Hydrogen Technologies Association

NATIONAL HYDROGEN ASSOCIATION TÜRKİYE

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MESSAGE FROM THE PRESIDENT

Dear Members, Esteemed Stakeholders, and Valued Readers,

As the Hydrogen Technologies Association, we are pleased to share the latest developments in this issue of our e-bulletin. The activities we have carried out and the meetings we have attended in recent months are of great importance for the future of hydrogen technologies.

The 10th International Hydrogen Technologies Congress (IHTEC-2026) was successfully held at Istinye University in Istanbul. This important congress brought together leading experts in the field, creating a strong platform for knowledge and experience sharing. In addition, the IHTEC 2026 Awards were presented to their recipients, honoring researchers who have made significant contributions to the field.

By participating in the sector meeting organized under the National Just Transition Strategy, we once again emphasized the critical role of hydrogen technologies in the green transformation. During this meeting, policies and approaches regarding Turkey's transition to a digital and green economy in a fair and sustainable manner were discussed.

We also took part in the WIN EURASIA 2026 Fair, where we shared insights on environmental rehabilitation, decarbonization, and clean energy solutions. We believe that such events play a vital role in promoting innovative technologies and strengthening collaboration within the sector.

In addition, we continue our R&D activities with GreenKnowTech on domestic hydrogen and fuel cell technologies. The projects being carried out in this field make significant contributions to the development of sustainable energy solutions.

Finally, we extend our congratulations once again to the distinguished scientists who were awarded in the field of hydrogen technologies. Within the scope of the Technology Award, the Prof. Dr. T. Nejat Veziroğlu Clean Energy Application and Research Center, Prof. Dr. Selmiye Alkan Gürsel, Prof. Dr. Bora Timurkutluk, Dr. Farrukh Khalid, and Sera Ayten Çetinkaya have once again demonstrated the scientific and technological potential of our country in this field.

With your continued support and contributions, we will keep advancing our work on hydrogen technologies with determination. Together, we will continue building a more sustainable future.

Prof. Dr. İbrahim Dinçer
Hydrogen Technologies Association
Chairman of the Board

LETTER FROM EDITOR

Dear Members, Distinguished Stakeholders, and Esteemed Readers,

It is our great pleasure to present the latest issue of the Hydrogen Technologies Association e-Bulletin. We remain committed to sharing the latest scientific, technological, and industrial developments in the field of hydrogen technologies while highlighting the research activities, projects, and collaborations taking place in Türkiye.

In this issue, we feature comprehensive coverage of the 10th International Hydrogen Technologies Congress (IHTEC-2026), successfully hosted by Istinye University in Istanbul. In addition to the scientific sessions, we are pleased to share the achievements of the distinguished scientists and researchers honored through the IHTEC 2026 Awards for their outstanding contributions to hydrogen technologies. We once again extend our sincere congratulations to all award recipients and thank them for their valuable contributions to advancing the scientific and technological capacity of our country in the field of hydrogen.

This issue also includes highlights from the National Just Transition Strategy sector meeting, our participation in WIN EURASIA 2026, and ongoing R&D activities carried out in collaboration with GreenKnowTech on domestic hydrogen and fuel cell technologies. We believe these initiatives will make significant contributions to Türkiye's clean energy transition and the continued development of its hydrogen ecosystem.

We would like to express our sincere appreciation to Prof. Dr. Oğuz Kaan Özdemir from the Department of Metallurgical and Materials Engineering at Yıldız Technical University for his valuable contribution to this issue.

We also extend our gratitude to the student clubs, academic advisors, and organizing committees behind the Yıldız Energy Summit 2025 at Yıldız Technical University and the TAU Energy Summit organized by the Turkish-German University for their valuable efforts in promoting awareness of hydrogen and clean energy technologies. We believe that such student-led initiatives play a vital role in encouraging young researchers and students to actively engage in the hydrogen and clean energy ecosystem and contribute to a more sustainable energy future.

We will continue to share the latest developments in hydrogen technologies and showcase Türkiye's growing scientific achievements in this field in our forthcoming issues.

We wish you an enjoyable reading experience.

Prof. Dr. Aysel Kantürk Figen
Editor

10th International Hydrogen Technologies Congress (IHTEC-2026) - Successfully Held at Istinye University, Istanbul

The 10th International Hydrogen Technologies Congress (IHTEC-2026) was successfully held at Istinye University in Istanbul. The congress brought together academics, researchers, industry representatives, and policymakers working in the field of hydrogen technologies at both national and international levels, creating a highly productive platform for knowledge exchange and collaboration.

Throughout the congress, key topics such as green hydrogen production, fuel cell technologies, energy storage systems, decarbonization strategies, and sustainable energy transition were extensively addressed. Expert speakers shared the latest scientific developments and technological innovations, providing valuable insights into the future of the sector.

During the sessions and panel discussions, the strategic role of hydrogen in the energy transition, industrial applications, and R&D activities were examined in detail. Participants had the opportunity to develop new collaborations through both academic and industrial perspectives presented at the event.

In addition, the IHTEC 2026 Awards Ceremony, held as part of the congress, honored researchers and institutions that have made significant contributions to the field of hydrogen technologies. These awards play an important role in promoting scientific excellence and supporting innovative work in the sector.

IHTEC-2026 concluded successfully as a significant event that strengthened scientific interaction, enhanced international cooperation, and contributed to the vision of a sustainable energy future.

We Participated in the Sector Meeting within the Scope of the National Just Transition Strategy

Mr. Ali Rıza Arslan, a member of the Board of Directors of the Hydrogen Technologies Association, participated in the sector meeting organized within the scope of the National Just Transition Strategy preparation studies conducted by the Ministry of Labor and Social Security.

