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Yazar Pc- turnitin

Gönderim Tarihi: 19-Kas-2024 11:37PM (UTC+0200)
Gönderim Numarası: 2500448580
Dosya adı: Çankırı.docx (109.62K)
Kelime sayısı: 291
Karakter sayısı: 1856

Green Hydrogen Production by Salt Electrolysis in Çankırı

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Abstract

This study evaluates the potential of utilizing Çankırı's abundant salt resources for renewable energy production, with a specific focus on green hydrogen generation. Particularly, hydrogen production through the electrolysis of salt emerges as an environmentally friendly and sustainable energy solution. During the electrolysis process, when combined with water, sodium and chlorine components are separated, resulting in the production of high-purity hydrogen gas. This method offers a significant opportunity in terms of both low carbon emissions and the utilization of local resources. Çankırı's natural salt reserves provide a robust foundation for this type of energy production. Leveraging these resources not only enhances the region's energy production capacity but also reduces dependency on fossil fuels. Moreover, hydrogen has a wide range of applications, including energy storage and transportation, making it a versatile energy carrier. This development has the potential to not only strengthen Çankırı's local economy but also contribute significantly to Turkey's renewable energy goals. The electrolysis process not only offers substantial advantages in terms of environmental sustainability but also allows for the byproducts, such as chlorine and other secondary materials, to be utilized in the chemical industry. Consequently, this production method can generate both energy and industrial added value. In conclusion, achieving hydrogen production by effectively utilizing Çankırı's existing salt reserves represents a major opportunity to advance energy transition and sustainable development at both local and national levels. In this context, the proposed method could serve as a starting point for Çankırı to become a model city in innovative energy production.

Keywords: *Green Hydrogen Production, Salt Electrolysis, Çankırı Energy Potential, Sustainable Energy*

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