energies

Editorial

Editorial for the Special Issue "Verifying the Targets—Selected Papers from the 55th International Universities Power Engineering Conference (UPEC 2020)"

Gianfranco Chicco *, Andrea Mazza, Salvatore Musumeci, Enrico Pons and Angela Russo

ENSIEL—Politecnico di Torino, Dipartimento Energia "Galileo Ferraris", 10129 Torino, Italy
* Correspondence: gianfranco.chicco@polito.it; Tel.: +39-011-090-7141

check for updates

Citation: Chicco, G.; Mazza, A.; Musumeci, S.; Pons, E.; Russo, A. Editorial for the Special Issue "Verifying the Targets—Selected Papers from the 55th International Universities Power Engineering Conference (UPEC 2020)". *Energies* **2022**, *15*, 5752. https://doi.org/10.3390/en15155752

Received: 1 August 2022
Accepted: 3 August 2022
Published: 8 August 2022

1. Introduction

The 55th International Universities Power Engineering Conference (UPEC 2020) has been held on 1–4 September 2020 in the Virtual Conference mode because of the limitations due to the pandemics, hosted by Politecnico di Torino, Torino, Italy. UPEC 2020 has continued the long tradition of the UPEC conferences, particularly aimed at hosting scientific contributions presented by young researchers and PhD students who discuss their research lines among them and with experienced researchers.

The conference UPEC 2020 had the motto "Verifying the Targets" and dealt with research topics concerning the role of electricity for a sustainable energy transition. The contents of the articles presented during the Conference were referring to keywords such as power systems, distribution systems, power electronics, electrical machines, electric vehicles, e-mobility, e-transition, renewable energy, energy efficiency, and storage.

This Special Issue includes 27 articles, prepared as extended versions of selected contributions presented during the Conference. All articles have been fully reviewed by an independent pool of reviewers not selected by the UPEC 2020 organizers.

The next section provides a categorisation of the contributions according with their main topics and summarises the specific focus of each contribution.

2. Overview of the Contributions

The various topics addressed by the articles included in this Special Issue reflect some of the current trends in place in the power engineering field. For the sake of clarity, the contributions have been partitioned into five more general categories. For each category, the next subsections indicate the role of each article in advancing the state of the art concerning the corresponding topic.

2.1. Electrical Machines and Power Converters

The electrical power conversion from renewable energy sources plays a crucial role in the development of a sustainable society. Electrical machines and magnetic components, high-voltage voltage power converters, and battery storage systems are some basic bricks to build an effective and efficient energy conversion environment. Both applied academic and industrial research are involved in the continuous improvement of these topics for the renewable energy resource integration. Considering the power converter topology, the development of multilevel circuital structures with dedicated control techniques are some of the main research objectives. A modular multilevel converters (MMC) approach is a key research aim.

In electrical distribution network, when the distance between generation plants and large consumers is significant, the best technical and economical solution is the use of high-voltage direct current transmission (HVDC) for a multiterminal DC network. In this applications area Damian et al. [1] make a noticeable contribution exploring the MMC-HVDC system. The MMC topology consists of several submodules (SMs), connected in series. The basic SMs topology analysis, the control techniques investigation, and the fault handling evaluation have been aimed at a correct design method for multiterminal HVDC network applications.

In AC energy sources such as the renewable wind power applications, also considering the offshore wind energy conversion systems (WECS), are featured by a wide growth. The state-of-the-art of energy conversion system in wind power applications is composed of a low voltage permanent magnet synchronous generator (PMSG) with a power converter followed by a step-up industrial transformer to reach the requested medium grid voltage. Steffen et al. [2] investigate a modular approach taking into account the interconnection of the wind generator and the power converter to avoid the industrial transformer.

The solid-state device technology development and the progress in magnetic materials leading nowadays to a replacement of the bulk industrial electrical transformers with an arrangement of power converters with smaller high-frequency transformers. The system arrangement is called a solid-state transformer (SST). Currently, this is a topic trend in energy conversion for renewable integrated systems interfaced with the grid network.