The meeting was held on Monday, April 6, 2026, at 2:00 PM in the Reşat Moralı Meeting Hall located in the Ministry's headquarters building. The meeting, which brought together stakeholders from different sectors, addressed policy development efforts aimed at managing Turkey's transition to a green and digital economy in a fair, inclusive, and sustainable manner.

In this comprehensive process, where each meeting focused on a single sector, the impacts of climate change, green transformation, and digitalization on the relevant sectors were evaluated from a multi-dimensional perspective. Participants were specifically asked to share their views and suggestions on:

- How the transformation in question is reflected in their own institutions and sectors within the framework of current and planned activities;
- The risks and opportunities for social development, along with its effects on labor markets;

Measures that should be taken to mitigate potential risks and maximize the benefits of emerging opportunities.

Mr. Ali Rıza Arslan, who attended the meeting on behalf of our association, drew attention to the critical role of hydrogen technologies in the green transformation; he made assessments, especially on the development of the clean energy ecosystem, the need for qualified workforce, and the fair management of sectoral transformation. It was emphasized that hydrogen is a strategic energy carrier contributing to the reduction of carbon emissions across a wide range of sectors, from industry to transportation; the importance of addressing the social and economic impacts of development in this area with a holistic approach was expressed.

The meeting also highlighted the necessity of training, reskilling, and capacity-building efforts to prevent job losses that may arise during the green and digital transformation process, to create new job opportunities, and to enable the existing workforce to adapt to the transformation.

As the Hydrogen Technologies Association, we will continue to contribute to such strategic studies conducted in line with our country's sustainable development goals; and we will continue our cooperation with stakeholders to strengthen the role of hydrogen technologies in the just transition process.

HİDROGENİX Participated in Hannover Messe Conference

HİDROGENİX participated in the conference program held within the scope of Hannover Messe, one of the world's most important industrial and technology fairs.

During the event, HİDROGENİX shared its latest developments in hydrogen technologies, fuel cells, and sustainable energy solutions with international participants and engaged in significant networking activities. The conference provided a valuable platform for strengthening global cooperation in energy transition, industrial digitalization, and green technology.

The company's founder and owner, Ali Rıza Arslan, also personally attended the conference, presenting the company's vision and ongoing projects to international stakeholders. He particularly highlighted the role of hydrogen in industrial applications, the importance of increasing domestic production capacity, and the development of sustainable energy infrastructure.

Throughout the event, HİDROGENİX met with industry representatives, technology developers, and investors from various countries to explore potential collaboration opportunities. The discussions focused on advancing the hydrogen ecosystem and promoting innovative energy technologies.

HİDROGENİX's participation in Hannover Messe enhanced the company's international visibility while also contributing to the representation of Türkiye in the field of hydrogen technologies.

First Ammonia's Selection of Green Ammonia Production Technology in its Texas Project

In the global energy transition, hydrogen and its derivatives are no longer just a vision of the future, but are being discussed through concrete investment decisions and real industrial projects. One of the most important examples of this transformation is First Ammonia's 200 MW green ammonia plant being developed in the US state of Texas. The company's goal of making a final investment decision and starting construction in 2026 demonstrates that green ammonia is taking on an increasingly strategic role in the energy, agriculture, chemical, and transportation sectors.

First Ammonia's project was initially planned to use Topsoe's solid oxide electrolyzer technology. However, Topsoe's decision to re-evaluate its plans to commercialize its SOEC technology led the company to consider alternative technologies for the hydrogen production portion of the plant. First Ammonia stated that this change would not cause significant delays in the process and that it is evaluating a transition to pressurized alkaline electrolysis (PEM) systems. This development once again underlines the importance of technological flexibility in hydrogen projects.

Green ammonia stands out as a carbon-free energy carrier because it is produced by combining hydrogen from renewable sources with nitrogen. It can become a significant component of decarbonization in various sectors, including fertilizer production, the chemical industry, maritime transport, energy storage, and power generation. First Ammonia's "electric ammonia" approach focuses on converting intermittent renewable energy production into a chemical energy carrier. From this perspective, the project represents not only a production facility but also a new model for the storage and transport of renewable energy. However, the real challenge for green hydrogen and green ammonia projects lies not only in technological choice but also in economic feasibility. Electrolyzer costs, the price of renewable electricity, long-term purchase agreements, and logistical infrastructure are among the key factors determining the success of these projects. Indeed, numerous hydrogen projects have been announced in many regions, such as Asia-Pacific, but a significant number have yet to translate into final investment decisions. This picture shows that the sector has great potential, but still requires careful management of financing, technology, and market demand security. From this perspective, First Ammonia's Texas project serves as an excellent example. The rapid search for alternative technologies following Topsoe's withdrawal from the market demonstrates the importance of not relying on a single technological solution in green ammonia projects. While alkaline electrolyzers offer a technologically mature and relatively cost-effective option, PEM technology is considered particularly attractive for integrated renewable energy systems due to its ability to adapt to dynamic operating conditions. Therefore, technology selection will be crucial not only in terms of efficiency but also in terms of project scale, existing electricity profile, investment costs, and operational strategy. Globally, green ammonia is emerging as one of the most viable carriers of the hydrogen economy. While the storage and transportation of pure hydrogen still present technical and economic challenges, ammonia offers a solution that can be more easily integrated into existing commercial infrastructures. Therefore, green ammonia is considered a strategic intermediate that can accelerate the use of hydrogen, especially in maritime transport and international energy trade. In conclusion, First Ammonia's Texas project represents a significant development demonstrating how the green ammonia sector has progressed from the conceptual stage to investment and industrial application. While technological change may seem uncertain in the short term, the company's commitment to pursuing alternative electrolysis systems reflects the sector's resilience and maturity. Going forward, the success of such projects will depend not only on access to renewable energy but also on the right technology selection, financial strength, and stable long-term market demand. If these conditions are met, green ammonia could become one of the most powerful tools on the path to global decarbonization.


