STAND ALONE GREEN HYDROGEN PLANT

The generation of green hydrogen, that is, of renewable origin, is one of the great challenges that the energy transition faces.

Having a continuous flow of renewable energy is not an easy task. The intermittency of solar or wind power means that it is necessary to include storage systems to maintain a steady flow of energy to feed the plant's electrolyzer.

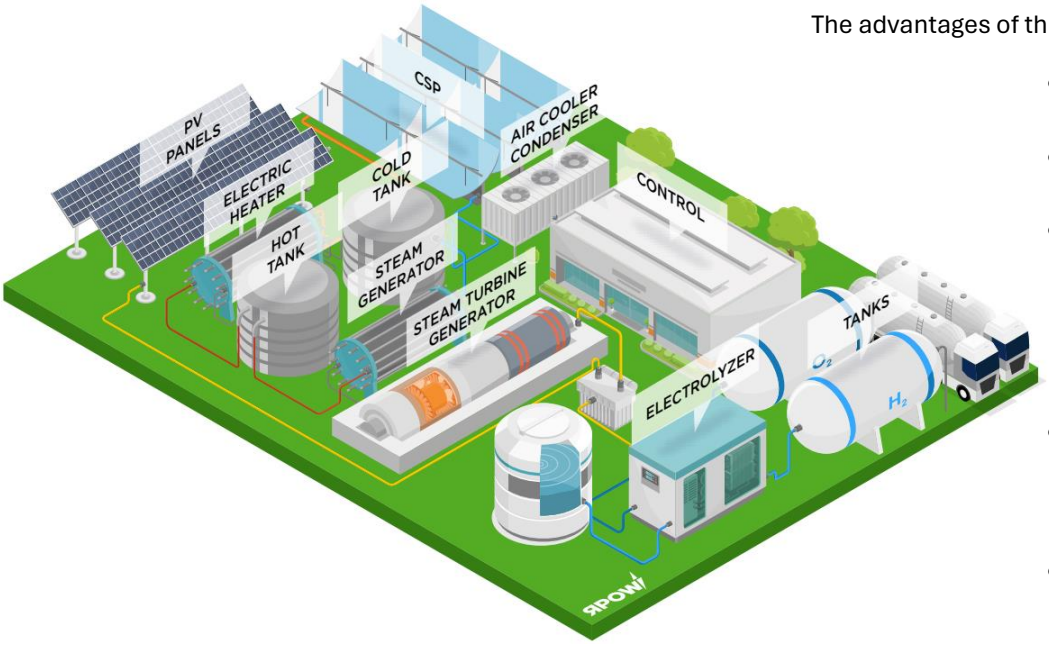
The lack of a continuous flow of electricity causes the electrolyzer to decrease its efficiency during the ON and OFF cycles, increasing the probability of failures.

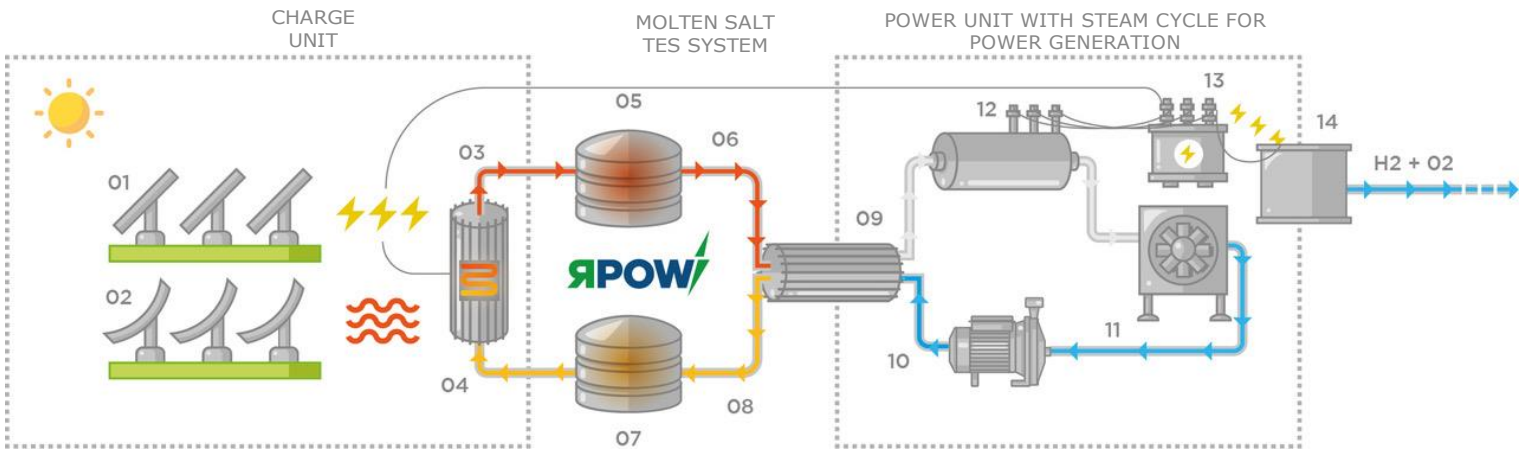
To address this, solutions such as the one proposed by RPow help to ensure a constant current flow at the electrolyzer terminals, based on the combination of different technologies for systems with electrolyzer above 30 MW.

