Integrated Photovoltaic Conference

25 – 26 November 2025
Chamber of Commerce
Florence, Italy

Eng. Giorgio Pastore

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Case Study of Bifacial PV based Noise Barriers in Lithuania.

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Company Overview

SoliTek is the leading Northern European solar & energy storage solution manufacturer

Significant market share in the **Baltics**, the **Nordics** rapid growth in **Germany, Switzerland, Belgium, the Netherlands, italy and France**

With huge potential in Europe

Solar installations in Europe are forecasted to grow from **115GW** cumulatively installed in 2022 to **274GW** installed by 2030

Unique products - greenest in the world

SoliTek is **the first and only solar manufacturer that received a prestigious Cradle to Cradle GOLD** sustainability certificate

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Timeline

1998 — BOD GROUP CD Replication Business is Born

2005 — DVD Factory Opened in Tallinn

2009 — SoliTek The Solar Energy Business is Born

2013 — Production of Solar Cell and Panel Started

2014 — Bod Lenses The Eye Lenses Business is Born

2021 — CD Replication Business Sold

2024 — Residential Battery Production Line in Vilnius Opened

2025 — C&I Battery Product Launched

2026 — Container Battery Production Line in Vilnius Launch

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PV Noise barriers

2in1

Blocks noise, generates energy

Transport infrastructure that pays off (rarely happens)

Same noise blocking capabilities as standard noise barriers

Saves land – no extra land needed for solar installation

DLR=30dB

Integral solution for 30dB noise reduction
Class B3: EN14388 & EN1793 standards

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Motivation

- As Europe scales up utility-scale PV, available land is becoming contested.
- “Land neutral” and “Dual use” PV system are becoming an attractive option for EU
- Infrastructure integrated PV minimize land conflicts while advancing renewable targets.
- 90,000 km of highways and 200,000 km of railroads with installed tens of thousands of noise barriers
- Rail Baltica project can be an object for potential contribution to European Green Deal

