

A MEETING THEMED “HYDROGEN, THE ENERGY OF THE FUTURE” WAS HELD AT GSO

The “Hydrogen, the Energy of the Future” meeting was held in cooperation with the Gaziantep Chamber of Industry (GSO) and Chamber of Electrical Engineers (EMO) Gaziantep Branch.

The meeting, which was held to evaluate the developments in hydrogen energy in the world and Turkey and to convey the opportunities and risks that the transition to the hydrogen economy will create for Turkey, was attended by Gaziantep Metropolitan Municipality Deputy Mayor Halil Uğur, GSO Deputy Chairman Başar Küçükparmak, Chamber of Electrical Engineers Gaziantep Branch President İslim Arkan, Energy and President of the Ministry of Natural Resources / Turkish Energy, Nuclear and Mining Research Council (TENMAK) Prof. Dr. Abdulkadir Balıkçı, academicians from universities and company representatives attended.



3rd Türkiye-Azerbaycan Energy Forum

The 3rd Türkiye-Azerbaijan Energy Forum was held in Nahçıvan between September 28-29, 2023. On September 28th, Prof. Dr. Colpan gave a presentation titled “Progress in Hydrogen Energy Technologies” during the Renewable Energy Working Group meeting.

<http://www.colpan.org/uncategorized/3rd-turkiye-azerbaycan-energy-forum/>



IHTEC2024



<https://ihtec2024.org/>

Dear Scholars, Researchers, and Industry Professionals,

In celebration of our university's 50th anniversary, we are pleased to invite you to the Eighth International Hydrogen Technologies Congress (IHTEC 2024), a multidisciplinary international conference. From May 12 to 15, 2024, the congress will be held in Diyarbakır, an ancient cultural metropolis that connects the Mediterranean to the Persian Gulf and the Black Sea to Mesopotamia.

The congress will cover a broad range of topics related to hydrogen technologies, including, among others, hydrogen economy, hydrogen infrastructure, hydrogen management, safety, production, and transformation. The conference will concentrate on a variety of hydrogen-related technologies.

We would like to thank you in advance for your contributions to this important congress hosted by Dicle University and organized by the Hydrogen Technologies Association.

Best Regards,

Prof. Dr. Mehmet KARAKOÇ
Rector of Dicle University

CARBON BORDER ADJUSTMENT MECHANISM: THE HYDROGEN SECTOR



Prof. Dr. Bestami ÖZKAYA

The Carbon Border Adjustment Mechanism (CBAM) is an important policy initiative developed by the European Union as part of its efforts to combat climate change. The CBAM is a mechanism that aims to align the EU's external trade with sustainability goals. It foresees a system to calculate the carbon footprint of imported products. Also, taxes, which will be paid by importers, on this carbon footprint are calculated. Thus, the CBAM aims to encourage low-carbon products to gain a competitive advantage in the EU market and to raise the costs of high-carbon products.

CBAM is an environmental policy instrument designed to impose the same carbon costs on imported products that plants operating in the European Union (EU) would incur. By doing so, CBAM reduces the risk of the EU missing its climate targets due to the relocation of production to countries with less ambitious decarbonization policies (so-called 'carbon leakage').

Under CBAM, in the definitive (post-transition) period, EU-authorized declarants representing importers of certain goods will purchase and surrender CBAM certificates for the embedded emissions of the goods they import. The price of these certificates will be derived from the EU Emissions Trading System (EU ETS) allowance price. Furthermore, the monitoring, reporting, and verification (MRV) rules are designed based on the EU ETS's MRV system. This will equalize the resulting carbon price between imported goods and goods produced in facilities participating in the EU ETS.

Let's concentrate on the potential effects of this mechanism on the hydrogen industry. Hydrogen has great potential as a clean energy carrier. Besides, it is a key raw material for sectors such as iron and steel sector, and ammonia production. It is a promising resource that supports the EU's climate targets. However, hydrogen production can lead to high carbon emissions, especially when produced in conventional ways.

Under CBAM, hydrogen is defined as a simple good as the raw materials and fuels used in its production are considered to have zero embedded emissions.

There are no relevant precursors for hydrogen. However, hydrogen may be a relevant precursor for use as a chemical feedstock to

produce ammonia or for other processes where it is produced separately to produce pig iron or direct reduced iron (DRI).

