Akademie věd České republiky

# ENERGY DAYS 2026

## Network Modeling: Current Trends in Stability, Reliability, and Optimization

**Thursday 5th November 2026**
**Charles University, Fac. of Mathematics and Physics**
Malostranské nám. 2/85, Praha 1; metro A : Malostranská

**Friday 6th November 2026**
**Czech Statistical Office**
Na padesátém 81/3268, Praha 10; metro A : Skalka
**Czech Cultural Institute, Nekázanka 16, Prague 1**
Praha 1; metro A

**Saturday 7th November 2026**
**Czech Technical University, Fac. of Mechanical Engineering**
Karlovo nám. 13, Praha 2; metro B : Karlovo náměstí

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# Schedule and Abstracts as of 5 November 2026

## Thursday, 5 November 2026

**Venue: Charles University, Faculty of Mathematics and Physics, Malostranské nám. 2/85, Prague 1 - Malá Strana**
**Malostranská metro station (Line A), one tram stop or a 5-minute walk**

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| **13:00 – 14:00** | **Get-Together and Icebreaker** |
| **14:00 – 14:05** | **Opening** |
| **14:05 – 15:45** | **Invited Lectures (Juchelková, Lewandowski, Lízal, Míl, Řežábek)** |
| **15:45 – 16:15** | **Coffee Break** |
| **16:15 – 18:00** | **Round Table Discussion** |
| **18:00 –** | **Guided tour of the historic building, Discussion over a glass of beer** |

## Friday, 6 November 2026

**Venues: Czech Statistical Office, Na padesátém 81/3268, Prague 10**
**Skalka metro station (Line A), a 3-minute walk**

**Evening Discussion: Jan Deyl Conservatory of Music, Maltézské námestí 14, Prague 1 - Malá Strana**
**Malostranská metro station (Line A), one tram stop or a 5-minute walk**

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| **Registration starts at 8:30** | |
| **8:45 – 8:50** | **Opening** |
| **8:50 – 13:00** | **Invited and Contributed Lectures** |
| **13:00 – 14:00** | **Lunch** |
| **14:00 – 17:30** | **Invited and Contributed Lectures** |
| **18:00 – 21:00** | **Evening Discussion at Jan Deyl Conservatory of Music** |

## Saturday, 7 November 2026

**Venue: Czech Technical University, Faculty of Mechanical Engineering, Karlovo náměstí 13, Prague 2 - Nové Město**
**Karlovo náměstí metro station (Line B)**

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|---|---|
| **Registration starts at 8:45** | |
| **9:00 – 9:05** | **Opening** |
| **9:05 – 12:00** | **Contributed Lectures and Discussion** |

## Jaromír Antoch
**Charles University, Faculty of Mathematics and Physics, Praha**

### Statistical process control as a tool for directing inspection and maintenance of complex systems

This lecture explores the use of sampling surveys and statistical process control methods in complex engineering systems composed of a large number of components that are costly or impossible to inspect individually. Examples include buried water and gas distribution networks, concealed electrical installations, and other infrastructures where complete inspection of all components is impossible.

The lecture discusses the limitations of statistical inference when information about component reliability and defect occurrence is limited. It will be shown that, under such circumstances, reliable estimation of the probability of critical system failures may not be possible. Rather than providing definitive answers about system reliability, sampling surveys and statistical process control can serve as effective tools for directing inspection and maintenance of complex systems. Because complete inspection is impossible, inspection resources must be directed to selected parts of the system.

**Jaromír Antoch** is professor of statistics at the Charles University of Prague. He is interested in simulations, robust statistics, change point detection and applied statistics. He served, among others, as President of the International Association for Statistical Computing, member of the Council of the International Statistical Institute, President of the Czech Statistical Society, etc.

## Ivo Bukovský, Gejza Dohnal
**University of South Bohemia in České Budějovice and Czech Technical University in Prague, Faculty of Mechanical Engineering**

### Beyond local linearization: Monitoring dynamical stability in energy systems using higher-order neural units

Monitoring dynamical stability under changing operating conditions is an important challenge in energy systems. This contribution presents a framework based on higher-order neural units (HONUs), with emphasis on quadratic and cubic polynomial architectures. These models combine nonlinear dynamical representation with linearity in their adjustable parameters, facilitating data-driven identification and explicit analysis of the resulting model.

