Solar Cell Coating

High Quality SiO_2 - PV Panels – Middle East

2023

Introduction

- SolarEX effectively inhibits the adhesion of contaminants to the surface, preventing the bonding of water, dust, bird lime, and other pollutants from environmental sources. This advanced coating facilitates the effortless removal of contaminants from the surface.
- The notable easy-clean effect is particularly pronounced, allowing for surface cleaning, if necessary, without the utilization of aggressive or abrasive agents. In numerous instances, the panels attain cleanliness after exposure to heavy rainfall.
- The resultant effect is an elevated performance of the solar panel, exemplifying the efficacy of SolarEX in maintaining and enhancing the functionality of solar energy systems."
- The outcome being enhanced performance of the solar panel.

Characteristics

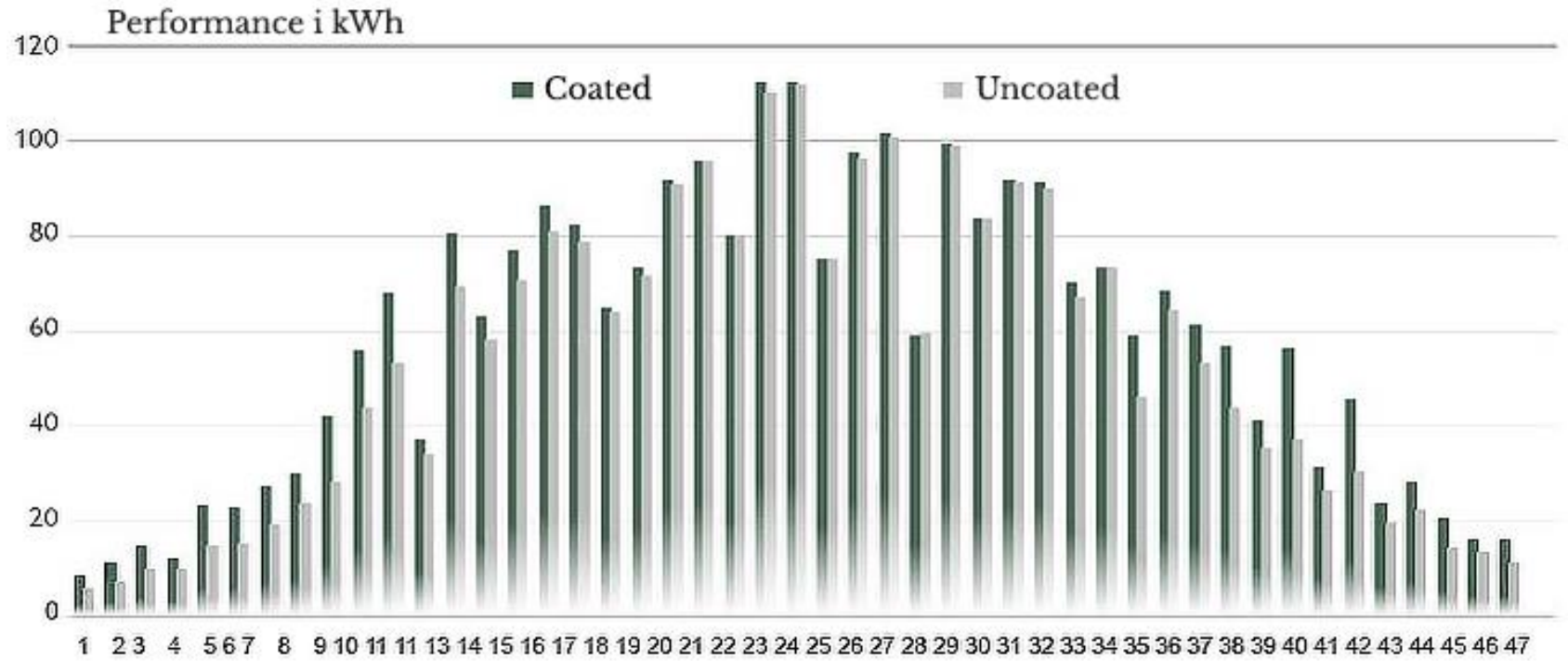
- Strong anti-stick properties
- Excellent easy-clean performance
- Highly durable
- Reduces maintenance cycles
- Prevents degradation of the solar panel surface
- Invisible to the human eye (coating thickness: 100-150nm)
- Permanent Solution (UV-stable, enormous abrasion-resistance)
- Resistant to high temperature change
- Diffusion open coating
- Easy application
- Chemical-resistant (within the range pH value 1 to 13)