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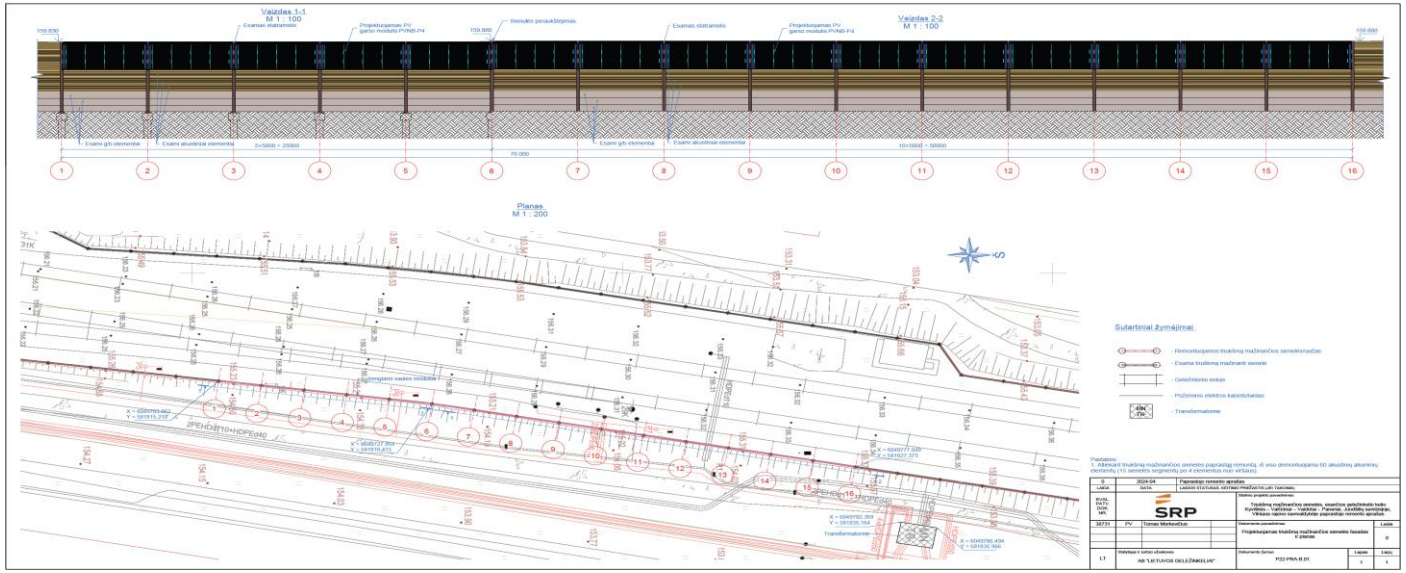
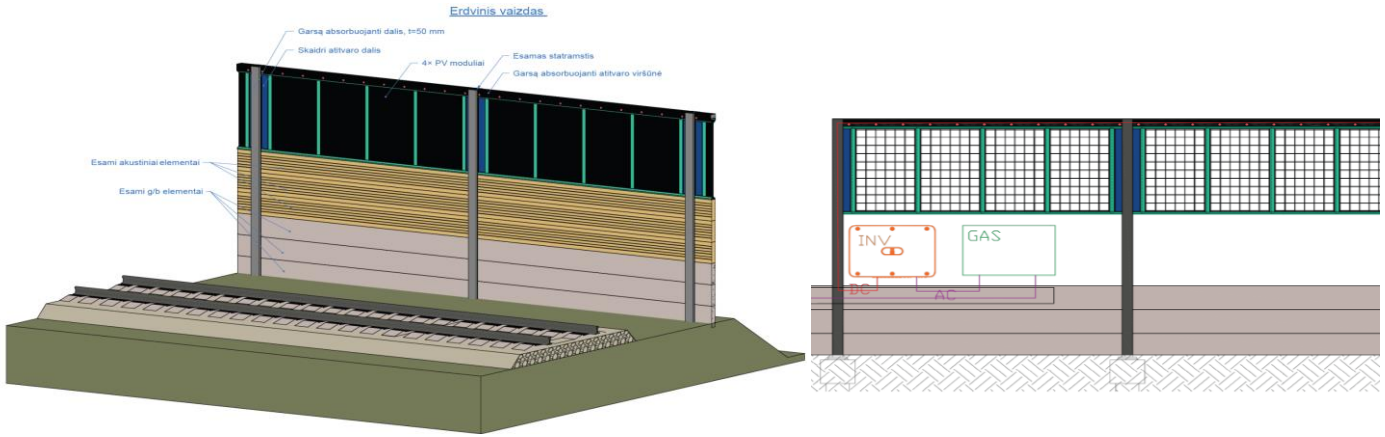
PVNB: Key parameters

- Photovoltaic noise barriers can be built with heights ranging from 2.5 to 7 meters or used to upgrade existing barriers.
- 1 km of PVNB can host 600 to 3,600 photovoltaic modules, corresponding to an installed electrical capacity of 0.2 MW to 1.3 MW.
- Certified with ESD and CE marking in accordance with LST EN 14388.





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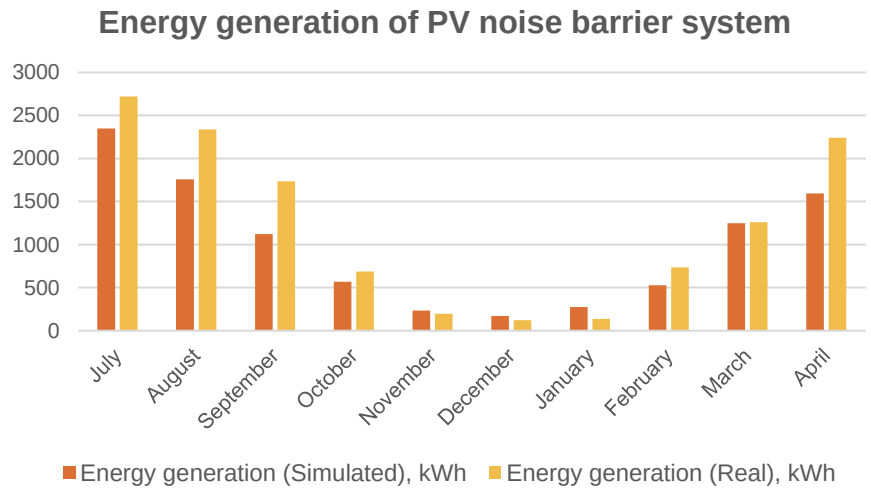
PVNB Installation – Lithuanian Railways Pilot Project