The accurate modelling of magnetic components such as high-frequency inductors or transformers is effective in designing the power converter A critical point in the DC-DC converter's operation is the suitable use of quasi-saturation in the magnetic core, it allows a reduction of the size of the inductors. For a compact power converter need, the passive components dimension reduction is a great demand design target. The modelling of the core saturation is remarkable in the estimation of the inductor current in the DC-DC converter design, taking into account the effect on the power losses obtained (as described by Musumeci et al. [3]).

Furthermore, the electrical machine (EM) modelling methodology may be used for an extensive analysis of the static and dynamic operation in some fields of integrated renewable energy source applications such as hydroelectric power plants. Moreover, the modelling analysis can be carried out to investigate the thermal and ventilation conditions. The evaluation of stator's copper and iron temperatures allows the estimation and monitoring of the actual EM thermal characteristics considering several operative conditions in hydro generator (HG) as demonstrated by Radulescu [4] in her contribution.

Energy storage systems such as batteries play a decisive role in integrated systems of renewable energy sources as well as in the field of sustainable mobility. Considering the battery applications' rate of growth, the requirement for more detailed models to accurately represent the behaviour regarding voltage, current, degradation, state of health (SOH), and state of charge (SOC) is highly wanted. Moreover, SOC prediction is one of the most widespread applications of battery models.

The battery management systems (BMS) need an accurate battery model to explore different load operative conditions with variable charges and discharges for simulating actual storage applications. In this way, a flexible electric circuit model (ECM) for battery storage system (BSS) achieves an effective analysis and design system (Fenner et al. [5]).

Finally, the fil rouge of every contribution in this section is oriented to investigate the power converters, electrical machines, magnetic components, and battery storage systems in actual energy conversion applications for renewable energy sources integration by a modelling approach. This proven engineering methodology to design management leads to an effective and flexible integrated planning system aimed at the continuous growth of this applied technology field fundamental for sustainable human development.

2.2. Grid Components and Applications

Issues such as the analysis of power system components, protection and monitoring, power quality, and optimization applied to distribution systems are continuously under consideration by researchers to keep them updated with the latest technological developments and new challenges faced by power systems.

Underground cables, widely used in distribution systems, can benefit from a "dynamic rating", in particular, for the lines that are subject to an increase of demand and carry current from intermittent renewable generation. Enescu et al. [6] provide an overview of the concepts and the methods related to the dynamic cable rating, with a focus on models, solution methods, reliability and monitoring issues and the impact on distribution systems operation with different time horizons.

The monitoring of equipment installed in power systems allows to know the condition of components and, in particular, of the insulation materials. An adequate monitoring action is necessary to set up the countermeasures for the improvement of the reliability of the supply system.

Monitoring the degradation of the cable insulation deployed in low voltage distribution networks with non-expensive sensors is a challenging task and a correct detection of degradation at early stage will improve the reliability levels. Nowadays, the availability of large datasets from smart meters, along with the use of sophisticated machine learning techniques, make it possible to monitor cable insulations without installing distributed sensors but only relying on the relationships between the operating conditions of network, the node voltages, and the thickness variation of cable insulation (Codjo et al. [7]).

Monitoring the equipment in power systems can also be based on partial discharge measurements that provide the state of the insulation. To interpret the measurement results of the partial discharge monitoring and identify the causes, the physical phenomena have to be accurately modelled and the measurement data and model-based results have to be correctly related (Friebe et al. [8]).

The criteria and the technologies used for the protection of power systems need a continuous updating. The setting and the correct operation of distance protections (based on the deployment of distance or impedance relays) are influenced, among other factors, by the effect of the mutual coupling of parallel overhead lines when the proximity between circuits cannot be ignored. Indeed, a mutual compensation factor helps in the correct setting of the relays. However, earth faults can lead to an incorrect calculation of the fault impedance and, as a consequence, to a mis-operation of the protection system. In O'Donovan et al. [9], some configurations of parallel lines are modelled including the mutual coupling and simulated to verify the efficacy of the distance protection in case of faults.

