



**TURKISH ENERGY, NUCLEAR AND MINERAL RESEARCH AGENCY (TENMAK)  
CLEAN ENERGY RESEARCH INSTITUTE (TEMEN)**

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**Emre YILDIRIM**

**Energy Systems Engineer**

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**2024**



In our institute, we carry out

- research and development,
- innovation,
- design,
- production,
- testing and
- localization studies for the scientific, technical and economic development of clean energy technologies in our country.



# INFRASTRUCTURES

- Fuel Cell Test Systems
- Gas Chromatography
- Thermal Analyzer
- High-Pressure Volumetric Analyzer
- BET Device
- Optical Contact Angle Measurement Device
- Electrochemical Test System
- PEM Electrolyzer
- Hydrogen Training Kits





- Flotation Device
- Centrifuge Device
- Fan Oven
- Ultrasonic Bath
- Heated Magnetic Stirrer
- Homogynasator
- Mechanical Mixer
- pH Meter



TENMAK EKOKARAVAN is equipped with wind turbine (1000 W), photovoltaic cell array (1710 W) and hydrogen fuel cell (1000 W).

It can meet the energy requirement to operate all equipment in the living space without needing any external power source.





## GOLF VEHICLE

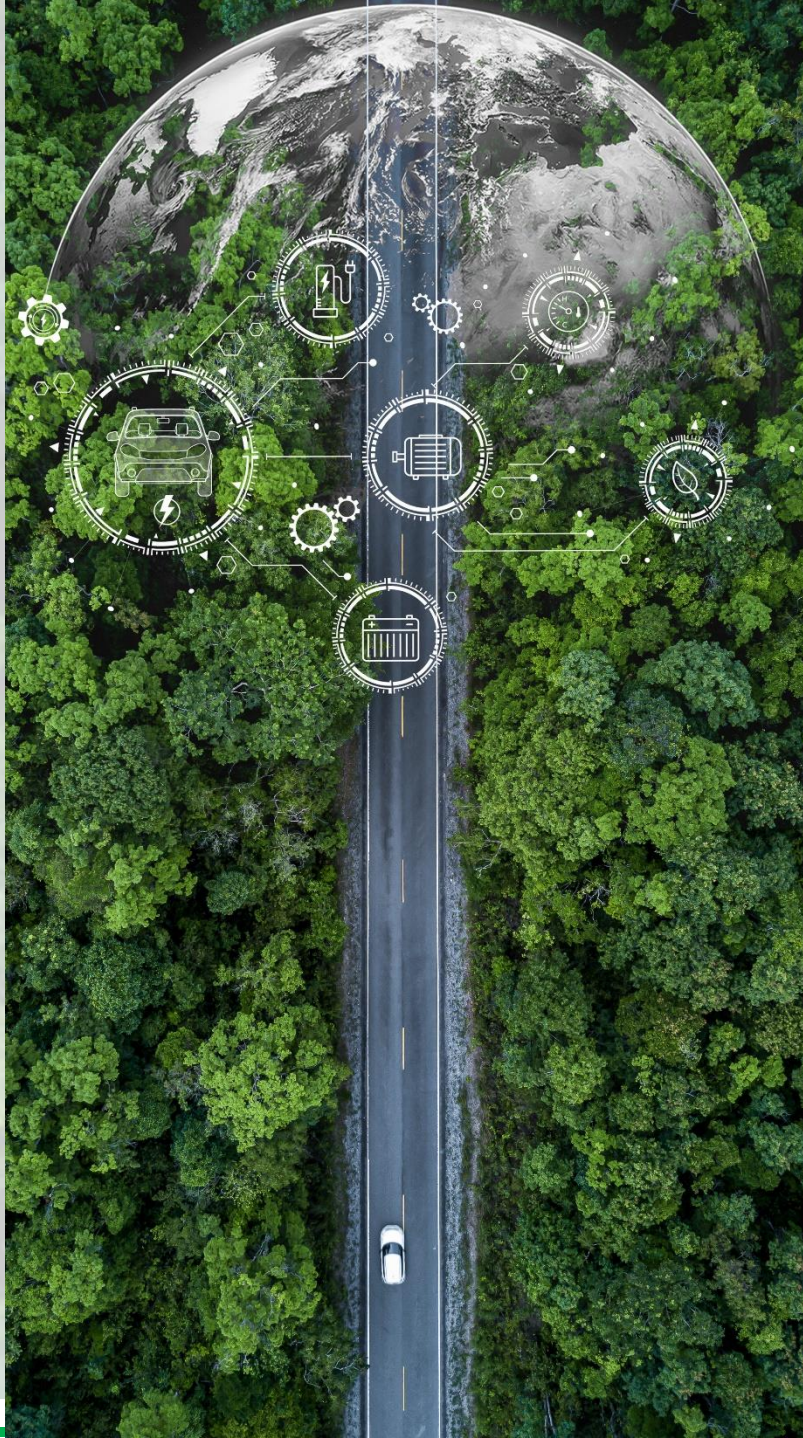


**TENMAK**  
TÜRKİYE ENERJİ, NÜKLEER VE  
MADEN ARAŞTIRMA KURUMU

The energy required by the hybrid golf vehicle modernized by our institute is provided independently of the grid, thanks to the solar panels (360 W) and fuel cell (1000 W) on the vehicle.







# RESEARCH AREA



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MINERAL RESEARCH AGENCY

01



**HYDROGEN  
TECHNOLOGIES**

- Fuel Cell Components Development
- Fuel Cell Performance Tests
- Characterization
- Hydrogen Production
- Hydrogen Storage Technologies
- Modelling
- System Integration

02



**CARBON  
TECHNOLOGIES**

- Development of Carbon Capture, Utilization and Storage (CCUS) Technologies
- Carbon Dioxide Conversion Technologies
- Development of Advanced Carbon Materials

03



**RENEWABLE  
ENERGY  
TECHNOLOGIES**

- Modeling of Renewable Energy Systems
- Solar Panel Raw Material Synthesis
- Solar Panel Recycling Technologies
- Biogas Conversion Technologies
- Geothermal Energy Technologies

# ONGOING PROJECTS





## DEVELOPMENT OF THERMO-CATALYTIC PROCESS FOR FUEL PRODUCTION FROM CARBON DIOXIDE



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It is aimed to develop unique reactor and catalyst systems to turn carbon dioxide into a raw material for the production of synthetic fuel and to produce other light hydrocarbons, especially synthetic natural gas, with high efficiency.



It is aimed to evaluate the coal and graphite mineral reserves to investigate and report the production potential of advanced technology nano materials such as graphene and carbon nanotubes from these mines.





## DEVELOPMENT OF AN INNOVATIVE SYSTEM FOR THE EFFECTIVE USE OF AMMONIA BORANE AS A CHEMICAL HYDROGEN STORAGE MATERIAL



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It is aimed to develop high value-added products and make a technological application by examining ammonia borane, a chemical hydrogen storage material, with dehydrogenation and regeneration methods after synthesis to determine its hydrogen storage potential.



# INTERNATIONAL EFFICIENCY CHALLENGE ELEKTRIC VEHICLE RACES



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The vehicles that will compete in the International Efficiency Challenge (EC) Electric Vehicle Races Hydromobile category;

- Fuel cell
- Metal hydride hydrogen tank
- Other support payments

It is provided by TENMAK.





**THANK YOU**

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**tenmak@tenmak.gov.tr**

[www.tenmak.gov.tr](http://www.tenmak.gov.tr)