- Client: AB LTG Infra
- Railway section: Kyviškės – Valčiūnai – Vaidotai – Paneriai
- Project: Restoration of the existing noise barrier over a length of 75 m
- Installed capacity: 22.2 kW, 15 units of PVNB-P4 acoustic barrier photovoltaic modules
- Minimum annual production (simulated): 13.2 MWh
- System certification: Compliant with EN 14388
- Generated energy used for local demand (e.g., for lighting, for line electrification)



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PVNB Installation – A1 Highway Pilot Project Vilnius – Kaunas

- Client: AB ViaLietuva
- Location: Section of the A1 Highway, Vilnius – Kaunas
- Project: Restoration of the existing noise barrier over a length of 76 m
- Installed capacity: 20.7 kW
- Minimum annual production: 14.4 MWh
- System certification: Compliant with EN 14388 standard
- In operation from: August 2024
- Energy consumption: Lighting, informational light boards etc.

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PVNB Installation – Lithuanian

StalCorp

Industrial partner in the design and construction of supporting structures for PVNB.

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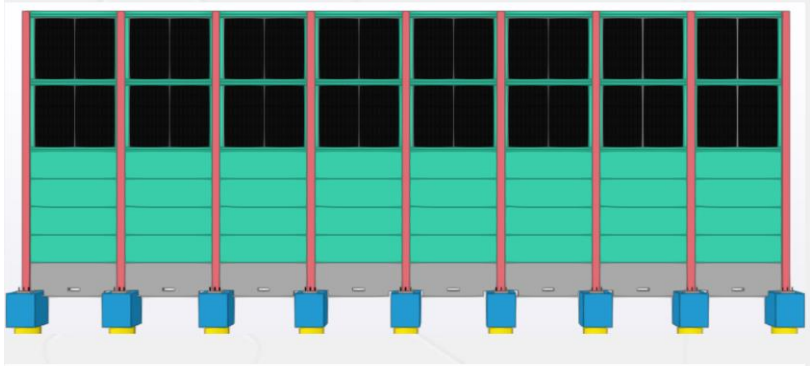
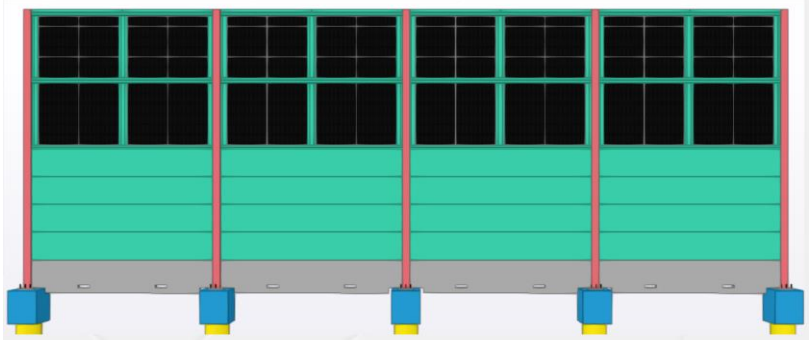
PVNB - Economical case evaluation:



Case #1



Case #2

Economical case evaluation:

Case #1 (PVNB with 2.5m gaps between posts) – 16.6% (cost difference compared to standard noise barriers), PBP – 5-7 years

Case #2 (PVNB with 4m gaps between posts) – 8% (cost difference compared to standard noise barriers), PBP – 2-3 years

