

Energy Demand-Aware Open Services for Smart Grid Intelligent Automation

SmartHG EU FP7 Project #317761



Deliverable D7.3.3 Project Showcase on Industrial Web-site

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Work programme topic addressed	
Challenge	6: <i>ICT for a low carbon economy</i>
Objective	ICT-2011.6.1 <i>Smart Energy Grids</i>
Target Outcome	d) Home energy controlling hubs that will collect real-time or near real-time data on energy consumption data from smart household appliances and enable intelligent automation.

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List of Acronyms

EV Electric Vehicle

PEV Plug-in Electric Vehicle

Executive Summary

SmartHG showcases data gathered from project test-beds resting on the interface provided by the Panoramic Power PowerRadar™ Software, as planned. This is a proprietary system and only registered users can access it. In this way, data security and privacy is taken into account. To reach a larger audience, SmartHG (anonymized) data and (aggregated) results are also showcased in the public project website, where all website visitors (energy distributors, retailers, residential users or simple onlookers) can access them. The public showcase consists of an overview of the deployed hardware, a description of the Panoramic Power PowerRadar™ Software, some anonymized screenshots from the Panoramic Power dashboard and the data on Plug-in Electric Vehicle (PEV) usage gathered from Test-an-EV project and used in SmartHG project. Furthermore, from the public showcase it is also possible to directly access the Technical Section of the project website, which contains general info about SmartHG Platform, test-beds data analytics, and technical, economic and environmental evaluation of the Platform on our test-beds.

Chapter 1

Project Showcase

The Panoramic Power sensors and bridges deployed in the residential homes of the SmartHG test-beds allow the project to collect information on the electrical consumption at substation level and at residential level of the monitored homes.

SmartHG project showcases on industrial Panoramic Power website the data gathered by sensors deployed in the project test-beds, resting on the Panoramic Power Power-Radar™ dashboard, as planned.

The data collected can be displayed in numerous ways on the dashboard, enabling the various users (the project partners, the homeowners, etc) to receive the information they need. This includes seeing only the entire home's consumption (mains), or just a specific appliance or category. It includes the time frame shown, be it hourly, daily, monthly, etc.

Each homeowner was given a unique user ID and password to view their own home consumption, and the project partners (and other future users, e.g. electric grid managers) have IDs that allow them to see the aggregate consumption of all homes, as well as zooming in on a specific home, a specific category of appliances, etc.

In this way, data security and privacy is taken into account.

To reach a larger audience, we create a public showcase in the project website, which contains some anonymized screenshots from the dashboard and general information about deployed hardware and test-beds data as well as a link to the Technical Section of the project website, which contains general info about SmartHG Platform, test-beds data analytics, and technical, economic and environmental evaluation of the Platform on our test-beds.

Next sections describe the content of the public showcase.

1.1 Deployed Hardware

The “Deployed Hardware” section of the public showcase contains general info about the hardware deployed in the SmartHG test-beds to monitor the electrical consumption at substation level and at residential level of the involved residential homes (see Figure 1.1).

1.2 Residential User Monitors Consumptions through Panoramic Power Dashboard

The “Residential User Monitors Consumptions through Panoramic Power Dashboard” section of the public showcase contains general info about the Panoramic Power Pow-



Figure 1.1: Hardware deployed at SmartHG test-beds

erRadar™ software, which is used to showcase the SmartHG project on the Panoramic Power industrial website (see Figures 1.2 and 1.3).


1.3 Screenshots from Panoramic Power Dashboard

The “Screenshots from Panoramic Power Dashboard” section of the public showcase contains some (anonymized) screenshots taken from the Panoramic Power dashboard about the electrical consumption at substation level and at residential level of the SmartHG test-beds residential homes.

Figures 1.4, 1.5 and 1.6 show some of the showcased screenshots.

1.4 Technical Section

The “Technical Section” section of the public showcase shortly describes the SmartHG public Technical Section, which contains information about SmartHG Platform, SmartHG test-beds, and technical, economic and environmental evaluation of the Platform on our test-beds. It is possible to reach the Technical Section by clicking on the link and on the image (see Figure 1.7) there in.