First Ammonia turns to alkaline or PEM for Texas plant

First Ammonia is preparing to shift away from solid oxide electrolysis (SOEC) for its 200MW Texas project, turning to pressurised alkaline or PEM systems following Topsoe's exit.

CEO Joel Moser told H2 View the developer has launched a request for proposal process with shortlisted original equipment manufacturers (OEMs) as it eyes a final investment decision this year.

"We have a qualified shortlist from our own work since the [Topsoe] announcement," he said. "We're asking for responses on a short timetable."

Outside of China, the Asia Pacific (APAC) region's ambitious hydrogen pipeline is struggling to convert plans into projects, according to a new report by the Energy Industries Council (EIC).

Linde Engineering will lead the design of a planned large-scale Australian blue ammonia project, while also exploring options to extend into construction, ownership, and long-term operations.

More Info

Decarbonization and Clean Energy Solutions Take Center Stage at WIN EURASIA 2026

We Are at WIN EURASIA 2026

We are pleased to be participating in WIN EURASIA 2026, one of the leading industrial trade fairs bringing together innovative technologies, sustainable solutions, and key stakeholders shaping the future of industry. The exhibition serves as a dynamic platform for knowledge exchange, collaboration, and the presentation of cutting-edge developments in industrial transformation.

As part of the event program, a highly engaging presentation entitled "Decarbonization and Clean Energy Solutions for Environmental Rehabilitation" was delivered by Prof. Dr. İbrahim Dinçer, Chairman of the Hydrogen Technologies Association. The session focused on the critical role of hydrogen technologies and clean energy solutions in addressing global environmental challenges and accelerating the transition toward a low-carbon future.

During his presentation, Prof. Dr. Dinçer emphasized that reducing carbon emissions is not only an environmental necessity but also a strategic priority for economic development, energy security, and sustainable growth. He highlighted the importance of integrating renewable energy resources with hydrogen technologies to support decarbonization efforts across various sectors, including industry, transportation, and power generation.

The session also provided valuable insights into recent advancements in hydrogen production, storage, and utilization technologies. Particular attention was given to the growing significance of green hydrogen as a key enabler of carbon-neutral economies. Innovative approaches to energy efficiency, sustainable resource management, and environmental rehabilitation were discussed, offering participants a comprehensive perspective on emerging clean energy opportunities.

Throughout WIN EURASIA 2026, discussions on sustainable energy, digital transformation, and industrial innovation continue to inspire industry professionals and foster new partnerships. The event provides a unique opportunity to explore transformative technologies and exchange ideas that will contribute to a more sustainable and resilient future.

The presentation by Prof. Dr. İbrahim Dinçer once again demonstrated the vital role that hydrogen technologies can play in reducing environmental impacts and supporting global decarbonization goals. We are proud to be part of WIN EURASIA 2026 and look forward to leveraging the knowledge and insights gained during the exhibition to further advance our sustainability initiatives and contribute to the clean energy transition.

GreenKnowTech: R&D-Oriented Solutions for Domestic Hydrogen and Fuel Cell Technologies

Prepared by: Prof. Dr. Oğuz Kaan ÖZDEMİR

In line with the clean energy transition, decarbonization targets, and sustainable development, hydrogen technologies have become one of the most strategically important fields today. Acting with this vision, **GreenKnowTech R&D and Consultancy Services** conducts studies on the development of domestic and national fuel cell technologies, the design of fuel cell components, electrochemical characterization, and the transformation of these technologies into system-level, applicable solutions.

GreenKnowTech combines its know-how in clean energy and hydrogen technologies with academic research, laboratory-scale material development, prototype production, and technology validation studies. The organization's main approach is to reduce the environmental impacts associated with fossil fuels, improve energy efficiency, and contribute to Türkiye's domestic production capacity in hydrogen technologies.

The group's priority research areas include PEM fuel cells, electrocatalyst development, membrane technologies, fuel cell stack design and fabrication, electrochemical performance testing, and sustainable material recovery. Within this scope, studies are carried out both on the critical components of the fuel cell and on system-level applications formed by integrating these components.

https://www.greenknowtech.com/

Corporate source: GreenKnowTech "About Us" page

Development of Pt Catalysts with High EASA Values

One of GreenKnowTech's prominent research areas is the development of Pt-based catalysts with high electrochemically active surface area for use in PEM fuel cells. Within these studies, catalyst synthesis conditions, Pt particle size and distribution, carbon support structure, metal loading ratio, electrochemically active surface area (EASA), and oxygen reduction reaction (ORR) performance are evaluated together.

Within this scope, an EASA value of approximately **88 m²/gPt** has been achieved in the developed **37% Pt/C** catalysts. This value demonstrates that Pt is effectively distributed on the carbon support, that electrolyte access to the active sites is sufficient, and that the catalytically usable surface area is at a high level. A high EASA value is particularly important in PEM fuel cells because it contributes to more effective anode and cathode reactions, enabling higher electrochemical performance per unit mass of Pt.

%37 Pt/C ≈ 88 m²/gPt	The EASA value achieved in the developed Pt/C catalysts indicates effective dispersion of Pt particles and a high level of catalytically accessible active surface area.

In catalyst development studies, not only the total Pt loading ratio but also Pt particle size, particle distribution homogeneity, the interaction between the carbon support and the metal, surface wettability, and accessibility of electrochemically active regions are considered together. Therefore, the developed catalysts are evaluated by cyclic voltammetry, EASA determination through the hydrogen adsorption/desorption region, oxygen reduction reaction measurements, rotating disk electrode tests, and comparative performance analyses against commercial reference catalysts.

The high EASA obtained is assessed not only as a material performance indicator achieved in half-cell electrochemical tests, but also as a critical parameter for membrane-electrode assembly (MEA) production and fuel cell stack performance. In this context, the developed Pt/C catalysts are used in MEA fabrication and tested in terms of single-cell performance, polarization behavior, ohmic losses, and stack-level power generation capacity.

