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Powering Alkaline Electrolyzers with Twelve-Pulse Rectifiers without an Interphase Transformer

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Professional article

Highlights

- Twelve-pulse rectifiers without an interphase transformer have been successfully implemented for electrolyzer power supply and hydrogen
- The paper details the implementation method for the electrolyzer power supply, providing a display of measured electrical quantities during the commissioning of the new system
- The selected rectifier topology described in this work is not widely known, which represents an additional contribution and value to the paper
- The realization of this type of power supply for alkaline electrolyzers represents a unique step forward for the domestic industry in hydrogen production, which is considered the fuel of the future

Abstract

The paper presents the realization of a twelve-pulse rectifier without an interphase transformer, supplied via a transformer with two secondaries of different voltage amplitudes, intended for powering a hydrogen production electrolyzer with an output power of 40 kW. An analysis of the converter topology, theoretical considerations, and practical measurements during the commissioning of the device are provided. The chosen solution is compared with other currently popular solutions from the aspects of reliability, immunity to grid disturbances, and efficiency. Viewing hydrogen as a significant energy source of the future, its production is predicted to become widespread in our country in the coming years. Therefore, the possibility for a wide application of converters and electrolyzers is discussed here, as well as the concepts of hydrogen application in the electrical power system.

Keywords

Electrolysis, Green energy, Hydrogen production, Special converters, Twelve-pulse rectifier

Notes:

The full text of this article is available only in the Serbian language.
In the English version, only its Abstract (above) is available.

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