The presentation distinguishes the stability of parameter adaptation from the bounded-input bounded-state (BIBS) stability of recurrent model dynamics and feedback interconnections. By retaining nonlinear polynomial interactions, the approach supports stability assessment beyond a local linear approximation around a fixed operating point. Particular attention is given to the assumptions and operating domains under which boundedness conditions hold, and to the interpretation of model-based stability indicators during online operation.

Potential applications include monitoring changing dynamical regimes and supporting operational risk assessment in energy systems. The discussion also addresses model uncertainty and the conditions required to relate the stability of an identified neural model to that of the underlying physical system.

**Ivo Bukovský** is an associate professor at the Czech Technical University in Prague. He focuses on adaptive novelty detection via learning entropy, adaptive algorithms and neural networks for complicated dynamic systems and signals, multi-scale analysis approaches to signal processing and dynamic systems, time series analysis and prediction, nonlinear adaptive control and fuzzy-logic rule-based systems for modeling and evaluation of complex dynamic systems.


## Eliška Cézová

**Czech Technical University, Prague, Czech Republic**


## Control EWMA chart for real-time energy consumption monitoring

This presentation focuses on the EWMA control chart with variable control limits for Phase II process monitoring. The proposed chart incorporates dynamic control limits that allow real-time discrimination between normal consumption variability caused by human activity and variability resulting from technical malfunctions. As the control limits automatically widen during morning and evening peak periods and narrow during low-demand nighttime hours, the monitoring scheme adapts to the expected level of process variability at each time of the day. Consequently, the proposed approach reduces the occurrence of false alarms while maintaining sensitivity to genuine process disturbances. In addition, it supports predictive maintenance and provides valuable feedback for improving the control algorithm of the monitored system.

**Eliška Cézová** is assistant professor at the Czech Technical University in Prague. She specializes in statistical process control and metrology.


## Zdeněk Fabián

**Czech Academy of Sciences, Institute of Computer Science, Prague**


## Stein's method for comparing probability distributions

Parameter estimates based on Stein's method are obtained by minimizing the distance between the operators of a model distribution and the so-called data score function via score matching. For a given distribution, the problem is to identify the simplest suitable operator. I will demonstrate that this problem can be solved using the so-called core function. function. This approach is straightforward and enables the construction of a probability theory for random variables that satisfy the conditions required for the Central Limit Theorem (CLT) and possess finite moments useful for parameter estimation. In this presentation, I will outline the essence of and differences between three fundamental methods, describe the basis of

an alternative probability theory, and present several results concerning the application of a distribution's score function to classical statistical problems.

**Zdeněk Fabián** is scientific worker emeritus at the Institute of Computer Science of the Czech Republic. He specializes in information theory, modelling uncertainty and the use of artificial intelligence in data analysis and modelling.


## Robin Gřunděl

**Univerzita Palackého, Olomouc**


### When electricity loses its value: Smart home energy management in practice

Over the past three years, the number of hours with unprofitable electricity sales in the Czech Republic has increased from dozens to hundreds per year. We will introduce OLAF, a system that continuously manages the operation of residential photovoltaic (PV) installations and battery storage based on electricity prices, weather conditions, and consumption patterns. We will explain the concept of an electricity-sharing group and how to optimize its operation as a whole. Furthermore, we will share insights gained from real-world operations and simulations based on actual data, highlighting cases where the results were surprising.

**Robin Gřunděl** is a master's student at the Department of Mathematical Analysis and Applications of Mathematics, Faculty of Science, Palacký University Olomouc, and works as a freelance software engineer. For OLC, Robin develops OLAF, a system for smart control of household photovoltaics and batteries.


## David Hartman

**Unicorn University, Prague and Czech Academy of Sciences, Institute of Computer Science, Prague**


### Data-driven forecasting and optimization in modern energy systems

Modern energy systems increasingly rely on data-driven methods to support efficient energy use and decision-making. This talk presents selected approaches ranging from time-series analysis and short-term forecasting of energy consumption and production to optimization of flexible energy resources. We also discuss their use in more complex settings, including energy aggregation, coordination of heterogeneous assets, and participation in multiple energy markets.