The solution consists of the combination of energy sources that directly generate electricity – such as PV, wind, concentrated solar power, etc. – which, together with a Thermal Energy Storage system using Molten Salts, generates enough steam during hours when photovoltaic or wind generation is not occurring. This steam would be used in a Steam Turbine with its corresponding alternator, which would power the electrolyzer during periods of non-renewable energy generation.

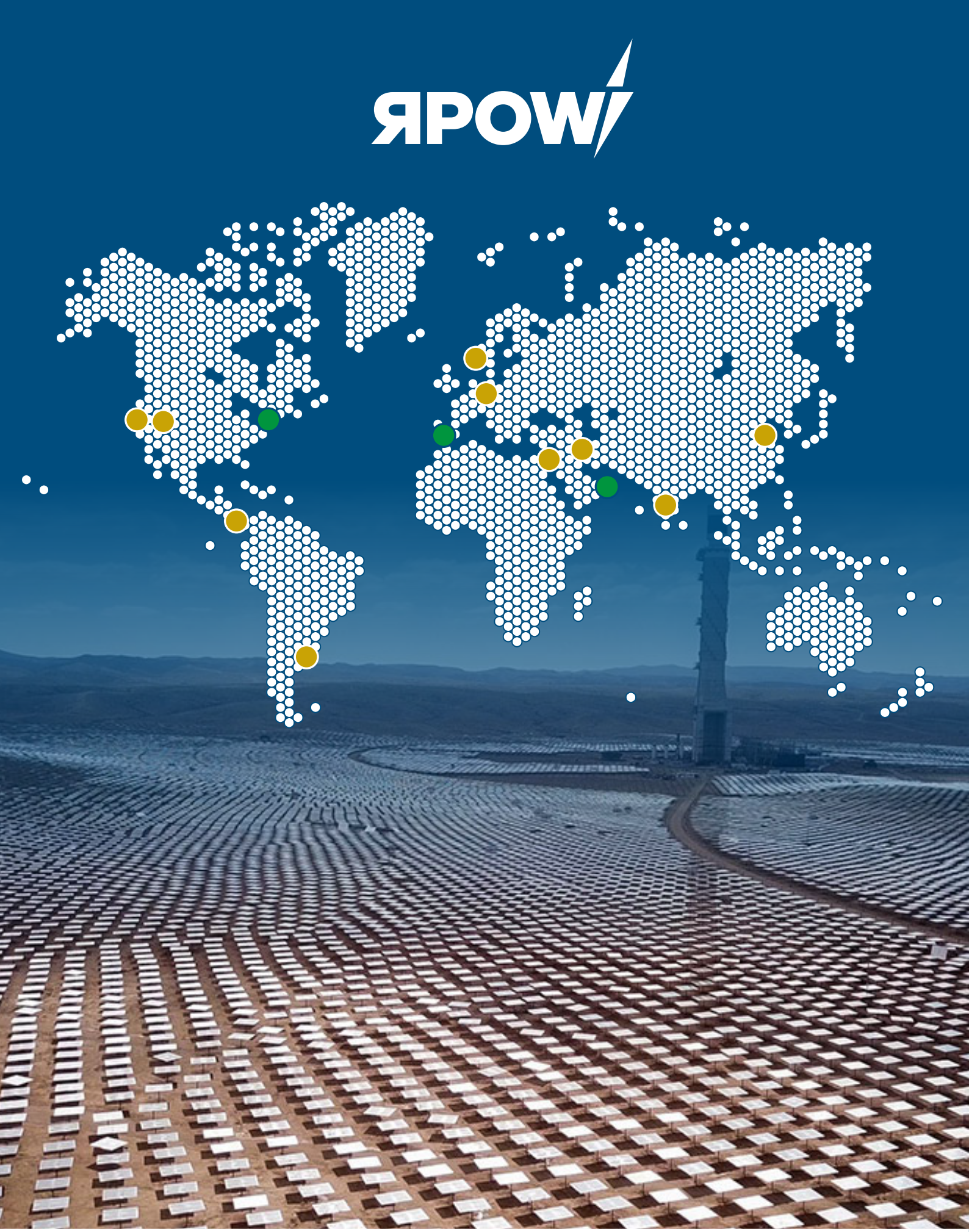
The advantages of this system can be summarized as follows:

- Continuous generation of green H_2 24/7.
- Improved performance of the electrolyzer.
- Isolated system from the electricity transmission grid, without connection points or transformation centers to integrate (beyond those of the subsystems themselves).
- Higher profitability than battery-based systems, provided the electrolyzer capacity is above 30 MW.
- Standalone solution, with total independence from the electricity grid and energy price fluctuations, both in purchasing and selling.





01. PV
02. CSP Field
03. Electric Heater
04. Molten salt heat exchanger
05. Hot Salt Tank
06. Hot Salt
07. Cold Salt Tank
08. Cold Salt
09. Steam Generation
10. Water at the pump outlet
11. Water at the outlet of the condenser
12. Turbine/Generator
13. Transformer
14. Electrolyzer



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