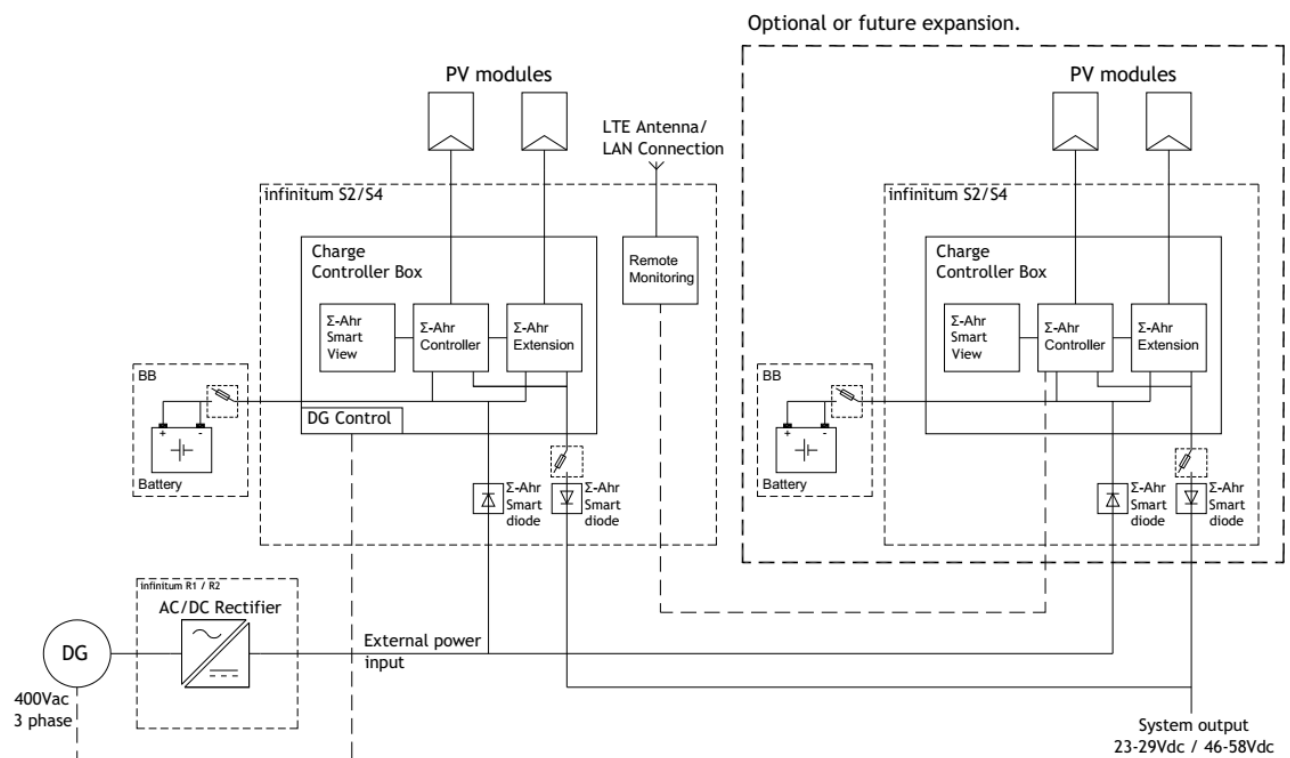


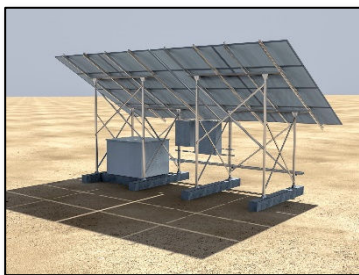
# infinitem Solar Hybrid Solutions

infinitem, TSS' durable, modular and scalable solar and solar hybrid power solutions combine multiple sources of electricity generation with a battery storage system managed by TSS' in house developed battery management system.

TSS solar and solar hybrid power solutions deliver outstanding reliability, performance, durability and unrivalled energy efficiency while reducing the air pollution, noise and costs associated with for example diesel fuel generators. The infinitem Solar Hybrid Solution can power a multitude of 24/48Vdc or 230/400Vac appliances for telecom, water treatment, farming, oil & gas, etc.



The above block diagram describes the TSS modular infinitem solar hybrid solution including options for remote monitoring and future expansion possibilities. The sub-systems are isolated from each other via smart diodes, to create redundancy and vastly increase your systems reliability. This is the only solid solution in which old and new batteries can be used together into one system.



