations.
7. Robots can do a sequence of motions according to their programme.
8. The simplification of design results in lower production costs.
9. Computer can be used to monitor automatic operation of the machine-tool.
10. Sensors (inra-red) are in TV to switch it on/off, and change programmes.

Задание 2. Соотнесите слова:

1. aid	a. автоматизация
2. automation	b. датчик
3. handling	c. заменять
4. previously	d. контролировать
5. sensor	e. обработка
6. sequence	f. помощь
7. simplification	g. последовательность
8. to monitor	h. ранее
9. to substitute	i. упрощение

Задание 3. Переведите словосочетания:

1. system of manufacture
2. certain tasks
3. sequences of operations
4. assembly plant
5. highly automated system
6. automatic devices

7. automated control systems
8. perform various operations
9. simplification of work
10. motions of the worker
11. dangerous environments
12. numerically controlled machines
13. reprogramming of the equipment

Задание 4. Прочитайте и переведите текст « AUTOMATION»:

Automation is performing certain tasks, previously done by people, by machines only. The sequences of operations are controlled automatically. The most familiar example of a highly automated system is an assembly plant for automobiles or other complex products.

- The term automation is also used to describe nonmanufacturing systems in which automatic devices can operate independently of human control. Such devices as automatic control system much faster and better than could be done by people. pilots automatic telephone equipment and automated s are used to perform various operations Automated manufacturing had several steps in i development. Mechanization was the first step necessary in the development of automation. The simplification of work made it possible to design and build machines that resembled the motions of the worker. These specialized machines were motorized and they had better production efficiency Industrial robots, originally designed only to perform simple tasks in environments dangerous to human workers, and are now widely used to transfer, manipulate and position both light and heavy workpieces performing all the functions of a transfer machine. In the 1920s the automobile industry for the first time used an integrated system of production. This method of production was adopted by most car manufacturers and became known as Detroit automation. The feedback principle is used in all automatic-control mechanisms when machines have ability to correct themselves. The feedback principle has been used for centuries. An outstanding early example is the flyball governor, invented in 1788 by James Watt to control the speed of the steam engine. The common household thermostat is another example of a feedback device. Using feedback devices, machines can start, stop, speed up, slow down, count, inspect, test, compare, and measure. These operations are commonly applied to a wide variety of production operations. Computers have greatly facilitated the use of feedback in manufacturing processes. Computers gave rise to the development of numerically controlled machines. The motions of these machines are controlled by punched paper or magnetic tapes. In numerically controlled machining centres machine tools can perform several different machining operations. More recently, the introduction of microprocessors and computers has made possible the development of computer-aided design and computer-aided manufacture (CAD and CAM) technologies. When using these systems a designer draws a part and indicates its dimensions with the help of a mouse, light pen, or other input device. After the drawing has been completed the computer automatically gives the instructions that direct a machining centre to machine the part. Another development using automation is the flexible manufacturing systems (FMS). A computer in FMS can be used to monitor and control the operation of the whole factory. Automation has also had an influence on the areas of the economy other than manufacturing. Many industries are highly automated or use automation technology in some part of their operation. In communications and especially in the telephone industry dialing and transmission are all done automatically. Railways are also controlled by automatic signaling devices, which have sensors that detect carriages

passing a particular point. In this way the movement and location of trains can be monitored.

Задание 5. Ответьте письменно на вопросы:

1. How is the term automation defined in the text?
2. What is the most «familiar example» of automation given in the text?
3. What was the first step in the development of automaton?
4. What were the first robots originally designed for?
5. What was the first industry to adopt the new inte- grated system of production?
6. What is feedback principle?
7. What do the abbreviations CAM and CAD stand for?
8. What is FMS?
9. What industries use automation technologies?

3. Контрольные вопросы:

1. Give the definition of the term “automation”. (Дайте определение автоматизации)
2. What was the first step in the development of automation? (Что было первым шагом в развитии автоматизации?)

3. What industries use automation technologies?(Какие индустрии используют технологии автоматизации?)