PowerRadar™ Software by Panoramic Power

Device Level Energy Data in Real-Time

Panoramic Power's PowerRadar software monitors electrical energy consumption at individual circuit levels across multiple sites. The software detects and reports excess energy usage, providing users with actionable insights that allow organizations to identify and reduce energy and operational expenses. The PowerRadar software is based on easy-to-use, web tools that provide real-time, detailed visibility into energy consumption, peaks and anomalies. Users can access this information from standard web browsers as well as tablets and phone devices.

The Dashboard

The dashboard provides a detailed snapshot of the energy consumption at a single or multiple sites. The dashboard displays the total historical, current and projected energy consumption over the entire monitored sites. It also provides managers with a quick-glance view of energy consumption breakdown and provides energy and facility managers with detailed energy and operational information.

Performance

The performance screens display consumption data and provide drill down tools to focus on particular circuits during a designated period, allowing users to pinpoint energy waste and consumption or equipment irregularities. Data can be also easily be exported to 3rd party systems or fed directly through the open API.

Consumption


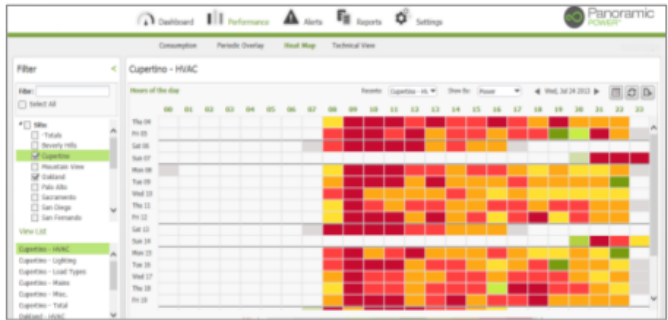
Allow users to view consumption data per specific site and specific circuits over time and correlate it with ambient or outside temperature.

Heat Map

Display energy usage as a "heat" intensity map, enhancing user's abilities to instantly detect exceptional energy consumption.

Data Normalization

Normalize energy consumption by weather and other site specific parameters to compare efficiencies between sites and systems, as well as by the Panoramic Power Index and to other industry standards.

Key Features

- **Detect inefficiencies and waste through unmatched energy visibility**
- **Reduce energy consumption and increase savings**
- **Identify operations and maintenance issues before problems occur**
- **Promote and enable behavioral and cultural change towards energy efficiency**

Figure 1.2: Panoramic Power PowerRadar™ software presentation - Page 1/2



Rules & Alerts

With The PowerRadar software, users can easily create sophisticated, rules-based events and alerts triggered by energy pattern, status and threshold to automate and improve everyday processes. Multiple types of predefined alerts can be triggered when a threshold, or a combination of threshold and temperature, is met. Alerts can be sent to customers via, SMS, Emails or HTTP post notifications.

Reports

Users can query, export, automate and print built-in reports, detailing single and multiple sites' energy consumption and alert history. Reports can be saved or email on a predefined schedule to users across the organization. The reports allow users to intelligently take action and reduce energy and operational waste.

Management Tools

Easily populate and store intelligence about physical locations, electrical hierarchy, operation scheduling and more. The tool includes a role-based access control model for securing permissions.

Enterprise Grade Platform

The application is designed to support hundreds of thousands of sensors and circuits and manage thousands of distributed sites through a modular and scalable architecture hosted in the cloud.

Interoperability

Open API and out-of-the-box adapters enable integration with third-party applications such as BMS, billing systems and controllers. Data can also be imported from smart meters and other environmental sensors.



