

# Clever solar devices by the Numbers



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# Our Photovoltaics 4.0



Up to 70% cost reduction, recover up to 12% your energy production with an efficient digital maintenance, and mitigate labor risk and CO2 emissions.



## How much money can you save?

### Conventional maintenance vs. Photovoltaics 4.0

Save up to 70% in maintenance costs! (see details in our TCO)

A TCO (Total Cost of Ownership) is the cost of purchasing something plus the cost of operating it over its useful life.

Every photovoltaic (PV) system requires upkeep. Data at the string or inverter level only offers indirect measurements, which only provide an estimation of potential problem areas. This means that a manual examination is always necessary to detect the problem and incurs in hidden costs (eg. Like the energy not produced by undetected faulty modules).

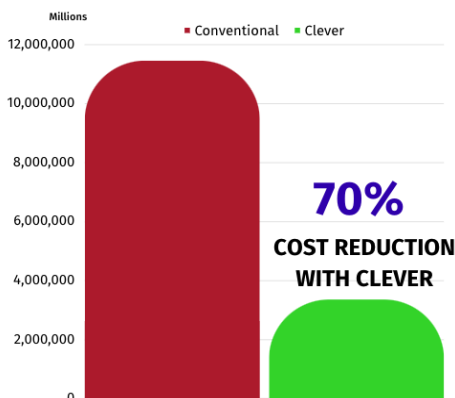
**OUR SOLUTION:** KNOW EXACTLY WHERE are the defective modules and WHAT is the problem automatically, in JUST 3-Clicks from your mobile device with NO HIDDEN COSTS.

## What happens at the end of the Installation Life?

Comparing the same number of diagnosed panels (5% of the installation) solution in a Utility plant (700.000 modules installation - 280MW) :

CONVENTIONAL		CLEVER SOLAR DEVICES			
	<b>O&amp;M Cost:</b>			CLEVER power	€ 13.805
	Total labor cost	€10.760.625		CLEVER SW	€ 3.351.414
	Total Drone flights	€411.835		<b>TOTAL Clever SD</b>	<b>€ 3.365.219</b>
	<b>Opportunity Cost:</b>				
	Energy not produced by strings	€ 171.598			
Energy not produced by modules	€ 114.399				
<b>Total Conventional</b>		<b>€ 11.458.457</b>			

Comparing the total costs of using a conventional solution Clever Dx save up to 70% costs.



Total costs at installation EOL = 30 years

*NOTE : The calculations used in this study were based on a 50€/KW cost. However, conventional costs are directly related to the cost of electricity and increase exponentially as the price/KW rises being unpredictable, while the cost of Clever Solar Devices remains constant.*



Contact us for more details on our calculations and parameters and get to know the numbers for your specific business!  
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# Behind the Numbers

The scenario is designed for PV production plants that want to maximize their production capacity while improving their service by lowering costs.



The case study was conducted for 5% of 700.000 modules (280MW); the costs will vary based on the actual number of modules. It should be noted that additional supplementary maintenance duties like mechanical inspections and lawn trimming are not included in this analysis. If you want us to examine your particular case, get in touch with us. Comparing both conventional maintenance vs. Clever solution in the same scenario.

## THE PARAMETERS:

Installation	
Number of Modules	35.000
Panel Power (W)	400
Hour Solar Pick (HSP)	1.752 hours
Electricity Cost (€/MWh)	50
Number of Modules/String	20



## Conventional Maintenance

Drones	
Drone flight	600€/MW
Troubleshooting Time (Operator's average time to access and measure):	
Per String	20 min
Per PV Module	10 min
Technician hourly cost	
Cost per Hour	35€

The cost of conventional maintenance is made up of the energy wasted during troubleshooting, the time spent troubleshooting, and the number of drone flights needed.

Other expenses that are associated with the early years include failing to identify manufacturing flaws in a timely manner and losing component warranties.

It should be noted that conventional maintenance is carried out at a specific point in time. We do not know what happens the rest of the time in the installation or if new failures appear.

## Photovoltaics 4.0

Clever Solar Devices	
Electricity Consumption of HW (mWh/unit)	300
Platform Fee (€/unit/month) Year 1	1,45
Platform Fee (€/unit/month) Year 2	0,73
Platform Fee (€/unit/month) Year 3+	0,21

The estimated cost of the Clever Dx platform includes the platform subscription, the power consumption of the measurement devices.

In the case of Clever, measurements are performed automatically, remotely and in real time, offering a continuous diagnosis of the installation.

# Get rid of Hidden Costs with Clever Dx

Clever Solar Devices delivers HIGH EFFICIENCY and COST REDUCTION to Photovoltaic plants compared to conventional procedures.

PV Plants currently perform traditional maintenance by measuring some data points on the IV curve at string level and flying expensive drones a couple of times per year to conduct thermal and visual inspections on the state of their plants. Today's though-to-be-stationary processes generate a lot inefficiencies and unnecessary expenses.

We reinvent PV plants diagnosis with remote AI-powered digitalization.

Clever Dx is a DIAGNOSTIC PLATFORM to support operational decisions knowing exactly what is happening to each module in real-time with the most accurate data (automatically and remotely measuring the IV Curves of EACH and EVERY module in the installation with our device) and AVOIDING MANUAL inspections to find the faulty modules and determine the problem's root cause

Simplified and comprehensive information, reports, alarms, and maps will help you understand WHAT is happening and, more importantly, WHERE THE PROBLEMS ARE IN THE INSTALLATION.

Save money by knowing this at your desk rather than dispatching operators to the field to locate individual broken modules.

Just 3 simple clicks to determine WHERE the problem is WHAT is going on (shadows, oxide, broken cell string, etc.), and the modules level of DEGRADATION.



Using the FREE Demon access, you may see our Pilot Power Plant performance:  
<https://demo.cleversd.com/register.php>

## More about Us

Find more details in our website:



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