Through this approach, GreenKnowTech establishes an integrated R&D chain extending from catalyst synthesis to electrochemical characterization, and from MEA production to stack performance validation. The aim is to achieve higher catalytic efficiency with lower precious-metal utilization, thereby contributing to reducing PEM fuel cell costs, strengthening domestic catalyst development infrastructure, and advancing application-oriented hydrogen technologies in Türkiye.

In **37% Pt/C** catalysts developed by GreenKnowTech, an EASA value of approximately **88 m²/gPt** has been achieved; this result is considered an important performance indicator in terms of the high active surface area of domestic catalysts, their strong ORR potential, and their transferability to MEA/stack applications.

Sustainable PEM Applications with Recycled Membranes

Focus Point: Development of sustainable PEM fuel cell components by recovering waste or used Nafion membranes, reprocessing them, and converting them into PTFE-supported composite membranes.

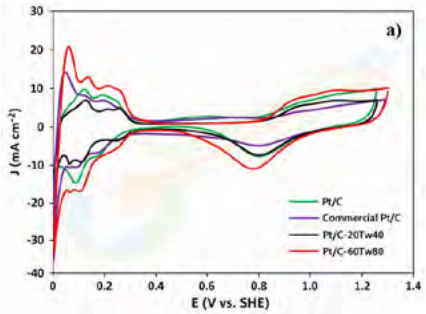
One of the priority research topics of the GreenKnowTech research group in the field of hydrogen technologies is the recovery, reprocessing, and re-evaluation of used or waste Nafion-based membranes for PEM fuel cell applications. In PEM fuel cells, the membrane is one of the critical components that directly determines system performance in terms of proton conduction, gas barrier properties, water management, and long-term durability. Therefore, it is highly important to consider membranes not only as high-performance materials, but also within a sustainable, economical, and reprocessable material cycle.

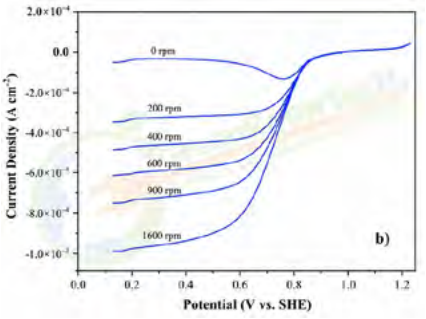
Within this approach, used Nafion membranes are recovered through appropriate pretreatment, purification, extraction, and redissolution steps; the resulting membrane solution is converted into an intermediate product that can be recast into films or used in composite membrane production. Thus, instead of treating high-cost and strategically important PFSA-based membranes in PEM fuel cells as waste, the aim is to transform them into a reusable material resource. In this respect, the work represents

a noteworthy research area in terms of both circular economy and resource efficiency in hydrogen technologies.

To demonstrate the suitability of recovered membranes for reuse, chemical structure, functional group integrity, thermal stability, water uptake capacity, swelling behavior, proton conductivity, and mechanical integrity are evaluated together. FTIR analyses are used to examine the preservation of functional groups characteristic of the PFSA structure, while TGA/DSC analyses are used to monitor thermal degradation behavior and changes associated with processing history. In addition, the conductivity behavior of the membranes under varying humidity and temperature conditions is evaluated under conditions close to PEM fuel cell operation, thereby revealing their real application potential.

One of the distinctive aspects of the group's work in this area is the conversion of recycled Nafion structures into more durable composite membrane systems by combining them with supporting phases such as PTFE. PTFE addition is intended to improve the dimensional stability, mechanical strength, and form stability of the membrane under high humidity and temperature conditions. In this way, the objective is not only to reuse recovered membranes, but also to transform them into next-generation composite structures with improved performance and durability.





These studies offer two important gains for sustainable PEM technologies. First, the life cycle of high-cost membrane components is extended by re-evaluating used membranes. Second, by reinforcing membranes obtained from recycled material with composite structures, the development of more durable, more economical PEM components with reduced environmental impact is supported. With this approach, GreenKnowTech emphasizes not only performance-oriented material development in hydrogen technologies, but also sustainability- and resource-efficiency-oriented material development.

Through its studies on the recovery and reprocessing of used Nafion-based membranes, GreenKnowTech contributes to a sustainable material cycle in PEM fuel cell technologies. The chemical structure, thermal stability, proton conductivity, and mechanical integrity of recovered membranes are examined in detail; the aim is to reinforce these membranes with supporting phases such as PTFE and convert them into more durable composite membrane systems. This approach extends the life cycle of high-cost membrane components while enabling the development of PEM components with reduced environmental impact and strong application potential.

Within these studies, the chemical structure, thermal stability, proton conductivity, water uptake behavior, and mechanical integrity of recovered membranes are investigated. In addition, the aim is to combine recycled membranes with supporting phases such as PTFE to convert them into more durable composite membrane systems.

200 W Fuel Cell Stack with Domestic Catalyst

One of GreenKnowTech's most important technology development objectives in the field of hydrogen technologies is to demonstrate the performance of domestically developed materials, synthesized and electrochemically validated at laboratory scale, under real system conditions. In this direction, the research group is working on the preparation of a PEM fuel cell stack with a power capacity of approximately **200 W** using its own Pt-based domestic catalysts.

This study is of great importance because it demonstrates that PEM fuel cell technologies in Türkiye can be developed not only at the level of material synthesis and electrochemical characterization, but also through **membrane-electrode assembly production, integration of cell components, stack design, assembly, and system performance testing**. In this respect, the work represents a pioneering and strategic step toward the development of an approximately **200 W** PEM fuel cell stack prepared with a domestic catalyst.

