

Virtual Power Plants Utility's New Assets

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ABOUT US



- 1897, start of electrification of capital city Ljubljana
- since 1963, supplying Central Slovenia
- 1990, Public Company Elektro Ljubljana
- June 1998, Public Limited Company
- 2008, Demand Response Service Center (R&D)
- 2009 in numbers:
 - Customers 323.997
 - Supply 3.573 GWh
 - Net sales revenues 282.880.411 EUR
 - Market share 29%

VPP drivers



COMMERCIAL VPP – MAX FINANCIAL OUTCOME

- The electricity retailer' challenges are:
 - Retaining customers
 - Increasing revenues

TECHNICAL VPP – OPTIMIZE POWER SUPPLY & DISTRIBUTION

- The power sector specific challenges are:
 - Increasing share of RES; distribution of RES
 - Underinvested aging infrastructure with long lead times for new projects
 - Public resistance against new projects (transmission lines, nuclear, coal, etc.)
 - Increasing consumption
 - Environmental issues

Spremljaj svojo porabo



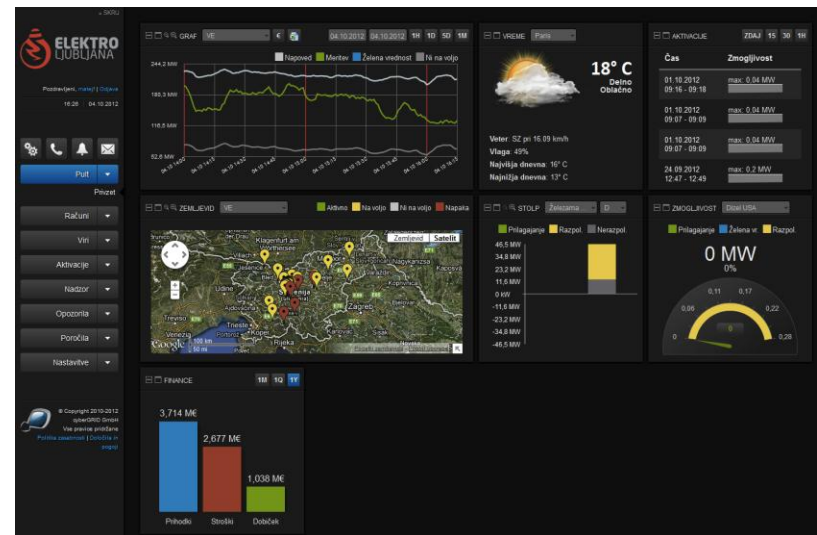
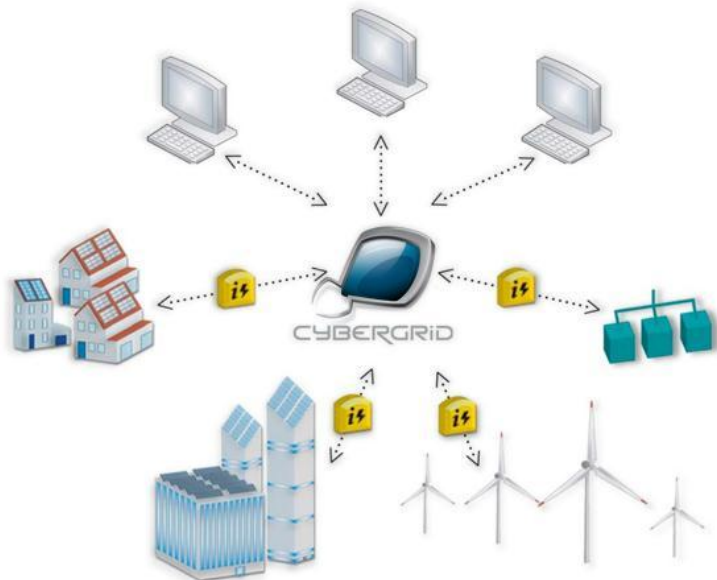
NOVO!



Prihranite z nami!

Virtual power plant concept

Virtual Power Plant matches up electricity consumption with a variety of distributed generation

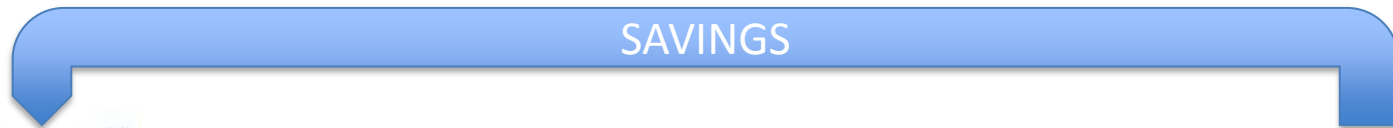


- Significantly lower investment when compared to conventional resources
- New capacity available within months
- VPP boosts efficient integration of Renewable Energy Resources
- Environmentally friendly – CO2 neutral

User benefits



Electricity suppliers can offer their prosumers to save money if the overall Power production and distributed generation capacities are intelligently meeting the instant demand.



- Ancillary services
- Scheduled/emergency services
- Market participation & reduction of imbalance costs

C&I loads & distributed generation

Utilities' Demand Response Center

Power Grid

Source: Elektro Ljubljana, cyberGRID

Tertiary Reserve Virtual Power Plant



- VPP capacity for tertiary reserve purposes
- 100 % availability of peaking positive and negative capacity
- 15 min response time
- Load curtailment + distributed generation
- Customers: Steel mills, Foundries, Paper Plants, Shopping Malls, Glass and Ceramics Manufacturers, Chemical Industries

Success Factors



Several factors define VPP's success:

- Method of financing (market or incentivized)
- Target market (system services, imbalance management, day ahead, intraday, balancing market, etc.)
- Motivation factor (price structure, environmental aspect, system aspect, etc.)
- Customer type (household, commercial, industrial, public)
- Consumption characteristics (responsiveness, capacity, reliability, frequency, duration, etc.)
- Distributed generation characteristics (primary resource, responsiveness, capacity, reliability, frequency, duration, etc.)
- Activation type (response time, duration, changes, capacity, etc.)
- Mode of communication or activation (manual, semi-automatic, automatic).
- Balance group issues (imbalances settlement)
- ...



Thank you for your attention!

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