

# Solution for Solar: **Solarpower** for Trezzo

**SIEMENS**

**Customer:** Ecosesto, Gruppo Falck

**Country:** Italy

**Project:** Trezzo

**Date:** 2007



## Scope of Supply

- Engineering
- Project management
- Realisation
- Supply solar panels
- Supply inverter
- Mounting
- Installation
- Service and maintenance

## Requirements

Siemens PTD M has built the largest PV facade of Italy till than. The system is connected to the grid in September 2007. The power plant will provide solar power for about 23 households. Yearly about 65.000 kWh will be generated by the solar panels.

## Solution

To improve the sight at a waste-to-energy power plant near Milan, the owner preferred to cover the buildings with solar panels. The competence centre for solar power project, PTD M in the Netherlands supplied the engineering, mounting system and the 432 solarpanels. The solar panels are placed on a 30 en a 40 meter heigh façade. Some panels are placed on the roof.

## Highlights

A PV façade of this seize and height hadn't been build before in Italy. One can see the solar system from the road between Venice and Milan. The daily garbage from the city Milan will be burned in a PV-covered factory.

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## Solarpanels

- 432 pieces
- Sharp multicrystalline
- Type NU-162 E1
- 162 Wp
- Totally installed 70 kWp

## Requirements

To mount solar panels onto a concrete façade at a height of 40 meters, special requirements need to be taken to be able to withstand f.o. the windloads.

Working on 40 meter and 30 meter heights requires a very secure and safe scaffolding.

## Solution

Stainless steel clams has been mounted with wall-screws onto the original wall. On this clams a stainless steel underconstruction was mounted. This construction will endure larger thermal influences. By making small openings in the underconstruction, it is able to 'move', so the thermal influences will not damage the solar panels.

A high and double secures scaffolding was build to be able to mount the solar panels.

## Highlights

The mounting of all these solar panels took about 6 weeks.

The solar panels are facing south.

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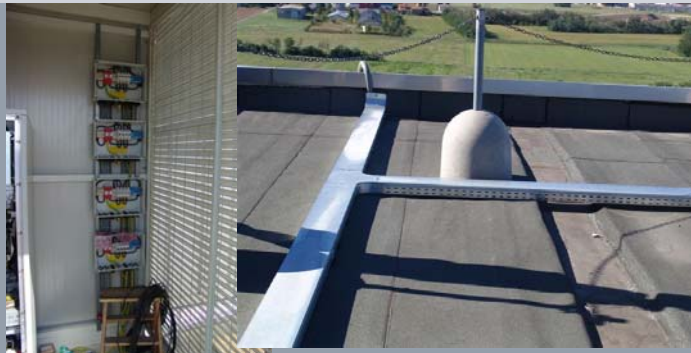
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## Cabling

- All stringcabling with 4 mm<sup>2</sup>
- MV switchgear
- Grid connection

## Requirements

To make a solar power plant the panels are connected together. This is not just a that all the panels are simply connected with cabling. The total systems exists of a combination of serial and parallel connections. For every project the way of connecting the panels to the grid (via connection boxes and the inverter(s)) is a important part of engineering. By optimising the cabling and way of connecting the panels, losses can be minimized.

## Solution

For the Trezzo project we made strings of 27 panels. A string is a ray of panels connected to each other, this is a serial connection. Four groups of strings are connected together. In total four connection boxes are used for this system. These are placing in the same container as the inverter. PTD Italy supplied the MV switchgear and the grid connection for this PV facade.

## Highlights

No extra cable trays were needed, as they could be integrated in the mounting construction.

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## Inverter

- Siemens SINVERT Solar
- 1 IGBT inverters to convert DC to AC
- 1 x 60 kVA inverter
- Supplied in a container on the roof

## Requirements

On a vertical surface such as a façade the solarpanels can't collect all the energy from the light. But facing due south the panels collect about 70% of the irradiated solar energy.

## Solution

The Siemens SINVERTsolar inverters convert direct current, generated by the solarpanels, into alternating current, to be able to feed the electricity into the grid.

The be able to monitor the 60 kVA inverter, the visualisation and monitoring tool Web-direct is installed.

## Highlights

Container with inverter placed on the roof to have no interference with ongoing process in the waste-to-energy plant.