Achieving high performance in PEM fuel cells does not depend solely on the electrochemical activity of the catalyst. Many parameters directly affect stack performance, including the structure of the catalyst layer, ionomer distribution, contact quality with the gas diffusion layer, homogeneity of the membrane-electrode assembly, current collector and bipolar plate design, gas flow-field geometry, sealing elements, compression pressure, and intercell electrical contact resistance. The 200 W PEM stack study conducted by GreenKnowTech aims to address all these parameters through an integrated engineering approach.

In this context, the developed domestic Pt/C catalysts are used in membrane-electrode assembly production and subjected to a validation process extending from single-cell performance to multi-cell stack performance. Thus, not only the activity of the catalyst in half-cell electrochemical tests, but also its contribution to power generation under real PEM fuel cell operating conditions is evaluated. This approach is critical for determining whether the high EASA and ORR performance achieved at laboratory scale can be translated into application-scale performance.

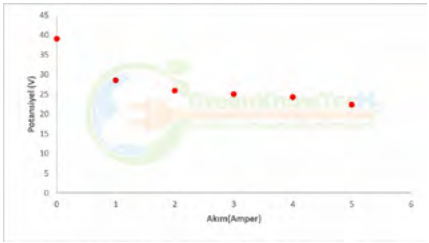
The approximately 200 W PEM fuel cell stack study brings together different disciplines on a single platform, including catalyst development, MEA production, cell design, gas supply and humidification conditions, thermal management, electrical connections, and performance optimization. Therefore, the study is not merely a stack production effort; it is also a comprehensive technology

validation process aimed at maturing domestic PEM fuel cell technologies at the system level.

GreenKnowTech's goal in this area is to achieve stable, repeatable, and applicable power generation in PEM fuel cell stacks by using high-performance domestic catalysts. The studies carried out in this direction contribute to strengthening domestic component development capacity in hydrogen technologies, reducing external dependence, and moving fuel cell systems from prototype scale toward application-oriented technology readiness.

In this respect, the approximately **200 W PEM fuel cell stack** to be prepared using a domestic catalyst is regarded as one of GreenKnowTech's most important outputs in the field of hydrogen technologies. The study has remarkable potential because it demonstrates that material development, component production, and system integration can be carried out together within the PEM fuel cell ecosystem in Türkiye.

The work carried out by GreenKnowTech stands out as one of the first applications in Türkiye aimed at developing an approximately 200 W PEM fuel cell stack using a domestic catalyst.

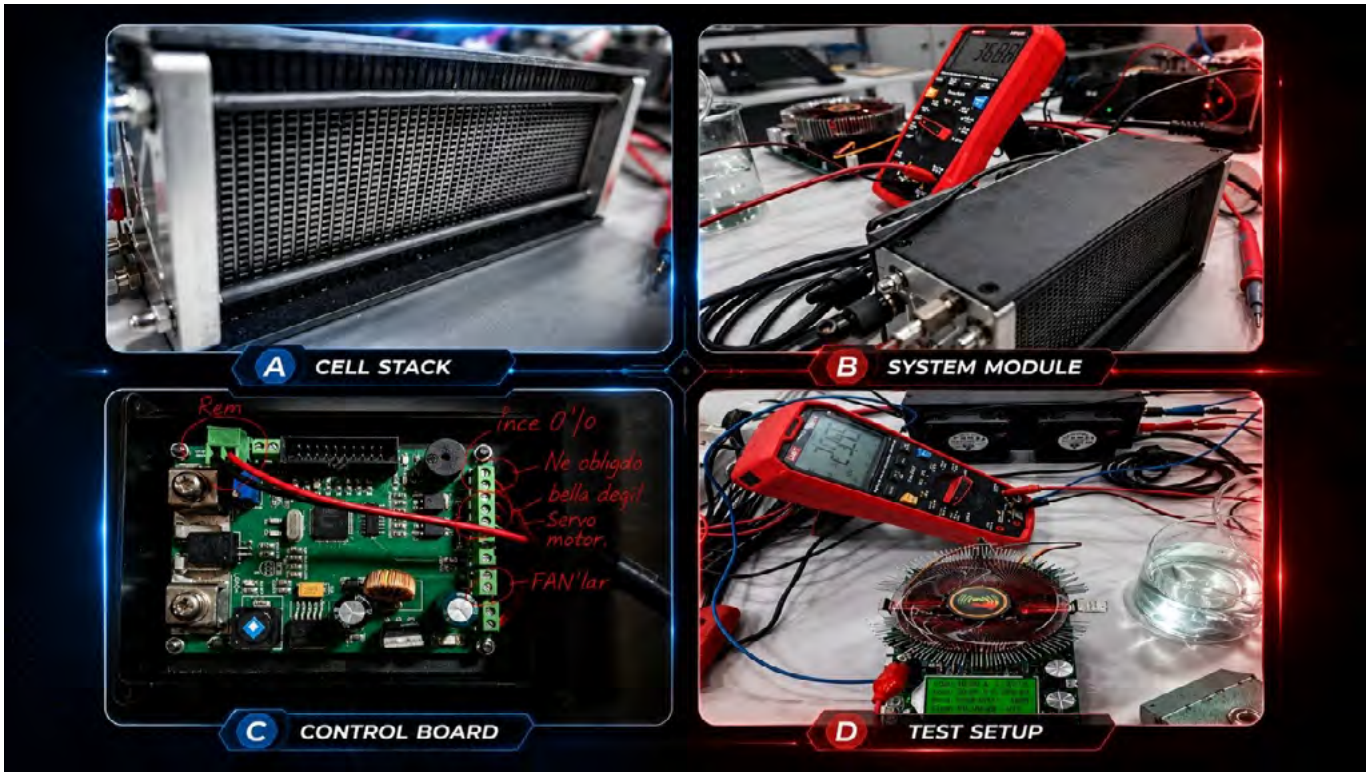


From Academic Expertise to Technological Product

GreenKnowTech aims to contribute to the expansion of domestic capacity in hydrogen and PEM fuel cell technologies by combining its scientific expertise in clean energy with advanced laboratory infrastructure and an interdisciplinary engineering approach. The organization's core vision is not merely to generate academic knowledge in hydrogen technologies, but to transform this knowledge into high-performance materials, critical components, and system-level solutions that are applicable in practice.