**David Hartman**'s research focuses on complex networks, graph theory and combinatorics, optimization, and statistical and AI methods. He combines structural and algorithmic approaches with applications in areas such as energy systems, computational neuroscience, and spreading information. He has led and participated in national and international research projects addressing both theoretical questions and interdisciplinary applications in complex systems, with a particular focus on network structure.

## Dagmar Juchelková

### Technical University of Ostrava, Ostrava, Czech Republic

## Waste-to-energy or wasting energy

What if one of our greatest untapped energy resources is the energy we already waste? The discussion about waste-to-energy often focuses on technologies that transform waste into useful energy. Yet the broader challenge is how to make better use of all available resources — from biomass and residual materials to industrial waste heat and energy that is lost through inefficient processes. The future of energy is not only about finding new sources. It is also about learning how not to waste the ones we already have. This lecture will explore the opportunities and limitations of "alternative energy sources" within modern energy systems. Using practical examples, it will highlight how technological innovation, system modelling and intelligent integration of different energy sources can improve efficiency, reduce environmental impacts and strengthen energy resilience. The key question is not whether we can recover energy from every available source, but when, where and how its utilization truly makes sense — technically, economically and environmentally.

**Dagmar Juchelková,** professor at VSB-Technical University of Ostrava, specializes in sustainable energy systems, with a focus on waste-to-energy technologies, biomass utilization, renewable energy integration, and energy system modelling. She founded the ENET Centre (Energy Units for Utilization of Non-Traditional Energy Sources) at VSB and initiated the international IRRC Waste-to-Energy conference series. Her work combines engineering expertise, systems thinking, and data-driven methods to improve energy efficiency, support decarbonization, and enhance energy resilience. She has held research appointments at several international universities, including TU Wien, TU Dresden, ETH Zürich, and Southern Illinois University Carbondale. She has also supervised and mentored numerous students and early-career researchers. She serves in expert working groups of the International Energy Agency and contributes to international research cooperation in the field of energy transition.

## Miloš Kopa a Jana Jůnová

### Charles University, Faculty of Mathematics and Physics, Prague, Czech Republic

## Multi-horizon capacity expansion planning of a virtual power plant with stochastic non-dominance constraints

Expanding a virtual power plant (VPP) is an investment problem under uncertainty in technology costs, subsidies, energy prices and renewable output. In this talk, we present a multi-stage, multi-horizon stochastic programming model in which a VPP invests at two stages of a thirty-year horizon in renewable and conventional generation, batteries, hydrogen and grid connection capacity, with hourly operation after each investment stage. We require the cost distribution to dominate that of a benchmark by second-degree stochastic dominance (SSD), that is, to be at least as good for every risk-averse decision maker. Relaxed solutions allow violation of dominance by at most a prescribed amount, measured by the empirical

measure of stochastic non-dominance. Varying this amount spans all solutions from SSD-constrained to risk-neutral. In a case study based on Spanish data, the risk-neutral solution leads to the lowest average cost but the highest Conditional Values-at-Risk (CVaRs), while the SSD-constrained solution reverses this. The relaxed solutions lie in between. Under a mean-CVaR criterion, the relaxed solutions outperform both extremes for a wide range of intermediate risk attitudes.

**Miloš Kopa** is an associate professor at Charles University in Prague, chair of Department of Probability and Mathematical Statistics. The research of Milos Kopa focuses especially on stochastic programming theory and applications, especially financial applications. He led several grant projects, including GAČR Expro project. He is the secretary of EURO working group on stochastic optimization and the president of the Czech Society for Operations Research. Jana Jůnová is a a third-year PhD student at Department of Probability and Mathematical Statistics.


## Mateusz Lewandowski

**Tauron Polska Energia, S.A.**


## TAURON's long-term energy transition strategy

**Mateusz Lewandowski** serves as Executive Director for Investment at TAURON Polska Energia S.A., one of Poland's largest energy companies. He is responsible for managing the company's investment portfolio across both conventional power generation assets and renewable energy projects. He also plays a key role in implementing TAURON's long-term energy transition strategy and its goal of achieving climate neutrality by 2040.


