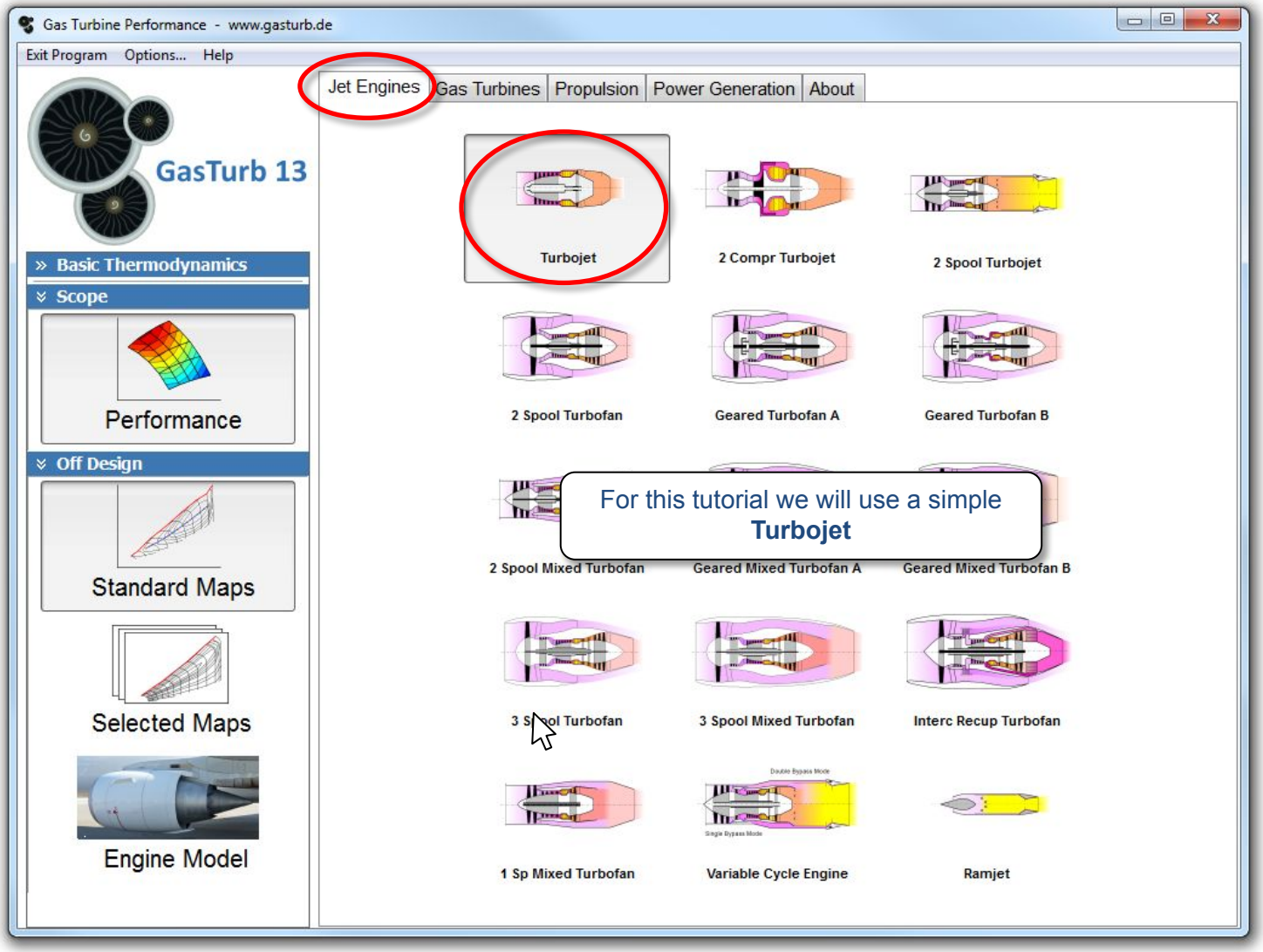
GasTurb

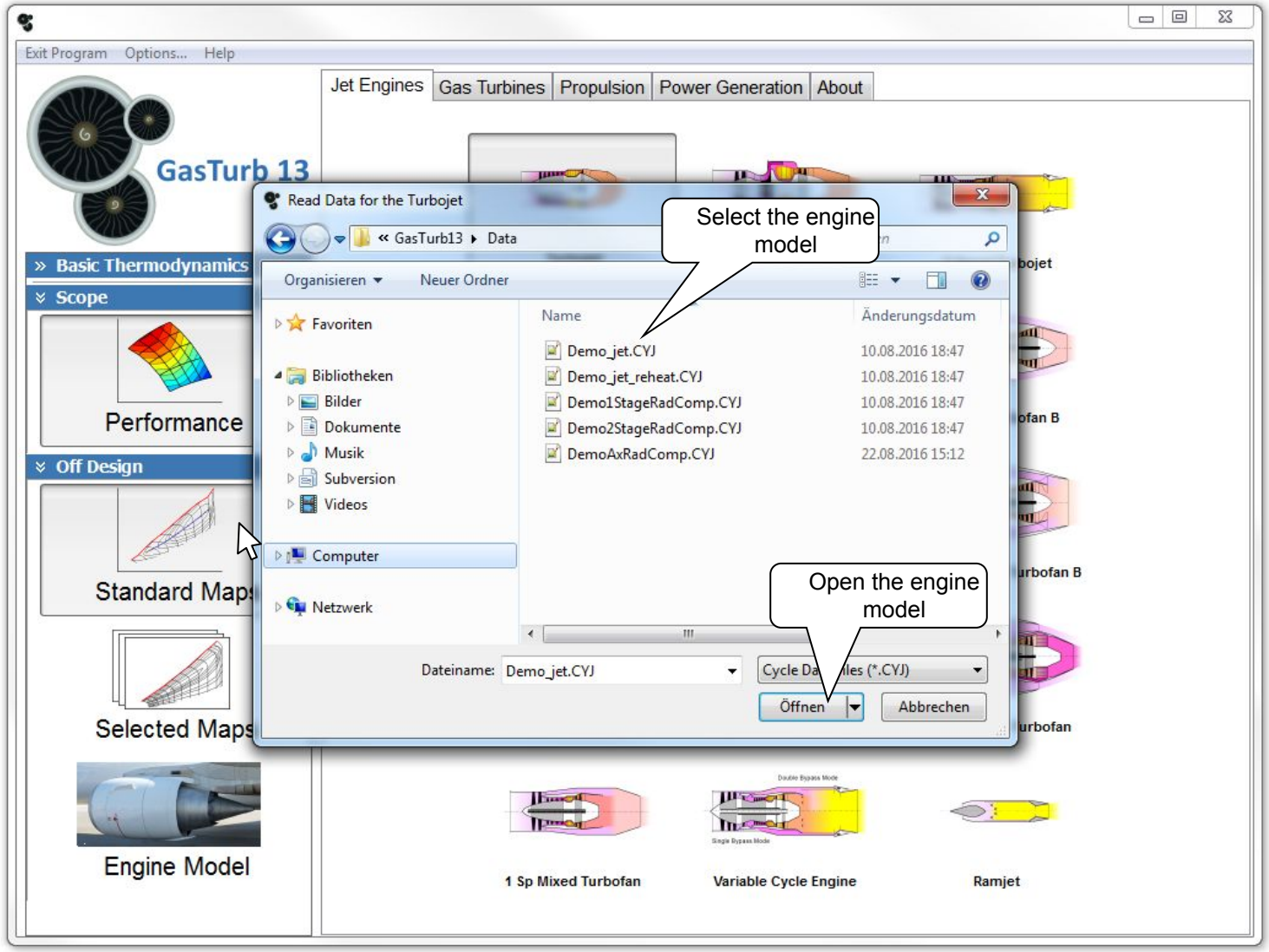
GasTurb 13

COMPONENT MAPS

GasTurb 12 Main Window

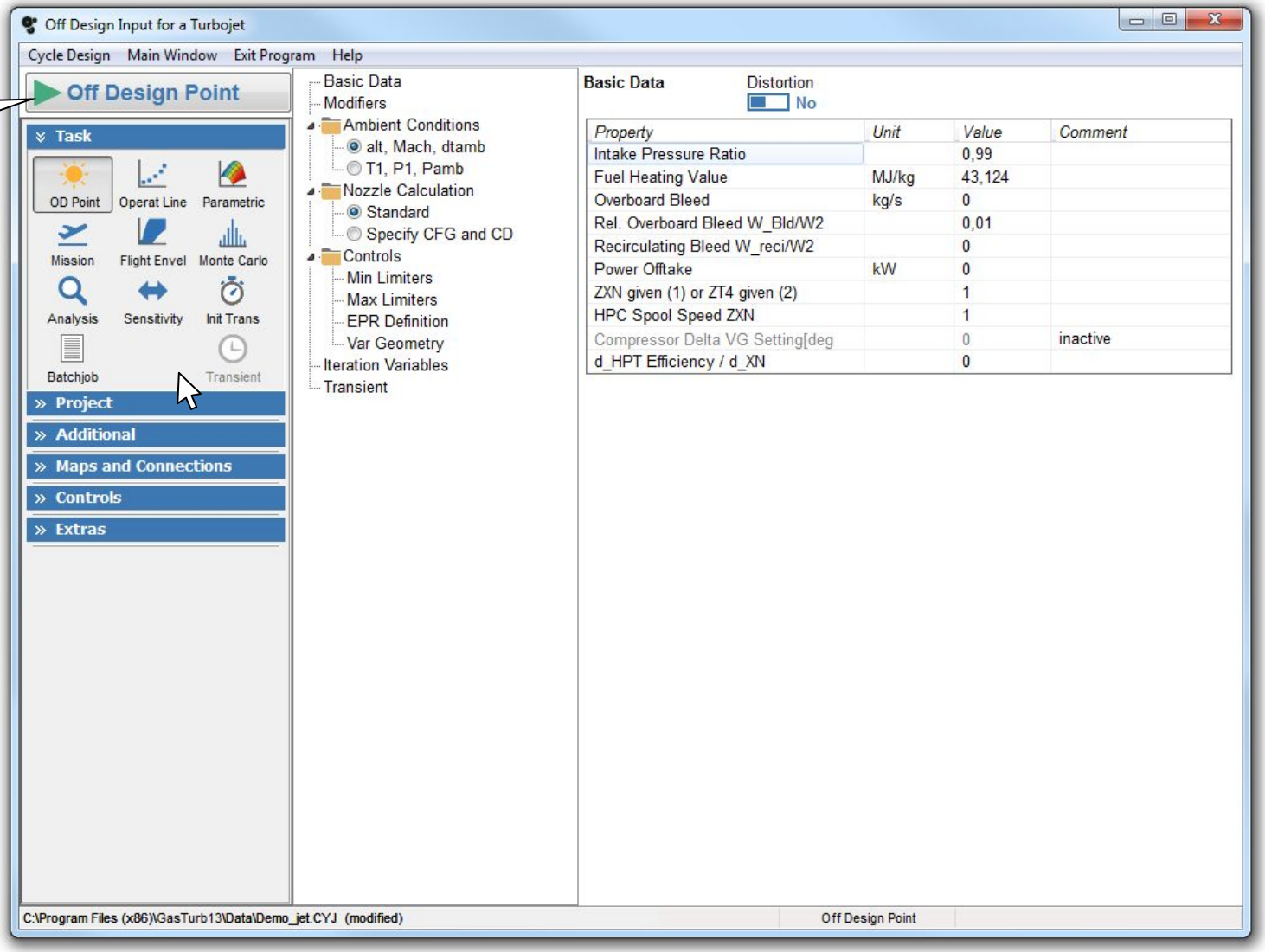


We Need Some Data

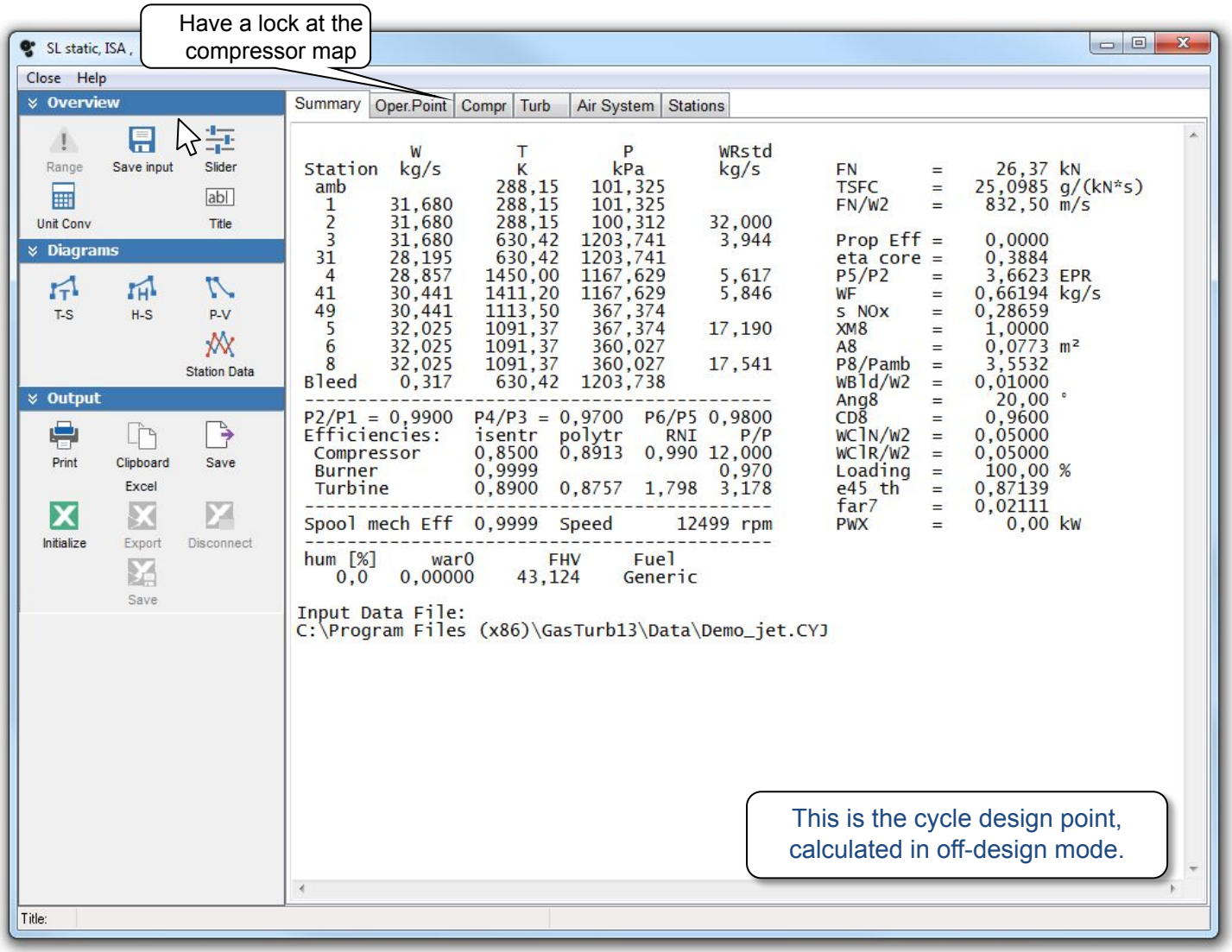


Off-Design Input Data Page

Run an Off-Design simulation without changes