Within this framework, GreenKnowTech's activities are carried out around domestic Pt/C catalysts with high EASA values, recycled and composite membranes, membrane-electrode assemblies, and PEM fuel cell stacks. Materials developed at laboratory scale are transferred to single-cell and stack performance studies and evaluated under real system conditions. Thus, material development, electrochemical characterization, component integration, and system validation processes are treated as an integrated technology development chain.

GreenKnowTech's approach, focused on high performance, domestic manufacturability, and sustainability, contributes to reducing external dependence in PEM fuel cell technologies, strengthening domestic component development capacity, and promoting the application-oriented dissemination of hydrogen technologies in Türkiye. In this respect, through its work extending from materials to systems, GreenKnowTech aims to establish a strong R&D and technology development platform for sustainable, economical, and domestic hydrogen technologies.



Student Clubs Contribute to the Hydrogen and Clean Energy Ecosystem

Energy summits organized by university student clubs play an important role in raising awareness among young people about the energy transition, sustainability, and hydrogen technologies. In this context, the Yildiz Energy Summit 2025, hosted by Yildiz Technical University, and the TAU Energy Summit, organized by Turkish-German University, brought students together with leading representatives of the energy sector and distinguished academics. Prof. Dr. Aysel Kantürk Figen, Member of the Board of Directors of our Association, moderated the "Hydrogen Technologies" panel at Yildiz Energy Summit 2025 and delivered an invited talk entitled "Hydrogen Technologies from a Sustainability Perspective" at the TAU Energy Summit. Both events served as valuable platforms for strengthening knowledge exchange and interaction between young researchers and stakeholders in the hydrogen and clean energy sectors.

Yildiz Energy Summit 2025, The Yildiz Energy Summit 2025 was held at the Historic Hamam of Davutpaşa Campus under the theme "From Risks to Opportunities: The Future of Energy." The summit brought together leading industry representatives, academics, and students to discuss the latest developments in the energy transition. During the two-day event, panels and sessions focused on renewable energy resources, hydrogen technologies, electric vehicles, wind energy, energy efficiency, and sustainability. Expert speakers addressed the challenges facing the energy sector, ongoing transformation processes, and emerging opportunities for the future.

The Hydrogen Technologies Panel, moderated by Prof. Dr. Aysel Kantürk Figen, attracted significant interest from participants. The panel featured Dr. Seda Köksal Yeğin, Dr. Yusuf Can Uz, Eren Yiğit, and Burak Özyer as speakers.

Discussions focused on the strategic role of hydrogen in the energy transition, green hydrogen production technologies, hydrogen storage and transportation methods, applications in industry and transportation, and the rapidly developing hydrogen ecosystem in Türkiye. The panelists also shared their perspectives on the infrastructure investments, skilled workforce requirements, and academia-industry collaborations needed to accelerate the growth of the hydrogen economy.

During the interactive question-and-answer session, participants exchanged views on the future of hydrogen technologies, career opportunities in the field, and Türkiye's potential in the clean energy transition. The panel provided an important platform for increasing awareness of hydrogen technologies among students and fostering direct engagement with industry experts.

The TAU Energy Summit, organized by the Energy Science and Technologies Club of Turkish-German University, brought together students and key stakeholders from the energy sector to discuss the latest developments in the energy transition. The summit featured sessions on sustainable energy technologies, energy security, renewable energy resources, and hydrogen technologies.

Prof. Dr. Aysel Kantürk Figen, Member of the Board of Directors of our Association, participated in the event as an invited speaker and delivered a presentation entitled "Hydrogen Technologies from a Sustainability Perspective." Her presentation addressed the role of hydrogen in the global energy transition, clean hydrogen production technologies, hydrogen storage and transportation methods, industrial applications, and the contribution of hydrogen technologies to sustainable development goals.

The presentation also emphasized that hydrogen technologies are not only important for the energy sector but also represent a key pathway for decarbonization in transportation, industry, and the chemical sector. Furthermore, participants were informed about Türkiye's potential for developing a hydrogen ecosystem and recent research activities being conducted in this field.

The TAU Energy Summit provided students with the opportunity to follow current developments in the energy sector, engage with experts from various disciplines, and gain a broader perspective on clean energy technologies. The knowledge sharing and discussions throughout the event once again highlighted the strategic importance of hydrogen technologies for the development of sustainable energy systems.

AA Greenline Academy Meetings Hosted at Yildiz Technical University

As part of the Greenline Academy Meetings organized by Anadolu Agency, a panel entitled "Water Management and Energy Technologies from a Sustainability Perspective" was hosted by Yildiz Technical University. Bringing together academics, students, and industry representatives, the event provided a multidisciplinary platform to discuss water management and energy technologies, two key pillars of sustainable development.

During the panel, Prof. Dr. Aysel Kantürk Figen, Director of the Institute of Clean Energy Technologies at Yildiz Technical University and a Member of the Board of Directors of our Association, highlighted the critical importance of water resources in energy production processes. She emphasized the need to evaluate the energy–water nexus through a sustainability perspective and noted that energy technologies should be assessed not only in terms of carbon emissions but also with respect to water consumption and water footprint. Prof. Dr. Kantürk Figen also shared recent developments in Power-to-X technologies and next-generation electrolysis systems.

The event further addressed topics such as second-life applications of electric vehicle batteries, wastewater management, circular economy practices, and sustainable energy systems. Experts from different disciplines discussed the environmental dimensions of the energy transition, emphasizing the importance of efficient water use and resource management in the development of clean energy technologies.

