SOLYNDRA®

Prague Soaks up the Sun

Photon Energy and Novacento Complete Largest Solyndra Installation in Eastern Europe

A CLEANER CITY

Due to rapid industrialization during the twentieth century, Prague, capital of the Czech Republic, has had to overcome high levels of air pollution and pollution-related public health issues in the past 20 years. The city's commitment to clean air policies and sustainable development has yielded positive results however, as overall emissions discharged into the atmosphere have been declining since the mid-1980s.

In 1998, Prague joined the CEROI project (Cities Environment Report on Internet), a United Nations initiative to define and use a common set of indicators for European local authorities and facilitate access to environmental information for sound decision-making and general awareness-raising in cities. The CEROI programme was established to increase awareness about the urban environment, improve environmental policy-making by providing better access to information, and ultimately improve the environment of cities across the globe.

As part of its commitment to sustainable development, the city of Prague decided in 2010 to use numerous school and nursery rooftops to generate electricity.

HIGH WIND PERFORMANCE

"The challenge we faced was that most of these roofs are situated in very windy areas," said Jaroslav Plinta, CEO of Novacento, the company that invested in the project. "Most photovoltaic (PV) panels we looked at would not have resisted the strong winds in those particular parts of the city."

To meet rooftop wind loading requirements, conventional flat solar panels must be anchored to roofs with either ballast or rooftop penetrations, which can lead to a number of problems, including leakage. The unique design of Solyndra panels allows the wind to

OVERVIEW

SOLUTION AT A GLANCE

- 3,700 Solyndra panels generating 653 kWp
- 700 MWh annual yield, enough to power 300 households
- Installations primarily on schools and nursery buildings

SOLYNDRA SOLUTION PROVIDER

- Photon Energy a. s.

INVESTOR

- Novacento a. s.

BUSINESS VALUE

- Quick to install – only 8 weeks
- Light-weight, ensuring no roof reinforcement costs were incurred
- Non-penetrating, allowing for roof integrity to be maintained
- 100 % of packaging materials were recycled by Solyndra during installation

"Even in the windiest areas of the city, Solyndra panels don't require roof-penetrating mounts or ballast to stay in place. For this reason alone, Solyndra was the only option. The fact that we could avoid damaging the roof and risking future leaks was an additional benefit."

Jaroslav Plinta, CEO, Novacento

flow naturally between the parallel PV cylinders, and they have been tested and are certified for use in winds up to 208 km/h (130+ mph).

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A RECORD-BREAKING PACE

As with any large-scale project, completing the installation in the most time-efficient manner was crucial. The combination of Evalon waterproofing membranes and Solyndra's PV panels guaranteed quick completion and minimal disruption to schools.

"Supplying 13 of the city's roofs with a source of clean, inexhaustible energy was an immense task for us. With Solyndra's unique panel design and Photon Energy EPC solutions, after just 8 weeks of intense work, we celebrated the completion of this ambitious project," said Plinta.

Solyndra's innovative cylindrical system was developed to optimize PV performance on flat or low angle roofs (such as on commercial buildings) and on highly reflective surfaces. Patented Solyndra solar modules are manufactured incorporating copper indium gallium diselenide (CIGS) thin-film technology and consist of tubes that catch solar radiation across their entire surface. This unique tubular design is "self-tracking", enabling a cost-effective capture of sunlight across a 360-degree photovoltaic surface capable of converting direct, diffused and reflected sunlight into electricity both early and late in the day.

"Using Solyndra technology allowed us to offer the city the best combination of non-penetrating roof sealing solutions and a solar system that captures more sunlight as a result of the reflective qualities of the roof," added Michal Gärtner, CEO of Photon Energy.

THE POWER OF PARTNERSHIP

Photon Energy is an international developer and system integrator providing comprehensive solar power solutions by developing and building greenfield and rooftop photovoltaic installations for its own portfolio as well as for third parties, acting as an EPC contractor, investor and operation and maintenance provider. A Certified Solyndra Solution Provider, Photon Energy regularly selects Solyndra technology when faced with challenging projects.