Hydrogen can be produced from a variety of feedstocks, including plastic waste, but is mostly derived from fossil fuels. Hydrogen production units are typically integrated into larger industrial processes, such as an ammonia production plant.

The direct emission monitoring system for hydrogen includes all processes directly or indirectly linked to hydrogen production and all fuels used in hydrogen production. Syngas or hydrogen production in refineries or organic chemical plants is excluded, where hydrogen is used only in these facilities and not in the production of goods covered by CBAM.

Targeting embedded carbon emissions of products imported into the EU for EU countries and countries covered by the EU Emissions Trading System and for specific sectors at the highest risk of carbon leakage. These are cement, iron and steel, aluminum, fertilizer, hydrogen, and electricity.

The hydrogen sector has to take into account both direct emissions and indirect emissions during the transition period. Indirect emissions must be reported separately.

Emissions must be reported as emissions in metric tons of CO₂ equivalent (tCO₂e) per ton of output. This value should be calculated for the specific facility or production process in the particular country of origin. Figure 1 shows the production routes defined for the Hydrogen Sector in CBAM.

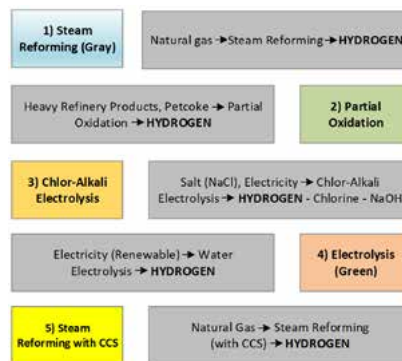


Figure 1 Production routes defined for the Hydrogen Sector in CBAM

The CBAM could be an important milestone for hydrogen producers. Countries or companies exporting hydrogen to the EU market will be subject to a CBAM tax depending on the energy sources used to produce the hydrogen. This could create an incentive in favor of hydrogen production based on clean energy sources and increase the costs of producing high-carbon hydrogen. As a result, CBAM could be a driving force aimed at promoting more sustainable and environmentally friendly methods of hydrogen production.

The hydrogen sector should follow these new regulations and increase investments in clean energy sources to reduce its carbon footprint. In addition, countries and companies doing business with the EU should review their strategies to adapt to the changes brought by CBAM and gain a competitive advantage.

In conclusion, CBAM is an important mechanism to promote compliance with the EU's environmental objectives. It could have significant implications for hydrogen producers. The hydrogen sector must adapt quickly to these changes and strive for a sustainable energy future.

Turkey has a significant potential for hydrogen exports. CBAM can incentivize countries to move towards clean and sustainable methods of hydrogen production. Moreover, to avoid paying taxes related to CBAM, importers may also prefer clean hydrogen.

CBAM's impacts on the hydrogen sector could lead hydrogen producers and suppliers to encourage sustainability-oriented investments and shift towards clean energy sources. This could make clean hydrogen more widely available and affordable in the future. Also, this could be a positive development for both the environment and the economy.



Our association was represented at the Twelfth Turkish Wind Energy Congress

The 12th Turkish Wind Energy Congress, organized by the Turkish Wind Energy Association, was held on 7-8 November 2023 at the Istanbul Hilton Bomonti Hotel with intense participation. With the motto "Century of Wind" on the 100th Anniversary of our Republic, industry stakeholders discussed the future of wind in Turkey, its problems, and sustainable solution options. At the conference, important issues such as energy storage, hydrogen, and offshore wind, as well as wind energy, were discussed by experts, and solution suggestions were presented.

One of the most effective aspects of the conference was the panels. Representing our Hydrogen Technologies Association, our Association's Founding Secretary General and current Board Member, ITU Faculty Member Prof. attended the "Future of Renewable Energy: Energy Islands, Floating Wind Farms, HVDC and Power-to-X" panel, which was discussed in the fifth session. Dr. Adnan Midilli attended. He gave a speech titled "Offshore Wind Hydrogen" to the panel with intense participation. At the beginning of his speech, he emphasized the role of

the Hydrogen Technologies Association and its contributions to our country's hydrogen ecosystem. In his speech, he discussed the different dimensions of hydrogen, explained the hydrogen value chain, and emphasized the importance of offshore wind power plants in the hydrogen economy. He explained the installation options of the offshore wind hydrogen value chain and explained its technological and economic dimensions. He emphasized the importance of the safety of electricity transport lines (HVDC and HVAC lines) and hydrogen storage systems in the synchronization of offshore wind-hydrogen power plants.