The AA Greenline Academy Meetings served as an important platform for strengthening collaboration between universities and society while disseminating current scientific developments in sustainability to a broader audience. The event also fostered knowledge exchange among researchers, students, and professionals working in the fields of energy and environment, contributing to a more sustainable future.

IHTEC 2026 Awards Found Their Winners

Nejat Veziroğlu Special Award

Prof. Dr. Selmiye Alkan

Faculty of Engineering and Natural Sciences of Sabancı University

Prof. Dr. Selmiye Alkan Gürsel, faculty member at the Faculty of Engineering and Natural Sciences of Sabancı University and researcher at SUNUM (Sabancı University Nanotechnology Research and Application Center), has been honored with the prestigious "Nejat Veziroğlu Special Award" at the International Hydrogen Technologies Congress (IHTEC-2026) in recognition of her outstanding scientific contributions to hydrogen energy and hydrogen technologies.

Prof. Gürsel is internationally recognized for her pioneering research in hydrogen technologies, polymer electrolyte membrane fuel cells (PEMFCs), anion exchange membrane fuel cells (AEMFCs), water electrolyzers, proton and anion exchange membranes, electrocatalysis, electrochemistry, and advanced functional materials. Her work focuses on overcoming key technological challenges associated with clean hydrogen production and utilization through the development of innovative materials, membranes, electrodes, and electrocatalysts with enhanced performance, durability, and cost-effectiveness.

Over the course of her career, Prof. Gürsel has authored more than 118 peer-reviewed publications, book chapters, and patents, with a significant portion of her research dedicated to hydrogen technologies. Her scientific contributions include the development of novel polymer electrolyte membranes for fuel cells and electrolyzers, the application of radiation-induced graft copolymerization for membrane synthesis, electrospun membrane and electrode architectures, graphene-supported catalysts, and next-generation electrocatalytic materials for electrochemical energy conversion systems.

Between 2013 and 2018, Prof. Gürsel served as the leader of the Fuel Cells Work Package within the European Union's flagship research initiative, the Graphene Flagship. Through this role, she led pioneering studies on graphene-based electrodes and catalysts for fuel cell applications, contributing significantly to the understanding and implementation of graphene materials in electrochemical energy technologies.

One of her major research themes has been the development of advanced polymer electrolyte membranes, which are among the most critical components of fuel cells and electrolyzers. Her book chapter entitled "Radiation Grafted Membranes", published in the prestigious Advances in Polymer Science series, has become a widely recognized reference in the field. Her publications in leading journals such as Journal of Membrane Science, Progress in Polymer Science, and Electrochemistry Communications have further strengthened her international scientific visibility and impact.

In recent years, Prof. Gürsel has expanded her research activities toward green hydrogen production technologies, focusing on advanced membranes, electrodes, and electrocatalysts for water electrolysis systems. Her invited review articles published in Cell Reports Physical Science, Global Challenges, and Chem Catalysis provide comprehensive assessments of emerging trends, challenges, and future directions in hydrogen production, fuel cells, and electrolyzer technologies.

Beyond her scientific achievements, Prof. Gürsel has played a key role in establishing and advancing Türkiye's first Hydrogen Valley initiative, HYSouthMarmara (South Marmara Hydrogen Shore). As a principal investigator and work package leader, she contributes to the development of an integrated regional hydrogen ecosystem encompassing green hydrogen production, industrial utilization, stakeholder engagement, and international collaboration. Her efforts have strengthened Türkiye's participation in the rapidly growing European hydrogen landscape.

Prof. Gürsel's research has also translated into tangible technological outcomes through patents and collaborations with globally recognized companies such as DuPont and Michelin, demonstrating the industrial relevance and commercialization potential of her innovations in hydrogen and energy technologies.

Named after Prof. Dr. Nejat Veziroğlu, one of the world's foremost pioneers of hydrogen energy research, the Nejat Veziroğlu Special Award recognizes individuals who have made exceptional contributions to the advancement of hydrogen technologies at national and international levels. The award represents international recognition of Prof. Gürsel's scientific leadership, innovation, and sustained contributions toward the development of a sustainable hydrogen economy and clean energy future.

Service Award

Prof. Dr. Bora Timurkutluk

Niğde Ömer Halisdemir University

Prof. Dr. Bora Timurkutluk is a faculty member at the Department of Mechanical Engineering, Faculty of Engineering, Niğde Ömer Halisdemir University. He received his B.Sc. and M.Sc. degrees from Middle East Technical University (METU) and completed his Ph.D. at Niğde Ömer Halisdemir University through research focused on hydrogen energy. Prof. Dr. Timurkutluk began his work in hydrogen technologies in 2000s. Prior to his academic career, he worked for many years in industry as an R&D specialist and R&D manager, playing an active role in the development and industrial implementation of hydrogen energy technologies. For more than two decades, he has conducted research on hydrogen production, storage, and utilization, and is widely recognized for his scientific leadership, technology development and commercialization efforts, research mentorship vision, and contributions to the national hydrogen ecosystem. His research primarily focuses on solid oxide fuel cells and electrolyzers, hydrogen storage systems, energy conversion technologies, numerical modeling, and advanced materials development. He has authored approximately 100 peer-reviewed publications in high-impact international journals and has served as principal investigator, researcher and consultant in numerous national and international academic and industry collaborative projects. He also holds several granted patents in hydrogen technologies.

Prof. Dr. Timurkutluk played a key role in the establishment and development of the Prof. Dr. T. Nejat Veziroğlu Clean Energy Research Center, of which he was a founding member in 2014. Since 2016, he has served as the Director of the Center, leading the establishment and advancement of a significant research infrastructure in hydrogen technologies at an international level. He has also

long served as Head of the Department of Mechanical Engineering and Head of the Interdisciplinary Energy Science and Technology Program at Niğde Ömer Halisdemir University. In addition to his academic work, he has made significant contributions to the commercialization of hydrogen and fuel cell technologies through university-industry collaborations and has played a pioneering role in the development of innovative solutions for the defense and energy sectors. He continues to contribute to the training of highly qualified human resources in hydrogen technologies through the supervision of numerous M.Sc. and Ph.D. students. He also serves as an Associate Editor of the International Journal of Hydrogen Energy, one of the leading journals in the field.

