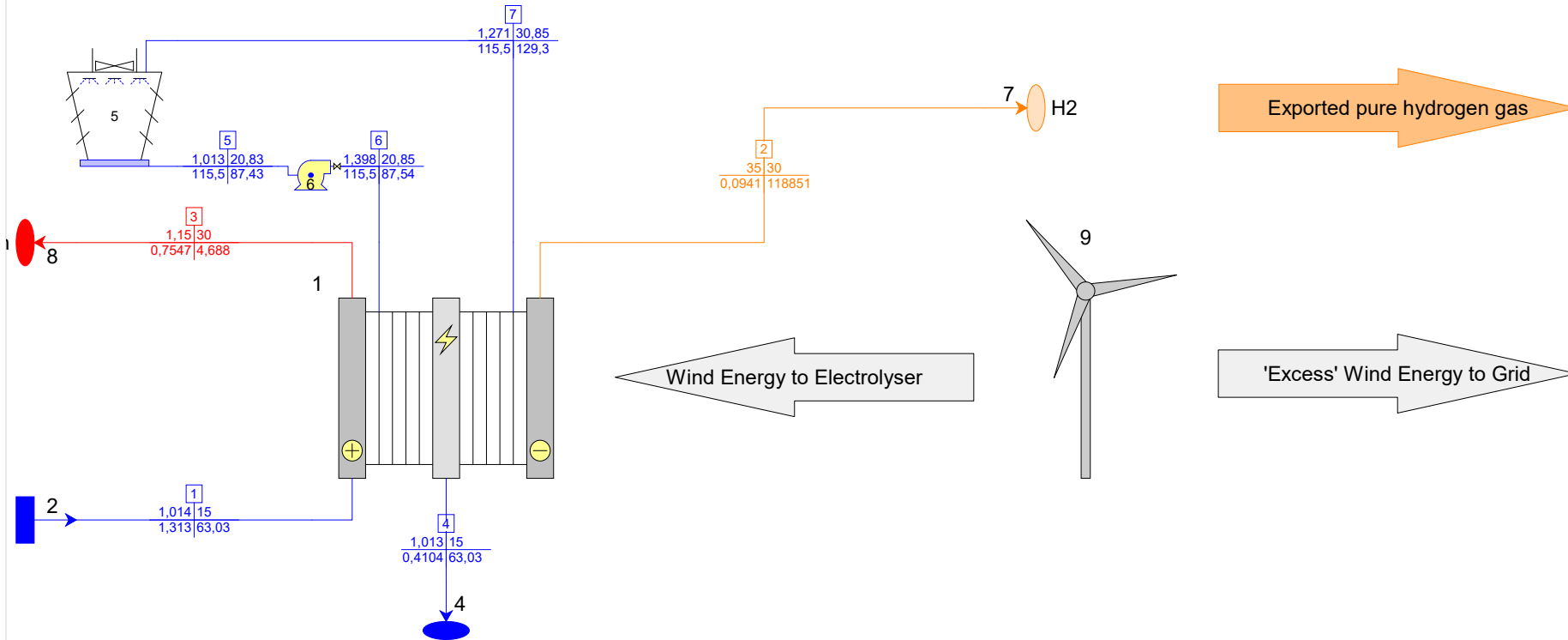


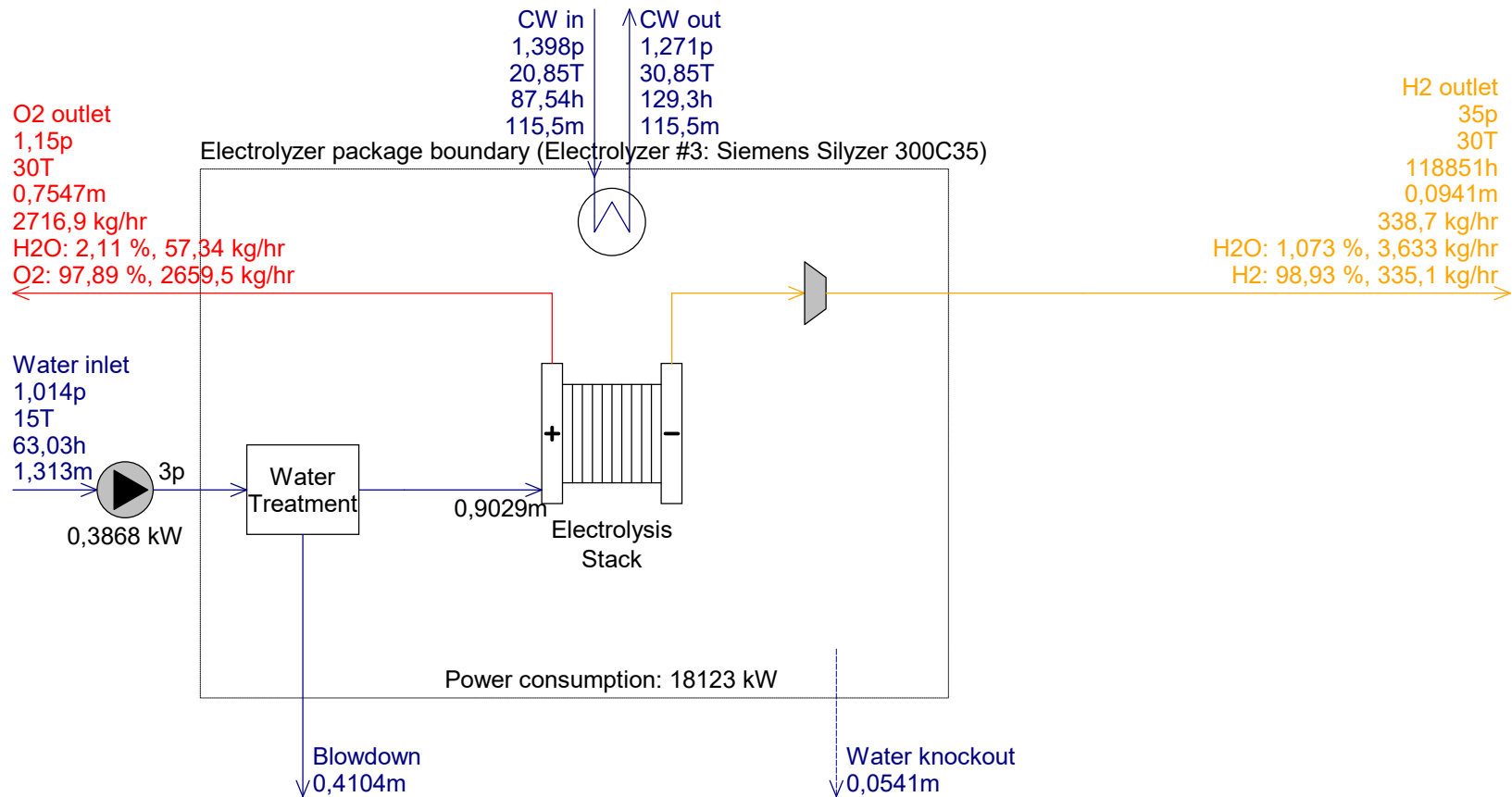
Sample file introduced in Thermoflow 29, 2020.

This model includes a six turbine windfarm and a comparably-sized electrolyser plant. It is used in its companion E-LINK file to run 24 cases, one for each hour of a hypothetical summer day. The hourly variable is wind speed. See associated Excel file '(S5-24a) Wind to Hydrogen (Daily Operation in Excel).xlsx' for daily calculation and results.

The companion Excel file has 24 cases which need to be run twice. On the first run, leave the input for electrolyzer power input (Line 9 of "ELINK" Sheet) as a given, equal to the base case value, and just discover the wind farm output for each hour and use it to populate Line 3 of the "Calculation" sheet. Then develop and populate Lines 4 and 5 of the Calculation Sheet to discover how much power you can send to the Electrolyzer each hour (Line 5 of Calculation Sheet). Next, populate LINE 9 of the "ELINK" Sheet using the data from LINE 5 of the "Calculation" Sheet and re-run the cases. Finally, tally up your results using Lines 9 and 10 of the Calculation Sheet.



Electrolyzer Plant Flow Diagram (Off Design Mode) (One Unit)



Total pure H2 delivered = 335,1 kg/hr
 Total plant power consumption = 18123 kW
 HHV Overall Efficiency = 72,88 %
 LHV Overall Efficiency = 61,67 %
 Total plant heat rejection = 4825 kW

p[bar] T[C] m[kg/s] h[kJ/kg] Q[kW]

