GEMALOGIC®

VIRTUAL POWER PLANT FOR SMART GRIDS

- Virtual Power Plant Management
- Portfolio Optimization
- Prediction Models
- Reporting
- Data Aggregation and Fusion
- Easy to Understand Visualization

We provide a virtual power plant (VPP) functionality through an advanced software platform. VPP enables aggregators to provide electrical energy flexibility through the activation of distributed energy resources, to control loads with DSM functionality, or both at the same time.

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A virtual power plant (VPP) is a link-up of small, distributed power stations, such as wind farms, CHP units, photovoltaic systems, small hydropower plants, biogas units, and of loads that can be switched off, in order to form an integrated network. The plants are controlled from one central control room.

DATA FUSION AND AGGREGATION

Acquiring reliable data from energy sources and loads is vital. Intensive data flows from specific domains are merged and their timestamps are aligned. Time alignment enables the creation of complex data attributes, the key building blocks of accurate prediction models. Our VPP includes special functionalities for the online aggregation of intense data flows and near real-time system response.

ACTIVATION SUPPORT

Our VPP provides support for the full process of activation. The process starts with a request for activation. After that the calculation of the available sources and the optimal engagement of sources is carried out. The actual set for activation is determined. The activation is then performed and controlled. After the activation is finished, the report and analysis of the activation are created as well as the billing reports.

OPTIMIZATION PROCESS

The optimization process identifies the set of potential distributed resources which are available and can fulfil the requested power increase or decrease. It then builds different activation sets of distributed resources that together form the requested activation block (time and power). These sets are ordered according to the chosen criteria, e.g. price, and provided to the operator to choose the proper set of activation.

PREDICTION MODEL MANAGEMENT

Because the distributed resources included in the VPP are very different in their nature, the set of models that describe their behaviour are different as well. The prediction model management functionality helps to identify the best model for each resource in the right situation. Models employ methods of artificial intelligence and machine learning which help the models to adequately predict each resource's demand.

USER INTERFACE

There are two user interfaces, one for each role in the VPP process. First is the user interface for the VPP operator with a Monitoring panel, an Activation Panel, an Alarms and Alerts Panel, a Billing Panel, and a Resources panel. The VPP partner interface excludes some functionality from the Activation Panel and limits the partner's access to only their own data.

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BASIC MODULES
- Monitoring – current values
- Monitoring – archive values
- Data analyses
- Dashboards
- Data exchange server (web service)

DATA IMPORT MODULES
- Manual inputs
- Weather data import
- Production data import
- SCADA data import (OPC2GL)
- Structural text import

FORECASTING MODULES
- Electricity consumption forecast

SYSTEM ADMINISTRATION MODULES
- Data acquisition setup
- Calculation and aggregation setup
- Account parameterisation
- Object parameterisation
- Variable parameterisation
- User role administration
- System job administration

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