## Lubomír Lízal

**Czech Technical University, Prague, Czech Republic**


## Winter challenge and energy adequacy mismatch

The planned energy transition creates a fundamental mismatch between weather-dependent, intermittent renewables and the continuous baseload demand of energy-intensive manufacturing. Weather patterns across Central Europe are highly synchronized, meaning regional risk diversification fails during low solar/wind periods. Forecasts indicate potential regional supply shortfalls during “dunkenflaute” periods. While high energy input costs directly caused 50% of recent industrial plant closures, low summer electricity prices ("duck curve") cannot offset expensive winter spikes or mitigate the long-term industry requirements.

**Lubomír Lízal** is a Czech economist, a member of the Bank Board of the Czech National Bank from 2011 to 2017. He is a member of several expert committees and scientific councils. He also served on the Supervisory Board of the energy company ČEZ. He lectures at the Faculty of Electrical Engineering of the Czech Technical University in Prague and at the University of Finance and Administration in Prague.

## Jiří Michalík

### Arnor Surgere

## Energy wrestling of new energy experts: How to increase prices easily and quickly

In late 2023, the Council of the European Union reached agreement on a proposal to reform the EU electricity market, a move it described as a strategic step forward for the EU. The agreement is expected to enable consumers across the EU to benefit from more stable energy prices, reduced dependence on fossil fuel prices, and stronger protection against future crises. The agreement is also expected to accelerate the deployment of renewable energy sources, providing EU citizens with cleaner and more affordable energy. This lecture will analyze the impact of the agreement on the economics of the electricity sector, market design, and the future energy mix. It will also examine the behavior of key market participants and regulatory institutions and present the author's view of the most effective approach to decision-making in the EU electricity market.

**Jiří Michalik** is a Czech energy expert and manager who has been active in the energy sector since 1988. Throughout his career, he has held several senior management positions and has been actively involved in the development of the Czech electricity market since its early years. He played a key role in establishing TAURON Czech Energy, a subsidiary of the major Polish energy group TAURON, where he subsequently served as Managing Director. He has also contributed, among others, to the activities of the Association of Energy Managers (AEM), supporting professional dialogue and knowledge sharing within the energy sector. He currently works in the fields of energy consulting and capital market trading. He discusses these topics in a number of publications, including the Energy Wrestling of New Energy Experts series.

## Jaroslav Míl

## Why are small modular reactors emerging?

Small modular reactors (SMRs) represent an engineering response to the rising investment costs of large-scale new nuclear projects, the growing indebtedness of European countries, green ideology, the disregard for economic realities and energy security, and, not least, the weakness and populism of political leadership. The presentation will focus on the fundamental changes that have taken place in the energy sector over the past 25 years (2002–2026), the impact of ideologically driven interventions in energy policy, and the increasing volatility of energy markets resulting from the preferential dispatch of intermittent energy sources. It will also address the continuing tendency to mitigate the consequences of misguided decisions rather than tackle the underlying causes of the problems. Attention will be paid to the economic situation in Europe and the Czech

Republic, the key factors behind rising investment costs, and the impact of project duration and interest rates on the cost of electricity generated by new nuclear power plants. The presentation aims to explain why SMRs are emerging as an increasingly important option, how the world's leading nuclear technology suppliers are responding to this development, and what opportunities exist for the deployment of SMRs in Europe and the Czech Republic.

**Jaroslav Míl** is a prominent Czech energy expert and former Chairman of the Board and Chief Executive Officer of ČEZ. He also served as the Czech Government Commissioner for Nuclear Energy, where his principal responsibility was to launch and oversee the process leading to the construction of two new nuclear units at the Dukovany Nuclear Power Plant. Over the course of his distinguished career, he has held numerous senior positions in both the Czech and European energy sectors. Among other roles, he was the first Chairman of the Board of the Czech Radioactive Waste Repository Authority. He also served for more than seven years as President of the Confederation of Industry of the Czech Republic.


