

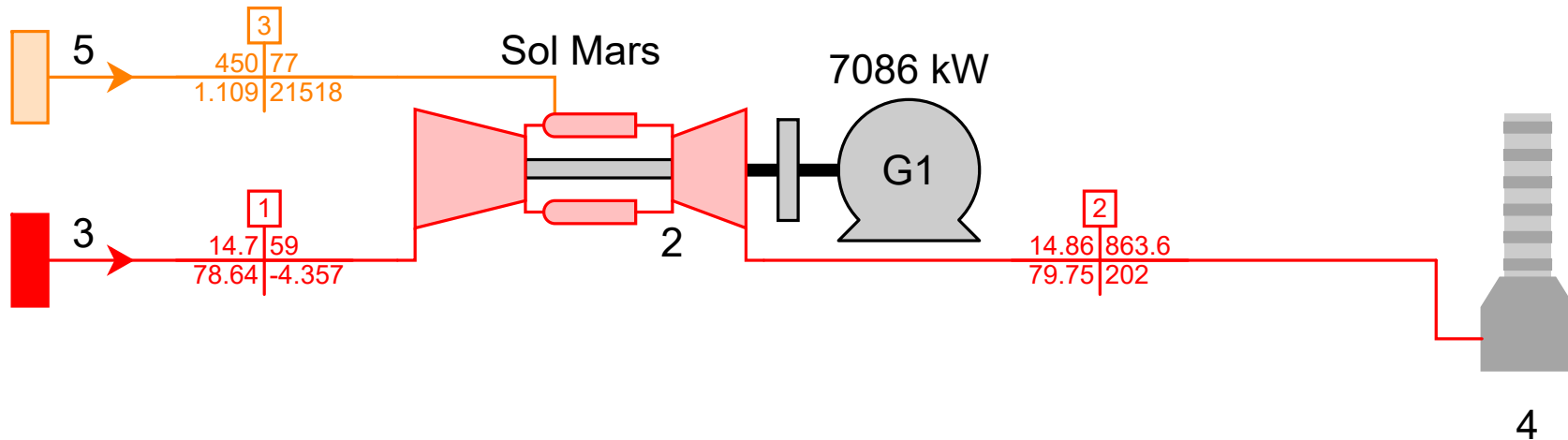
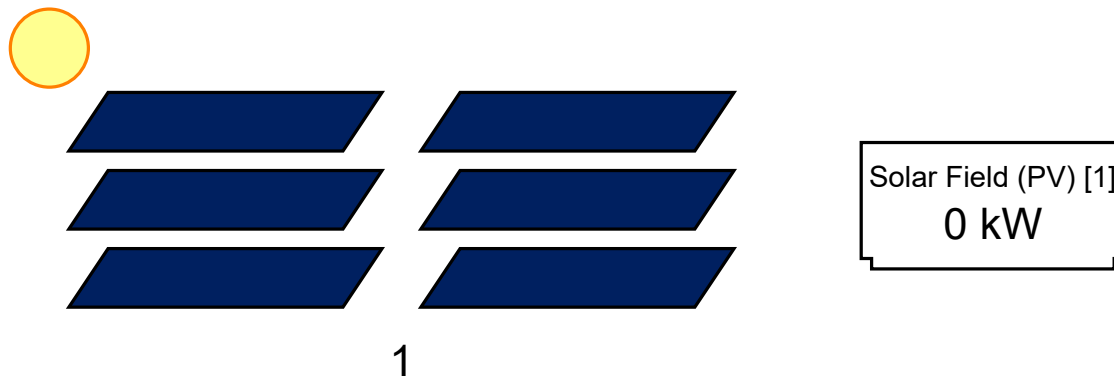
Sample file introduced in Thermoflow 26, 2016.

This plant model consists of a gas turbine installed in parallel with a photovoltaic solar field of comparable nominal power capacity. The model is setup to use the solar field to deliver desired gross power, and when there is a shortfall, to use the engine to make up the difference. A custom script input is used to define desired gross power. It is editable under [Edit Inputs] - [Custom Script Inputs].

