The Enel Smart Info
A first Smart Grids step to addressing in-home energy efficiency

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Summary

• The Telegestore Enel AMM Solution
• The Indoor Energy Services
• The Enel Display Market Test
• Projects for EV Recharging Infrastructure
The Telegestore Enel AMM Solution

**Unique Network:** 30 million smart meters already deployed in Enel’s distribution network.

**Functionalities:** Full implementation of the functionalities:
- to support the operative and business process typical for an Electrical Distribution Utility
- required by the Italian and European Authorities

**2008 results:** more than 500 M Euros operational cost saving:
- Work orders managed remotely: > 8 M units
- Remote meter readings: > 230 M units
- Bad payers management: > 2 M units
- Customers with multi-hours tariff: > 8 M units
The Telegestore Enel AMM Infrastructure
The Enel Telegestore to enable new services

The Enel AMM Infrastructure is an Innovative and Unique network:

- **widespread**: every indoor socket is a potential “access point” to this network
- **energy service enabling**: all the data managed by the System can be placed at indoor smart device disposal, for Energy Service proposition

Indoor Energy Services

The Italian Authority (AEEG) will soon define rules to promote the mass deployment of solutions allowing customers to have access to their energy consumptions
The indoor energy services

- Enable Customer to benefit from simple and structured information related to its Energy behaviour

- Automatic interaction between domestic appliances based on tariff structures and power needed

- Create a multiple access platform to enable:
  - enhanced energy management
  - advanced policies for demand response
  - distributed generation optimization
The Smart Info

In order to make the energy data available in the indoor network, a new device has to be integrated in the AMM infrastructure.

The data provided by Smart Info in the indoor environment has to be reliable, standard and public.
The Smart Info in the indoor environment

The new **Smart Info** allows the proposition of innovative services, spreading the meter data to the indoor smart devices.
The Indoor Energy Services

1. Provides the customer with information related to the energy consumption

2. Integrates systems able to manage and control indoor devices

3. Allows the remote management of the indoor devices and enable real time services

All these services can be tailored to different clusters of customers in order to maximize the impact on their energy efficiency. The Smart Info will be the key element to collect data useful to tailor these services.
The Enel Display Market Test

- Main goal: understanding customer attitudes towards energy monitoring devices
- Almost 1000 families involved in more than 50 cities
- Survey conducted by an independent research company
- Test feedback:
  - 3 face to face interview to evaluate the appeal of the solution
  - Load profile analysis to measure the impacts on the customers consumptions
The Enel Display Market Test

- Energy Consumption Monitoring & Analysis
- Alerts
- Suggestions
The Market Test results

Customer Involvement

Usage Frequency (%)

Weekly 40%

Daily 25%

Monthly 18%

Less than Monthly 4%

Never 13%
The Market Test results

Customer Needs

Most viewed pages

- Daily load graphic: 89%
- Weekly load graphic: 86%
- Daily load table: 84%
- Weekly load table: 82%
The Market Test results

Impact on Customer Behaviour

Changed behaviors examples:
- White goods usage moved in the evening: 29.3%
- Alternated usage of white goods: 11.9%
- Electronic appliances switched off instead of stand-by: 7.5%
- Reduced usage of white goods: 6.6%

The market test demonstrated that the Smart Info could be the key enabler to link the energy offer and the customer demand, opening interesting scenarios for a smart management of the intermittently generated energy.
Expected benefits

Enel will deploy the Smart Info, not only to comply with the next Italian Authority rules, but above all to benefit from energy savings and peak reduction.

A wide literature of results collected worldwide shows that the average achievable values

<table>
<thead>
<tr>
<th></th>
<th>Energy savings</th>
<th>Peak reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>-2 / -7 %</td>
<td>-3 / -8 %</td>
</tr>
<tr>
<td>USA</td>
<td>-5 / -8 %</td>
<td>-14 / -20 %</td>
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</tbody>
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Preliminary analysis on the impact on the consumption behaviors, made on the customer involved in the Enel market test, confirms the important role of these services for energy efficiency.
The new Smart Info makes possible the design and the development of an innovative EV recharging infrastructure, integrating the main metering functionalities:

- **Customer identification** for a secure and safe recharge
- **Measuring** the energy consumption for each customer’s recharge
- Enabling **different tariff structures** for recharging the vehicles
- Enabling **power management** to optimize the impact on the grid
Thank you for your kind attention

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