EDSO
for smart grids

The Telegestore case history

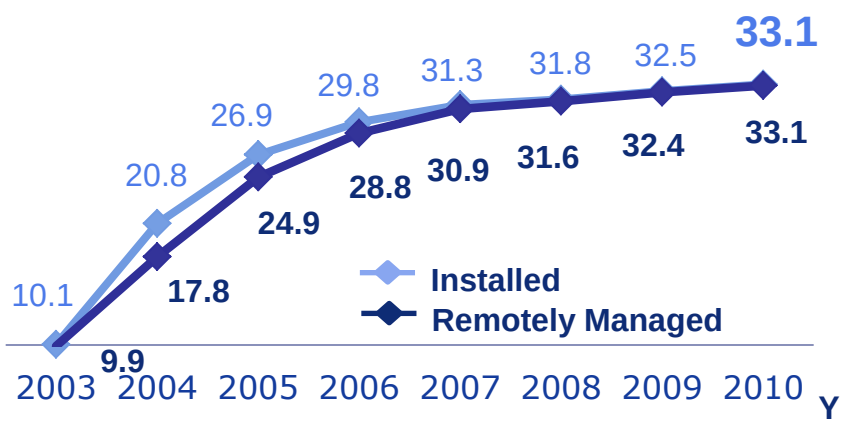
a finely grained network monitoring, from metrological data to the integration of renewables

CEER workshop on Meter Data Management, Brussels 19.04.2012

Marco Cotti, Enel Distribuzione

Key Telegestore figures and results

Full Roll-out (million of meters)



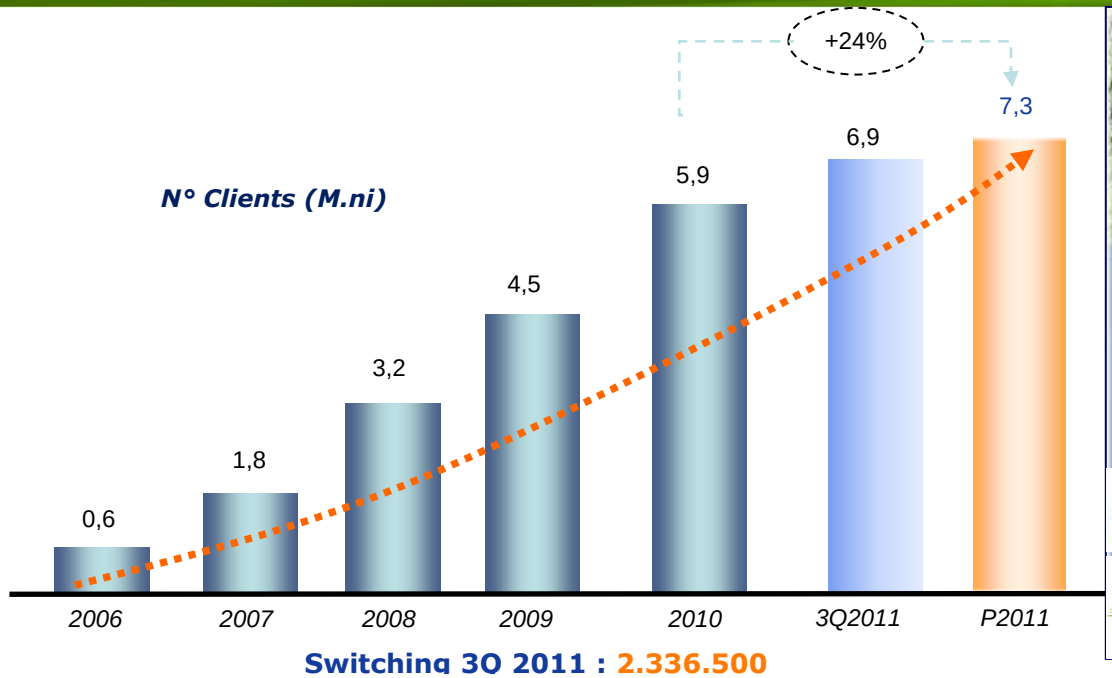
Economics

- Cumulated Capex 2.1 B€*
- Yearly Running Costs 67.3 M€
- Yearly Savings: 499 M€

Remote Operations in 2010

READINGS	Periodic	331,000,000
	Spot readings	5,000,000
	Total	336,000,000
CONTRACT MANAGEMENT	Activations	140,000
	Terminations	900,000
	Bad payers management	2,600,000
	Contract management	11,000,000
	Total	14,640,000

Concrete support to market liberalization



Switching 3Q 2011 : 2.336.500

≈ 150 retailers

Tailored tariffs

- *Retailers design tailored tariffs based on customer consumption behaviors*
- *Bi-hourly tariff is also applied to all no-shopping customers*