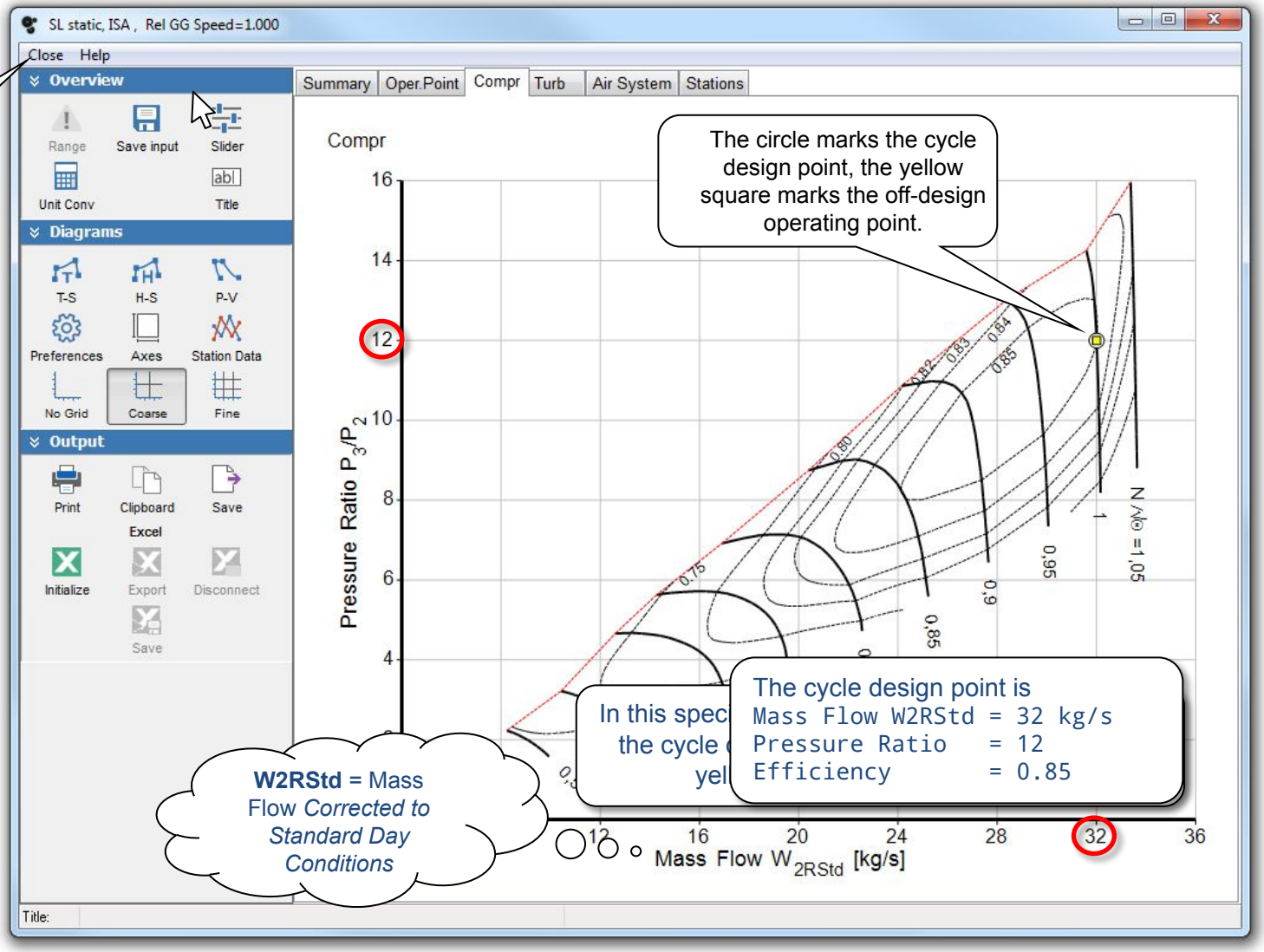


Off-Design Point Summary



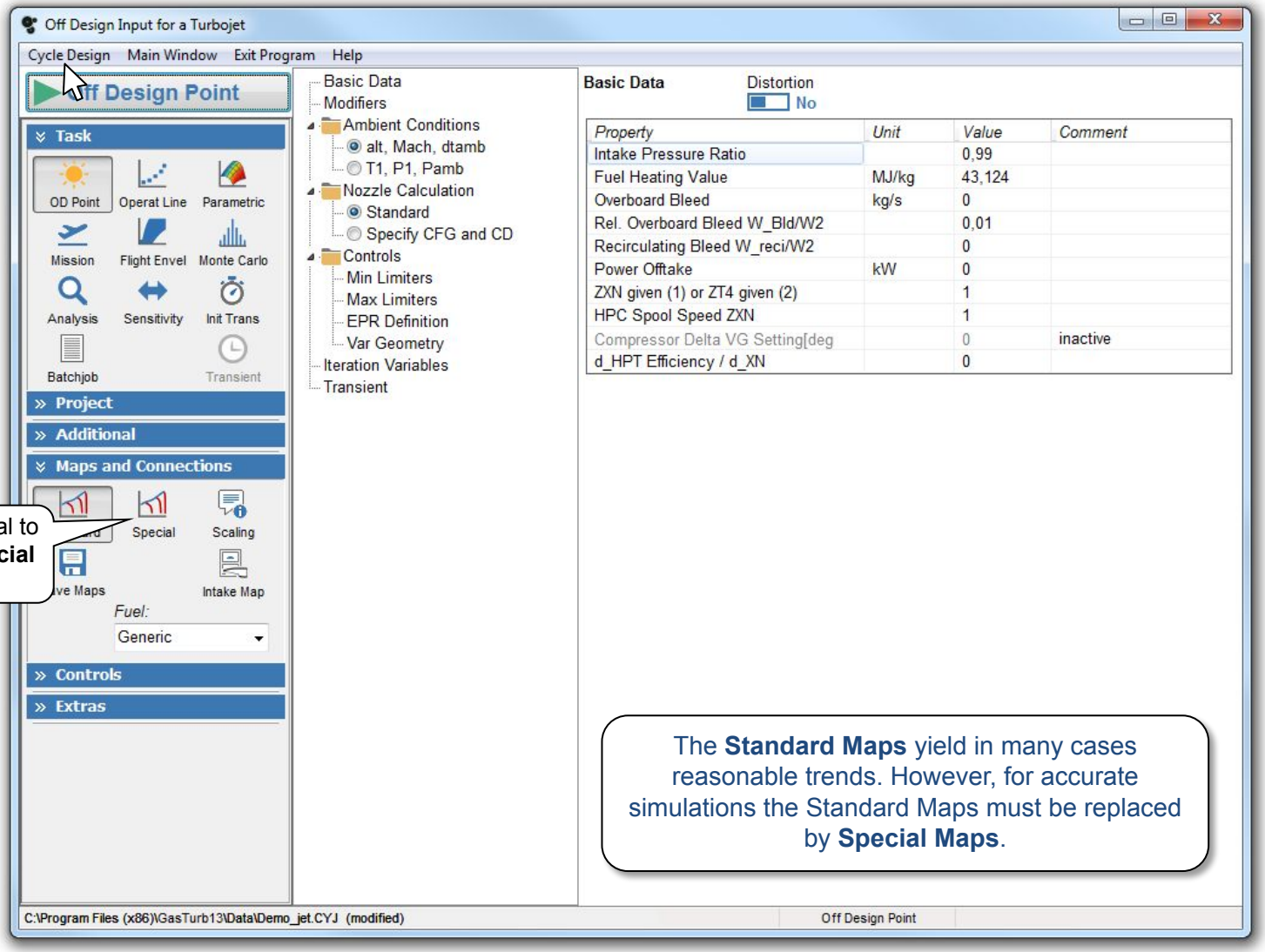
GasTurb

Standard Compressor Map



Close the result window

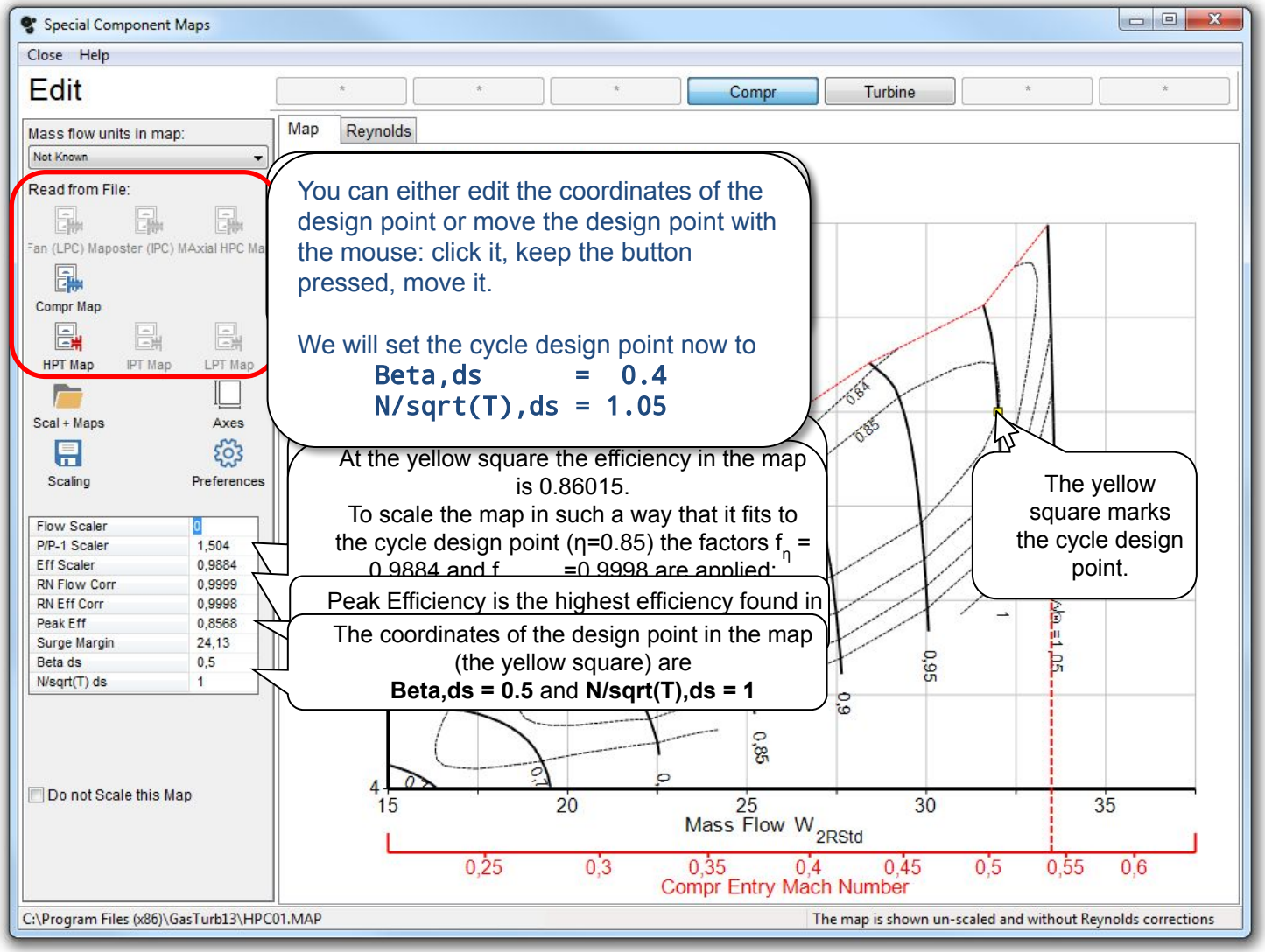
Off-Design Input Data Page



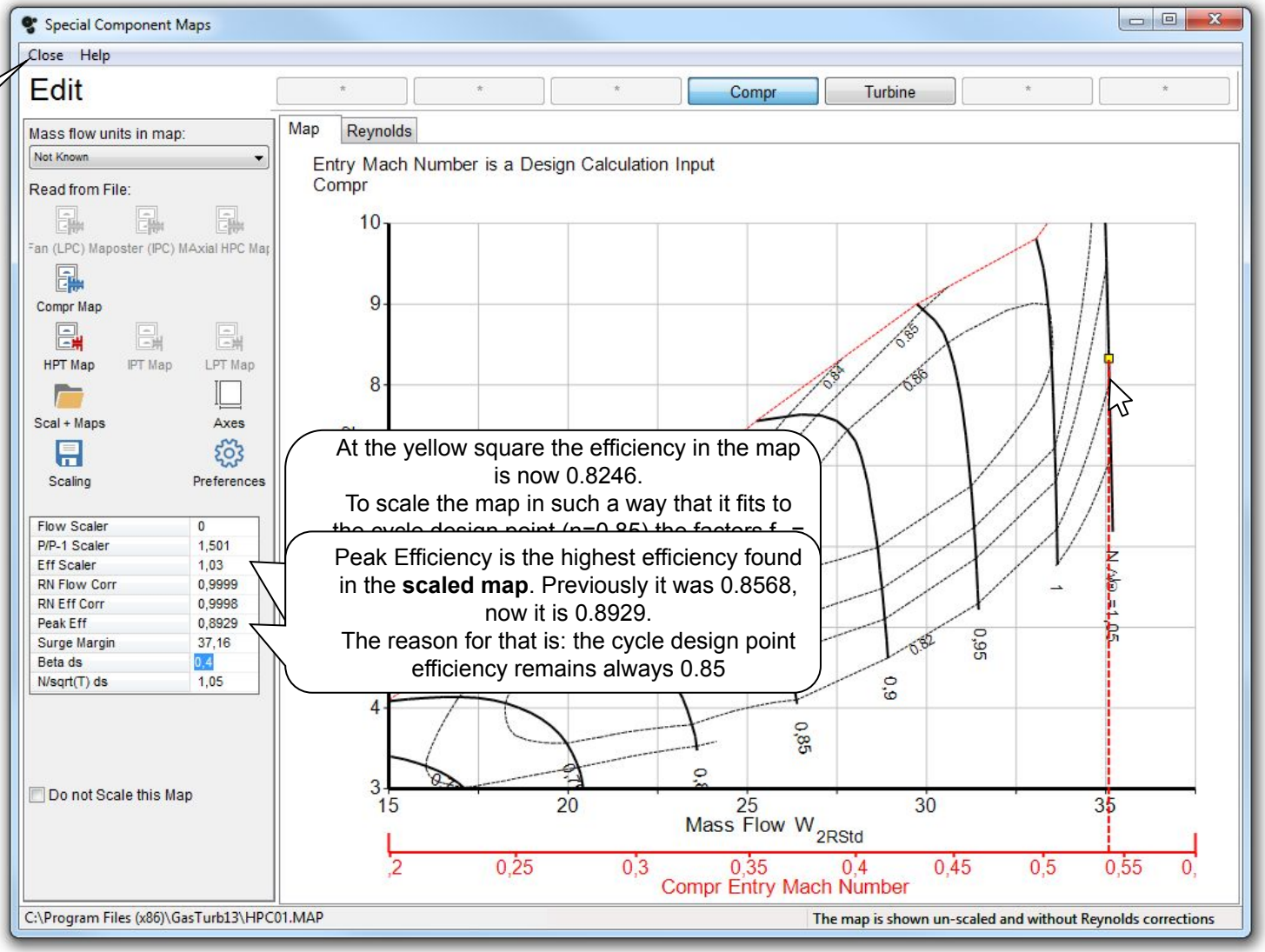
