



Ways of Technical Support of Hydrogen Energy

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WAYS OF TECHNICAL SUPPORT OF HYDROGEN ENERGY

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Анотація - стаття присвячена вирішенню такої важливої проблеми в енергетичному секторі, як перехід світової економіки до нульових викидів вуглекислого газу та можливість накопичення енергії у вигляді водню. Ми запропонували пристрій для виробництва водню, що містить робочу камеру, в якій розташовані аноди та катоди, а феритові кільця встановлені зовні з протилежних сторін. Ми також запропонували балон для водню низького тиску.

Ключові слова: нульові викиди вуглекислого газу, накопичення енергії у формі водню, енергозбереження.

Summary - The article is devoted to solving an important problem in the energy sector as the transition of the world economy to zero carbon dioxide emissions and the possibility of storing energy in the form of hydrogen. We have proposed a device for the production of hydrogen, containing a working chamber, in which the anodes and cathodes are located, and the ferrite rings are installed on the outside from its opposite sides. We also offered cylinder for a low pressure hydrogen.

Key words: zero carbon dioxide emissions, energy storage in the form of hydrogen, energy saving.

Hydrogen energy makes it possible to avoid dependence on traditional energy sources, which is relevant for Ukraine. Hydrogen is the most promising and environmentally friendly fuel for the energy of the future [1]. The heat of combustion of hydrogen exceeds 100 MJ / kg and is one of the highest [2].

Improving the hydrogen production device by introducing new structural elements into the system, which will simplify the design, reduce energy consumption.

The closest analogue of the proposed model is a known cell, which contains a working chamber in which sets of anodes and cathodes, a fitting for water supply, a power source, a fitting in the lid of the chamber for hydrogen gas, a fitting on the side wall of the chamber for oxygen.

However, the known hydrogen production device has high energy consumption and complex design of movable electrodes - in the form of identical fragments of three-dimensional geometric shapes, in the form of segments of spheres

or truncated cones with different numbers of faces and dielectric springs or washers of elastic dielectrics.

The problem is solved by the fact that in the electrolytic device for producing hydrogen, containing a working chamber in which sets of anodes and cathodes, a fitting for water supply, a power source, a fitting in the lid of the chamber for hydrogen gas removal, a fitting on the side wall of the oxygen gas chamber, ferrite rings are installed outside the ends of the working chamber, through which a high-frequency electrode with grounding [3,4] is passed.

We also obtained a patent for a low pressure hydrogen cylinder [5]. The low pressure cylinder for hydrogen contains the cylindrical case, a technological branch pipe, filler. The cylindrical body is equipped with a glass coating, and the filler made of intermetallic powder. The use of a low pressure cylinder for hydrogen through the equipment of a cylindrical body with a glass coating and the manufacture of a filler from intermetallic powder can eliminate excess hydrogen pressure, reduce the requirements for strength and tightness of the cylinder. Because the accumulation of hydrogen is not due to the compression of hydrogen, but in a solid material, for example, during sorption on the surface of dispersed nanomaterials, ie intermetallic powder.

The use of an electrolytic device for hydrogen production, due to the installation of ferrite rings outside the ends of the working chamber, through which a high-frequency electrode with grounding, simplifies the design, reduces energy consumption. The proposed utility model can be used in power plants using hydrogen.

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