Switching

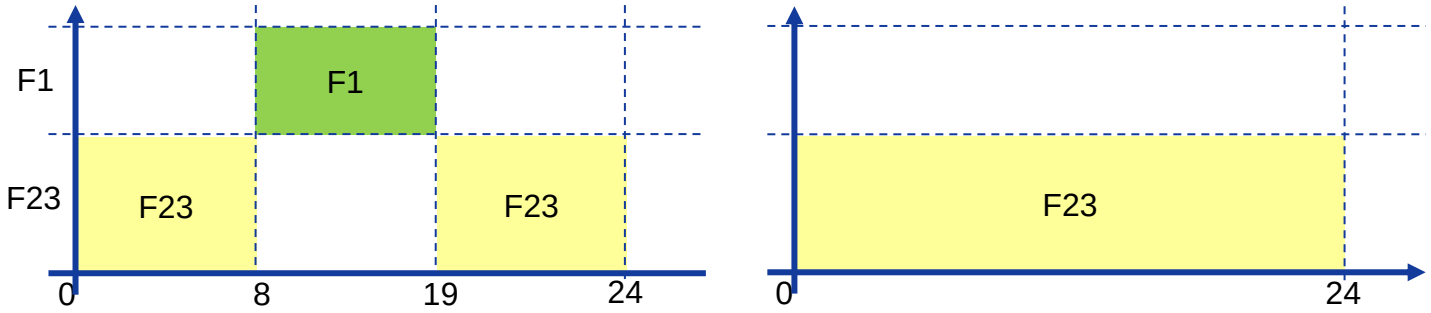
- *6 Mln customers in free-market*
- *~2 Mln customers/year switching*

Flexible tariff structure and tailored billing periods increasing customer choice and participation in the free market

More energy savings thanks to advanced tariff mechanisms

AEEG 156/07

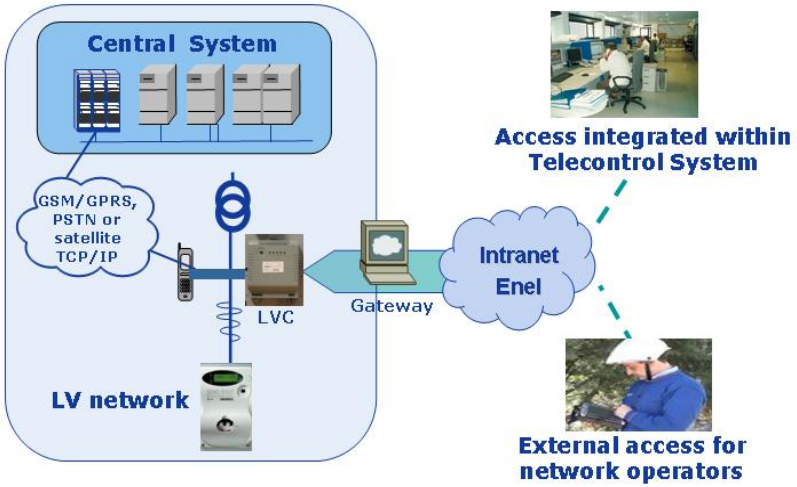
- Introduction of separate collection of data collection for different time slots
- All meters reconfigured in less than 1 year ≈ 450k/week
- Day/night tariff for 25 million domestic customers



Average energy consumption rate/time slot for Italian domestic customers

Time slot	Rate	Hours/week
F1	33%	55
F23	67%	113

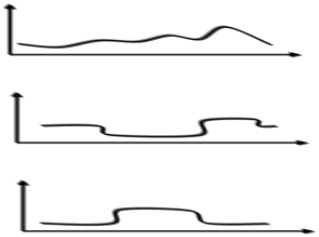
Enabling voltage quality monitoring at all voltage levels