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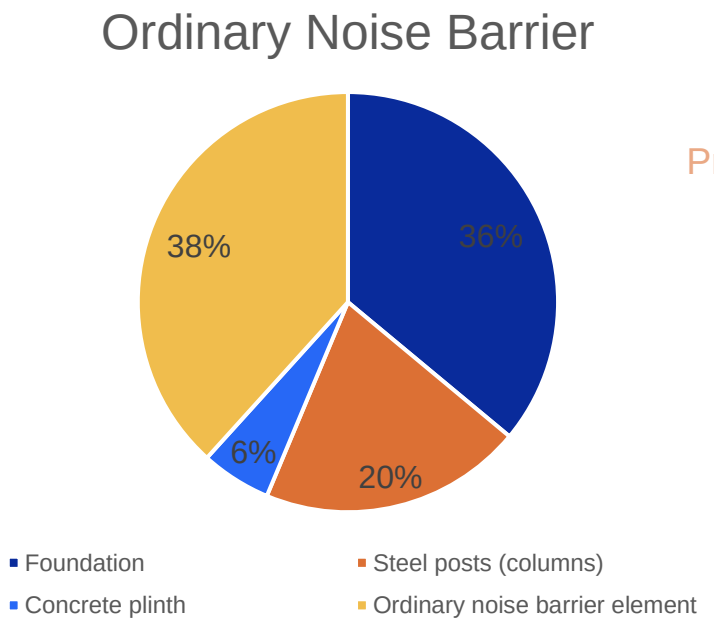
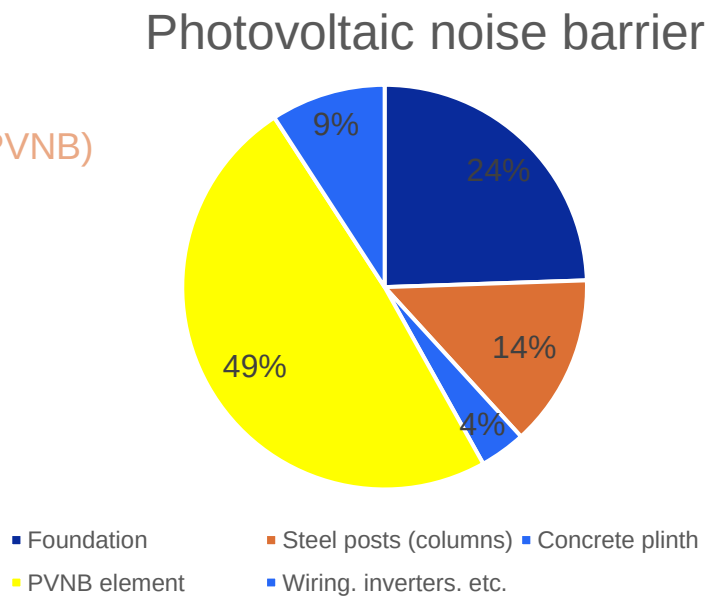
PVNB - Economical case evaluation:



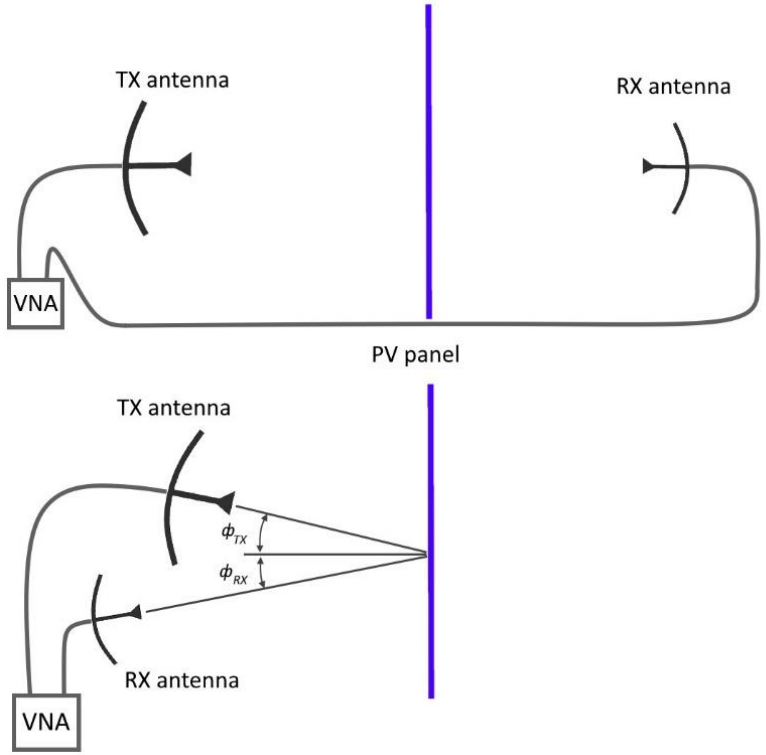
Price difference (between NB and PVNB)
105€/m^2



PVNB and electromagnetic waves.

