The Change of Automobile Vocational Education Caused by the Change of Old and New Energy Sources

Limin Song
School of Dalian Vocational and Technical College, College of Automotive Engineering and Technology, Dalian, China
E-mail: 496583534@qq.com

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Abstract. It is the critical time for new energy to replace the conventional one, and mobile intelligence and resource sharing have raised the mass transformation in mobile industry [1]. This paper argues that under the context of occupational requirements, we should make proper top-level design, systematically revising talent training program and innovating talent training system according to the technical route of new energy vehicles.

Research Purpose

The research is basing on the restructuring of the automobile industry, the new energy automobile industry, as one of the emerging strategic industries, has become an important breakthrough for China to save energy, reduce emissions [2], revitalize the economy and transform the industrial structure. New energy vehicles will gradually replace traditional ones. In view of such a special period, Starting from the top-level design, according to the technical route of new energy vehicles, the personnel training plan is systematically revised, vocational ability is sorted out, curriculum system is designed, and the personnel training system is innovated. Realize the course content and post standard, teaching program and the production task, teaching process and operational procedures, qualifications and docking post certificate, etc., in order to develop the students' ability of sustainable development as the goal, to meet under the new form of traditional energy vehicles maintenance, new energy vehicle maintenance and repair, automobile marketing service, automobile manufacturing and assembly and other professional demand for talent training.

Background

The Curriculum System Cannot Meet the Capacity Required by New Energy Vehicles

For curriculum structure, most vocational colleges have not been fully researched and design the top of curriculum. And the curriculum structure system is merely based on the traditional fuel cars professional, adding a few new-energy automobile specialized course, instead of distinguishing according to different new energy automobile technical path, setting up related courses for service industries such as charging pile, or including techniques massively used by new energy vehicles such as intelligent interconnection, lightweight and other related knowledge in courses. In addition, the development of students' safety protection awareness is insufficient in teaching, and there is a lack of relevant supporting facilities and assessment system for electrical protection, as well as relevant content of safety production standards for manufacturing industry, especially for new technologies.

The Construction of Teaching Team Is Urgently Needed

At present, the vast majority of teachers of new energy automobile major are converted from traditional fuel automobile major or automation and other majors by self-learning. They are in the exploratory stage of new energy automobile technology and lack of experience in subject construction. However, the new energy automobile industry as a whole is in the period of rapid
development and technological exploration, with fierce market competition and technical blockade among manufacturers. Manufacturers has no time to participate in the professional construction of colleges and universities. As a result, there is a shortage of all aspects of information and capacities needed for the subject construction of colleges.

There Is a Gap between Talent Training and Demand

The types of talent demanded are diverse, whilst the goal of professional training is narrow. In terms of training objectives, the major of new energy vehicle technology is mainly targeted at the most practical production positions of manufacturing enterprises, and does not cover many job groups. The new energy vehicle maintenance technology major is mainly for maintenance and sales positions, and does not cover the demand of infrastructure service enterprises such as charging piles.

In terms of the scale of trainings, due to the late subject establishment of vocational colleges, incomplete curriculum system, lack of courses or teachers, and the conservative attitude towards the development of the industry, the number of personnel training is too small to meet the needs of the industry.

In terms of the level of training, the level of talent training for new energy vehicles in vocational colleges is not in line with the demand. Compared to vocational middle school, the number talented developed by vocational college is even smaller.

Result

Table 1. The changes of laid-off capacity of new business.

| Research on Post Market Jobs of New Energy Automobile | Typical job assignment | Changes in employees’ professional abilities | Changes in vocational qualifications |
|-------------------------------------------------------|------------------------|---------------------------------------------|-----------------------------------|
| New energy car repair workers                         | 1. power cell detection and maintenance  
2. new energy vehicle complete vehicle failure repair, parts disassembly and adjustment  
3. new energy car structure, quality inspection, troubleshooting, maintenance | 1. must master the difference between the new energy car and the traditional car structure, technical characteristics;  
2. must master the new energy vehicle and the traditional car in the structure design and the power principle difference;  
3. must master battery management, motor and other components maintenance;  
4. must have automotive electronic maintenance technical capabilities;  
5. must understand the power and intelligent control technology;  
6. must master the management and maintenance of charging facilities;  
7. Knowledge of information technology and advanced energy-saving materials;  
8. with the maintenance of traditional automotive professional ability. | Low voltage electrician certificate  
Vehicle maintenance permit |
New Major 3d Training Objective

**Professional Ability**

Have safety consciousness, abide by the safety in production practice, have the ability to refer to relevant technical data, to master the basic structure, process, assembling and disassembling to master the structure working principle of automobile electronic control system, electric vehicle assembly of basic skills, electric vehicle assembly process, can proper use of tooling equipment, according to the technical requirements of electric car assembly and testing operation, understand the structure working principle of automobile testing equipment, use of maintenance and inspection standards, grasp the new energy automotive after-sales service center service system and service process, to learn the structure of the hybrid electric car parts system principles and maintenance methods.

**Social Skills**

Strong oral and written expression skills, interpersonal communication skills, teamwork spirit, good psychological quality and the ability to overcome difficulties, to establish a good and lasting relationship with customers, with a sense of responsibility for work,

**Problem-solving Ability**

Able to learn new knowledge and new technology of automobile independently; able to search for required information through various media resources; able to make and working implementation plans independently; able to accumulate maintenance experience and find commonalities from individual cases.

**Conclusion**

**Research on Talent Training Program of Automobile New Energy Major**

First, the major of new energy automobilex aims to cultivate high-quality talents equipped with advanced skills. It is designed from the top level. The curriculum system is set in accordance with the three vertical and three horizontal technical routes and combines the certificate of ability, qualification and academic. The syllabus can cover the relevant knowledge and skills of traditional cars, but the engine content can be relatively weakened. At the same time, motor drive and control, battery management, charging equipment installation and management and other related content can be added. As the plug-in hybrid electric vehicle contains the core part of the traditional energy vehicle.

**The Courses of New Energy Automobile Major**

Include all the courses of traditional energy automobile major. Second, it is further integrated with the advanced and standard maintenance operations of the companies. Third, in the construction of teaching staff team, strengthen the enterprise practice of teachers, so that teaching and enterprise
production, research are closely combined; Fourth, in terms of teaching methods, it should pay attention to the cultivation of students' comprehensive professional ability, not only emphasizing the students' mastery of automobile maintenance technologies, but also paying more attention to the cultivation of interpersonal communication, standardized service, workshop management and other skills needed by enterprises.

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