He stated that offshore hydrogen and ammonia ports for maritime transport and offshore aircraft are critical for zero-carbon seas in the future. He emphasized that offshore wind power plants are extremely important in the construction of our country's hydrogen economy. We would like to thank our teacher who represented our Hydrogen Technologies Association, our country's address in Hydrogen, in this important organization.

Prof. Dr. Adnan MİDİLLİ
*Hydrogen Technologies Association
Board Member*



European Hydrogen Week!

European Hydrogen Week brings together important actors such as the European Commission, Clean Hydrogen Partnership, and Hydrogen Europe in order to provide information about the latest developments at the global and European level in the context of hydrogen, which has an important place in the transition to clean energy, and to ex-

change ideas about the future of hydrogen. It will be held in Brussels between 20-24 November 2023.

The event will be held for policymakers active in the hydrogen value chain and many stakeholders from industry and academia. Many networking sessions will be organized for participants.



https://www.ab.gov.tr/avrupa-hidrojen-haftasi_53608.html

News from Hydrogen Energy and Hydrogen Industries

On October 25, 2023, Mission Hydrogen hosted the largest interactive Hydrogen Online Conference HOC2023. 30 keynote speakers shared their best and most valuable knowledge.



You can access November 2023 news about Hydrogen Energy and the Hydrogen Industry from Turkey, Europe, Africa, and America on the Hydrogen Technologies Association website.

TEKSİS ADVANCED TECHNOLOGIES GENERAL MANAGER HUSEYİN DEVRİM: ‘BECOMING AN ENERGY EXPORTER: THE ONLY KEY IS GREEN HYDROGEN’



Hüseyin DEVRİM

TEKSİS Advanced Technologies, which was founded in 2007 and is among the first technology companies in Turkey focusing on Green Hydrogen technologies, is preparing for local electrolyzer manufacturer. Hüseyin Devrim, General Manager of the company, stated that the only key of Turkey to become an “energy exporting country” is Green Hydrogen.

Hüseyin Devrim, who is also a Board Member and Ankara Representative of the Energy Industrialists & Business Association (ENSIA), said that they aim to commercialize the academic knowledge they have gained over the years, and pointed out that state supports should be provided for investments in the field of Green Hydrogen.

“IT IS ENOUGH TO GIVE A HAND TO ENTREPRENEURS”

Reminding that Green Hydrogen is used extensively in many areas of life, especially in heavy vehicles on roads, railways and seas, in countries such as Germany, China, America and India, Devrim stated that there are many entrepreneurs in Turkey who want to invest in this field, and said, “ Private entrepreneur is very dynamic in Turkey. All you have to do is to give a hand. We have national brands that are getting prepared to manufacture hydrogen-powered vehicles in our country. Many of them set out on this issue and even made export connections. Also, there are many areas where Green Hydrogen can be used in the defense industry. For example, it is used in drones. Green Hydrogen is the

most efficient, quietest, vibration-free, cleanest electricity production method we know, and this creates a strategic advantage for our defense industry. For example, drones can fly 20 minutes when powered by batteries. With hydrogen, same drone can reach up to 3 hours endurance. Extending the endurance of drones for defense industry by even 3 minutes brings an incredible strategic advantage.” he said.

“THE ONLY WAY FOR US TO BECOME AN ENERGY EXPORTER”

Devrim pointed out that at least 5 billion Euros should be invested for 5 GW electrolyzer, which is our national target for 2035, and said that this cost is ex-factory cost; He emphasized that when high engineering works such as installation, operation, commissioning and maintenance in the field are added in, Turkey has a large value chain potential.

Underlining that developed countries give the highest im-



portance to Green Hydrogen in their long-term energy plans, TEKSİS General Manager Hüseyin Devrim emphasized that Turkey can achieve its potential to become an exporter by reversing its energy imports with green hydrogen.

