



HyCO

Hydrogen Cost Optimization

Intelligent optimization of hydrogen projects to achieve the lowest levelized cost (LCOH)



The green hydrogen challenge

Structuring green hydrogen (GH₂) projects requires balancing the inherent intermittency of renewables, asset sizing, and strict certification rules, all within the complex ecosystem of the power sector. Without advanced tools, there is a risk of underutilizing expensive assets or failing to meet low-carbon criteria.

The engineering behind HyCO

Using **advanced optimization algorithms under uncertainty**, the software integrates cost assumptions (CAPEX/OPEX), regulatory constraints, and renewable generation data to find the **project architecture** that delivers the **lowest LCOH**.

What does HyCO deliver?



Asset sizing and investments

Mathematically optimizes the **installed capacity** of renewable generation (solar, wind) and storage (BESS) assets. HyCO defines the **ideal investment** needed to avoid over-sizing or idle capacity.



Contracting and grid use strategy

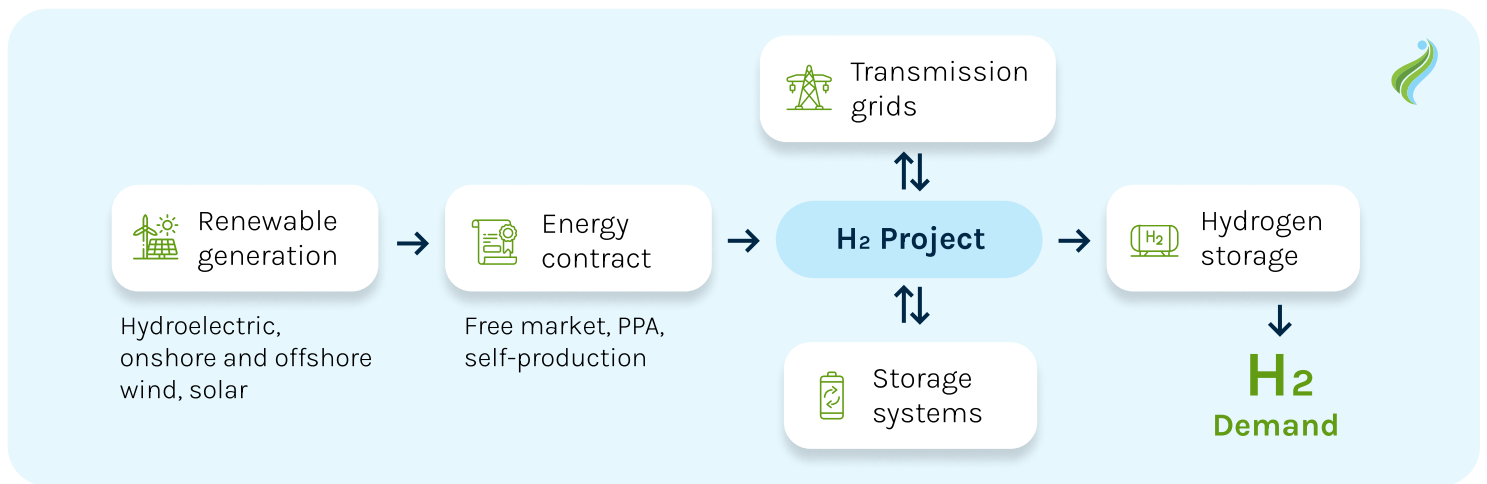
Determines the ideal supply mix (Free Contracting Environment or Self-production). Optimizes the use of the transmission system and defines energy import and export strategies to **maximize project profit**.



Levelized cost of Green H₂

The main output is the **levelized cost of hydrogen**, minimized through the fine-tuning between investment and operation. The software simulates how different energy arrangements impact the final molecule competitiveness.

Simulation of a complete ecosystem



Flexibility and connection

Evaluation of scenarios with or without grid use (on or off-grid) and for different contracting modalities.

Storage modeling

Simultaneous optimization of batteries, Pumped Hydro Storage, and physical hydrogen storage.

Energy flow management

Optimal strategy to purchase energy from the grid, export surplus, or store to minimize losses.

Integrated optimization of renewable generation

HyCO uses **stochastic optimization** to simultaneously evaluate hundreds of renewable generation and energy price scenarios, mapping risks and opportunities to ensure a resilient and financially secure project.

Native integration with Time Series Lab

TSL is PSR's renewable energy tool that uses global climate databases from NASA and the European Center for Medium-Range Weather Forecasts to **produce future wind and solar generation scenarios**.

Compliance for certification

The model optimizes the project with unrestricted grid use or applying **sustainability criteria**. By complying with **temporal correlation** (hourly or monthly), HyCO guarantees that the electrolyzer operates strictly within the renewable generation and storage curve, ensuring **eligibility for the most valued certificates in the world**.

Global reference in energy innovation

Developed within ANEEL's R&D Program in partnership with CPFL, HyCO reflects PSR's more than 30 years of global operation. Our **Research & Development** team creates tailor-made products for your strategic planning.