Click on Special to configure **Special Maps**

The **Standard Maps** yield in many cases reasonable trends. However, for accurate simulations the Standard Maps must be replaced by **Special Maps**.

HP Compressor Map



Map Scaling



Close the map window

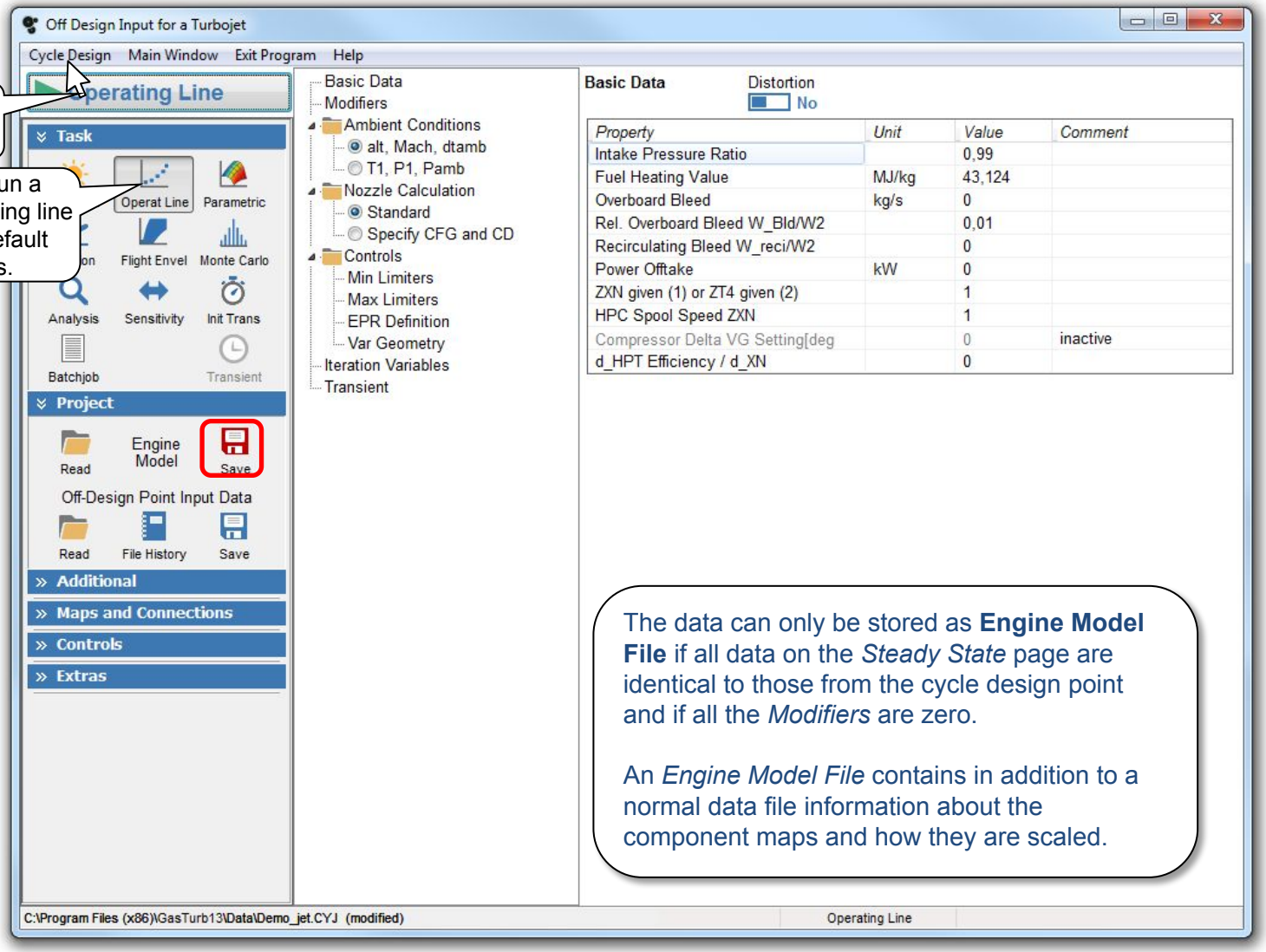
At the yellow square the efficiency in the map is now 0.8246.
To scale the map in such a way that it fits to the cycle design point (n=0.85) the factors f_ =

Peak Efficiency is the highest efficiency found in the **scaled map**. Previously it was 0.8568, now it is 0.8929.
The reason for that is: the cycle design point efficiency remains always 0.85