“GREEN HYDROGEN WILL BE THE WINNER IN AUTOMOTIVE”

TEKSİS Advanced Technologies General Manager Hüseyin Devrim stated that there is



an energy crisis in the world with unpredictable increases in commodity prices of batteries are straining supply chains. Production and availability of minerals such as Lithium, Nickel and Cobalt, which are vital for the production of the battery, which is the most important element of an electric vehicle, has become a serious problem, Devrim made the following assessment:

“Everyone dealing with transportation technologies in the world knows that electric vehicles will be an interim period. Today, their usage area is increasing in the world and in our country, but the reign of electric vehicles will never be sustainable. After a while, the whole world will be filled with battery dumps waiting to be recycled. Green Hydrogen, which is produced from water and emits only water, will be the most basic energy source of the transportation sector after 10-15 years, medium term. By filling your car with 7 kilograms of hydrogen, you will travel more than 1000 kilometers. “You cannot provide this comfort and emission level with any other source.”

“WE DID NOT MISS THE TRAIN BUT THE LEGISLATION STAGE”

Stating that Hydrogen is an energy source used extensively in the world, TEKSİS General Manager Hüseyin Devrim pointed out that 100 million tons of Hydrogen was consumed worldwide last year, but 96 percent of this was Hydrogen produced from fossil fuels.



Informing that carbon emissions in the production of Grey Hydrogen are at a very high level, Devrim noted that the global target is to increase the %4 share of Green Hydrogen produced by electrolyzer from water resources.

Devrim, emphasizing that the only source in Green Hydrogen production is water and added that it is critical to carry out the energy transition with Green Hydrogen in industries that have very high emissions such as iron, steel, petrochemical, fertilizer, glass and cement.

TEKSİS HAS FIRST ENERGY NEUTRAL BUILDING IN TÜRKİYE BY HYDROGEN ENERGY TECHNOLOGIES

TEKSİS also gives an important message by providing the energy of the technology building in Ankara from Green Hydrogen.

Stating that they created demo systems in their buildings to both serve the sector and transfer their knowledge to investors, General Manager Hüseyin Devrim explained their work as follows:

“Our building is energy neutral based on Hydrogen energy technologies. We produce our own energy. We have solar panels on the roof, we meet our needs during the day from there. We also produce hydrogen during the daytime, and in the evening, we use that hydrogen in fuel cells to produce electricity and meet our needs. In this way, we produce and consume all our energy ourselves, without drawing any electricity from the grid. Our electricity bill is zero TL. This is the first application in Turkey. We built the systems for demo purposes. We show that there are systems that can be used throughout the industry. Instead of storing electricity in batteries, we store it as hydrogen. We also have drones and scooters that use the Green Hydrogen we produce as fuel. “So, after producing hydrogen, we can use it in different applications.”



Electrochemical and Chemical Energy Storage Technologies Symposium took place in Ankara on 30 November - 1 December 2023.

The TMMOB Chamber of Chemical Engineers Ankara Branch organized a two-day symposium on Electrochemical and Chemical Energy Storage Technologies. The first day of the symposium was about the research and applications carried out in Turkey on batteries and battery systems. On the second day of the symposium, there were oral presentations on Hydrogen Energy research and applications. Electrochemical Hydrogen Production Technologies by Prof. Dr. Can Erkey- Koç University, Direct Liquid Fuel Cell Technologies: Past, present, future by Dr. Ramiz Gültekin Akay- Kocaeli University, Overview of Biohydrogen Production Technologies and Applications: Limitations, Scale-up and Commercialization by Assoc.

Prof. Yasemin Dilşad Yılmaz, Middle East Technical University, Hydrogen and Fuel Cell Technologies TÜBİTAK MAM by Assoc. Dr. Fatma Gül Boyacı San, TENMAK Hydrogen Technologies R&D Activities by Ragıp KIZILTAŞ-TEMEN Institute President, Green Hydrogen Value Chain and Opportunities for Our Country by Kahraman ÇOBAN - Enerjisa Enerji Üretim A.Ş., Hydrogen Safety: Going on Holiday with a 700 Bar Tank by Mehmet DİLAVER - ProSCon Engineering.

THE CLEAN HYDROGEN FROM RESEARCH TO APPLICATION Panel, held in the afternoon, was moderated by Prof. Dr. Çiğdem GÜLDÜR- Gazi University. The panel speakers were Prof. Dr. İnci EROĞLU -Hydrogen Technologies Association, Prof.

Dr. Selmiye ALKAN GÜRSEL - Sabancı University, Yaprak Serenay TAŞKIN - The Ministry of Energy and Natural Resources and Hasan AKSOY - SHURA Energy Conversion Center. They emphasized the importance and developments of green hydrogen all over the world and in our country.

