Press release

STEADYSUN / THEnergy white paper: Sky Imaging - A Competition for Storage in Solar-Diesel-Hybrid Applications?

An improved forecasting of weather changes will have consequences for the optimal specification and operation of renewable energy microgrids

Munich, April 2016 – Balancing the intermittencies in remote PV-diesel hybrid applications presents one of the most convincing business cases for energy storage. In the simplest case without storage, if clouds shade the PV array, then the load of the gensets is increased in order to provide the needed power. As traditional gensets can hardly be run below a minimum load of 30-40%, and have a ramp-up time of several minutes without storage, then gensets typically cannot be switched off as they need to provide spinning reserve for sudden solar irradiation changes.

The integration of storage allows for these gaps to be bridged while operating the gensets. This means that on sunny days the diesel gensets might be switched off and the share of PV in the microgrid can be increased accordingly. As power from diesel gensets is very expensive, especially in remote locations due to transport costs, the business case for solar plus storage is much better than for many grid-connected applications. If power drops caused by shading of the PV array can be forecasted precisely, then diesel gensets can be switched off during sunny days without using storage systems. The microgrid has to be conceived in a way that the solar plant forms the grid. STEADYSUN has developed a sky imager called SteadyEye, which takes hemispherical photos of the sky every minute. A proprietary forecasting algorithm calculates the possible impact of clouds on the PV production.

The influence is two-tier in regard to a possible integration of storage in solar-diesel hybrid systems, particularly in applications where shading occurs extremely rarely and where it is likely that sky imagers will crowd out storage solutions. More common will be the cases where sky imagers will be complementary and so optimize storage solutions. Forecasting weather patterns permits a parameterization of the microgrid that optimizes the number of generator starts and the use of the storage system. For example, if unsteady conditions are forecasted then we need to consider whether diesel gensets should actually be shut down and restarted frequently which has a negative influence on both, gensets and storage systems. A tailor-made solution can then take into consideration specific conditions on the generation side as well on the consumption side. In certain parameterizations, the risk of production losses can be driven down to virtually zero; for other systems with low consequences, such as stopping an air-condition system for a few minutes, this can be accepted in order to increase diesel reductions.

 "Sky imagers add significant value to basically every PV-diesel hybrid system. The associated costs are extremely moderate," explains Xavier Le Pivert, CEO of STEADYSUN. "Our innovative solution has been proved in several insular grid and off-grid applications. It can optimize investment costs and operating costs at the same time." "Weather forecasting with sky imagers reduces investment and O&M costs in solar-diesel hybrid systems. This is another step toward more mature decentralized power generation. Every PV-diesel hybrid planer should be at least aware of this new approach," says Thomas Hillig, CEO of THEnergy consultancy specializing in microgrids and hybrid power solutions.

The white paper can be downloaded at: http://www.th-energy.net/english/platform-renewable-energy-and-mining/reports-and-white-papers/

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About Dr. Thomas Hillig Energy Consulting ("THEnergy")

THEnergy assists companies in dealing with energy-related challenges. Renewable energy companies are offered strategy, marketing and sales consulting services. For industrial companies THEnergy develops energy concepts and shows how they can become more sustainable. It combines experience from conventional and renewable energy with industry knowledge in consulting. In addition to business consulting, THEnergy advises investors regarding renewable energy investments in changing markets. It is also active in marketing intelligence and as an information provider in select fields, such as renewables and mining, through the platform th-energy.net/mining or renewables on islands through the new platform th-energy.net/islands.

For more information, have a look at www.th-energy.net

About STEADYSUN

STEADYSUN SAS, founded in 2013, is a spin-off of CEA (www.cea.fr). After more than five year of R&D at INES (www.ines-solaire.org), the company is now offering a comprehensive range of professional solar production forecasting services to contribute to a better integration of the solar energy in the power grids. STEADYSUN makes the management of power grids and photovoltaic power plants easier, enabling its customers to reduce their costs (CAPEX / OPEX) by using its solar forecasting solutions.

Combined with meteorological models, satellite imaging and sky imagers on site, STEADYSUN technology generates forecasts ranging from a few minutes to a few days at local, regional, and national level. Photovoltaic power plants operators, power grid managers and, energy traders can therefore better predict the power generated and reduce financial or technical risks related to variable weather conditions. The solar forecast solutions of STEADYSUN are currently implemented on more than 1400 PV plants in a dozen of countries worldwide.

You will find more information at http://steady-sun.com/

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