Photovoltaic Plant  *(Terminal of Gallarate, Italy)*

**Key Words:**
Implementation of low emission technologies; B2B solutions cooperation; Infrastructure financing: taxation, user charges, PPP; Environmental standards and policy; Data collection and statistics

**Description:**
Photovoltaic plant was built in the terminal of Gallarate for electricity production. The plant is placed on the roof of the warehouse. It is composed by 2656 thin film solar modules of last generation covering an area of approximately 1860 m² and by two Aros inverters. Capacity is 199 kWp for an estimated annual production +/- 220,000 kwh. Operational: October 2010.

**Benefits:**
- Facilitation in the reduction of CO2 (115 tons annually)
- Saving of equivalent oil (50 TOE – tons annually)
- Corresponding to 50% of annual requirements for terminal

**Starting point/objectives/motivation:**
Common practice before the implementation of this solution was the use of the local electricity supply grid. The motivation behind the decision of installing the photovoltaic plant in the terminal was mainly the necessity of gaining independence from the electricity grid run by the national energy companies, avoiding therefore any possible shortcoming. The plant provides considerable economic savings as far as the electricity consumption bill is concerned, which represents a significant return on investment.

The implementation of the photovoltaic plant on the roof of the terminal can be considered a best practice since it is a clear example of an industrial business case that provides a remarkable and easy solution to several relevant challenges in freight logistics, i.e. the necessity of using a reliable, independent and clean energy source and the need of exploiting in an intelligent way the limited physical space of the terminal.

These kinds of developments anticipate in a smart way usage of space and spatial planning which is inherent to transport and warehousing operations. This practice addresses evidently both business and policy objectives, producing at the same time measurable positive effects on strategic targets, as efficient and sustainable energy use clearly is.

**Success factors:**
- Clever management of existing space
- Physical implementation executed in short time without interrupting normal activity of terminal
- Access to unlimited source of clean (solar) energy
- Improves reliability of power supply in terminal
- Highlights feasibility of environmentally-friendly practices in an industrial framework

**Supported strategic targets**
**Private actors:**
- Increased efficiency and productivity logistics processes
- Reduced emissions; conservation of resources
- Gaining independence from national electricity grid
- Better green image
The installation of photovoltaic plants is currently not extraordinarily expensive. The technology is already in an advanced status; a photovoltaic plant can be installed in areas where atmospheric events hinder the sunlight. This solution can easily be expanded to a different area, although the requirements for the transfer to different countries are related to the laws of the national authorities. Supply chain elements involved are electrical installations for infrastructures like terminals, warehouses, electrical cranes and offices.

Other photovoltaic plants have been installed in Italy (Interporto Padova, terminals in La Spezia and Genoa). Although very effective, the solution implemented in these cases are not particularly innovative while the technology involved is already known and many times adopted by other actors.

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