## Serhii Bogdanovich Myskiv

**National Transport University, Kyiv, Ukraine**


## When demand is hidden. Evaluating electricity forecasts under load shedding


Ukraine's experience of electricity rationing exposes a basic problem in demand forecasting: a model can predict recorded consumption accurately while missing the demand that outages prevent from being served. For assessing electricity needs and supply adequacy, the distinction between served load and unmet demand matters. This paper develops an evaluation protocol for the Ukrainian setting that makes the forecast target and the interpretation of accuracy explicit. The analysis combines historical Ukrainian hourly load with published outage schedules and a Ukrainian survey conducted by the Center for Applied Research between 31 January and 10 April 2026. The survey records differences between announced and experienced outage durations, providing empirical context for the uncertainty in schedule-based assumptions. Controlled censoring experiments then impose a small set of explicitly specified interruption scenarios on historical load. The original series remains available as a reference, allowing the effects of imposed restrictions to be distinguished from forecasting error. Weekly seasonal-naive and regression forecasts are trained and evaluated against both served and reference load, comparing absolute error, signed bias, and relative model performance. Published demand series and load-reduction estimates from Eskom in South Africa provide a supporting empirical comparison from actual load-shedding periods. They allow the protocol to be examined beyond simulated interruptions, while recognizing that operator estimates are not independent measurements of unmet demand. The resulting framework distinguishes accuracy in predicting electricity delivered from accuracy in predicting demand without imposed restrictions. It also makes it explicit which conclusions depend on assumptions about interruption timing and affected demand shares. The

experiments provide a reproducible assessment of forecast evaluation under Ukrainian rationing patterns, without treating synthetic reference demand as a reconstruction of actual wartime consumption.

**Serhii Myskiv** is a third-year Ph.D. student in Computer Science at the National Transport University in Kyiv, Ukraine. His research focuses on statistical modeling and electricity demand forecasting, particularly exploring how load shedding and incomplete observations affect forecast evaluation.


## Valerio Piersimoni a Gejza Dohnal

### Cellforce Group GmbH, Porsche Group, Germany and Czech Technical University in Prague, Faculty of Mechanical Engineering


## Forecasting lithium-ion battery state of health

Lithium-ion battery deployment is rising exponentially, driven primarily by the rapid growth of electric mobility. As the IEA reports, global lithium-ion battery deployment in 2025 was more than six times its 2020 level. Consequently, soaring battery demand has led to higher cell production and testing volumes. In this context, the digitalization of production and testing processes becomes essential. This lecture demonstrates how to predict degradation trends early while keeping the underlying model fast enough for online use.

**Valerio Piersimoni** works in Cellforce Group GmbH, Porsche Group, Germany, as process engineer. He is also PhD student at CVUT.
**Gejza Dohnal** is a professor at the Czech Technical University in Prague. He specializes in statistical process control, reliability, quality control, and statistical applications. He has successfully led numerous large-scale projects, most notably the REQUEST.


## Jiří Plešek

### Czech Academy of Sciences, Institute of Thermomechanics, Prague


**Jiří Plešek** is a distinguished Czech scientist whose work bridges advanced mechanics and nuclear power engineering. He has long been associated with the Institute of Thermomechanics of the Czech Academy of Sciences (CAS), where he also served as Director. His research focuses on computational mechanics, continuum mechanics, metal plasticity, and impact dynamics. He has successfully applied his expertise to nuclear power engineering, contributing to structural integrity assessments and seismic analyses of nuclear power plant components and systems. Beyond his scientific work, he plays an important role in shaping science and innovation policy in the Czech Republic. He is a member of the Academic Council of the CAS, where he coordinates the prestigious Strategy AV21 research programme and chairs the Commission for Energy. He also serves as a member of the Presidium of the Technology Agency of the Czech Republic (TA CR).

## Pavel Řežábek

### ČEZ, a.s.

## Significant trends in energy markets

**Pavel Řežábek** is Chief Economist at ČEZ. He specializes in energy market analysis and forecasting and is responsible for the company's detailed model of European energy markets. His areas of expertise include electricity and natural gas markets, carbon pricing and the EU Emissions Trading System (EU ETS), European energy and climate policies, and the implications of technological progress for the energy sector. Prior to joining CEZ in 2006, he held engineering and commercial positions at Dresser-Rand and Emerson. Earlier in his career, he spent four years conducting research in superconductivity at the Institute of Physics of the Czech Academy of Sciences. He graduated from the Faculty of Nuclear Sciences and Physical Engineering at the Czech Technical University in Prague. He regularly contributes to discussions on European energy market developments, decarbonization policies, and long-term trends shaping the energy sector.