## infinitem - Art of No Cooling

- 24/7 Running hybrid control system, without forced cooling required for batteries or charge controllers
- No energy required for cooling, all generated current flows directly to the loads and battery
- Suitable for ambient temperatures up to 60°C
- No moving parts, no wear & tear
- infinitem series, equipment for even higher power input and higher reliability values, available in a 24Vdc or 48Vdc version

### infinitem S2/S4 Control Box

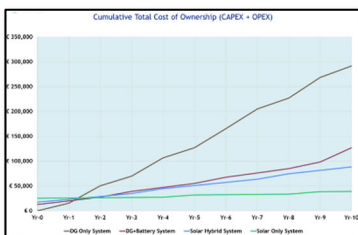


- Modular, plug & play, upgradable
- Solar only and solar hybrid solution with the capability to control multiple power sources with only one controller (less components = more reliability)
- infinitem includes TSS  $\Sigma$ -Ahr PWM Controllers provided with three independent solar array inputs and datalogger function
- Available in 24Vdc and 48vdc version
- Suitable for Lead Acid, Li-ion or Ni-Cd batteries
- Passive cooling / no ventilators, up to 85°C enclosure internal temperature, without derating
- $\Sigma$ -Ahr SmartView for displaying all available system parameters
- Standard Modbus TCP/IP interface. As an option different remote monitoring solutions can be chosen from
- Combining your already available (hybrid) system, or batteries, with new ones is no problem due to the TSS  $\Sigma$ -Ahr Smart Diodes. Without compromising on reliability & lifetime expectancy
- Even a dual & triple system setup is possible, resulting in continuous 24/7 uptime



### infinitem R1/R2 Rectifier Box

- AC/DC rectifier for optimized battery charging
- Available in 24Vdc and 48vdc version
- Modular setup: 5 kW or 10 kW (48Vdc only)
- Adjustable power output to maximize fuel efficiency
- Savings on fuel cost and maintenance cost
- 340-530 Vac-3 ph+N input



### infinitem - TCO Software Tool

TSS uses an in-house developed software tool to calculate for:

- Total Cost of Ownership of various solar hybrid energy solutions
- Defining TCO and CO<sub>2</sub> reduction
- Calculating various uptime solutions / days without load
- Calculating & defining the battery lifetime expectancy



### TSS - off-grid Solar Power System expert

- With over 35 Years' experience in the design and supply of off-grid Solar Power Systems and components. Suitable for very high demanding environments
- TSS develops their own battery management system for various battery chemistries providing longer battery lifetime expectancy
- TSS uses in-house innovations backed by intensive field and lab testing
- All TSS electronic equipment is designed, engineered and manufactured in the Netherlands, Europe

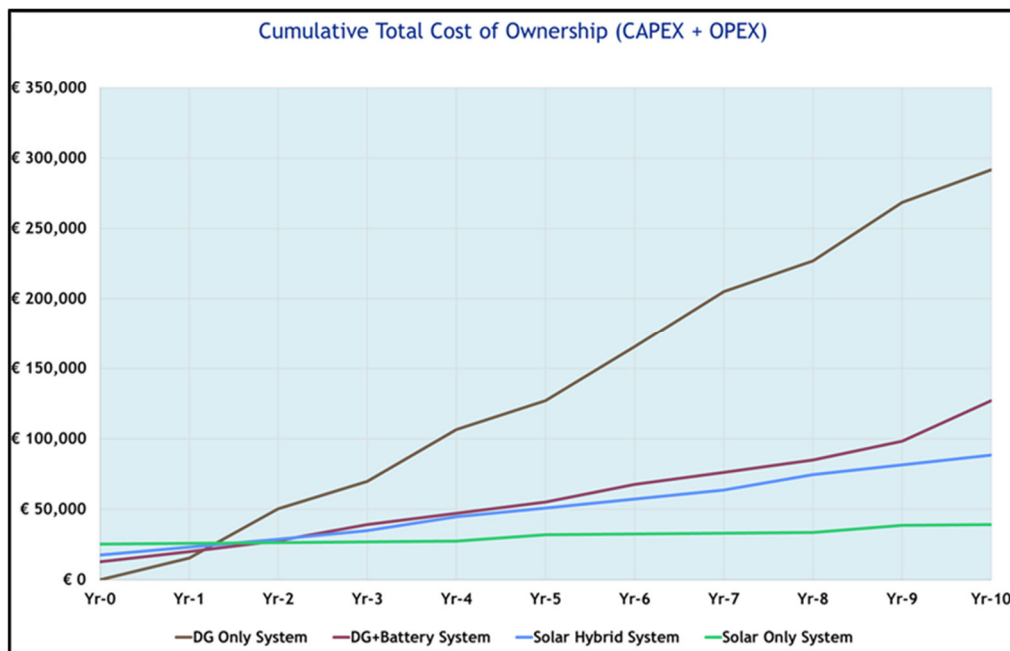
### infinitem OPEX and CO<sub>2</sub> savings

With the TSS infinitem control system and the TSS infinitem TCO software tool various diesel hybrid, solar only and solar hybrid solutions can be provided. The below table shows the various cost and CO<sub>2</sub> emission reductions you can achieve.

Item	Diesel generator only system	Diesel generator & battery system	Solar hybrid system (50% solar)	Solar only system
Break-even point	-	1 - 2 year	1 - 2.5 year	1 - 2.5 year
TCO savings	-	50 - 60%	60 - 70%	80 - 90%
CO <sub>2</sub> emission reduction	-	50 - 60%	70 - 80%	100%

*The above results are equal for VRLA or Lithium-Ion batteries.*

Cost for maintenance and fuel are also considered in the TSS TCO calculation. Transport of diesel and maintenance crew to the system site is not taken into account as this is depending on the location where the system will be installed. Each location requires a different solution resulting in a project specific TCO as shown below.



TCO example



a sustainable versatile modular  
power energy system