Save the data as Engine Model

Click on Operating Line

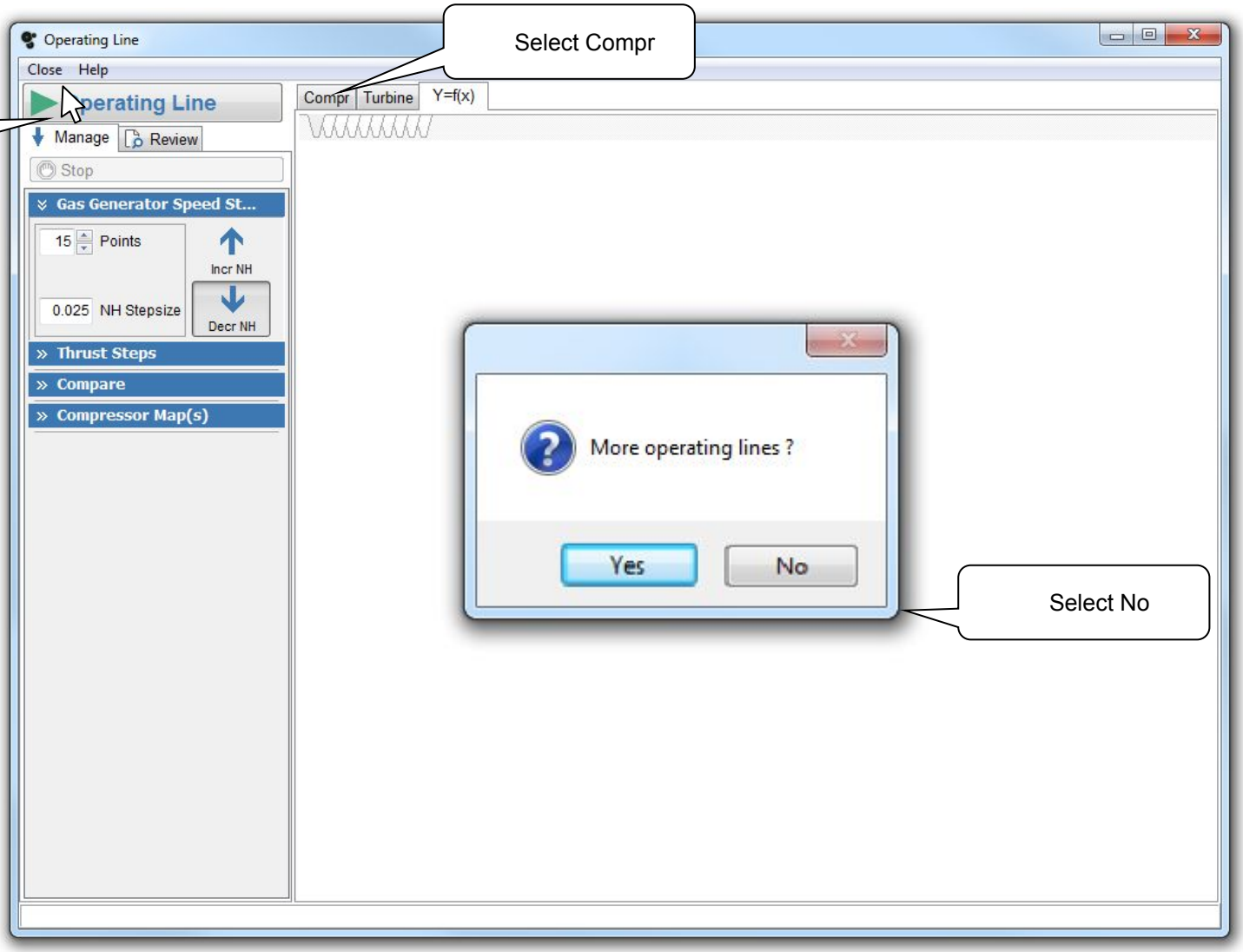
Next we run a single operating line with the default settings.



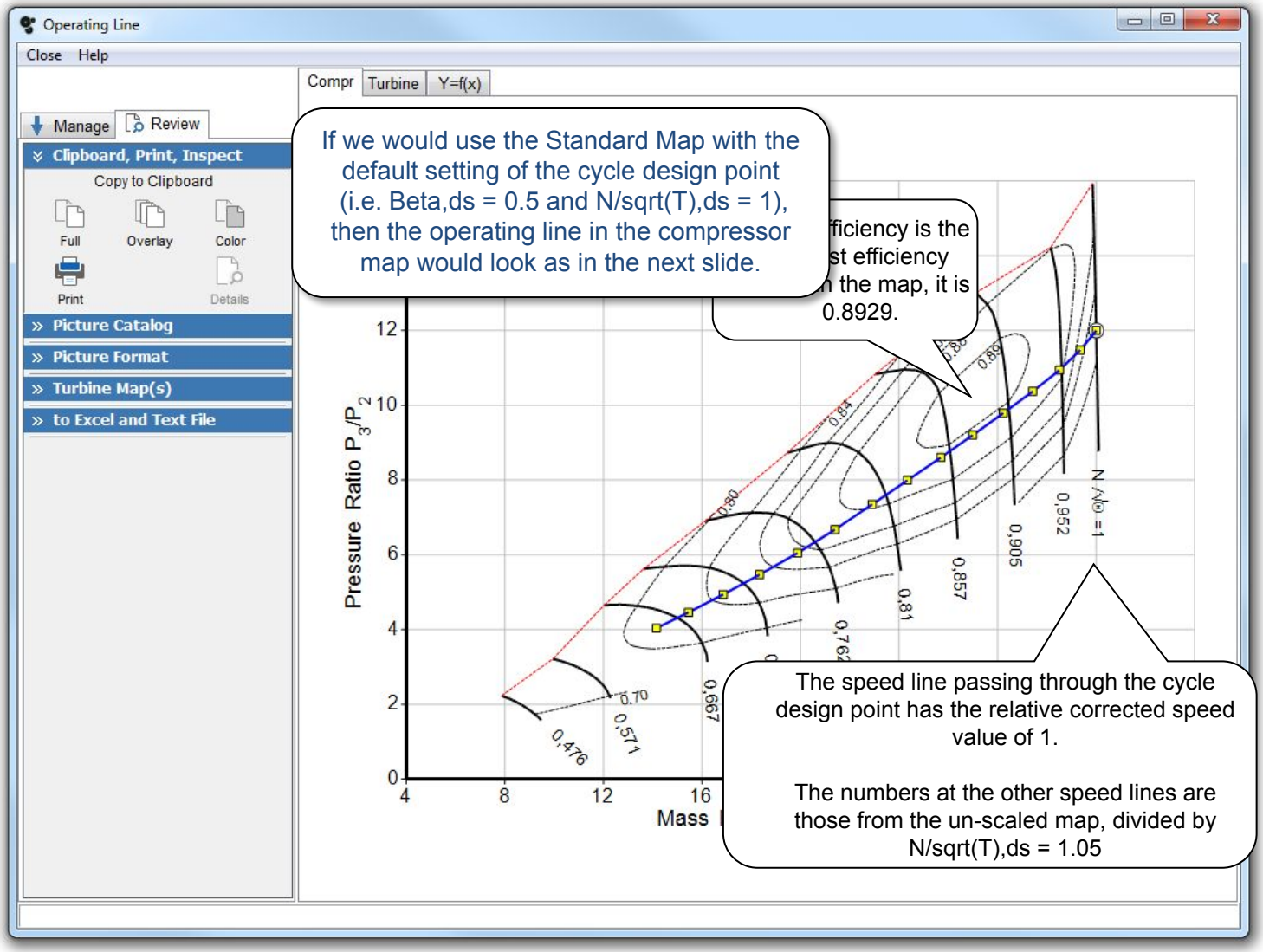
The data can only be stored as **Engine Model File** if all data on the *Steady State* page are identical to those from the cycle design point and if all the *Modifiers* are zero.

An *Engine Model File* contains in addition to a normal data file information about the component maps and how they are scaled.