## Jaroslav Sixta

### Czech Statistical Office

## The impact of the energy transition and nuclear power plant expansion on the macroeconomic statistics of the Czech Statistical Office

**Jaroslav Sixta** is a Czech statistician and educator who has served as Vice-President of the Czech Statistical Office since April 2018. Throughout his professional and academic career, he has focused extensively on macroeconomic statistics, national accounts, and economic statistics. Prior to his appointment as Vice-President, he headed the Macroeconomic Statistics Section. He played a key role in implementing the European standards ESA 1995 and ESA 2010 for the compilation of national accounts in the Czech Republic. These standards ensure that Czech economic indicators, such as GDP and investment figures, are fully comparable with those of other European Union countries. He frequently publishes and speaks on topics related to the significance and interpretation of key economic indicators.

## Milan Smutný

### Realistická energetika a ekologie

## The security, self-sufficiency and affordability of energy supplies in the Czech Republic

Climate change is a reality; it has occurred repeatedly on our planet; however, we do not regard it as an unmanageable disaster; we can adapt, which is the most cost-effective approach. We regard a rational, non-ideological effort to reduce emissions as legitimate; the extent and pace of decarbonization must be tailored to the social and economic capabilities of individual states and must be preceded by impact assessments and

analyses. Because of the green lobby, we are 20 years behind in the only rational way of meeting the energy needs of modern society nuclear power stations; until they become fully operational in the Czech Republic in the 2040s, we cannot completely phase out coal-fired power stations used to generate both electricity and heat.

**Milan Smutný** is a Czech publicist, commentator, communications expert, and spokesperson for the think tank Realistická energetika a ekologie (Realistic Energy and Ecology). In his writings and public appearances, he has long focused on topics such as energy, the automotive industry, and the
economic impacts of the European Union's green policies. Milan Smutný has an extensive background in media and public relations; he spent many years as a journalist and editor-in-chief at the Czech News Agency (ČTK), including a stint as a foreign correspondent in Vietnam, and served for 11
years as the press spokesperson for the automaker Škoda Auto. Later, he managed communications and marketing at Český Telecom and provided consulting services, often in a crisis management capacity, to various other companies. He also served as the Director of the Communications and Marketing Department at the Ministry of Industry and Trade.


## Florian Sobieczky

**Software Competence Center, Hagenberg, Austria**


## Dependence of profit and risk on model accuracy in predictive maintenance

If the sequence of maintenance cycles is assumed to be a renewal process, it is easy to compute the asymptotic profit rate given identical independence of the distribution of breakdown and maintenance scheduling times. However, the fluctuation of the profit strongly depends on the distributions of the cycle's idle time, maintenance cost and production gain [1]. To use our cost-model [2] as a practical basis for the asymptotic conditions for profitability of predictive maintenance (PdM) vs. preventive and reactive maintenance, it is also necessary to bound the profit's variance to prevent ruin with controlled confidence.


[1] Florian Sobieczky, A predictive maintenance Cost-Model: Fluctuations of Profit related to Predictive Maintenance, IFORS 2026 https://www.euro-online.org/conf/admin/tmp/program-ifors2026.pdf

[2] Florian Sobieczky, A Predictive Maintenance Strategy Cost-Model, https://conferences.enbis.org/event/32/contributions/423/


**Florian Sobieczky** is a senior researcher in the Data Science Lab at the Software Competence Center Hagenberg focusing on Machine Learning for Fault Detection. His research is in probability theory, particularly discrete stochastic processes. The projects at SCCH to which he is typically contributing are related to the statistics of production processes, fault detection, anomaly diagnosis and predictive maintenance. In the context of Explainable Artificial Intelligence is involved in the project on *Interpretable Artificial Intelligence Corrections*, with the aim of delivering

explanations of the predictions of high performing machine learning methods for which AI acts as a "corrector" on top of the predictions of the classical model.