"Solyndra's fast and easy-to-install panels are a proven and scalable solar solution, ideal for rooftop applications. Today we are presenting competitive 'all in' pricing, strong ROI and economics for rooftop owners," said Georg Hotar, CFO, Photon Energy.

"We are delighted to have been selected as the solar technology of choice for this high profile project in the Czech Republic," said Clemens Jargon, President EMEA, Solyndra. "The forward-looking Prague city administration is bringing clean energy to the city while generating income from otherwise unused rooftop space."

Photon Energy and Solyndra's experience, expertise and superior technology meant that results exceeded all expectations: the project now yields 653 kilowatts of electricity, enough to power 300 homes annually and support Prague's vision of bringing a supply of clean solar energy to its inhabitants.

SOLUTION DETAILS

KRIMICKA 314

Type of building	school
Size of roof top (and the system): (in m^2)	3,305
Power: (in kWp)	91.4
Annual CO_2 emissions offset: (in kg)	70,872.9
Annual power production: (in kWh)	74,603
Number of panels:	528

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VERONSKE NAMESTI 391

Type of building	school
Size of roof top (and the system): (in m²)	4,418
Power: (in kWp)	130
Annual CO_2 emissions offset: (in kg)	98,874
Annual power production: (in kWh)	104,078
Number of panels:	714

TESARIKOVA 1027

Type of building	medical center
Size of roof top (and the system): (in m²)	1,016
Power: (in kWp)	38.6
Annual CO_2 emissions offset: (in kg)	30,898
Annual power production: (in kWh)	32,524
Number of panels:	212

BOLONSKA 312

Type of building	medical center
Size of roof top (and the system): (in m²)	1,016
Power: (in kWp)	36.7
Annual CO_2 emissions offset: (in kg)	29,917
Annual power production: (in kWh)	31,491
Number of panels:	212

BOLONSKA 313

Type of building	kindergarten
Size of roof top (and the system): (in m²)	1,016
Power: (in kWp)	36.7
Annual CO_2 emissions offset: (in kg)	29,605
Annual power production: (in kWh)	31,163
Number of panels:	212

LIBKOVSKA 1069

Type of building	kindergarten
Size of roof top (and the system): (in m²)	1,016
Power: (in kWp)	36.7
Annual CO_2 emissions offset: (in kg)	29,378
Annual power production: (in kWh)	30,924
Number of panels:	212

PARMSKA 388

Type of building	kindergarten
Size of roof top (and the system): (in m²)	740
Power: (in kWp)	18.7
Annual CO_2 emissions offset: (in kg)	15,568
Annual power production: (in kWh)	16,387
Number of panels:	108

PARSMKA 389

Type of building	kindergarten
Size of roof top (and the system): (in m²)	740
Power: (in kWp)	18.7
Annual CO_2 emissions offset: (in kg)	15,568
Annual power production: (in kWh)	16,387
Number of panels:	108

KOZINOVA 1000

Type of building	school
Size of roof top (and the system): (in m²)	5,556
Power: (in kWp)	158.8
Annual CO_2 emissions offset: (in kg)	127,317
Annual power production: (in kWh)	134,018
Number of panels:	918

MILANSKA 472

Type of building	kindergarten
Size of roof top (and the system): (in m²)	584
Power: (in kWp)	18.7
Annual CO_2 emissions offset: (in kg)	15,147
Annual power production: (in kWh)	15,944
Number of panels:	108

MILANSKA 473

Type of building	kindergarten
Size of roof top (and the system): (in m²)	584
Power: (in kWp)	18.7
Annual CO_2 emissions offset: (in kg)	15,147
Annual power production: (in kWh)	15,944
Number of panels:	108

GOLFOVA 910

Type of building	kindergarden, library
Size of roof top (and the system): (in m²)	853
Power: (in kWp)	24.9
Annual CO_2 emissions offset: (in kg)	19,916
Annual power production: (in kWh)	20,964
Number of panels:	144

NAD PREHRADOU 469

Type of building	school
Size of roof top (and the system): (in m²)	607
Power: (in kWp)	24.9
Annual CO_2 emissions offset: (in kg)	20,167
Annual power production: (in kWh)	21,228
Number of panels:	144

To learn more, visit www.solyndra.com

SOLYNDRA®

PHOTON ENERGY