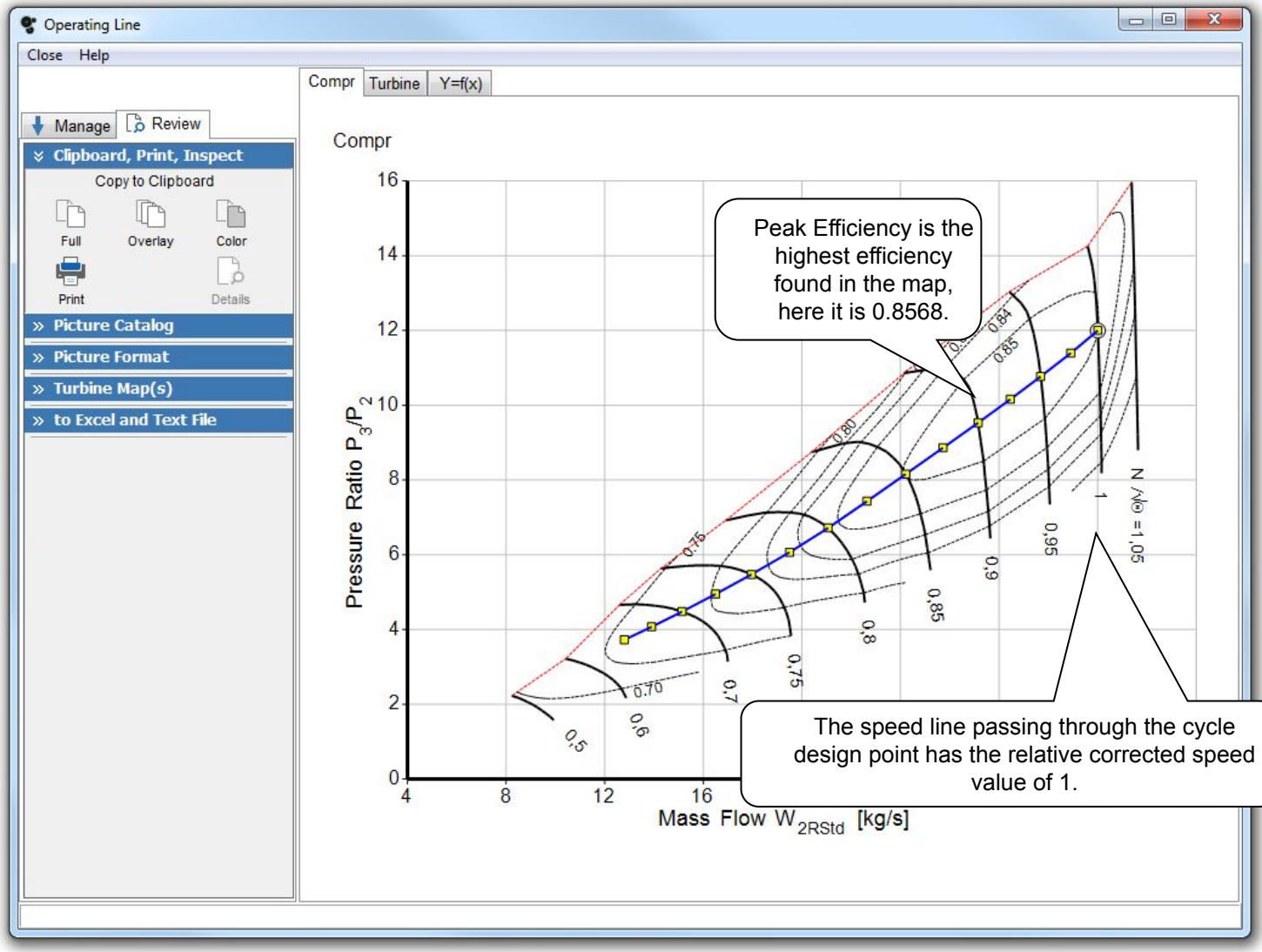
Off-Design Input Data Page



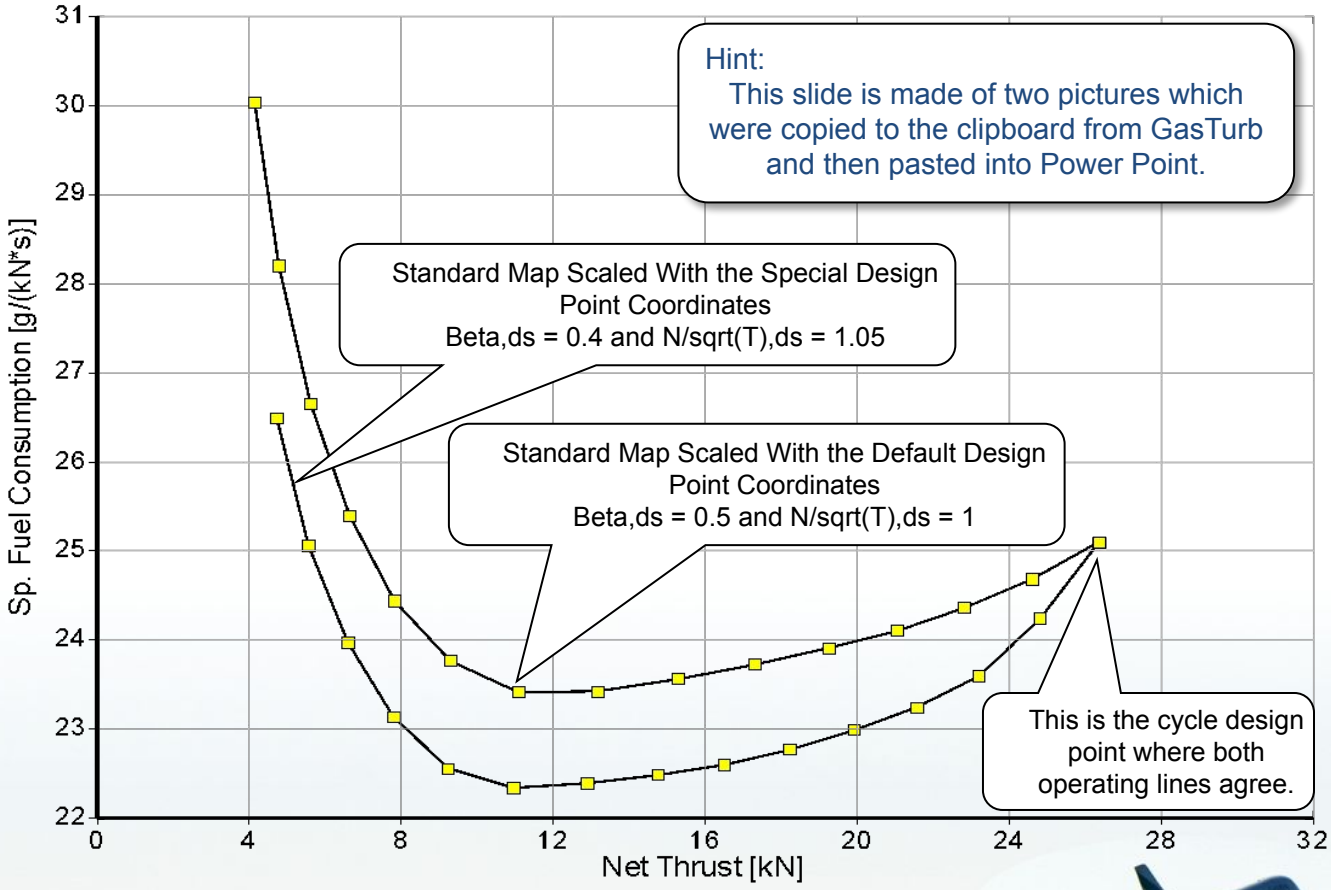
Compressor Map New



Compressor Map Old



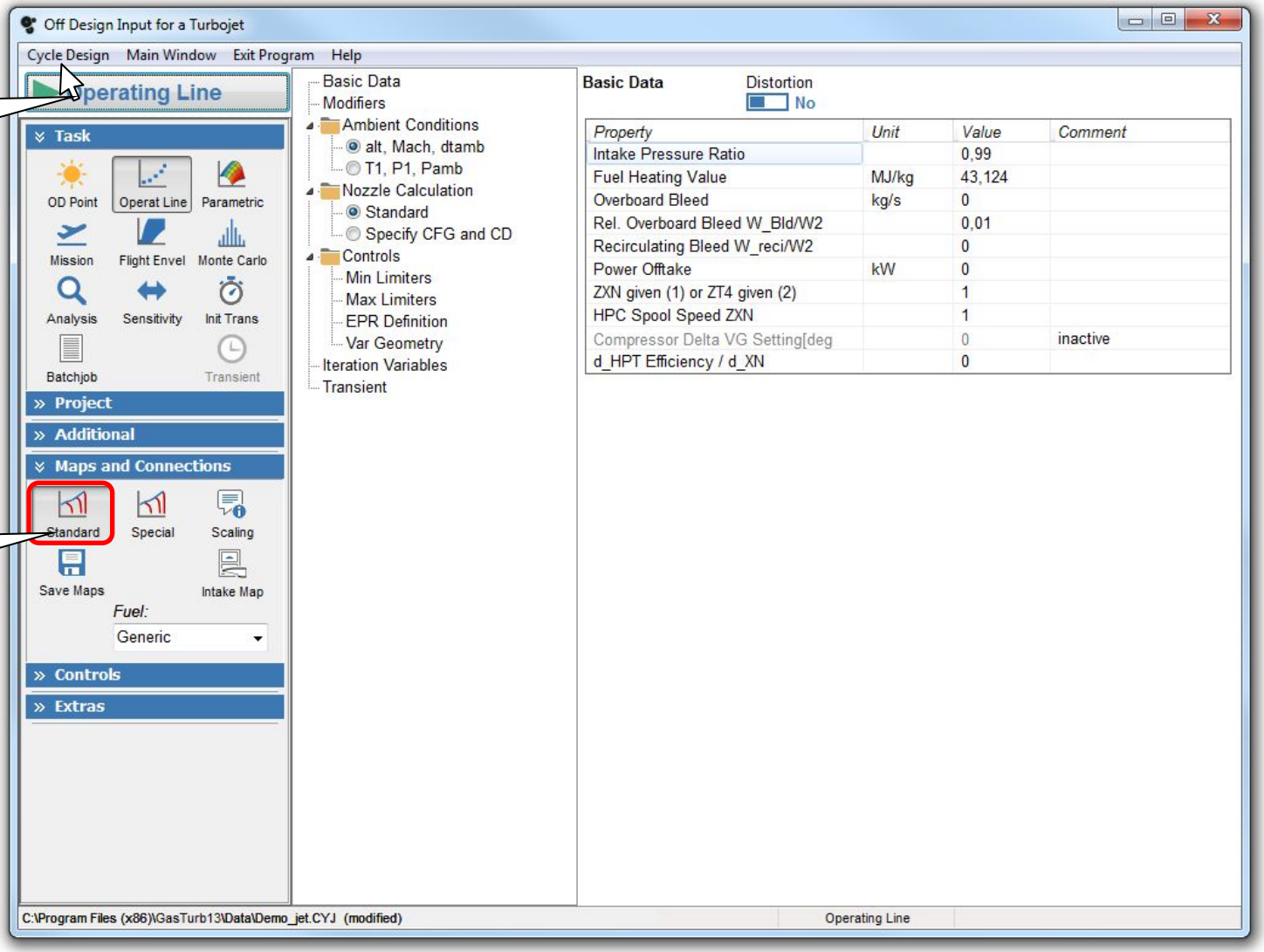
Effect of Map Scaling on SFC



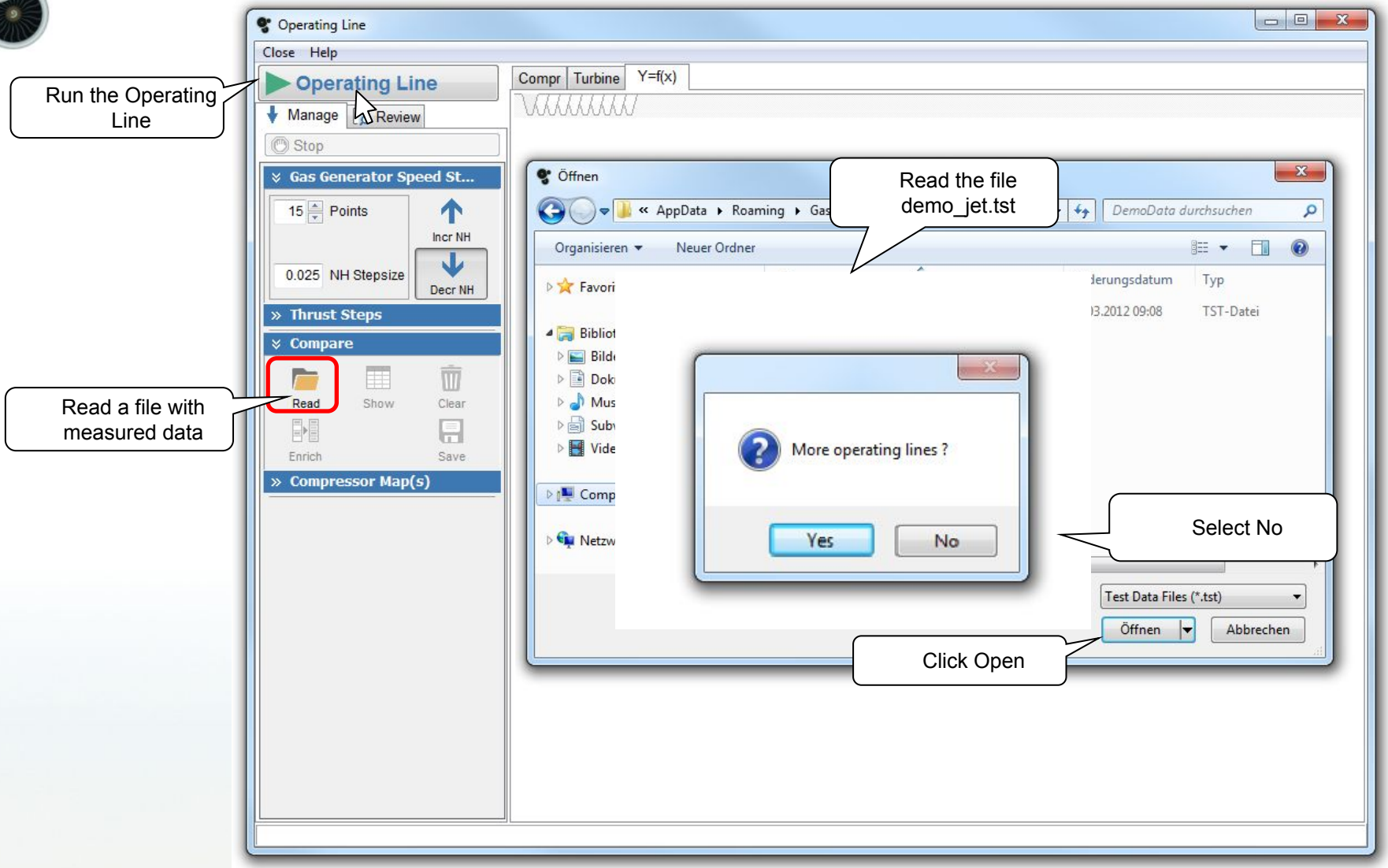