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Figure 1.3: Panoramic Power PowerRadar™ software presentation - Page 2/2

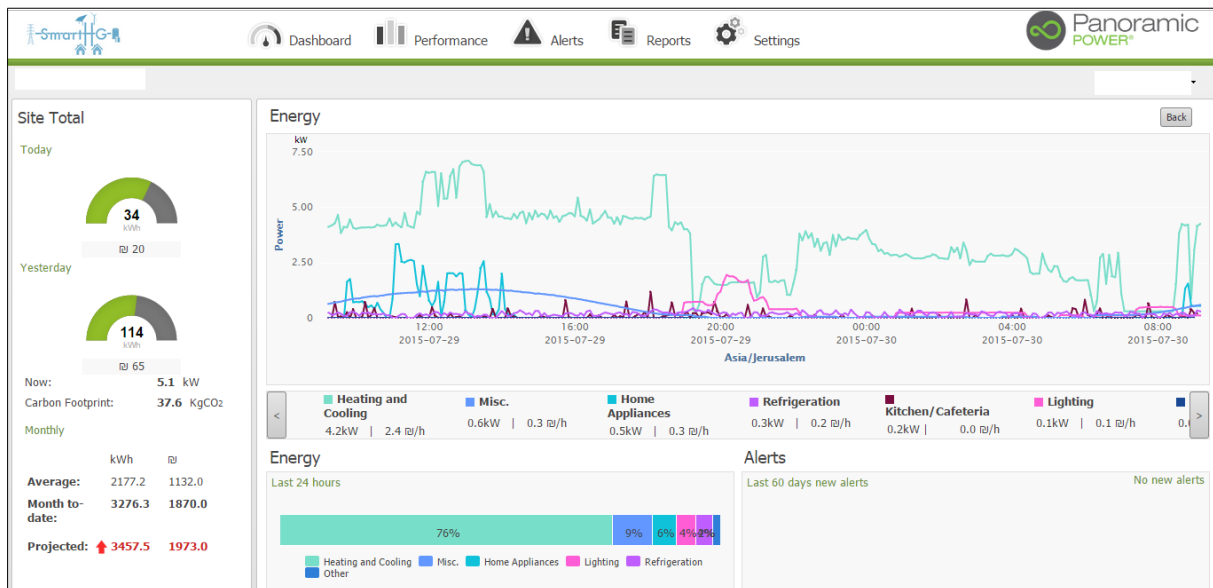


Figure 1.4: General Overview (from Panoramic Power dashboard)

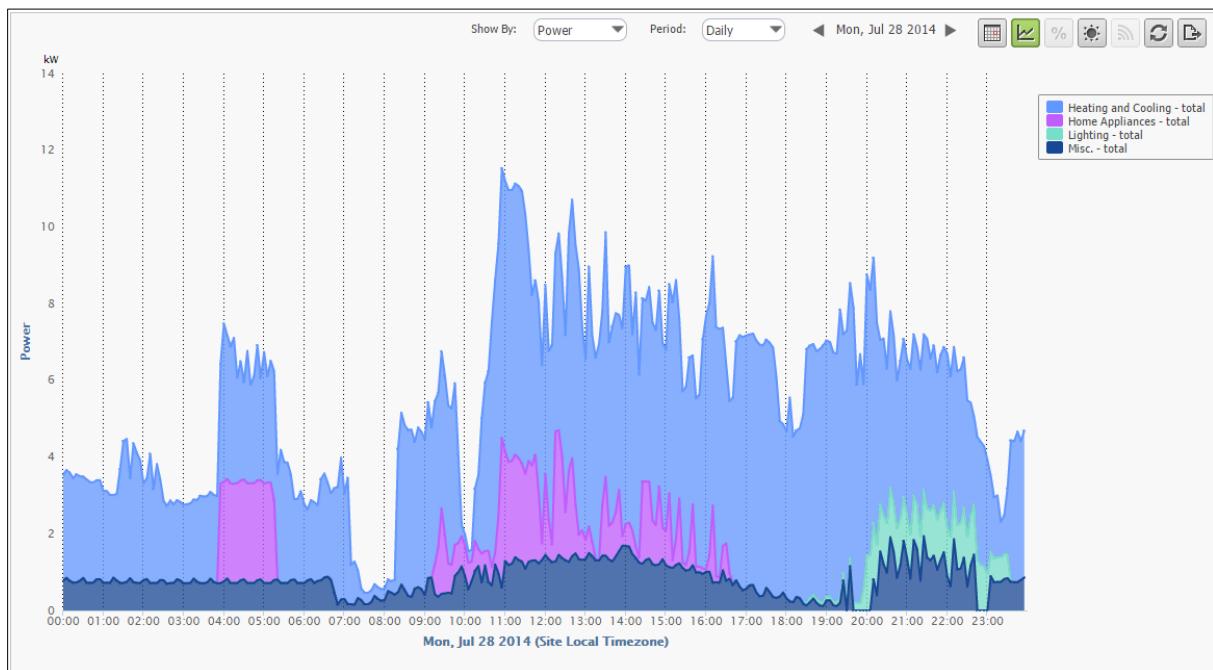


Figure 1.5: Typical Daily Profile - Stacked by Categories (from Panoramic Power dashboard)