Technology Award

Prof. Dr. T. Nejat Veziroğlu Clean Energy Research Center

Established within Niğde Ömer Halisdemir University in honor of Prof. Dr. T. Nejat Veziroğlu, a pioneer in hydrogen technologies, the Prof. Dr. T. Nejat Veziroğlu Clean Energy Research Center conducts product- and system-oriented research and development activities in the field of hydrogen energy. Under the long-standing directorship of Prof. Bora Timurkutluk, the center has achieved a leading position at both national and international levels, particularly in solid oxide technologies. As a result of sustained and long-term efforts, the center is the only institution in Türkiye with commercial-scale cell production capacity. In addition, it possesses a comprehensive infrastructure covering processes ranging from production to testing, and from characterization to analysis in hydrogen production, storage and conversion, positioning it among a limited number of advanced research and production centers worldwide operating in this field. The center contributes not only to technology development but also to the regional and institutional economy by providing production, testing, and characterization services, in addition to its extensive academic consultancy activities for numerous industrial partners in the hydrogen sector. It also promotes knowledge sharing and strengthens interdisciplinary collaboration through summer schools and international conferences hosted at the institution.

Products developed through university-industry collaboration led to the University receiving the "University-Industry Collaboration Award" within the Council of Higher Education Outstanding Achievement Awards in 2018. The accumulated scientific expertise and leadership were further reinforced in 2023 when Niğde Ömer Halisdemir University was designated by the Council of Higher Education as a "Specialized University" in the field of "Hydrogen and Fuel Cell Technologies." As the only public university in Türkiye holding this designation, the Center further demonstrated its global impact by receiving an international award in the "Applied Research and Product Development" category at the Emirates Energy Awards held during the 2025 Dubai World Green Economy Summit. In addition to applied patents developed under the leadership of highly qualified academics, the researchers trained within the center have become sought-after professionals in hydrogen technologies across both academic and industrial sectors, nationally and internationally. Built upon the vision of a sustainable future, this advanced laboratory and researcher development ecosystem makes significant contributions to Türkiye's carbon neutrality targets, energy independency and hydrogen strategy through the development of indigenous and locally engineered technologies.

Young Researcher Award

Dr. Farrukh Khalid

IIT Guwahati Enerji Bilimi ve Mühendisliği Okulu

Dr. Farrukh Khalid is an internationally recognized academic and researcher specializing in hydrogen energy, sustainable energy systems, and decarbonization technologies. He earned his Ph.D. from Ontario Tech University, Canada, under the supervision of leading energy scholars Prof. Ibrahim Dincer and Prof. Marc A. Rosen. Throughout his career, he has been actively involved in teaching, research, and academic activities across Canada, Qatar, Türkiye, and India, making significant contributions to the advancement of energy technologies.

Currently serving as an Assistant Professor at the School of Energy Science and Engineering, IIT Guwahati, Dr. Khalid leads and contributes to numerous research projects in the fields of green hydrogen production, thermochemical cycles, energy storage systems, sustainable fuels, carbon capture, and energy transition technologies. He is actively involved in the international hydrogen energy community through his participation in conference organizing committees, editorial responsibilities for scientific journals, and mentorship of graduate researchers.

Through his innovative research and dedication to advancing clean energy technologies, Dr. Khalid has made significant contributions toward the development of sustainable energy solutions and a low-carbon future. In recognition of his outstanding academic achievements, research excellence, and leadership in hydrogen energy and sustainable energy systems, Dr. Khalid has been selected as the recipient of the Young Researcher Award.

Student Researcher Award

Sera Ayten Çetinkaya

Southampton University

Sera Ayten Çetinkaya is a promising young researcher whose work focuses on hydrogen energy, fuel cells, and hydrogen storage systems. She received both her Bachelor's and Master's degrees in Mechanical Engineering from Dokuz Eylül University, where she completed her graduate studies in the Thermodynamics Division with outstanding academic performance. From the early stages of her academic career, she has dedicated her research to hydrogen technologies and sustainable energy systems, contributing to the advancement of clean energy solutions through various research projects.

Her research activities encompass proton exchange membrane fuel cells (PEMFCs), metal hydride hydrogen storage systems, thermal management applications, mathematical modeling, numerical simulations, and optimization of energy systems. Throughout her academic journey, she has actively participated in several research projects funded by TÜBİTAK and Dokuz Eylül University, serving as both a researcher and project leader. Her contributions have supported the development of hydrogen-based land and marine vehicles, hybrid fuel cell-battery systems, and renewable energy-driven hydrogen technologies.

As part of her scientific work, Ms. Çetinkaya has presented her research at numerous international conferences and contributed to scholarly publications in the fields of hydrogen energy and fuel cell technologies. In addition, she has mentored undergraduate students involved in research projects and assisted in graduate-level courses on hydrogen and fuel cell technologies. She has also contributed to the organization of major international scientific events, including the World Hydrogen Energy Conference, demonstrating her commitment to both research excellence and scientific collaboration.

Currently, she is pursuing her Ph.D. at the University of Southampton in the United Kingdom, where her research focuses on the experimental and numerical investigation of material requirements for liquefied and compressed hydrogen storage tanks. Her work aims to advance safe, efficient, and sustainable hydrogen storage technologies, which are essential for the future hydrogen economy and global energy transition.

In recognition of her academic achievements, research excellence, active involvement in national and international projects, scientific contributions, and strong potential to advance future clean energy technologies, Sera Ayten Çetinkaya has been selected as the recipient of the Student Researcher Award.

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