Comparing Measured Data With GasTurb

And run another Operating line

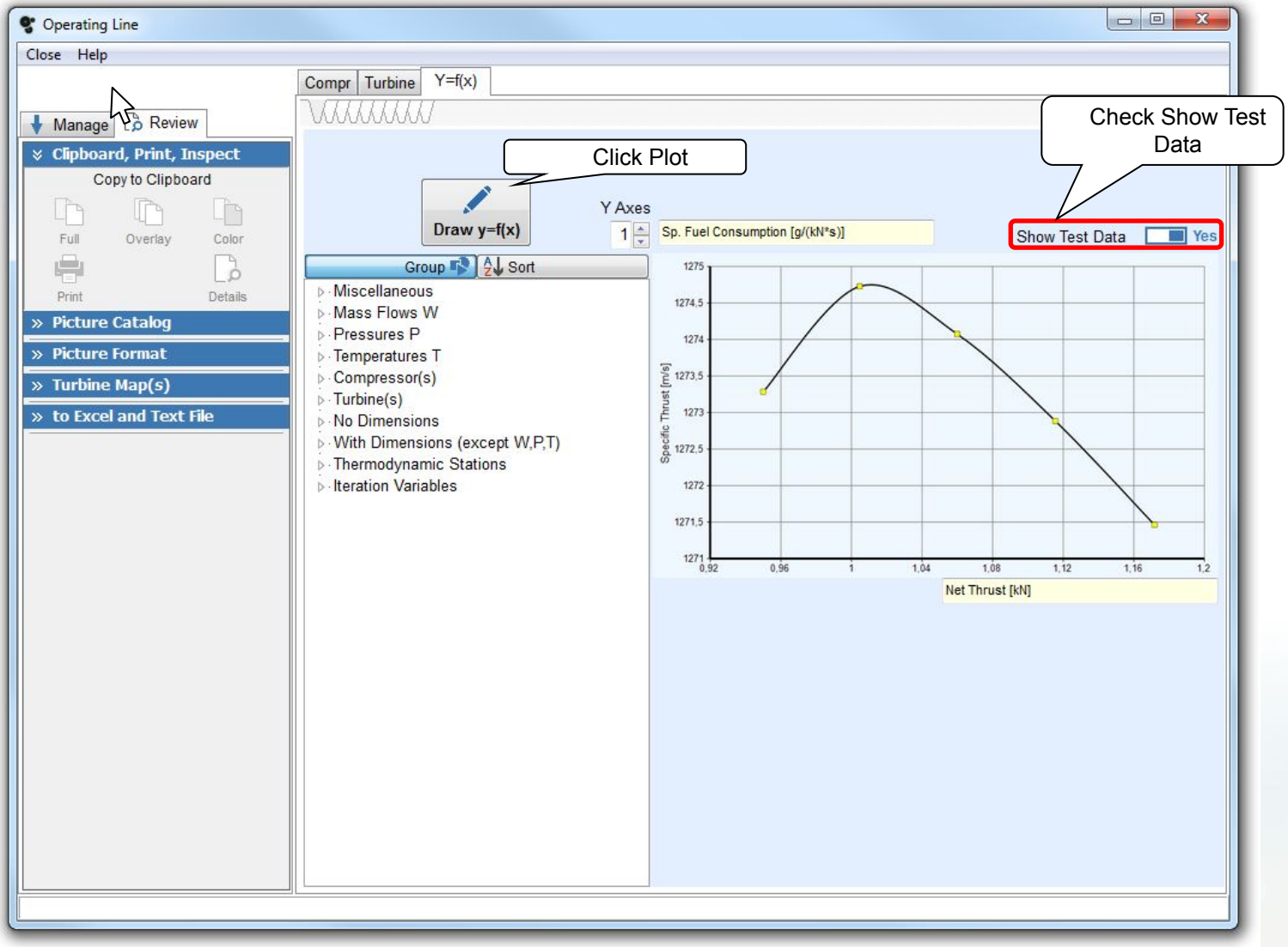
Switch back to Standard maps



Read Test Data

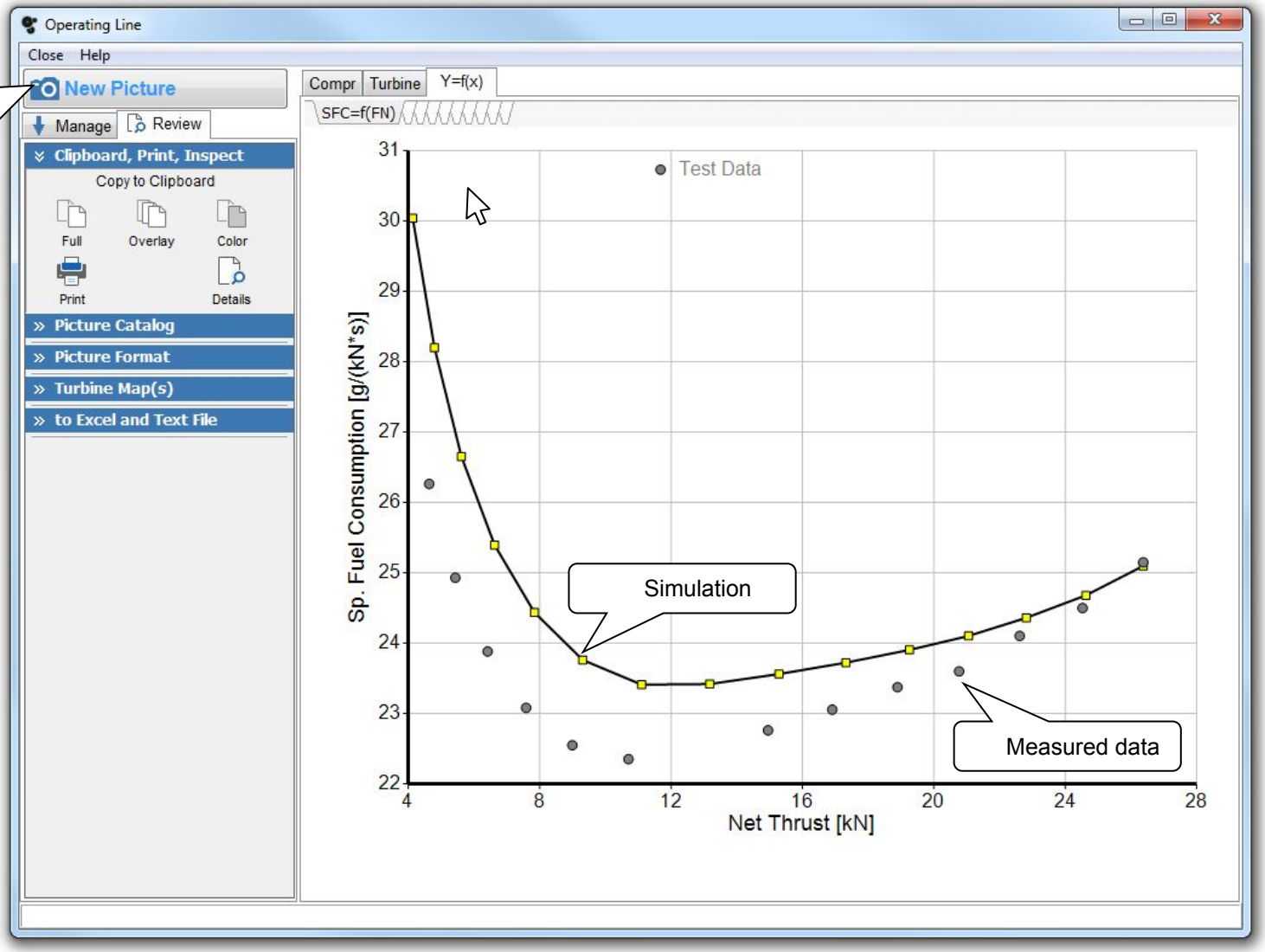


Making the Comparative Data Visible

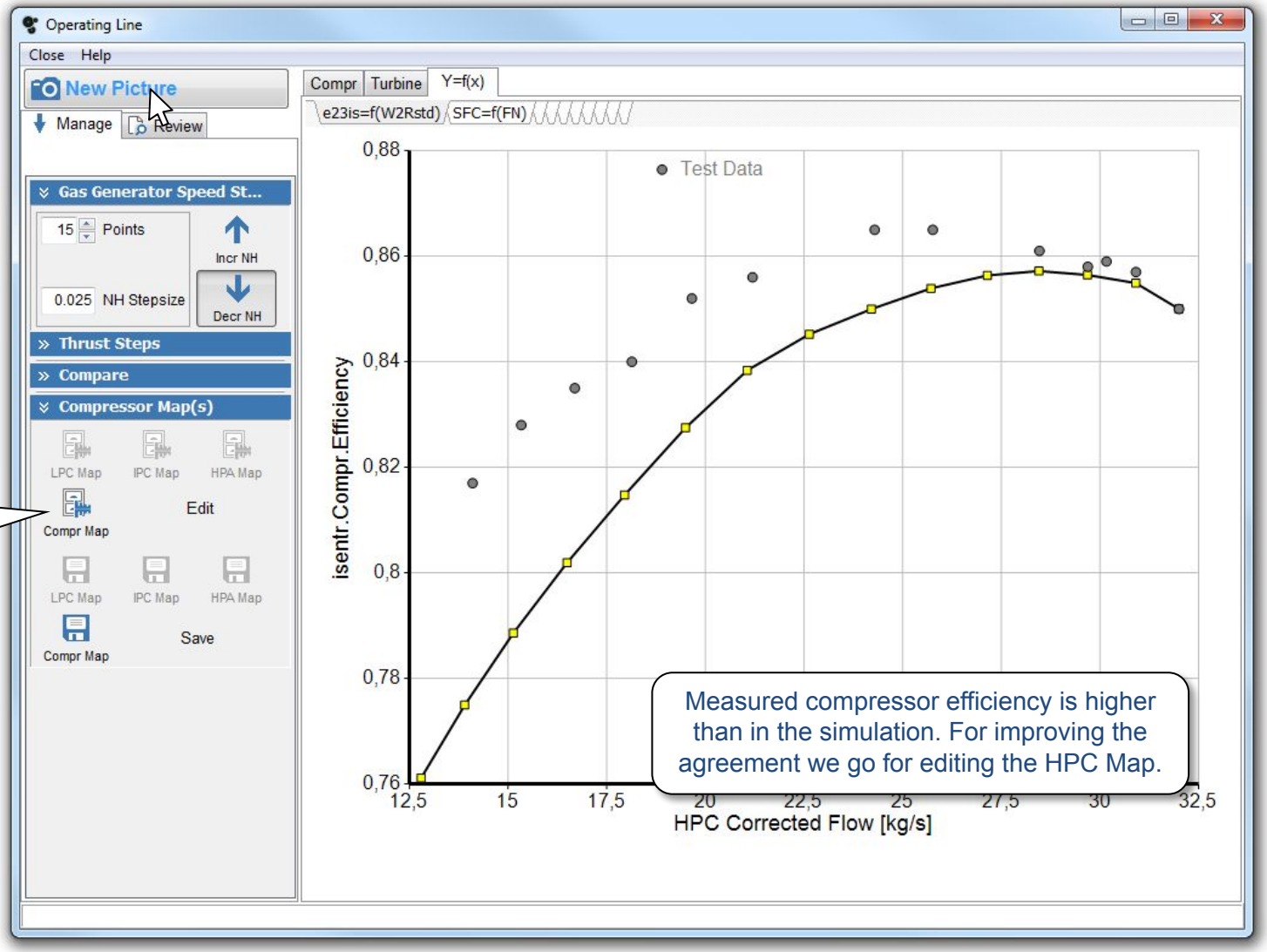


Comparing SFC