Power quality issues have to be considered and contextualized in the recent framework of power systems. The problem of the waveform distortion, widely addressed in the technical literature and in international standards, is considered by Plamanescu et al. [10] with the aim of providing a non-intrusive time-frequency analysis of distorted waveforms at the point of common coupling of a prosumer to improve the flexibility. In particular, time-varying, nonstationary, non-linear distorted waveforms are considered, and a hybrid method based on Fast Fourier Transform, improved empirical mode decomposition with masking signals, and Hilbert Transform is proposed.

Voltage sags, widely recognized as one of the most impacting power quality disturbances, need extensive and long measurements to obtain statistically significant surveys and the development of efficient algorithms able to forecast the frequency of voltage sags in a node of a power system is of utmost importance. The variable number of sags, expressed on an annual basis, is usually taken to represent the statistical characteristics of the voltage sags; De Santis et al. [11] propose to consider the "time to next event" as the random variable to characterize the statistics of the voltage sags in order to use a large data set, obtained from a few years of measurements.

The low-voltage three-phase distribution grids are increasingly considered and, in particular, optimal power flow (OPF) based problems are faced to correctly schedule the resources such as the energy storage systems. When dealing with three-phase distribution grids, unbalances cannot be ignored and, as a consequence, the existing algorithms to solve OPF problems have to be modified to include the models of three-phase four-wire low voltage lines and to determine the voltage unbalances (Held et al. [12]).

2.3. Electric Vehicles and E-Mobility

The targets set for energy and environmental sustainability involve the decarbonisation of the whole energy system. New technologies and approaches are therefore required in the different sectors, currently mainly dominated by fossil fuels. Among the energy intensive sectors which need to be decarbonized, the transportation sector plays a key role. In this sector, the implementation of Battery Electric Vehicles (BEVs) may provide two benefits: the reduction of local and global emissions and support to the operation of the electric grid in case of large share of non-dispatchable renewable energy sources, through the provision of ancillary services. It is worth to highlight that the European Parliament has voted to set a 2035 deadline for zero-emissions cars and vans. In this framework, researchers are studying the different components, control systems and operational strategies, related to BEVs and charging stations.

From the point of view of the BEV, one key element is the electric energy storage system installed on-board the vehicle. Electric vehicle batteries require high power inputs for fast charge, should have a high energy capacity, should be low-weight and should require minimum installation space. The reliable operation of batteries for EV requires an efficient battery management system (BMS), that impacts the expected battery life, which is affected mainly by operating temperature, charge and discharge rates. Lithium batteries are the most used at the moment, due to their light weight and energy density. Together with the BMS, another key element to guarantee a proper battery life is the cooling system. In this framework, experimental tests on different battery technologies, BMS and cooling systems are extremely important to extend the battery life and BEV performance (Sehil et al. [13]).

From the point of view of the fixed installations, a key role is played instead by the charging infrastructure, which has to be deployed in such a way to fulfil two main requirements: (i) providing the required energy to BEVs when and where it is required, and (ii) being able to be controlled in such a way not to stress too much the existing electricity network, not to require too expensive investments for the electricity network enhancement, and if possible, to provide ancillary services such as voltage and frequency control.

One possibility to provide fast charging services, decoupling the power flow between the charging station and the BEV and between the charging station and the grid, enabling charging powers above the grid capacity, is to use a charging station consisting of a stationary battery energy storage system (BESS) with reconfigurable cell topology, which also allows to avoid a DC/DC converter (Engelhardt et al. [14]). Avoiding the DC/DC converter is important for two reasons: (i) to reduce the charging station cost, and (ii) to improve the overall efficiency of the charging process.