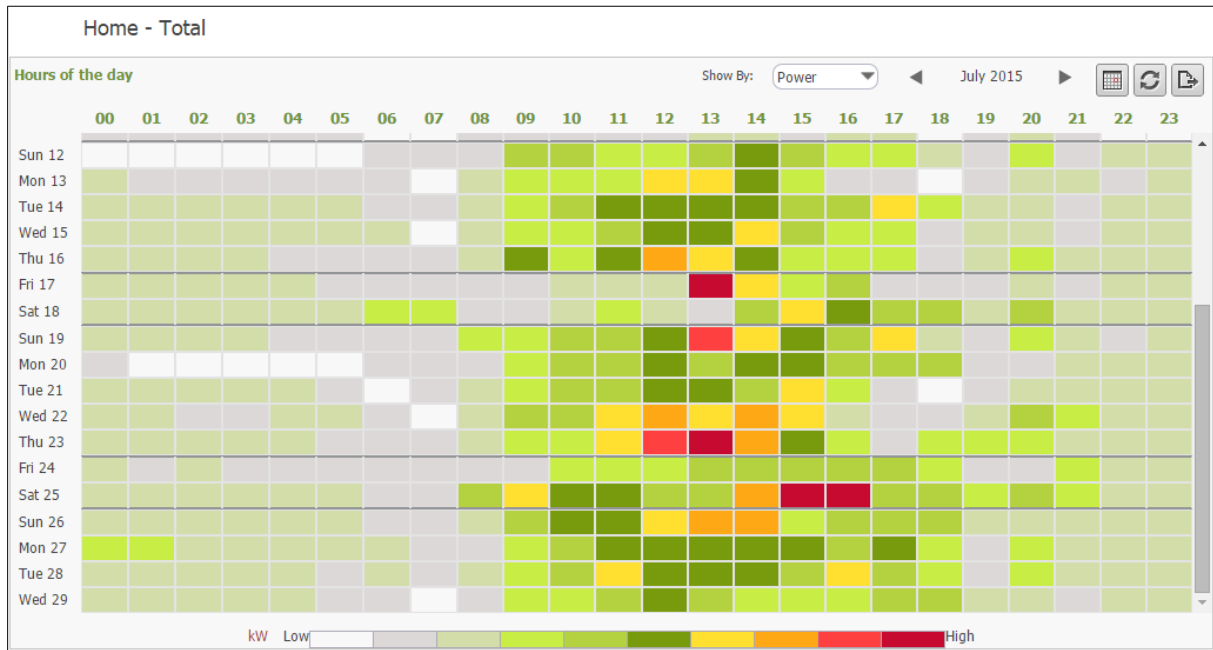


Figure 1.6: Monthly Heat Map (from Panoramic Power dashboard)

