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ABOUT

Matrix99 a.s. was founded in 1999 as a spin-off "STROM Telecom", large ICT company that developed and implemented OSS (Operational Support Systems) and BSS (Business Support Systems) for TELCOS

The idea behind spinning-out Matrix99 a.s. was to create a company that could leverage experiences, solutions, and technologies used traditionally for large TELCO companies to create novel solutions for Utilities companies

Matrix99 developed the aiLake for Energy Efficiency (www.matrix99.net), based on Azure and Microsoft .NET technologies

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aiLake
3mDER.ESCO



Matrix99 aiLake.3mDER.ESCO/PROSUMER provides Metering-Modeling-Management (3m of Distributed Energy Resources (DER) for Energy Services Companies (ESCO) and/or energy Producer/Consumer (PROSUMERS) and is intended to be used for optimal and sustainable DER usage. Leveraging the information about the consumption, renewable generation, classic generation reserves, storage capacities and operational constraints it gives all the inputs to the energy marketing and trading systems for the best economic generation dispatch. The Azure Digital Twin technology allows the user to simulate different scenarios, observe the current situation, and restore any situation from the past for further study and analysis.

Consumption prediction function uses machine learning methods leveraging historical data and weather as the inputs

Renewable generation prediction function uses machine learning methods that leverage weather data (solar radiation, wind speed) and historical data as the inputs. Based on historical data and ML principles, the degradation of the generation nominal power is calculated and taken into account

Generation reserves function monitors the current generation from small hydro power plants, gas, and co-generation from power plants together with historical and weather data to predict the future generation limitations

Storage capacities function monitors the existing storage capacity and calculates the free storage capacity. Using historical data and ML principles it estimates the degradation of the storage capacity through time

Operational constraints function processes all the data calculated above and adopts them so they comply with the contract and local rules (i.e. open market, net metering etc.). All aggregated data, about the consumption prediction, generation prediction, available storage capacity, available generation capacity, and available classic generation reserve are available in aggregated form

Possible implementations

aiLake.3mDER.ESCO/PROSUMER is a cloud/edge solution, based on Microsoft Azure. PROSUMER part contains modules that collect data and manage optimal usage of DERs (monitoring and forcing constrains), while the ESCO part of the solution contains models and Machine Learning algorithms that help to further optimize by (possibly) adding new DERs and usage patterns. Also, ESCO can act as a broker on Secondary and Tertiary energy markets on behalf of PROSUMERS. The ESCO part of the solution is an Azure (Managed) Application, while PROSUMER part of the solution is a Software as a Service. The PROSUMER can use software through ESCO or a Cloud Service Provider that has a contract with Matrix99

Supported Devices:

Matrix99 aiLake.MDER.ESCO supports devices using the following starts for communications:

- ▶ MODBUS (serial and IP)
- ▶ SunSpec Alliance
- ▶ DLMS
- ▶ M-BUS (Wired and Wireless)
- ▶ IEC 61850
- ▶ IEC 60870-5-101, 104
- ▶ OCPP
- ▶ KNX
- ▶ SNMP
- ▶ AMQP, MQTT, REST/JSON

BENEFITS

aiLake.3mDER.ESCO can help ESCO companies to aggregate different types of

renewables, storage as well as classic micro generations into a single unit which can be

offered on the deregulated market, as well as to their clients to get a portion of this market revenue, in which they otherwise could not participate alone.

aiLake.3mDER-PROSUMER helps larger IPPs and industrial customers to optimize the revenue by renewable and storage operation optimization.

