Hephas Energy HS-Series Equipped with MegaEIS™ for PEMFC Stack Performance Diagnosis

As the demand for high-performance and high-power fuel cell stacks for heavy-duty vehicles continues to grow, precise analysis and optimization have become essential. Hephas has integrated Kolibrik's multi-channel EIS (Electrochemical Impedance Spectroscopy) technology into the HS-series fuel cell stack testing system.

With advanced impedance analysis capabilities, the EIS function enables researchers and engineers to gain deeper insights into stack performance, degradation mechanisms, and efficiency improvements, making it an indispensable tool for fuel cell development and validation.

"We are committed to delivering the best solutions on the market, so we have carefully evaluated various options before selecting Kolibrik's multi-channel EIS technology. The Kolibrik MegaEIS™ System meets all demanding requirements for accuracy, high currents, and high power in fuel cell stack analysis," says the CEO of Hephas Energy, Jerry Chen.

HEPHAS energy

MegaEIS™ System

MegaEIS™ has optimized the operation of the electrolyzer at the EC Elbląg Power Plant (Energa, Grupa Orlen)

For more than 15 years Institute of Power Engineering (Poland) conducts studies, related to solid oxide cells, in a wide spectrum of problems, from the fabrication of cells up to SOFC and SOEC stacks and SOFC-based cogenerative (CHP) system. There was a need to replace general purpose data acquisition units in automation and control boxes with dedicated ones. They selected solution from Kolibrik, starting with TEVOMET TV16 and CVM-24P units and later with MegaEIS™.

"We use Kolibrik's Cell Voltage Monitoring system because of their reliable system that offers better operability and fits better our needs than general data acquisition units in automation. Additionally, MegaEIS allows detailed characterization and optimization of the stacks and has helped to optimized 10 kW reversible SOC-based electorolyzer that it is placed at Elbląg Power Plant," evaluates the cooperation dr hab. Yevgeniy Naumovich.

MegaEIS™ System
Cell Voltage Monitoring
TEVOMET

ien Institute of Power Engineering

kolibrik

Case Studies

- Quest One
- Pinflow
- Chemnitz University of Technology
- Hephas
- Institute of Power Engineering

Designed for hydrogen

- MegaEIS™ System
- Potentiostat/Galvanostat
- Cell Voltage Monitoring
- Power DC/DC Converter
- R&D and custom design

www.kolibrik.net

© 2025 Kolibrik.net, a.s. Czech Republic

Cell Voltage Monitoring allows Quest One to extend the lifetime of PEM electrolyzers

Quest One takes the quality of their system very seriously and pays high effort to ensure maximum lifetime of their electrolyzer systems for their customers. This is why they decided to measure continuously each cell of all produced electrolyzers.

They have chosen Cell Voltage Monitoring from Kolibrik which helps them to identify so-called critical operations, that could lead to damaging the whole electrolyzer, and react accordingly. This allows to protect the electrolyzer stack and to ensure its maximum lifetime.

"We use Kolibrik's Cell Voltage Monitoring system because of their accurate and reliable system. They are open to customization of their solution to meet our needs. They are flexible to meet our requirements and have a sufficient capacity to match our growing demands. They also provide excellent technical support," evaluates the cooperation senior buyer Björn Wawrok.

QUEST ONE

Cell Voltage Monitoring

Pinflow significantly improves its redox-flow batteries the multi-channel MegaEIS™ System

Pinflow develops Energy storage systems with redox flow technology and needs to test and improve the efficiency of the complete stack. They chose the MegaEIS™ System to measure Electrochemical Impedance Spectroscopy (EIS) of each individual cell of the battery stack simultaneously to enhance the performance and efficiency.

„The MegaEIS™ System enables simultaneous measurement of individual redox-flow battery cells, providing crucial insights during charging, discharging, and even at zero current. Now, thanks to Kolibrik, we can apply this capability to complex, large-scale testing," comments Jiří Vrána, Co-founder & management.

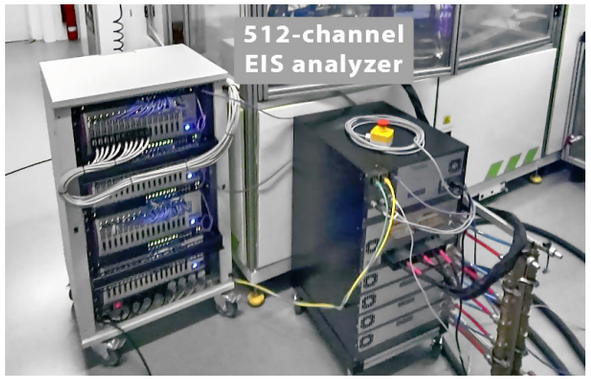
"I really appreciate Kolibrik flexibility and customer focus that was clear during our last project. They helped us deliver a Multi-channel EIS analyzer within a three-week timeline and even added custom functions that our customer asked for, taking in account available time that was nothing short of incredible," comments Jaromír Pocedič, Product development manager at Pinflow.

pinflow energy storage

MegaEIS™ System

TU CHEMNITZ can measure EIS simultaneously up to 512 channels with new MegaEIS™ System

Chemnitz University of Technology needed to innovate a test station that was able to measure with EIS only one cell at a time and decided on a MegaEIS™ System equipped to measure 512 channels simultaneously.



"We have been successfully cooperating with Kolibrik for several years. We have their trusted product, and this solution greatly improved our measurement capabilities," comments Dr. Carmen Meuser, Professorship of Advanced Powertrains at Chemnitz University of Technology on system deployment.

"Creating a network of quality partners and choosing the best solutions helps us to make Chemnitz a central competence location in Germany," says Prof. Dr. Thomas von Unwerth, Professorship of Advanced Powertrains at Chemnitz University of Technology.

Are you interested in more detailed report including advanced precision measurement? Send us e-mail to **sales@kolibrik.net**

TECHNISCHE UNIVERSITÄT
IN DER KULTURHAUPTSTADT EUROPAS
CHEMNITZ

MegaEIS™ System