In ultra-fast charging stations, the connection to the electric vehicle is in DC and the converter is located in the charging station. These devices simultaneously require high efficiency, high power density and the grid-side filter, which ensures sinusoidal current absorption with low harmonic distortion, can be a key element in the overall converter size and losses. Optimal design of the filters and their testing is therefore an essential part of the overall converter design (Cittanti et al. [15]).

As previously mentioned, besides the hardware components, also their control strategy is extremely important for a proper operation of both BEVs and electric grid. The key objectives of the charging strategy are: (i) providing the BEV user the required final state of charge (SOC) when he/she needs to use the vehicle; (ii) minimizing the charging cost; and (iii) minimizing the network overload or even maximizing the provision of ancillary services. In this framework, Oliveira Farias et al. [16] proposed a combined framework for day-ahead scheduling and real time rule-based operation.

2.4. Simulation of Power Systems and Markets

The power system represents one of the largest existing infrastructures. In presence of traditional generation, the system planning was based on the passive load increase, and the generation units were installed where, according to the resource availability (mainly water, either as primary source or for cooling purposes), they could guarantee the proper system operation (both in terms of energy and reserves). Today, the increase in the number of grid interconnection assumes an important role, because of the necessity to share as much as possible the generation resources and improving the system operation (e.g., in terms of losses reduction). The grid investments must be evaluated by considering more criteria, opening the possibility to introduce multi-criteria methods for ranking the potential investments (as in Dicorato et al. [17], where a number of different candidate projects have been ranked with the use of Analytic Hierarchy Process). However, the increasing share of Variable Renewable Energy Sources (VRES), often installed at distribution system level, introduced the necessity to enlarge the system planning including both transmission and distribution systems, in particular when investments that are alternative to the network expansion are considered. In this sense, the H2020 project FlexPlan aimed to establish new planning methodologies, which include flexibility resources in both transmission and distribution system. Migliavacca et al. [18] provide the description of the modelling characteristics of the planning tool and present the results with reference to a small-scale scenario.

Even though the VRES are expected to largely increase, traditional carbon-free sources, such as hydro, will play an important role in the future energy system. The coordination among hydro power plants and their interaction with VRES and load results then fundamental to keep the (steady-state) balance of generation and load within the same market area. In Kouveliotis-Lysikatos et al. [19] this problem is faced by considering most of the hydro power plants of Sweden and Norway, by using an open-source model based on openly available data. The case study considers the market area unbalance minimisation and include the penalisation of the water spilled as well: this is an important aspect to take into account, to efficiently use the available water source.

With reference to the market areas, their definition may result challenging. In fact, the market areas can be identified with different criteria, even though in the past they were basically built considering network topology and contingency conditions on the line. An efficient market design requires new approaches for market zone identification. In Colella et al. [20], the identification of the market zones is based on the Locational Marginal Prices (LMP) and the Power Transfer Distribution Factors (PTDF), by including topological constraints as well. The methodology allows analysing multiple scenarios based on normal and planned maintenance operation conditions. The calculation of the LMP and PTDF, however, must be carried out by running OPF on real grid portion, by including all the grid constraints. In Bovo et al. [21], the authors suggested a novel OPF formulation including explicitly N-1 security criteria. All contingency-related constraints were introduced in a compact form, so that the application to large-scale test results suitable. The optimisation problem considers the actual model and the operating conditions suggested by the Italian System operator, providing an added value to the results obtained.

2.5. Demand Side Aspects and Local Energy Systems

The demand side is more and more central in the evolution of the energy systems. The demand of electricity is primarily involved in the energy transition towards higher electrification of the end uses. Many changes have occurred in recent periods in the way electricity is used, including unexpected events such as the pandemics, which have modified the evolution in time of the demand in different sectors. Due to these changes, many aspects have to be considered in the analysis of the electrical demand.

