

## OPTOENERGY VS PHOTOVOLTAIC

Item	Photovoltaic	Optoelectric	Explanation
<b>Cells</b>	144	144	Both technologies use 144 cells. Photovoltaics rely on silicon, while optoelectric cells utilize dielectric materials like Cadmium Telluride, enabling them to capture diffuse radiation. This improves solar generation under shadows, rainy days, or when the surface is covered with particulate matter.
<b>Efficiency</b>	16.75% - 21.3%	19.84% - 25.5%	The optoelectric technique allows for higher efficiency at a lower cost per kW produced.
<b>Encapsulation</b>	Acrylic and Glass	Polyethylene Terephthalate (PET); float glass; tempered glass; acrylic steel; polymethyl methacrylate (PMMA)	The optoelectric encapsulation structure is more versatile and efficient, allowing its use in roofs, walls, and surfaces, unlike the mono-encapsulated photovoltaic panels.
<b>Weight</b>	28 kg for 550W	6.5 kg for 550W	Optoelectric technology reduces weight by 78% compared to photovoltaic technology in frameless versions.
<b>Installation</b>	On mounting racks	Directly on the structure	The ability to absorb diffuse radiation allows optoelectric technology to be installed directly on roofs or walls, reducing transportation, lifting, and installation costs.
<b>Cell type</b>	Silicon	Cadmium Telluride (CdTe)	By relying on Cadmium Telluride instead of silicon, this technology is more efficient in production, reduces dependency on partner companies, and supports



proprietary nano-structural technologies.

<b>Lifespan</b>	Between 8 and 15 years	Between 45 and 54 years	Optoelectric technology does not suffer accelerated degradation due to photonic action, as its generation principle is based on solar optoelectric wave modulation, resulting in a longer effective lifespan.
<b>Recyclability %</b>	Between 12% and 25%	Over 95%	The optoelectric panel manufacturing structure uses recyclable materials that can be reused in the concrete, plastic, and paving industries.
<b>Hotspots Effect</b>	High	Does not occur	Optoelectric panels, being silicon-free, do not generate hotspots, preventing material degradation and efficiency loss.
<b>Generation Hours</b>	3 - 5 peak hours	5 - 8 peak hours	Optoelectric panels provide higher conversion efficiency and continuous generation compared to traditional solar panels.
<b>Ease of Installation</b>	Only horizontal with a 45° azimuth towards the sun	Vertical or horizontal without azimuth	Optoelectric technology, by absorbing diffuse radiation, does not require direct sunlight orientation or a specific inclination angle.
<b>Electrical Parameters</b>	Regulatory	Regulatory	Both products share industry-standard electrical characteristics, ensuring safe solar energy generation ranges.



# GENERATION CURVE

## Optoenergy

Non-Ionizing Radiation vs Watts per Square Meter: Optoelectric vs UTC Hours