THE FUTURE OF ENERGY STORAGE IN TURKEY Panel was moderated by Süleyman Şimşek. In this panel, Volkan KARAHAN - Yiğit Akü, Hüseyin DEVRİM - Tek-Sis, Assoc. Prof. Dr. Neslihan Yuca Doğdu - Pomega/Kontrolmatik, Emin Batur Dizdar - RATIO Enerji, and Refik Şenol Çetin - Europower, announced the developments in electrochemical storage in Turkey.



PROF. DR. AYSEL KANTÜRK FİGEN

Chemistry Club of Istanbul Technical University held the 'Hydrogen Energy Summit' on October 7, 2023. Prof. Dr. Aysel Kantürk Figen, the Director of Clean Energy Technologies at Yıldız Technical University and a member of our association's Board of Directors, delivered a presentation titled 'Hydrogen Storage, Boron Fuels, and Hydrogen Production'

GCGW-2024

On behalf of my university, it is my great pleasure to welcome you to Şanlıurfa for the 12th Global Conference on Global Warming (GCGW-2024) Conference. The GCGW has effectively established itself as a prominent congress in this field since 2008, with GCGW-2024 marking the 12th installment of this conference series. We are thrilled to have the chance to share the unique Turkish hospitality and showcase the breathtaking beauty of the city of Şanlıurfa with you. As the global community is aware, Şanlıurfa is a city akin to Göbeklitepe, challenging established conventions and knowledge. As evident from our conference theme, this event will foster a significant shift in perspective regarding global warming. GCGW-2024 serves as a multidisciplinary international conference covering various facets of global warming, encompassing its origins, effects, and potential remedies. I anticipate that this conference will create a platform for the interchange of technical insights, the sharing of impactful research findings, and the introduction of novel policies and scientific advancements, all contributing to the advancement of sustainable development and energy security. We extend a warm invitation to participants from diverse disciplines associated with global warming, including but not limited to ecology, education, engineering, natural sciences, social sciences, economics, management, physical sciences, and information technology. Your valuable



le contributions are encouraged at this year's event, which will take place at Harran University. The scientific segment of GCGW-2024 will encompass presentations by keynote and invited speakers, as well as oral and poster sessions featuring contributions from attendees. We anticipate that everyone will have a rewarding and delightful experience at the upcoming conference, GCGW-2024.

Moreover, we encourage you to relish the historical, cultural, and natural splendor of Şanlıurfa, Turkey. We eagerly await the chance to extend a warm welcome to all participants in Şanlıurfa from May 16-19, 2024.

Prof. Dr. Mehmet Tahir GÜLLÜOĞLU
Chair of GCGW-2024 Conference
Rector of Harran University

IHTEC2024 AWARDS

The last day for application is April 15, 2024



Nejat Veziroğlu Special Award

This award was created on behalf of Prof. Dr. Nejat Veziroğlu, who is an international leader in hydrogen energy, the father of hydrogen technologies, and the permanent honorary president of the Hydrogen Technologies Association. It is given to people who have proven themselves in the field of hydrogen energy and technologies both domestically and internationally and have made internationally recognized contributions.

Service Award of Hydrogen Technologies Association

This award is given to the people who have dedicated themselves to hydrogen energy and have served for at least 20 years in the development and application of this field, have contributed to the communal, social, technological, and economic development of the country in this field, have been a pioneer in the education and training of youth, have made institutional contributions and are active in industrial applications.

Technology Award

This award has been created for institutions that work effectively on hydrogen energy technologies and develop technologies. It is given to institutions that develop a product for the development of hydrogen technology, establish a pilot or industrial facility in the field of hydrogen energy and technologies, have patents in the field of hydrogen energy and technologies or support technology development.

Young Researcher Award

This award has been created for researchers, who are under the age of 35 (not less than 35 years old as of the date of IHTEC-2023 conference, where the award will be given) and have at least a master's degree. It is given to people who have done successful studies on hydrogen energy technologies that are recognized at the national and international levels.

Student Researcher Award

This award is given to undergraduate, graduate, or doctoral students. Candidates are expected to be under the age of 30 as of the date of the IHTEC-2023 conference, where the award will be given. The candidates who will be nominated for this award or who will apply themselves, will be preferred for this award if they have developed an invention, a new application, or a unique method for hydrogen technologies.

Winners of these prizes will be invited to attend the conference in which they will participate in the award ceremony, and their transportation and hotel expenses will be covered by the association.

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