First of all, considering electrical demand forecasting, the pandemics has changed all the recent baselines, causing an inhomogeneity in the time series to be used as references for short-term load forecasting (STLF). The effects of pandemics have been addressed in Tudose et al. [22] in the formulation of the STLF problem. New contents referring to the pandemics are used together with the conventional exogenous factors such as weather, season, day of the week, and others, solving the problem with a convolutional neural network.

A further aspect based on the users' participation for adjusting the energy demand is demand response, applied by offering incentives or price changes to the users to modify their consumption in a given time slot. The demand curve has to be changed due to the action of multiple users of different types, i.e., residential, industrial and from other sectors. Among them, the residential sector has multiple appliances, whose period of usage can be deferred and adapted to the needs of the demand response programme. Peak-shaving demand response programmes are among the most diffused ones, to obtain a direct demand reduction effect in the relevant time period. Chatzigeorgiou et al. [23] address the determination of an appropriate set of alerts to be sent to the users for modifying the demand curve in a peak-shaving demand response programme. Past-usage measurements gathered on many deferrable appliances are used to define priorities to the households based on the probabilities of appliance usage in time.

Energy efficiency, with the definition of strategies to reduce the energy consumption of a system to provide a given service, is a classical objective, which has to be studied case by case depending on the specific energy system. For example, energy efficiency is addressed in Zheng et al. [24] for a mechanized coal mining.

Local energy systems are emerging as specific entities connected to the grid. Energy management in local energy systems is a challenging task, as it reproduces the needs of ensuring reliable, stable, safe and cost-effective operation of the assets included in the local energy system, mainly based on local resources to supply the local load, with interactions with the external grid to ensure appropriate operation in any condition. Some local energy systems are also evolving to become energy communities, in which the physical connection within the same local system is not necessarily required. In this case, there is the possibility of satisfying the local users' needs through energy provided even in external locations by entities that belong to the community. In local energy systems, local flexibility markets are used to deploy distributed energy resources to avoid congestion. Flexibility is determined by considering an operational baseline, which could include the operational setup of storage systems. If storage is not used for flexibility purposes, the deployment of the flexible resources is decided without changing the state of charge of the storage systems in the operational baseline. The use of flexibility for storage would modify the state of charge during time, requiring some compensation at later times to re-obtain the initial flexibility characteristics (Schmitt et al. [25]).

The local energy production in local energy systems is provided in many cases by micro-generation supplied from renewable energy sources. The diffusion of the micro-generation systems practically depends on the deliberations of the regulatory authorities. The regulatory options have to be introduced in the formulation of cost-benefit analyses, to check whether the solutions are acceptable in terms of economic indicators such as the payback time. Doyle de Doile et al. [26] address the effects of changes in the Brazilian regulation on the diffusion of micro-generation.

In addition to the use of renewable energy that provides electricity to the grid, the local generation based on multi-energy systems opens interesting possibilities of energy shifting between different energy sources to provide the same service. In addition to the non-dispatchable variable renewable energy sources, the use of dispatchable co-generation such as from biogas plants (Zepter et al. [27], with application to an island) provides useful contributions to balancing the grid with scheduled resources, also interacting with the thermal energy side.

3. Conclusions

The collection of articles in this Special Issue provides indications on some directions of development of the current research in the power engineering field. In the wide context of the energy transition currently under way, the contributions sent to this Special Issue have addressed timely issues on topics concerning electrical machines and power converters, grid components and applications, electric vehicles and e-mobility, simulation of power systems and markets, up to demand side aspects and local energy systems. The results indicated in this collection of articles are useful to the scientific community to continue the progress towards future development of the power and energy systems.