Vertical and Horizontal polarization evaluated in cellular technology frequency range (800-2800 MHz)

Transmission and Reflection measurements



Conventional noise barriers

PV noise barriers

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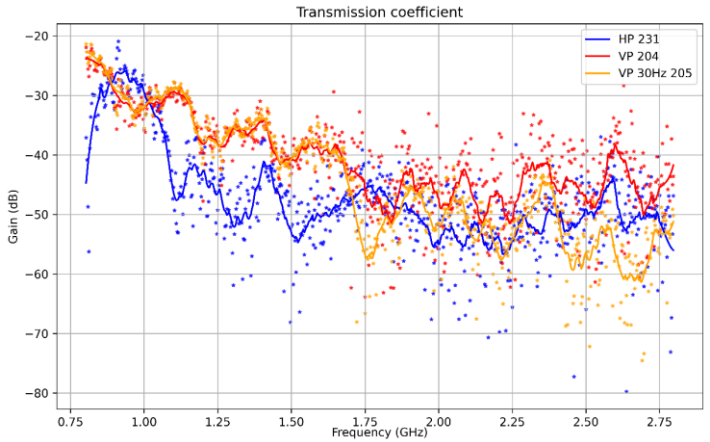
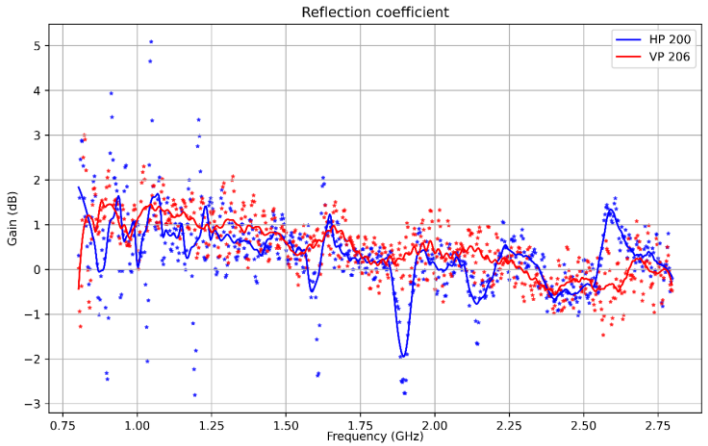
Conventional noise barriers



