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THE DEVELOPMENT OF THE ENERGY AND ENGINEERING SECTORS AND THE IMPORTANCE OF THE ENGLISH LANGUAGE IN THEM

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Abstract: This article discusses recent developments in the fields of energy and engineering, as well as the ongoing scientific research in these areas. It highlights the current pressing issues and proposed solutions within these sectors. In addition, the article emphasizes the role and growing importance of the English language in these fields. It justifies the necessity of English proficiency for specialists to stay competitive on a global scale and to access the latest scientific and technological innovations.

Keywords: English language, Engineering, Energy sector, Labor market, Young specialists, Scientific innovations, Qualified specialist, Educator.

Introduction

In the 21st century, science and technology are advancing at an unprecedented pace. During this process, the fields of engineering and energy are experiencing rapid growth. These sectors hold significant positions on a global scale. As we can see, highly qualified engineers with advanced scientific degrees are highly valued internationally. At the same time, it is impossible to overlook the importance of scientific and technical approaches, as well as the innovations developed by specialists in the energy sector.

Educators also play a crucial role in preparing professionals in these fields to reach a high level of expertise. In addition, highly skilled language instructors must effectively teach English — a key and universal tool in the fields of engineering and energy — to the younger generation. In these areas, English plays a decisive role in communication, knowledge and experience exchange, and professional development at the international level.

Methods

The Energy Sector and Its Prospects in Uzbekistan

The energy sector has developed extensively in Uzbekistan and has reached its current state through significant progress. Among the widely established energy engineering facilities in the country are hydroelectric power stations, thermal power plants, wind energy installations, and solar power plants — all of which have been constructed across Uzbekistan.

At present, Uzbekistan has begun the construction of a new type of energy facility that had not yet existed within the country — a nuclear power plant. The construction of this project commenced in 2022 in the Jizzakh region. The project envisions the building of a nuclear power plant equipped with VVER-1200 type pressurized water reactors, with a planned capacity of 1.2 gigawatts per hour. The development of the energy sector in Uzbekistan has followed a gradual and structured path over the decades. In the early stages of the Soviet era, the foundation of the country's energy infrastructure was laid,

with the construction of large-scale thermal power plants and hydroelectric stations. These facilities played a key role in meeting the industrial and household energy needs of the time. After gaining independence in 1991, Uzbekistan began reforming and modernizing its energy sector. This period included the renovation of existing power plants, the optimization of energy distribution systems, and the introduction of energy-saving technologies. The government also began to explore alternative energy sources to diversify the energy mix and reduce dependence on traditional fossil fuels. In the 2010s, Uzbekistan entered a new phase of development by prioritizing renewable energy projects. Large-scale solar and wind power projects were initiated with the support of international partners. Additionally, the decision to build the country's first nuclear power plant marked a significant milestone, aiming to provide stable and eco-friendly energy in the long term.

Result

Today, Uzbekistan continues to implement a comprehensive energy strategy aimed at enhancing energy efficiency, expanding green energy production, and integrating advanced technologies. These efforts are intended to ensure sustainable development and meet the growing energy demand of the population and economy. As of today, Uzbekistan has 41 hydroelectric power stations with a total capacity of 1,689 megawatts, of which 30 are currently operational. In addition, 35 small hydroelectric power plants with a total capacity of 383.2 megawatts have been constructed, and 24 of them are actively functioning. These include facilities such as the Chirchiq-Bozsu tract, the Tashkent Hydropower Cascade, the Andijan Hydropower Stations, and the Samarkand Hydropower. The hydropower potential of Uzbekistan's rivers is categorized into gross, technical, and economic potential, as outlined below.

River	Gross Potential (GV*h)	Technical potential (GV*h)	Economic Potential (GV*h)
Amu Darya	0.47	3.27	2.57
Syr Darya	0.43	0.75	0.75
Chirchik	4.72	4.84	4.78
Zarafshan	0.18	0.62	0.18
Surkhandarya	-----	1.46	0.47
KashKadarya	-----	0.21	0.065
Karadarya	0.61	0.78	0.78
Total	6.41	11.93	9.595

1. Gross and total hydropower potential of river flow: 85.5 billion kilowatt-hours (Large rivers – 81.1; Medium rivers – 3.0; Small rivers – 4.4)

2. Technical potential – 27.4 billion kilowatt-hours (Large rivers – 24.6; Medium rivers – 1.5; Small rivers – 2.3)

3. Economic potential – 16.6 billion kilowatt-hours, of which 6.8 billion kilowatt-hours are currently being utilized.

Hydropower resources refer to the natural potential of rivers, lakes, and other water flows used to generate electricity through the utilization of their potential energy. These resources are classified as renewable energy sources and play a crucial role in ensuring sustainable development on a global scale.

Facts:

The global hydropower potential is estimated to be around 50,000 terawatt-hours (TWh).

Currently, approximately 25–30% of this potential is being utilized at an industrial scale.

Hydropower accounts for about 15–17% of global electricity generation (this figure may vary from year to year).

Leading countries: China, Brazil, Canada, the United States, and Russia are among the top nations in hydropower production.

The largest hydroelectric power station — "**Three Gorges Dam**" — is located in China and is one of the most powerful hydroelectric facilities in the world.

Regional Distribution:

Region	Potential (TWh/year)	Utilized Portion (%)
South America	High	60–70%
Asia (China, India)	Very High	40–50%
Africa	Large potential	<10%
Europe	Moderate	70–80%
North America	High	50–60%

Renewable Energy Sources

Renewable energy sources are those that continuously regenerate through natural processes. Unlike conventional fossil fuels, they are inexhaustible, environmentally clean, and contribute to sustainable development. On a global scale, renewable sources play a significant role in combating climate change. Main types: Solar Energy, Wind Energy, Biomass Energy, Geothermal Energy,

Global Statistics:

1. Renewable sources account for 30-35 % of global electricity generation.
2. Annually, 300-400 GW of new renewable energy capacity is brought online worldwide.
3. China leads in renewable energy production and investment.

The Direct Relationship of the English Language to the Energy and Engineering Sectors

Today, modern equipment imported from abroad is widely used in the energy sector. Regardless of which energy facility you visit in Uzbekistan, all programs, user manuals, and operational principles of the devices are provided in English. Caution is essential when using such types of equipment. Otherwise, any technical issues can disable an entire energy facility. For this reason, skilled and qualified personnel are highly valued in this field. These professionals, in addition to being specialists, must have a solid command of the English language. Naturally, the need for the assistance of foreign language instructors increases in preparing such personnel. Therefore, proficiency in foreign languages is increasingly demanded in every field, and we encounter such situations frequently in our daily lives. The development of the engineering sector directly impacts the advancement of science, technology, and the economy in society. This field plays a key role in developing new technologies across various sectors, efficiently utilizing existing resources, and finding solutions to global problems. The development of engineering also plays a vital role in improving the quality of life, protecting the environment, and ensuring sustainable development. Developing and manufacturing next-generation technical devices. Creating transportation vehicles, industrial machines, and robotics systems.

The Role of the English Language in Digital Technologies

Digital technologies are transforming all fields of the world, and the English language plays a crucial role in their development, implementation, and application. English has become the global language of communication and business in the world of digital technologies. The role of English in digital fields is not only essential for software development and information technology but also plays a pivotal role in the entire socio-economic system.

Discussion

In the development of any field, whether it be energy or engineering, the role of foreign languages is invaluable. The need to study foreign technologies, scientific books, and research arises in the progress of various fields. Without knowledge of a foreign language, the development of your field can slow down, and you may fall behind in competition. Through this, it is not unlikely that any field may face a crisis.

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