Acknowledgments: The Guest Editors of this Special Issue thank MDPI Energies for having acted as a supporter and Media Partner in UPEC 2020, all the Authors of the contributions included in this Special Issue for their work in preparing the extended versions of their articles, the Academic Editors, and all Reviewers of the Special Issue articles for their timely and insightful reviews. All of them have contributed to increasing the scientific level of the articles presented in this Special Issue.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Damian, I.-C.; Eremia, M.; Toma, L. Fault Simulations in a Multiterminal High Voltage DC Network with Modular Multilevel Converters Using Full-Bridge Submodules. *Energies* **2021**, *14*, 1653. [CrossRef]
2. Steffen, J.; Lengsfeld, S.; Jung, M.; Ponick, B.; Herranz Gracia, M.; Spagnolo, A.; Klöpzig, M.; Schleicher, K.; Schäfer, K. Design of a Medium Voltage Generator with DC-Cascade for High Power Wind Energy Conversion Systems. *Energies* **2021**, *14*, 3106. [CrossRef]
3. Musumeci, S.; Solimene, L.; Ragusa, C. Identification of DC Thermal Steady-State Differential Inductance of Ferrite Power Inductors. *Energies* **2021**, *14*, 3854. [CrossRef]
4. Radulescu, V. Research and Solutions to Minimize Frontal Area Overheating of Hydro Generator Stator with Vertical Axis. *Energies* **2021**, *14*, 1243. [CrossRef]
5. Fenner, G.; Stringini, L.; Rangel, C.; Canha, L. Comprehensive Model for Real Battery Simulation Responsive to Variable Load. *Energies* **2021**, *14*, 3209. [CrossRef]
6. Enescu, D.; Colella, P.; Russo, A.; Porumb, R.; Seritan, G. Concepts and Methods to Assess the Dynamic Thermal Rating of Underground Power Cables. *Energies* **2021**, *14*, 2591. [CrossRef]
7. Codjo, E.; Bakhshideh Zad, B.; Toubeau, J.-F.; François, B.; Vallée, F. Machine Learning-Based Classification of Electrical Low Voltage Cable Degradation. *Energies* **2021**, *14*, 2852. [CrossRef]
8. Friebe, K.; Jenau, F. Trichel Pulse Analysis: Physical Calculation and Validation by Using Broadband Measurements. *Energies* **2021**, *14*, 4512. [CrossRef]
9. O'Donovan, M.; Barry, N.; Connell, J.; Cowhey, E. Mutual Coupling Compensation Techniques Used for Distance Protection of Parallel Lines. *Energies* **2021**, *14*, 1982. [CrossRef]
10. Plamanescu, R.; Dumitrescu, A.-M.; Albu, M.; Suryanarayanan, S. A Hybrid Hilbert-Huang Method for Monitoring Distorted Time-Varying Waveforms. *Energies* **2021**, *14*, 1864. [CrossRef]
11. De Santis, M.; Di Stasio, L.; Noce, C.; Verde, P.; Varilone, P. Initial Results of an Extensive, Long-Term Study of the Forecasting of Voltage Sags. *Energies* **2021**, *14*, 1264. [CrossRef]
12. Held, L.; Mueller, F.; Steinle, S.; Barakat, M.; Suriyah, M.; Leibfried, T. An Optimal Power Flow Algorithm for the Simulation of Energy Storage Systems in Unbalanced Three-Phase Distribution Grids. *Energies* **2021**, *14*, 1623. [CrossRef]
13. Sehil, K.; Alamri, B.; Alqarni, M.; Sallama, A.; Darwish, M. Empirical Analysis of High Voltage Battery Pack Cells for Electric Racing Vehicles. *Energies* **2021**, *14*, 1556. [CrossRef]
14. Engelhardt, J.; Zepter, J.; Gabderakhmanova, T.; Rohde, G.; Marinelli, M. Double-String Battery System with Reconfigurable Cell Topology Operated as a Fast Charging Station for Electric Vehicles. *Energies* **2021**, *14*, 2414. [CrossRef]
15. Cittanti, D.; Mandrile, F.; Gregorio, M.; Bojoi, R. Design Space Optimization of a Three-Phase LCL Filter for Electric Vehicle Ultra-Fast Battery Charging. *Energies* **2021**, *14*, 1303. [CrossRef]
16. Oliveira Farias, H.; Sepulveda Rangel, C.; Weber Stringini, L.; Neves Canha, L.; Pegoraro Bertineti, D.; da Silva Brignol, W.; Iensen Nadal, Z. Combined Framework with Heuristic Programming and Rule-Based Strategies for Scheduling and Real Time Operation in Electric Vehicle Charging Stations. *Energies* **2021**, *14*, 1370. [CrossRef]
17. Dicorato, M.; Tricarico, G.; Forte, G.; Marasciuolo, F. Technical Indicators for the Comparison of Power Network Development in Scenario Evaluations. *Energies* **2021**, *14*, 4179. [CrossRef]
18. Migliavacca, G.; Rossi, M.; Siface, D.; Marzoli, M.; Ergun, H.; Rodríguez-Sánchez, R.; Hanot, M.; Leclerq, G.; Amaro, N.; Egorov, A.; et al. The Innovative FlexPlan Grid-Planning Methodology: How Storage and Flexible Resources Could Help in De-Bottlenecking the European System. *Energies* **2021**, *14*, 1194. [CrossRef]
19. Kouveliotis-Lysikatos, I.; Waernlund, A.; Marin, M.; Amelin, M.; Söder, L. Open Source Modelling and Simulation of the Nordic Hydro Power System. *Energies* **2021**, *14*, 1425. [CrossRef]
20. Colella, P.; Mazza, A.; Bompard, E.; Chicco, G.; Russo, A.; Carlini, E.; Caprabianca, M.; Quaglia, F.; Luzi, L.; Nuzzo, G. Model-Based Identification of Alternative Bidding Zones: Applications of Clustering Algorithms with Topology Constraints. *Energies* **2021**, *14*, 2763. [CrossRef]
21. Bovo, C.; Ilea, V.; Carlini, E.; Caprabianca, M.; Quaglia, F.; Luzi, L.; Nuzzo, G. Optimal Computation of Network Indicators for Electricity Market Bidding Zones Configuration Considering Explicit N-1 Security Constraints. *Energies* **2021**, *14*, 4267. [CrossRef]