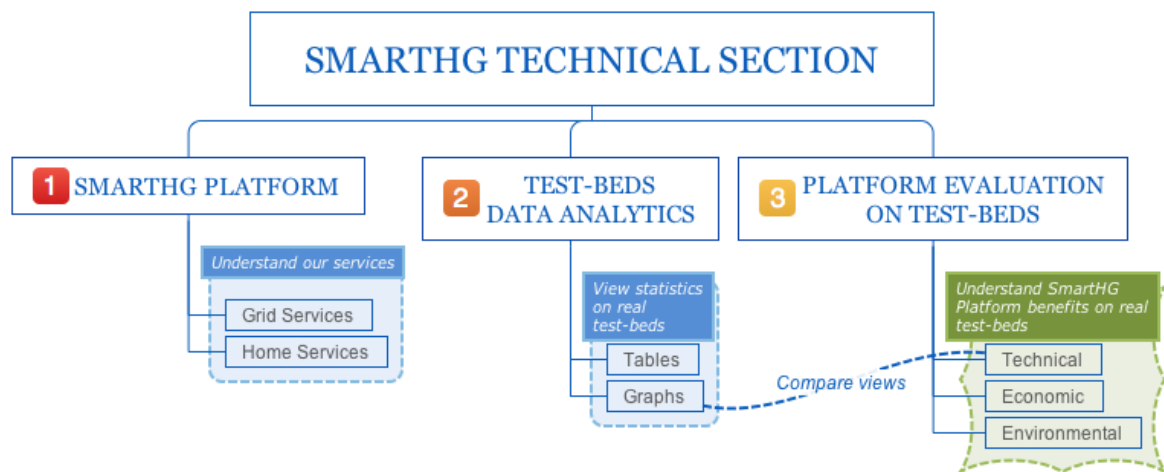


Figure 1.7: Technical Section overview

1.5 Data on Plug-in Electric Vehicle (PEV) usage from Other Projects

The “Data on Plug-in Electric Vehicle (PEV) usage from Other Projects” section of the public showcase shows the data on PEV usage gathered from Test-an-EV project (<https://www.clever.dk/test-en-elbil>) and used in SmartHG project (see Figure 1.8).

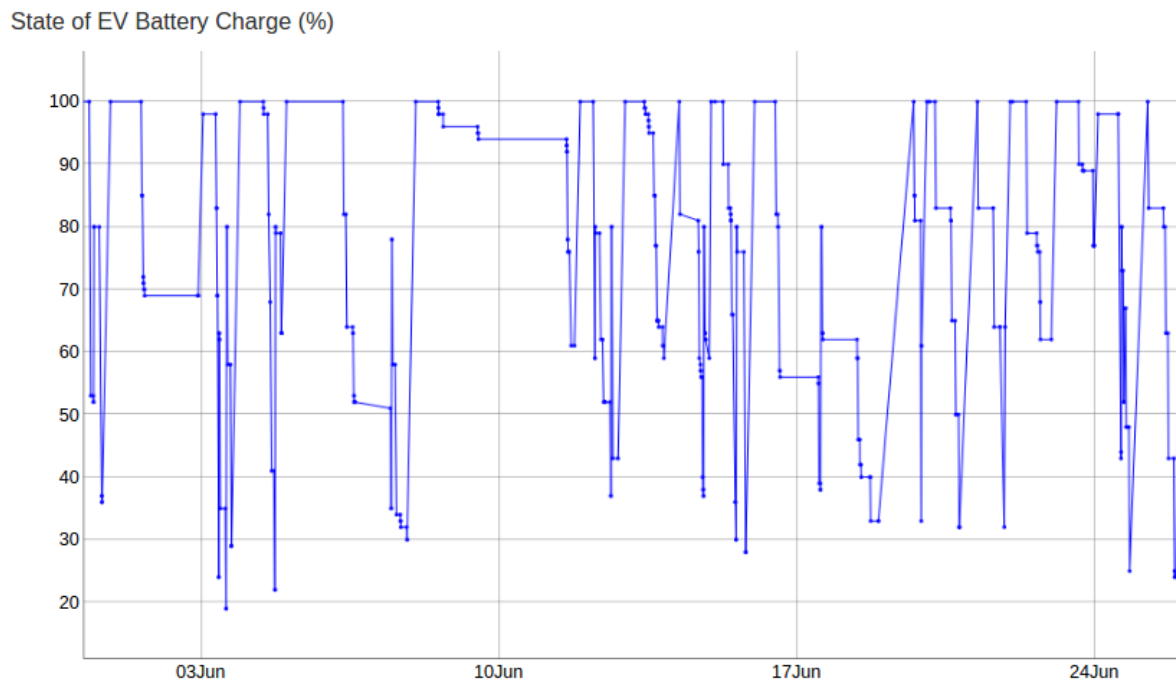


Figure 1.8: State of Electric Vehicle (EV) Battery Charge (%)