Project title	**Education in Hydrogen Technologies Area**
Project number	2021-1-CZ01-KA220-VET-000028073

Curriculum

Module title	**Hydrogen filling stations**
Number of lessons	Expected number of educational lessons necessary to achieve the learning outcomes assigned by education units: Total number of lessons: 20 Number of theoretical lessons: 10 Number of vocational training lessons: 10
Entry requirements	For successful completion of the module, a student has to have these entry vocational competences: a) Know the principles of car charging b) Be able to perform measuring and evaluation of measured results c) Use technical documentation d) Mind occupational safety and health protection at work
Brief summary of module aim	This module provides the general knowledge of physical nature, function and construction of components of hydrogen filling stations. It introduces students to the development and legislative framework regarding the construction and operation of hydrogen filling stations. The module clearly and systematically describes the individual structural elements of the filling station and partial procedures for their operation and maintenance. The module also describes individual types of hydrogen filling stations and describes the system car - filling station. The module contributes to acquiring of a complex view into the issue of given car subsystem, its function and construction. A significant aim is also the education to responsible attitude to running of hydrogen car which can endanger health and safety of users and fellow citizens in case of incorrect use. An indispensable part of education is the environmental education that leads to responsibility while using motor vehicles.
Expected learning outcomes (educational)	The student is familiar with the basic terminology of hydrogen technologies related primarily to the construction of hydrogen filling stations. He formulates the basic legislative framework for the construction, operation and maintenance of hydrogen filling stations. The student is able to define the types of technical gas filling stations, including structural parts of filling stations, is also familiar with technical terminology and is able to describe the individual technical elements and segments of hydrogen filling stations. The student knows the technological and structural properties of individual elements of hydrogen filling stations and recognizes the various types of these stations. The student is also familiar with the normal use, maintenance and repairs associated with the operation of hydrogen filling stations. The student also has general knowledge of the public hydrogen filling stations. The student understands the meaning of need for permanently sustainable development.

Module outline	Module outline 1. Introduction - history 2. Comparison of a hydrogen car and an electric car 3. Legislation on the operation and maintenance of filling stations 4. Technical gas filling plants 5. Construction parts of the filling station 6. Operation and maintenance of the filling station 7. Types of filling stations 8. Forecasts in development
Recommended educational practices (methods)	Basic methods and forms of education are: – verbal method – explanation – demonstrative visual method – demonstration and observation, work with images, instruction – skill and practical methods – imitating, manipulating, experimenting and lab techniques – activating methods - discussion, problem solving – group learning – group and cooperative learning, homogenous and heterogeneous pair classes, individual classes – e-learning course supported by presentations and illustrative photographs
Mode of module completion	Practical exam with a test of vocational skills with the final assessment – “pass – fail”.
Assessment standards of educational outcomes	The basis of assessment is overall module classification. The emphasis is primarily put on depth of the topic understanding, logical thinking and ability to apply the knowledge in practice while solving application tasks. There is important the whole manifestation of student, his activity during classes and ability of self-evaluation. Knowledge of the particular topic is examined in written or verbal examination. There are emphasized coherence, fluency and content correctness of talking.

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