# SOL2HY2

## Worldwide optimized hydrogen production plant

The **European research project SOL2HY2** (Solar to Hydrogen Hybrid Cycles) investigates the Hybrid-Sulphur-Cycle (HyS-Cycle), considered as one of the most promising approaches to generate emission free **hydrogen by the use concentrated solar power (CSP).**

The HyS-Cycle is a two-step process producing hydrogen and oxygen out of water:

1. Thermal evaporation and decomposition of sulphuric acid at high temperature, forming sulphur dioxide and oxygen.

2. Electrolysis of sulphur dioxide and water generating hydrogen and sulphuric acid.


Hybrid-Sulphur-Cycle (HyS)
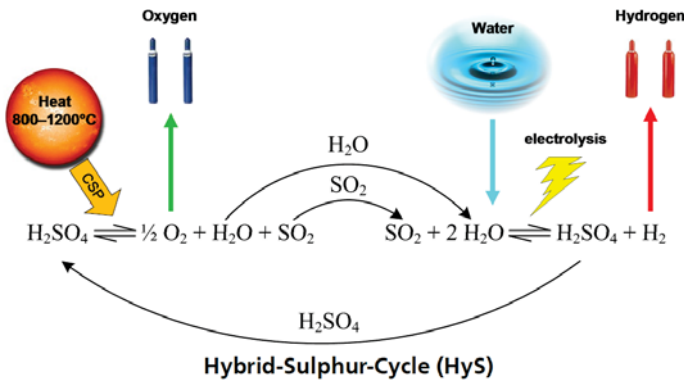
The **project aims to develop and demonstrate all key components** of the HySprocess – solar sulphuric acid cracker, sulphur dioxide depolarized electrolysis, gas separation, heat storage – **at industrial relevant scale**.
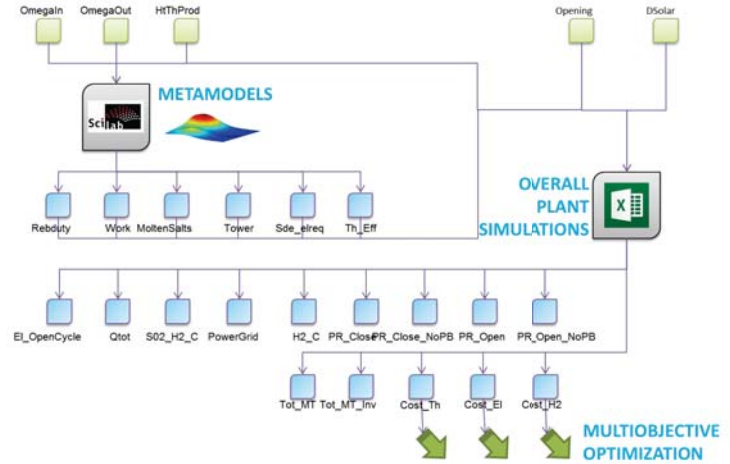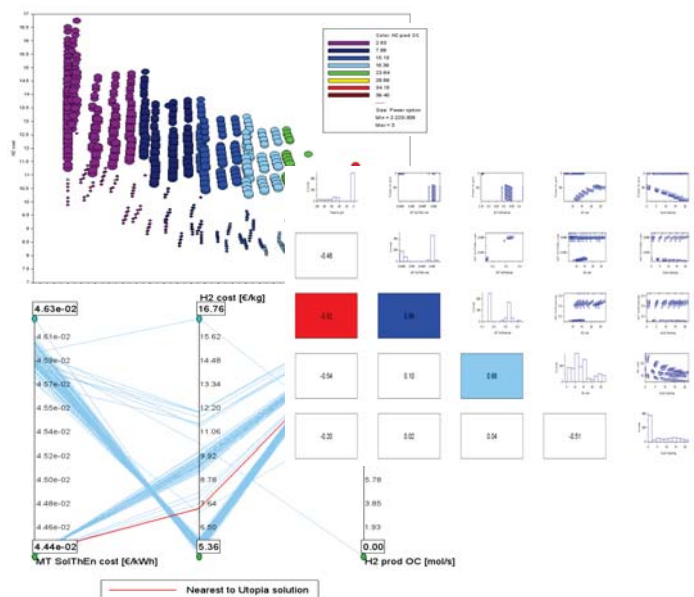

The creation of the **optimization process of the whole plant** brought also to the development of a **platform that integrates the simulation spreadsheets and metamodeling techniques**, which are also useful to deal with the size (scaling) of the solar plant under consideration.

This tool for the study of the SOL2HY2 process, developed to offer a single interactive and accessible application with a graphical user interface, includes also the possibility to create charts to **support the analysis of the simulations' results** and to compare different solutions.
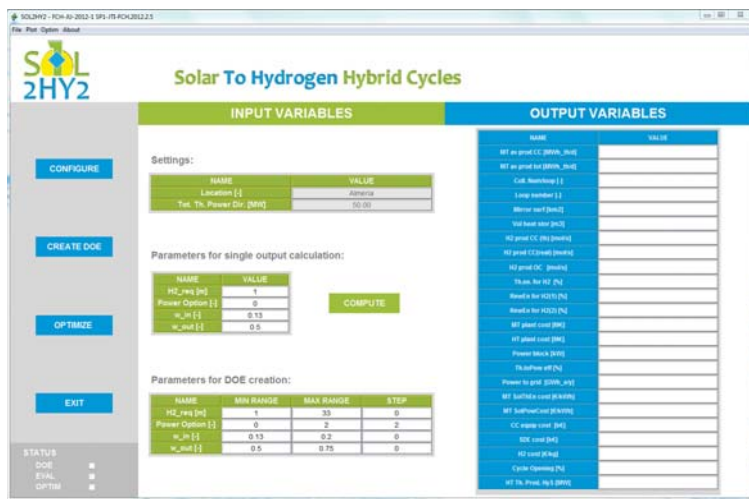
EnginSoft developed a **new software tool to make a flexible plant design** with different share of cycle opening, SO2 source, solar energy share and, on demand, adjustable hydrogen production. Namely, it is capable to estimate CAPEX/OPEX **for any planned location**.

https://sol2hy2.eucoord.com