Research on Teaching Methods of Motor Drive Technology Based on Information Technology

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Abstract. It is university and college that bring up graduates who own creative talent, which is needed urgently by company and the whole society. Creative talent can be trained by proper teaching methods. Taken motor drive technology course as an example, this paper researched on teaching methods in detail. As compulsory course of mechanical engineering and automation, mechatronics and so on, motor drive technology course plays an important role in course system. Aim to these characteristics, the paper combined course system, teaching content and teaching methods suitably. Meanwhile, synthesizing three teaching methods are proposed effectively. That are method of enlighten to make a thorough inquiry, project-driven and research guided. By these methods, individuals are treated separately, and guided in different way. Finally students can find position of their own.

Keywords: motor drive technology, teaching methods, enlighten to make a thorough inquiry, project-driven, research guided.

1 Introduction

Innovative spirit and practical ability Talents is needed by company and social. To cultivate innovative talents, it must be combined curriculum system, teaching content and teaching methods properly. Teaching method is an innovative personnel training strategy which is related to concept of involving education, management system, policy and environmental. The best teaching method is not only imparting knowledge, but also encourage students to think freely and independently, and put into practice.

The aim of Beijing Union University's mission is to apply their knowledge, that is application is the ultimate goal of learning. Motor drive technology is an important professional basic course in major of mechanical engineering and automation, electrical engineering and automation as well as mechatronics. The course is a turning point from basic course to the professional core courses. The prerequisites for the electrical and electronic courses, while follow-up electrical control and PLC application, automatic control theory and integrated practical training related to automatic control. As to motor, it can be driven by relay contact system, microcontroller, PLC, DSP and other control core. In order to meet different actual needs of industrial production, various motor is driven by different control strategy. It is a hot issue for teacher to introduce students gradually walk on the professional way.
This paper focuses on exploring three aspects that is curriculum, teaching content, and teaching methods. Synthesizing these areas, three teaching methods are proposed in depth. These methods are suitable to the whole curriculum, taken one method as master in different content, the others as a secondary method.

2 Course System

Based on principle that the theoretical services for the application, course system is constructed. Organically combing electric machinery, electric drive and control the motor three courses into one course, known as the "motor drive technology" courses. It includes motor-driven training within one week. This training is departed three modules. The first module is reversible control of the production line. In this module, teacher explains in detail three-phase asynchronous motor relay contactor control principle and design method, while students complete the circuit schematic according to limits of the installation and commissioning. The second module is delay reversing control of production line. In this module, base on the first work, students complete circuit design, installation and commissioning independently. The third module is variable frequency control of production line. In this module, teachers introduce basics information of the inverter, demonstrate the basic operating method, while students complete the requirements on the basis of the frequency content of the actual operation.

The fellow up course is electrical control with PLC application, automatic control theory. After these courses, a large comprehensive training in eight weeks is arranged. In this training, motor drive technology, detection technology and automatic control technology are integrated into different projects, namely FESTO production line, process control training units and elevator models and so on industrial model. Students choose freely, completed a project in a team. It is possible for students to build their own knowledge system.

3 Teaching Content

According to the characteristics of applied higher undergraduate education and the development of modern science and technology, the teaching content of motor drive technology courses is adjusted. Including DC motors, DC motor drive, three-phase asynchronous motor, three-phase asynchronous motor drive and control motor. Content arrangement is logical, from DC to AC, from general motors to the control motor. From the knowledge of the surface, not only the traditional type and drive motor, but also include the recently developed new motor, new motor-driven approach in order to expand the knowledge and speed up the updating of knowledge.

4 Teaching Methods

Teaching methods are not only serviced for teaching content, but also had an important independent value in enlightening wisdom, cultivating the way of thinking. Long-established teaching principles such as induction of inspiration, the principle of gradual, individualized principles, combined with the principle of knowing, entertaining and educational principles, reflect the improvement of teaching methods in different