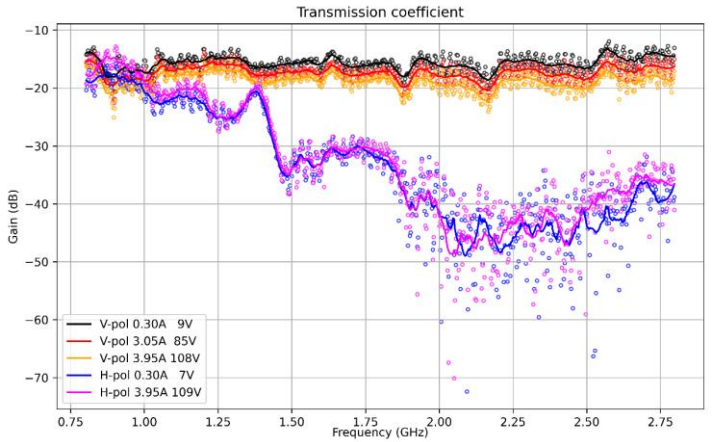


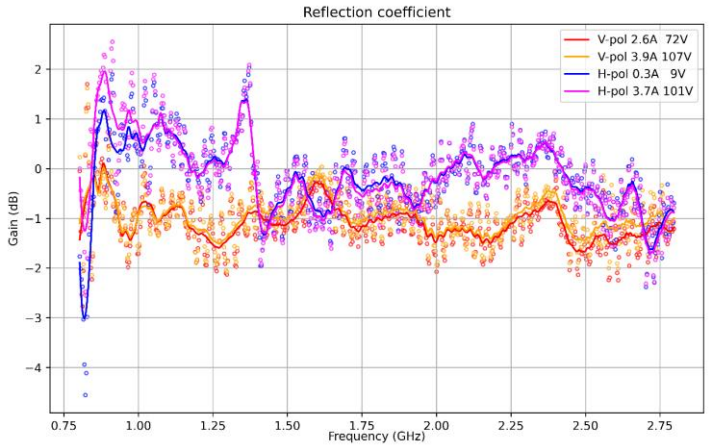
Properties are identical in the case of H-polarization signals

Lower density of the conductors in V-pol direction results in a higher transparency of the PV modules for vertical polarization

	Reflection, dB				Transmittance, dB			
	900 MHz		1900 MHz		900 MHz		1900 MHz	
	H	V	H	V	H	V	H	V
PVNB (in operation)	0	-0.8	0	-1	-18	-17	-40	-19
PVNB (in the dark)	0	-0.8	0	-1.1	-18	-16	-40	-16
Noise barrier	0	0	0	0	-30	-30	-50	-50
Sheets of copper	0	0	0	0	-20	-20	-40	-40

PV noise barriers





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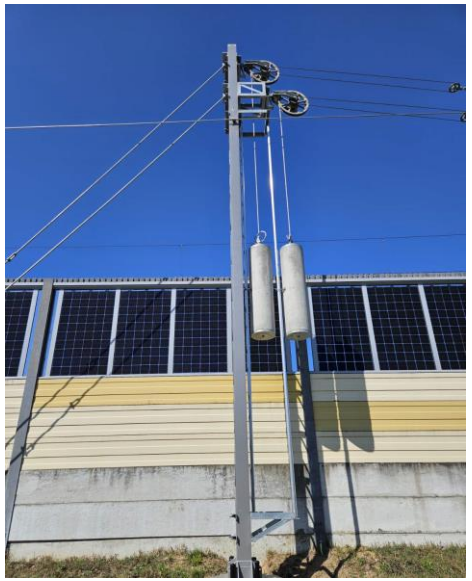
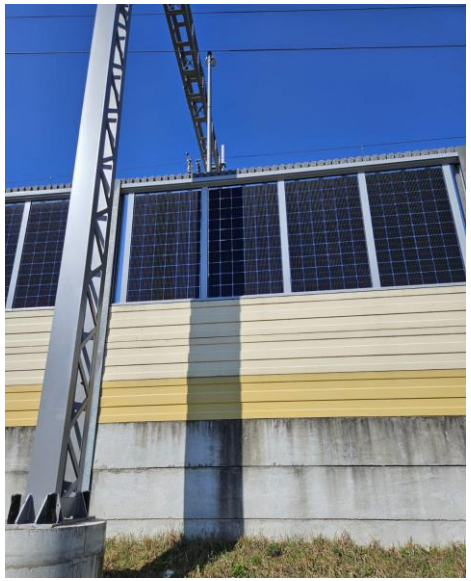
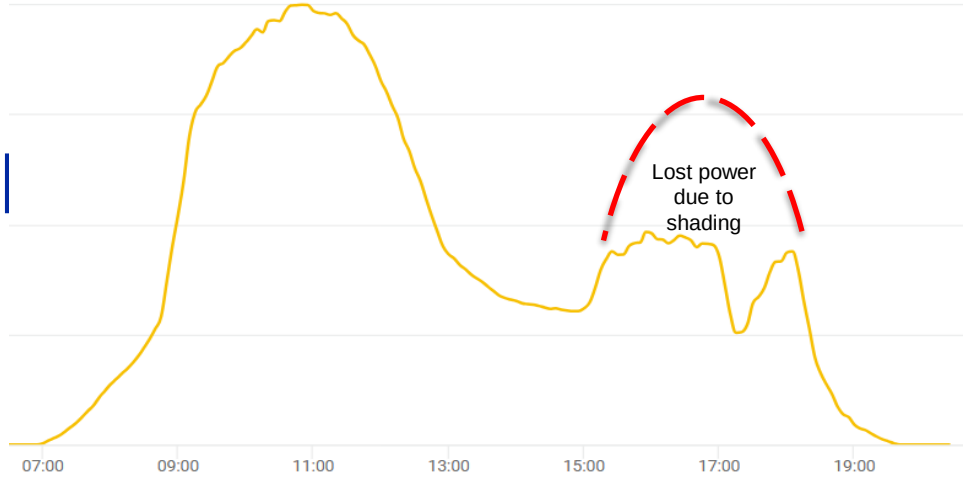
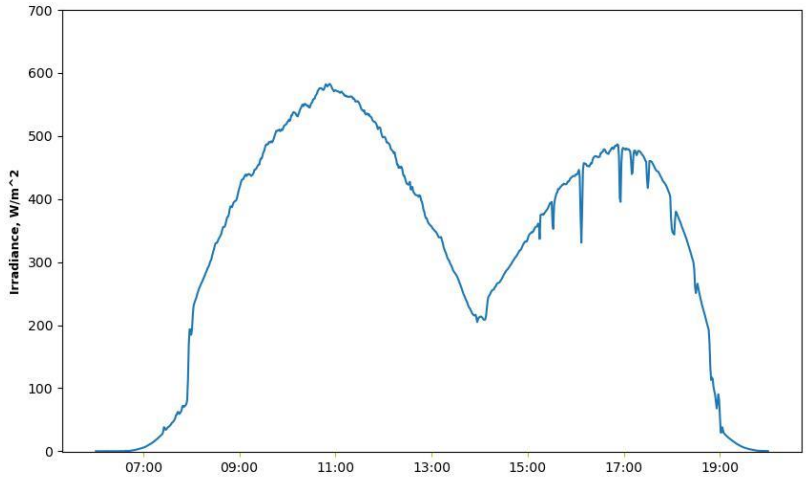
PVNB:
shadows reduce PV generation and l