Periodic voltage reading from the smart meter for quality information

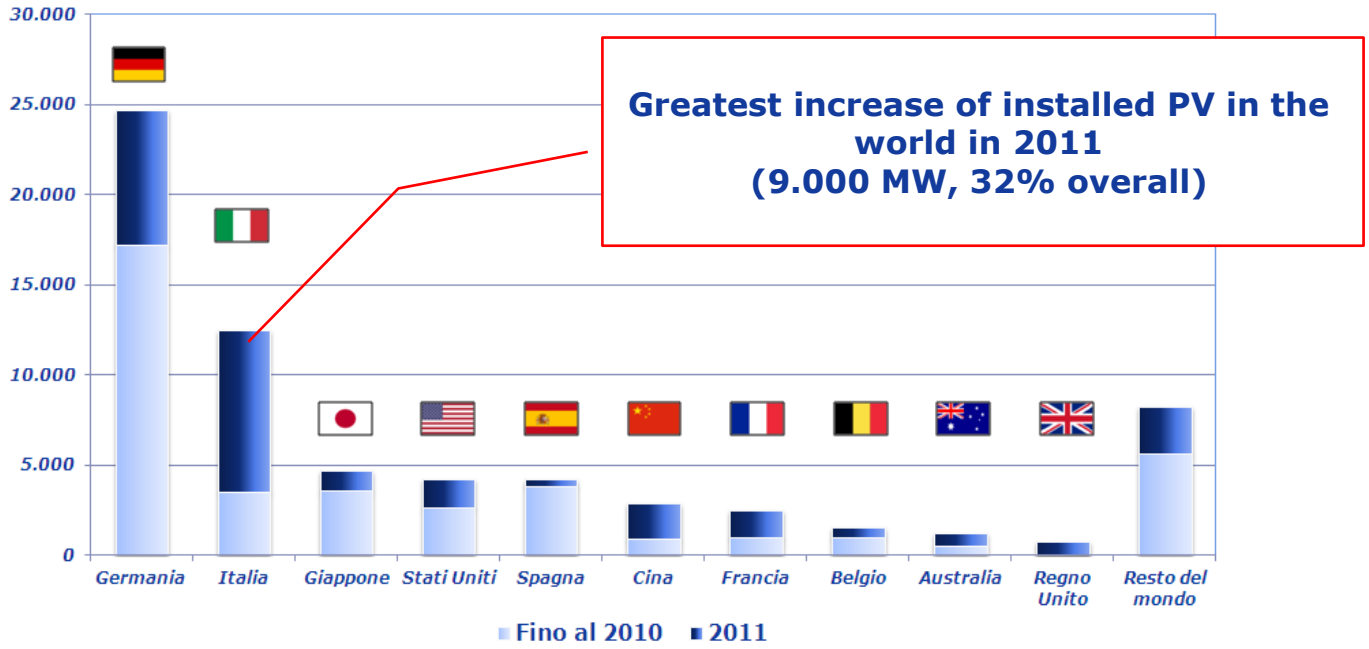
Stami: supporting work force intervention

Statistical analysis on load curves



Allowing a finely-grained monitoring of grid status and performance to promptly identify criticalities

Driving the integration of renewables in the grid

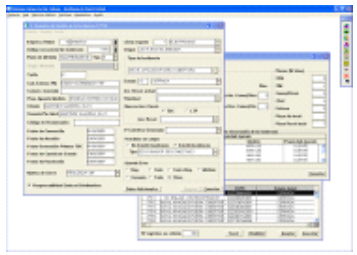


Smart Meter Role

- **Measure** and Monitor DGs' production
- Measure energy exchange by Prosumers
- Allow a fine-grained **monitoring** of grid status and performance (e.g., voltage and voltage droop)

The Telegestore data management system

Pre-billing	Central System	Concentrator	Smart Meter



"Four" and "Smile" a single front office between trader and DSO

Consumption data are stored 5 year in the central system*

Each concentrator collects consumption data of 70 meters on average

Consumption data stored 1 month in the meter

***According to Delibera 348/07**

The Telegestore focus on data security and privacy

✓To each meters installed at customer premises a security key is associated. They are necessary to access customer data through all possible channels (PLC, optical port).
✓The communication between the meter and the concentrator through PLC network is authenticated.
✓The communication between the concentrator and the central system through the GSM/GPRS network is authenticated
✓Data on the distribution line carrier cannot be directly related to the client as the association is possible only at the level of the central system

GSM/GPRS

PLC

Towards a real involvement of the customers

Enel Technology

Consumers

Smart Appliances

Smart Info

Smart Meter Role

- The meter is an access point to all the metrological data
- Provides information about the consumption history and habits

Ongoing Projects

- **Address,**
  - Develop and test **technical solutions** for customers and the electricity network to enable "Active Demand"
  - Identify **market**, **regulatory** and contractual mechanisms to facilitate the development of Active Demand and the penetration of distributed generation and renewable sources.

address interactive energy

- **Energy@Home,**
  - Development of a **communication platform** which enables value added services based on exchange of energy consumption information within the Home Area Network (HAN)

Energy@home

Not a simple data hub of metrological information, but…

Enables the liberalization of the electricity market thanks to transparency and operational efficiency in customer relationship

Reduces technical and commercial losses thanks to advanced monitoring of the grid

Reduces CO2 emissions avoiding workforce interventions due to the activities performed remotely

Enables the active participation of customers and the introduction of new loads in the grid such as EV charging infrastructures and distributed generation