## Peter Štibraný

**Ministry of Economy of the Slovak Republic, SIEA**


### Renovation of public buildings using a strategy based on statistics

This presentation dispute common myths regarding the necessity for the state to invest exclusively in deep renovation of public buildings via subsidy programs. The energy efficiency monitoring system, operated by the Slovak Innovation and Energy Agency (SIEA) under the patronage of the Ministry of Economy of the Slovak Republic, includes a "BUILDINGS" module and an integration platform that shares project data from European Structural Funds. It utilizes selected data on actual energy consumption in public buildings, as well as specific indicators and economic data from renovation projects implemented under the structural funds. The data analyzed demonstrates that projects can be selected for implementation more effectively, rather than simply granting support to projects that meets the call's criteria. The state could achieve greater energy savings for the same level of investment.

**Peter Štibraný** is head of the Energy Efficiency Monitoring Department at the Slovak Innovation and Energy Agency (SIEA). He graduated in computer modelling of mechanical systems from the University of Žilina and spent twenty years in the IT sector, managing ERP solutions for production processes. In 2010, he joined SIEA, focusing on renewable energy sources, and became a certified energy auditor in 2011; he has led the department since 2015, establishing an internal software team for advanced data processing. Since 2020, he has also been responsible for energy data reporting for the Ministry of Economy, the Statistical Office of the Slovak Republic, and Eurostat.


## Vladimír Wágner

**Czech Academy of Sciences, Nuclear Physics Institute, Prague and FNSPE CTU in Prague**


### Is the nuclear renaissance finally beginning globally and at home?

This lecture provides an overview of the latest developments in nuclear energy both globally and within the Czech Republic. It examines progress in extending the safe operation of nuclear reactors up to eighty years, the deployment of Generation III reactors, and most importantly, updates on the pathway toward the efficient utilization of small modular reactors (SMRs). In all of these key areas, the Czech Republic remains actively engaged and holds a significant stake

**Vladimír Wágner** joined the Nuclear Physics Institute of the Czech Academy of Sciences (CAS) immediately after completing his studies in nuclear physics at the Faculty of Mathematics and Physics, Charles University. Until 1990, he was a member of a research group focusing on nuclear structure through nuclear spectroscopy; currently, he is a member of the Relativistic Heavy Ion Group. He completed both his master's and Ph.D. theses at the Institute, focusing on the structure of deformed nuclei. At present, his research mainly centers on hot and dense nuclear matter - the kind found inside neutron stars or produced during supernova explosions. Microscopic volumes of this matter can be generated through the collision of heavy nuclei accelerated to ultra-relativistic speeds approaching the speed of light. Additionally, he is involved in studying the potential applications of relativistic proton reactions with thick targets for neutron production and utilizing the resulting neutron fields for radioactive waste transmutation.


## Francesco Zanini

### International Institute of Technology, Lugano, Switzerland


## Photovoltaic Energy in Italy: Regulatory framework, investment opportunities, and technological Innovation

Photovoltaic (PV) energy production in Italy is governed by a regulatory framework covering plant development, grid connection and the commercialization of the electricity generated. We are going to analyze the current scenario and identify best ways to maximize financial Profit of an investment in the field. Specifically, we will pay particular attention to the Italian market, due to the energy deficit Italy is currently facing. We will also analyze the technologies currently present in the sector and the innovations required to increase the share of renewable energy in each European country's energy mix.

**Francesco Zanini** is an academic researcher and engineer. His research activity is primarily focused on Energy Efficiency and Energy Production from renewable resources. Since July 2023, he has led the research division at the I2T International Institute of Technology ($I^2T$), a research institute established in 2023 in Lugano, Switzerland that focuses on integrating advanced physics and materials engineering to innovate sustainable technologies and renewable energy systems. Professor Zanini has contributed to numerous academic publications detailing Energy efficiency in semiconductor devices.

## Local Organizing Committee

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contact email info@energy-days.cz/
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STRATEGY AV21
Top research in the public interest

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## Strategy AV21

*Top research in the public interest* is the motto of the strategy of the Czech Academy of Sciences, which presents itself more strongly as an institution whose primary mission is high quality research focused on the problems and challenges faced by contemporary society. Topics such as the **future of energy in the Czech Republic**, public health or the quality of public policies involve complex sets of problems, the solution of which requires broad-based interdisciplinary research. The Czech Academy of Sciences has therefore adopted Strategy AV21 based on a set of coordinated Research Programs utilizing interdisciplinary and inter-institutional synergies to identify the problems and challenges of our time and to harmonize the efforts of research institutes of the Czech Academy of Sciences towards their solutions.