Photo one month after coating without cleaning in the Middle East

Performance

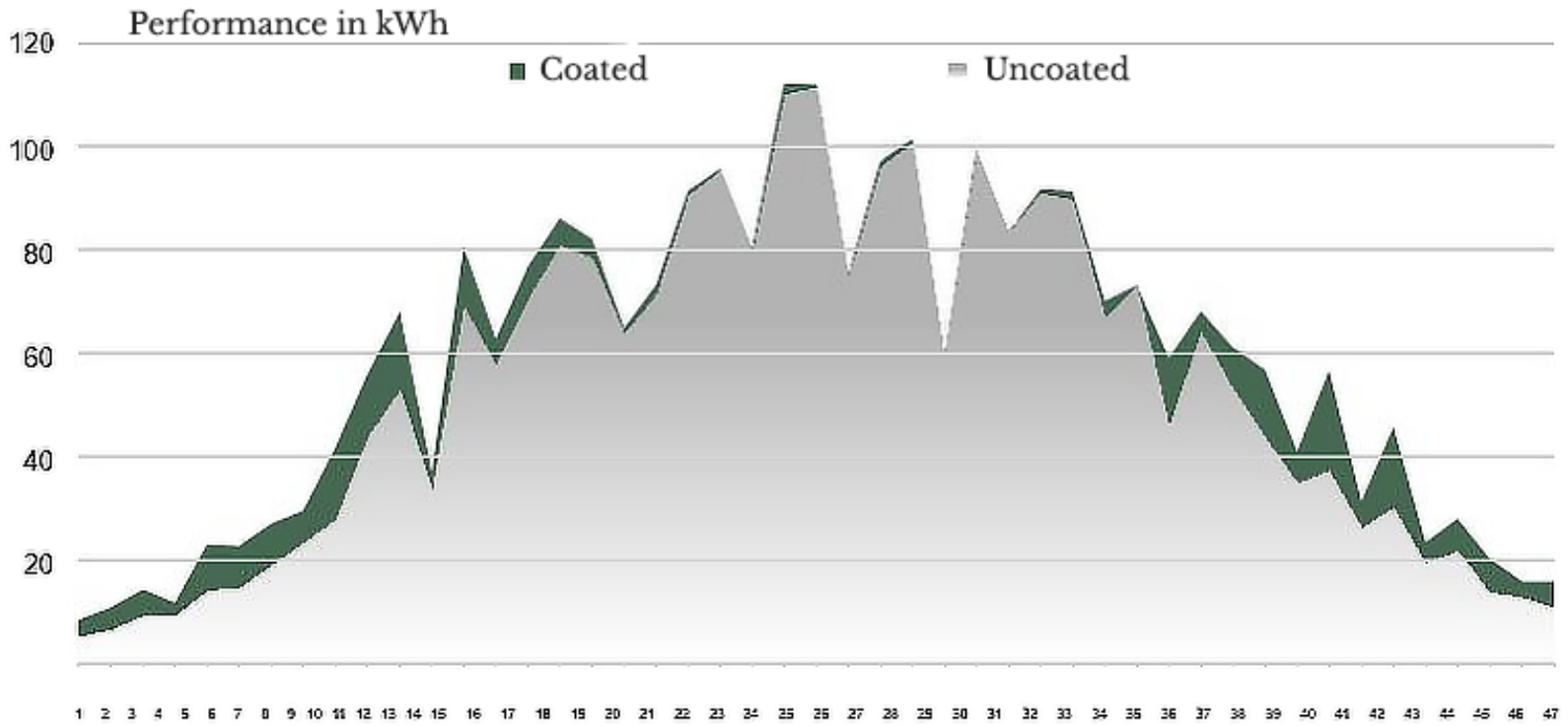
ISO / Laboratory	Description	Results
ISO 15184:2012	Pencil hardness test	9H (Mohs Scale)
TÜV SÜD – spectrophotometer	Light absorption test	does not inhibit light transmission
TÜV SÜD	P80 sandpaper, 800g	Scratch resistance
SO 9001	Anti-bacterial	Excellent
LNE Lab	SCCP content (Short Chain Chlorinated Paraffins), Alkanes, C-10-13, regarding to the Regulation (EC) No 850/2004 & 2015/2030	
LNE Lab	Organostannic Compounds, regarding to the Regulation (EC) N. 276/2010 amending 1907/2006 Annex XVII, 20	

Performance



Calendar Week

Performance



Technical information

- Density: 0,794 KG/L
- Manual Application: 5-10 ml/m^2
- Industrial Application: 5-15 ml/m^2
- Application method: Spray (HVLP), Cloth
- Shelf life: min. 2 years
- Pre-Cure time: 30 sec
- Ready Cure time: 5 min (> 25°C) – 30 min (5 – 10°C)
- Fully Cure time: 24 hours
- Layer thickness: 100 – 150 nm
- Composition/information on ingredients: Ethanol (>94%), butanone (<5%)
- Acid / Base stability: 1.5 – 12.5 PH

Return on Investment

Relative factors:

- Rainfall between 350mm – 750mm annually
- Approximately 3000 sunshine hours per year
- 90W per m^2 solar panel
- Euros pr. kWh: € 0,759
- Expected performance increase with coating: 2%
- Coating price per m^2: € 2,44
- 3 years duration; based on 30% annual sandstorm

Return on Investment

Calculation:

90Wh x 3000 sunshine hours per year = 270kWh per m^2 annually

270 kWh/year x € 0,759 Euros per kWh = € 204,9 per m^2 annually

€ 204,9 + 2% production increase = € 209 per m^2 annually

Energy gain each year with coating: **5,4kWh per m^2**

Return on Investment after: <u>218 Days</u>

Profit within duration-period (3 years): <u>€ 9,85* per m^2</u>

**In addition to dramatically reduced cleaning cycles, repairs an wear and tear*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