22. Tudose, A.; Picioroaga, I.; Sidea, D.; Bulac, C.; Boicea, V. Short-Term Load Forecasting Using Convolutional Neural Networks in COVID-19 Context: The Romanian Case Study. *Energies* **2021**, *14*, 4046. [CrossRef]
23. Chatzigeorgiou, I.-M.; Diou, C.; Chatzidimitriou, K.; Andreou, G. Demand Response Alert Service Based on Appliance Modeling. *Energies* **2021**, *14*, 2953. [CrossRef]
24. Zheng, Z.; Chen, D.; Huang, T.; Zhang, G. Coordinated Speed Control Strategy for Minimizing Energy Consumption of a Shearer in Fully Mechanized Mining. *Energies* **2021**, *14*, 1224. [CrossRef]
25. Schmitt, C.; Gaumnitz, F.; Blank, A.; Rebenaque, O.; Dronne, T.; Martin, A.; Vassilopoulos, P.; Moser, A.; Roques, F. Framework for Deterministic Assessment of Risk-Averse Participation in Local Flexibility Markets. *Energies* **2021**, *14*, 3012. [CrossRef]
26. Doyle de Doile, G.; Rotella Junior, P.; Carneiro, P.; Peruchi, R.; Rocha, L.; Janda, K.; Aquila, G. Economic Feasibility of Photovoltaic Micro-Installations Connected to the Brazilian Distribution Grid in Light of Proposed Changes to Regulations. *Energies* **2021**, *14*, 1529. [CrossRef]
27. Zepter, J.; Engelhardt, J.; Gabderakhmanova, T.; Marinelli, M. Empirical Validation of a Biogas Plant Simulation Model and Analysis of Biogas Upgrading Potentials. *Energies* **2021**, *14*, 2424. [CrossRef]