



Рис. 2. Окно анализа, показывающее влияние одного (а) и двух параллельно включенных инверторов (б) на гармоники тока

Как показано на рис. 2, значение гармоник напряжения $\text{THD} = 53,02\%$ (общее гармоническое искажение) (рис. 1, а) в системе с двумя инверторами, подключенными параллельно, имеет $\text{THD} = 30,06\%$ (рис. 1, б).

Добавление в энергосистему солнечных панелей через инверторы и повышающие трансформаторы, представленные в данной работе, будет способствовать стабильности напряжения и улучшению качества электрической энергии, а также экономии электрической энергии.

Литература

1. Gurbanguly Berdimuhamedow. Türkmenistanyň elektroenergetika kuwawy. – A. : Türkmen döwlet neşirýat gullugy, 2022.
2. Kasun Samarasekera. Fault Ride-Through Capability of Grid Integrated Solar Power Plants. June 1st, 2015.
3. Трещ, А. М. Моделирование солнечных батарей в среде Matlab/Simulink / А. М. Трещ. – Минск : БНТУ, 2013.

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THE FUTURE PROSPECTS OF THE OIL INDUSTRY USING ARTIFICIAL INTELLIGENCE

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In this work, we illustrate how artificial intelligence systems can be used to lower costs associated with extraction and processing, increase efficiency in oil extraction, and minimize losses. Research indicates that in order to ensure a seamless and equitable shift within the oil industry, it will be imperative to strike a balance between the utilization of artificial intelligence and the needs of workforce transition and job creation in other domains.

Keywords: artificial Intelligence, oil, gas.

ПЕРСПЕКТИВЫ РАЗВИТИЯ НЕФТЯНОЙ ПРОМЫШЛЕННОСТИ С ИСПОЛЬЗОВАНИЕМ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА

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Проиллюстрировано, как системы искусственного интеллекта могут использоваться для снижения затрат, связанных с добычей и переработкой, повышения эффективности в добыче нефти, минимизации потерь. Исследования показывают, что необходимо найти баланс между использованием искусственного интеллекта и созданием рабочих мест в других областях.

Ключевые слова: искусственный интеллект, нефть, газ.

Along with other industries, the oil and natural gas sector expects the field of artificial intelligence to grow at an accelerated rate. Major changes in production techniques, field management, and customer service are among the many areas where these advancements are predicted to have a substantial impact. Furthermore, all phases of the oil business are anticipated to be affected, beginning with discovery and continuing through production and refining, distribution, and so forth [1, 2].

These developments begin in the midst of the challenging times that the oil and gas sector has recently encountered, such as the major economic slump and the worldwide drop in oil prices as a result of decreased demand. Due to the substantial possibilities provided by artificial intelligence, this has led a number of businesses to cut back on their capital expenses while also looking to utilize the most effective and economical methods of extracting oil.

Advantages of AI for the oil and gas sector [1–4].

Cost-cutting: Artificial intelligence lowers costs by reducing capital expenditures.

Enhanced Oil and Gas Extraction and Production Efficiency: Artificial intelligence improves efficiency through data processing and analysis, precise insight extraction regarding well drilling activities, and examination of the operating parameters and conditions of the producing reservoir.

This makes it possible to maximize the potential for oil recovery by choosing the most effective production system for the reservoir.

In addition, data analysis reduces the likelihood of haphazard or ineffective drilling operations, which lowers the risks involved in oil and gas exploration and drilling.

Businesses can target areas with greater chances of success, make more informed decisions about where to put wells, and lower the possibility of expensive and fruitless drilling attempts by utilizing artificial intelligence. This results in a more effective use of resources.

By accounting for hundreds of variables, such as market supply levels for oil and petroleum products, climatic patterns, and economic conditions, it aids in the development of more objective and accurate economic and financial prediction models. It also makes decision-making and long-term planning easier. This gives a better understanding of price trends.

Artificial intelligence may be employed to operate robots and other machinery that performs a variety of intricate and dangerous tasks. As a result, there are fewer risks to which employees may be exposed, and the possibility of catastrophic human error is decreased.

Customer satisfaction rises dramatically when feedback from customers is more thoroughly analyzed and incorporated into product improvements.

By projecting consumer demands and market trends, artificial intelligence can be utilized in future prediction processes to enable its application in marketing systems.

Although artificial intelligence applications in the oil industry are still in their infancy, they have bright futures. A few multinational corporations have begun to gradually integrate AI into their analysis and prediction processes. Notwithstanding the noteworthy advantages, it is imperative to consider its possible adverse effects on job displacement and elevated unemployment rates [4].

The application of AI technologies may result in the automation of some jobs and procedures, which could lessen the need for manual labor in some circumstances. Redundancies in the workforce and workforce displacement may follow from this. In order to adapt to the rapidly evolving technological landscape and lessen its detrimental effects on employment, it is critical that businesses and policymakers take strategies for reskilling and upskilling workers into consideration.

For a smooth and equitable transition in the oil industry, it will be crucial to balance the application of AI with considerations for workforce transition and job creation in other areas.

References

1. How AI Is Revolutionizing the Oil and Gas Industry – Nine Use Cases and Benefits (electronic resource). – Mode of access: <https://appinventiv.com/blog/artificial-intelligence-in-oil-and-gas-industry/#~:text=By%202028%2C%20the%20market%20for,is%20revolutionizing%20how%20companies%20operate.> – Date of access: September 4, 2023.
2. How will artificial intelligence impact the future of oil industry? (electronic resource). – Mode of access: <https://futureuae.com/ar-AE/Mainpage/Item/3653>. – Date of access: 24.01.2018.
3. Подольский, А. К. Применение методов искусственного интеллекта в нефтегазовой промышленности / А. К. Подольский // *Соврем. наука*. – 2016. – № 3. – С. 33–36.
4. Казначеев, П. Ф. Применение методов искусственного интеллекта для повышения эффективности в нефтегазовой и других сырьевых отраслях / П. Ф. Казначеев, Р. В. Самойлова, Н. В. Курчиски // *Экон. политика*. – 2016. – Т. 11, № 5. – С. 188–197.