""Your university is striving for the same goals as my father, who was committed to the dissemination of science in the open environment, a goal he himself promoted in his academic career."

Marina Von Neumann

János Neumann is the greatest mathematician of the 20th century, often regarded as the world's second greatest scientist after Einstein. His discoveries are applied to economics, psychology, sociology, political science and evolutionary research, having laid the foundations for game theory. He was a pioneering developer of the EDVAC, the forerunner of the modern computer, which is credited with creating the first digital computer, and without Neumann's principles modern computing would not exist today. His research in defence and nuclear technologies made him a top adviser to the US defence leadership of his time. The name of the world-famous Hungarian scientist is proudly borne by the János Neumann University in Kecskemét. In keeping with his name, the university focuses on sustainable automotive engineering, hydrogen storage and propulsion, materials and laser technology, ecological management, sustainable and green finance, new economics and geo-economics, and the creative economy.

3 + 1 PILLERS OF UNIVERSITY COOPERATION

GAMF Faculty of Engineering and Computer Science

The GAMF Faculty of Engineering and Information Technology has been in existence since 1964. It's main characteristics in the training of technical and IT specialists are its practical orientation, it's extensive cooperation with companies, it's pioneering role in dual training and it's special attention to talent management. The courses are constantly adapted to the industry needs and the institution aims to become a key partner for regional industries. The faculty has state-of-the-art laboratories, which play a major role in the education of students and in high-quality research.

FACULTY OF Economics and Business

The university's youngest faculty aims to equip students with the most up-to-date knowledge and adaptability to obtain marketable university degrees. The faculty's priority is to integrate with the dynamic urban and business environment of its region and to seize and exploit the opportunities that this brings. In addition to the bachelor's degree courses, it offers master's programmes, dual training, higher and further education and MBA courses.

Faculty of Horticulture and Rural Development

The Faculty of Horticulture and Rural Development has been educating future horticultural professionals for six decades, building on the region's ancient agricultural history. The main mission of the faculty is to train agricultural and horticultural engineers with an entrepreneurial approach to higher education in agriculture, who are able to adapt quickly and flexibly to the constantly changing natural, social and economic environment, with their versatile knowledge, skills and abilities. Training is supported by laboratories, a farm, a demonstration garden and greenhouses, and a riding arena.

MNB Knowledge Centre

In 2021, the MNB Knowledge Centre was established in the framework of the cooperation between Neumann János University and the Hungarian National Bank, with three sub-centres in Budapest Campus.

Eurasia Centre

conducts research on various current geopolitical issues in the Eurasian supercontinent, while contributing to the basis for economic and policy decisions in the Eurasian region.

Centre for Economic Geography, Settlement Marketing and Geopolitics

it's objective is to provide knowledge of geography, regional science, spatial and settlement development resulting from spatial, territorial existence and functioning in the teaching research work.

MNB Institute

the Master's programme in International Economics and Management was launched in 2022.

More than 3000 students

3 faculty

15 BSC

5 MSC

7 higher vocational training

225 professor

A unique CAMPUS project in the world

86 colleague with Ph.D

28 modern laboratory

58 dual partner

Hydrogen Technology Research Center

The **Hydrogen Technology Research Center of John von Neumann University** aims to join international trends with the appropriate professional and social involvement. We place great emphasis on the creation of practical results that prove our competences and contribute to the widespread social acceptance of hydrogen technology. The activities of the research center are focused on three main areas of expertise: **hydrogen-based energy management, hydrogen storage, hydrogen combustion**.
We are looking for international collaboration with academic and industry partners.

Hydrogen Storage

All H related applications, require H storage solution. Although many storage technologies are being investigated, H is most commonly compressed in high pressure cylinders. Storing H poses new challenges for materials science and pressure vessel design. The aim of our research dealing with **composite overwrapped pressure vessels**, is to improve the weight ratio of H tanks, to improve their service life and sustainability, and to reduce their raw material and production costs.