Shading is one of the uncontrollable factors
For PVNB project,shadowing could be an unavoidable
"Power optimizers can effectively resolve the issue.









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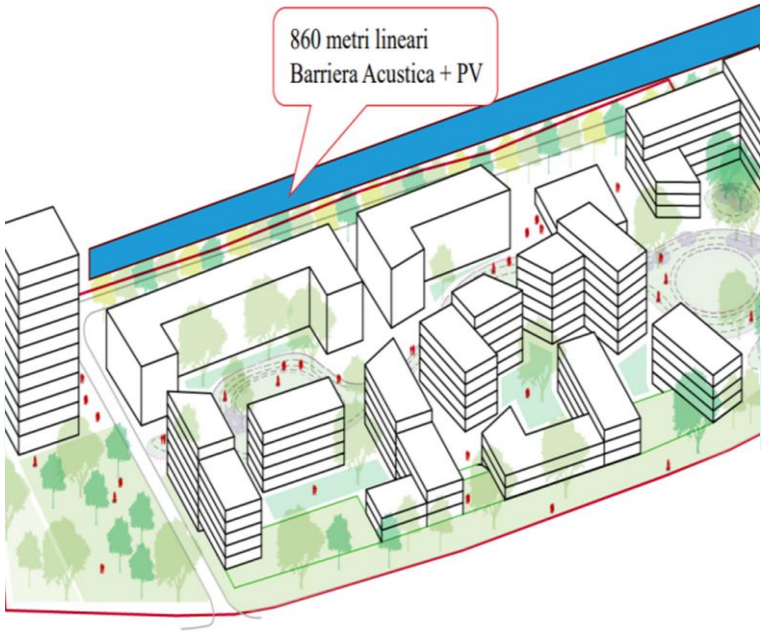
Future PVNB projects

Rail Baltica

Capacity : 392 kW

Extension : 1 km

ITALFERR – S. Bologna



Capacity : 470 kW

Extension : 1,2 km

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ANAS – Smart Road Center (Rome)

Capacity : 19,5 kW

Extension : 100 m

Installation completed in 3 working days

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Thank you!

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Seamless-PV

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