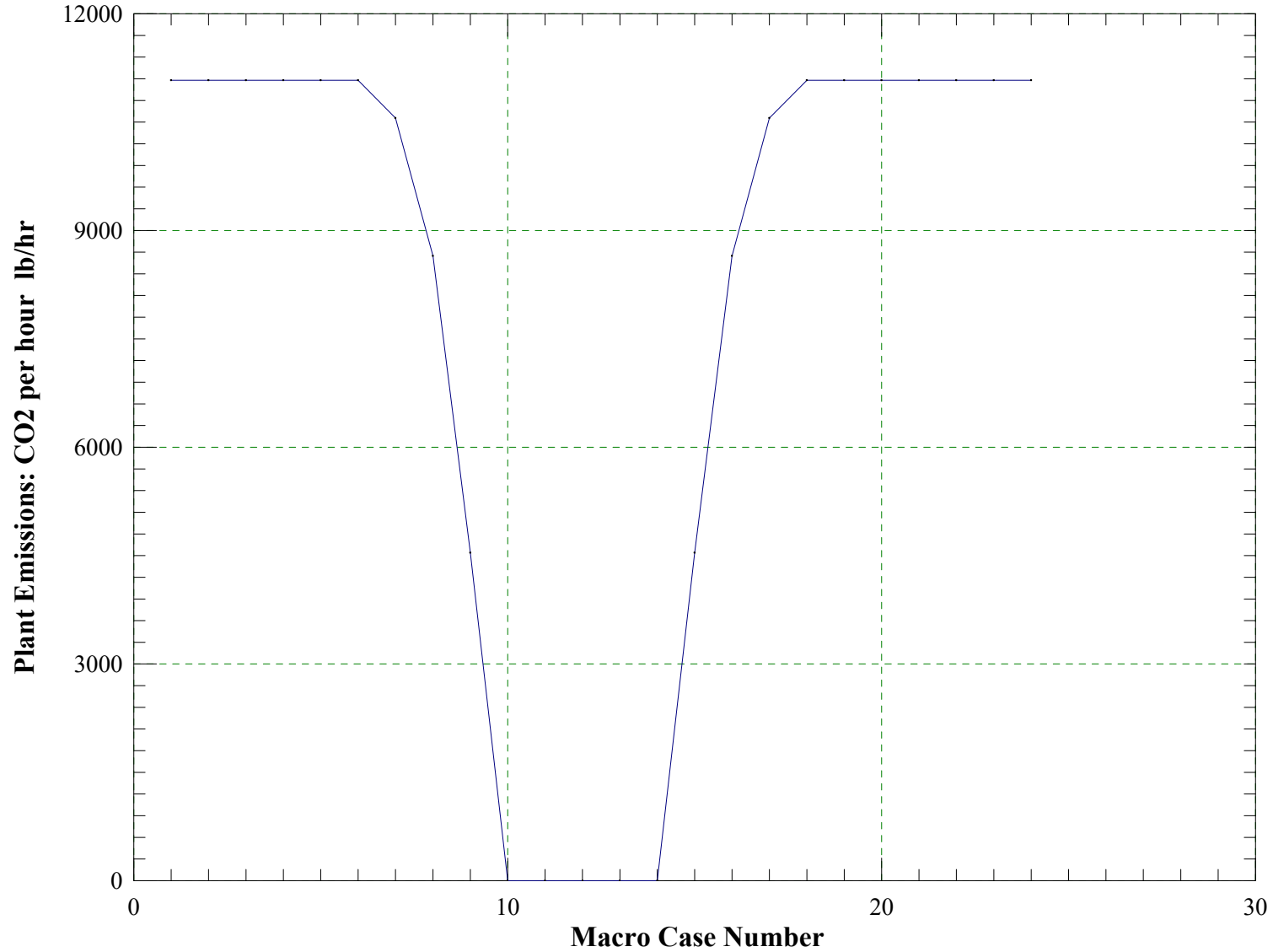
At a given set of solar irradiance conditions, (day of year, hour of day, cloud cover, and module operating temperature), the PV array has a certain capacity. Once that's known, the amount of backup engine power needed can be computed. The script uses this logic to cause the model to produce the desired gross output, if possible. If the solar field makes more power than desired, the engine will be shutdown and plant gross output will exceed the desired level because the PV array has no turndown ability. Likewise, if the input value for desired gross power exceeds the sum of PV array output plus engine output at full load, then plant gross power will be lower than desired. The script can be viewed by clicking [Define] - [Scripts].

This file includes a Classic Macro which runs 24 cases to represent performance over a single day. Click the [Macro Cases] menu to summon results from a particular hour. Click the [Graphics] output button, followed by 'Power versus Hour of Day' to review the plot of gross power, engine power, and solar PV field power as it varies throughout the day.

Ambient temperature	59 F
Gross power	7086 kW
Solar Field (PV) [1] : Day of the year	82
Solar Field (PV) [1] : Hour of the day (solar time)	24
Engine load scheduler: Solar power percentage	0 %
Engine load scheduler: Engine power percentage	100 %



CO2



% Power

