

A User-Friendly Tool to Assess the Environmental **Footprint of PV Systems and Modules**

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"CSEM's LCA tool revolutionizes environmental footprint assessment for PV systems, enabling accelerated assessments and development of customized eco-design strategies."

Why LCA matters ?

LCA bottlenecks



LCA matters for sustainability

- Life Cycle Assessment (LCA) provides comprehensive understanding of **a** a product's environmental impact based on its function and life cycle.
- This knowledge enables informed decisions and strategic improvements for sustainable product developments.



- Difficulty to collect reliable primary data.
- Low flexibility offered by market-dominant LCA softwares.
- Time consuming and need LCA expertise.



CSEM's strengths



- Strong knowledge in PV technologies.
- Internal database to monitor cell & module production.



Our solution: a fast, accurate, flexible & user-friendly LCA tool adapted for PV products

Specify module details and parameters from CSEM's module database. It can be any type of module: lightweight, colored, tiles, glass-backsheet, etc...

Input key system parameters (site selection, system type, module orientation, degradation rates).

PV system power output estimation using HETSIM software.





	Cell & Module main characteristics			Sustem area (m2)	14.72	
				System area (mz)	14.72	
	cell area (cm2) 137.1 ABb	module area (cm2) Nser 60		System output (kW)	3.145	
	Cell type & size HJT M6	1.839e+(Npar 2		Yearly energy yield (MWh/y)	5.218	
		Wafer parameters		Total energy yield (MWh)	156.5	
		wafer origin Europe	System main parameters			
Glass-3mm		Wafer thickness (um) 170	Site selection Lisbon		n)	
			system type slanted-roof	1.0000	5.4097	
		Module parameters	Module tilt (°) 35	2.0000	5.3902	
NA08		module frame aluminum 💌	Azimuth (°), 180° = south 180	4.0000	5.3692	
		Edit current BOM/MODULE	System lifetime (years) 30	5.0000	5.3558	
[57] 200-7um			Number of modules 8	6.0000	5.3424	
		Module datasheet		7.0000	5.3290	
CELL(S)		load IV 🔻	Degradation	8.0000	5.3157	
				9.0000	5.3024	
[57] 200-7um		Impp (A) 10.4	Initial degradation (%) 1.5	10.0000	5.2892	
		Vmpp (V) 37.8	Degradation rate (%/an) 0.25	4 0000	E 0700	
NA09		Pmpp (W) 393.1	BOS losses (%) 5	coma-separated		
		Rctm (Ohmcm2) 0		5.4097, 5.3962, 5.3827, 5.369	5.4097, 5.3962, 5.3827, 5.3692, 5.3558, 5.342	
		Rcell (Ohmcm2) 0.5				
BEC301		Tcoeff_Pm (%/°C) -0.27	Please save your PV system (or update it if already existing) to reuse data afterwards		.CA >	

PV systems list	st. Different functional units are available (kWp, kWh, etc).		Different LCA impact categories are available.				
For analysis		. ,					
EUPVSEC_HJT_Bern	functional unit kWh	0.014	Climate change	(kg CO2 eq/kWh)			

COMPARE MATERIALS' LCA



CALCULATE LCA OF PV SYSTEM



CO, & COSTS SAVINGS OF PV SYSTEM





COMPARE LCA OF PV SYSTEMS

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