We mainly focus on **type IV cylinders** which have **polymer** liner. The H compatibility of special liner materials and production strategies of the composite overwrap are investigated to provide new international results. Our specially equipped **Plastic Processing and Material Testing Laboratory** is used for H compatibility research. A competence of type IV cylinder production has been developed to create test cylinders in order to validate our material and production technology developments.

Hydrogen-based Energy Management

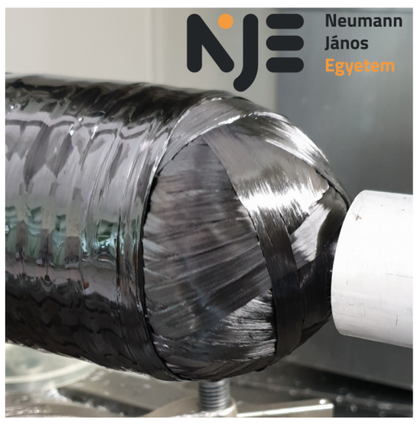
The aim of our energy management research is to increase the efficiency of electrical systems by adding renewable energy sources and fuel cells. We develop an autonomous energy control of the hybrid system using **Artificial Intelligence**. The currently examined energy system consists of a **battery** pack, **solar** cells and a H **fuel cell** stack. The AI is able to determine the optimal energy mix by combining the available energy sources and considering the current operating conditions.

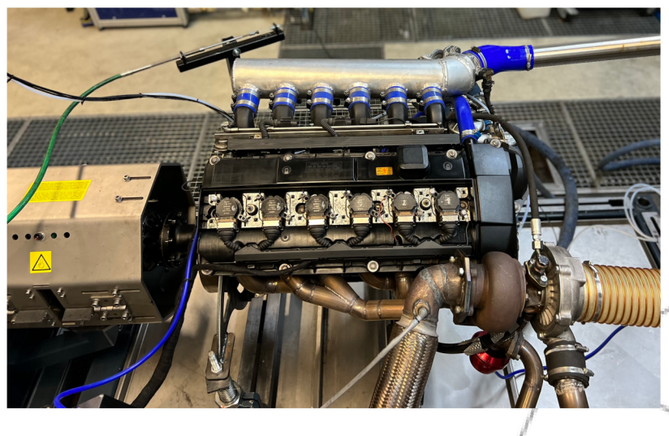
To demonstrate the capabilities of the energy control unit, a **prototype vehicle** of the **L6E** category is being designed and built. The autonomous system decides when the vehicle will run from which energy source and with what energy extraction. The design is achieved in consortium with **MOME (Moholy-Nagy University of Art and Design Budapest)**. The vehicle will even be suitable for road use, as it complies with all technical legislation in its category.

Hydrogen Combustion

H powered **internal combustion engines** might provide investment willingness to build the H distribution network and supply capacity. H combustion engine is not a completely new concept, but the accelerated developments in the H economy have brought it back to the fore.

As part of our initial research, we **measure**, **modify** and **optimize** a petrol engine on our **engine brake dynamometer** equipped uniquely in Hungary. H supply is achieved with a modified fuel injector system and turbocharger. The purpose of our measurements is to compare H operation with currently used internal combustion engines and to learn about the combustion characteristics of H, including experiments to approach the **EURO 7** norm. One of the most important pieces of information for an engine today is its environmental rating. Our emission measuring device monitors all EURO 6 standard values with high accuracy in real time.





Vision of Hydrogen Technology Research Center in 10 points

- Building a network among the top global hydrogen players.
- Learning about the most recent developments, trends, real needs of the industry.
- Doing joint research & development with foreign companies and universities, publishing articles, creating intellectual property.
- Becoming successful in Horizon Europe and further RDI focused grant programs.
- Getting on the map of acknowledged hydrogen RDI ecosystem players.
- Becoming successful in commercialization - licensing IP to companies, undertaking industrial assignments.
- Doing excellence based independent research – generating inventions which are ahead of their time.
- Contributing to EU Hydrogen Strategy.
- Creating the future education of hydrogen technology.
- Increasing the awareness and acceptance of hydrogen technologies among society.

John Von Neumann University

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