Click on New Picture and plot the isentropic compressor efficiency over the corrected compressor flow



Comparing Compressor Efficiency

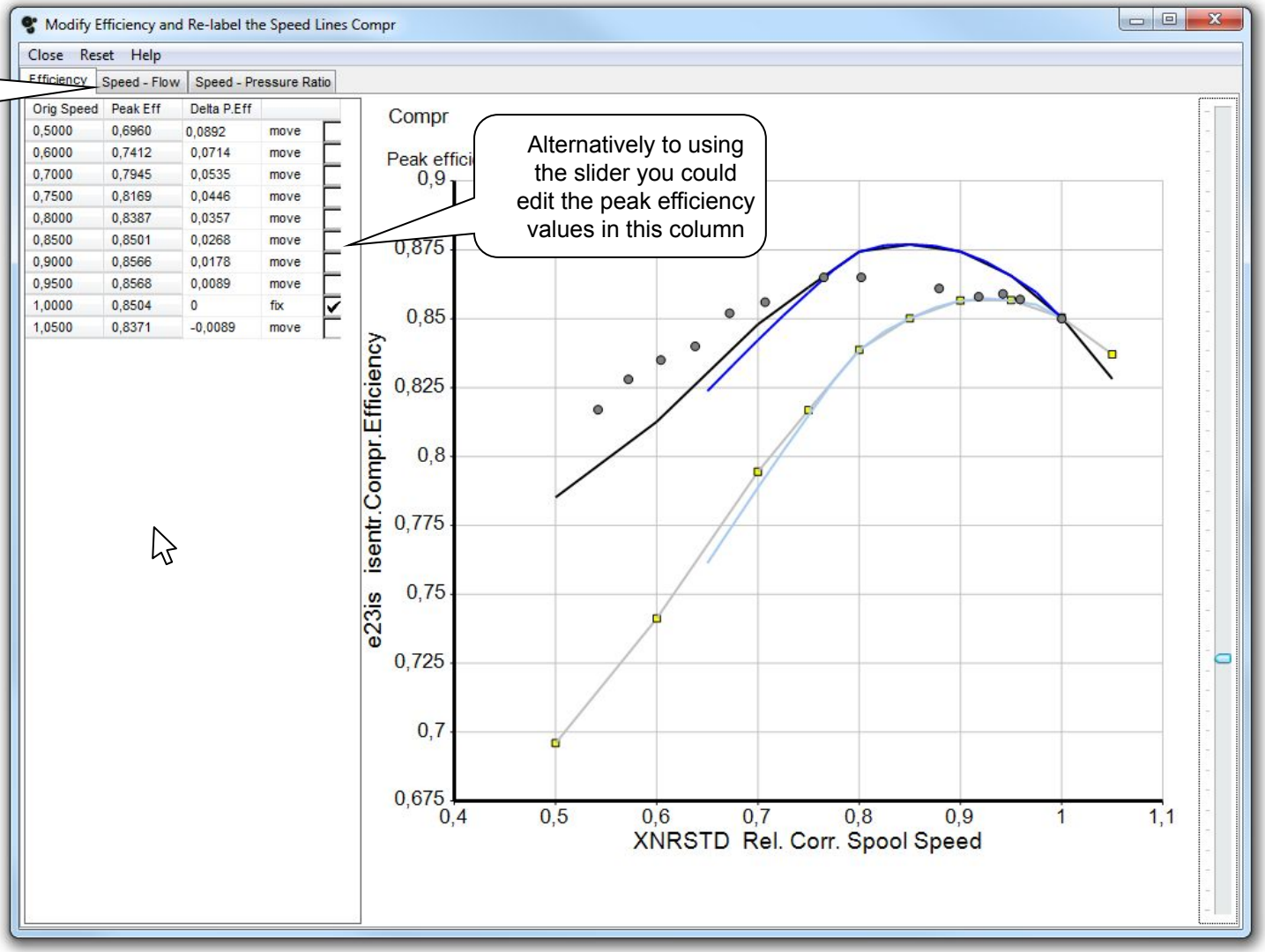


Click on Edit Compr Map

Measured compressor efficiency is higher than in the simulation. For improving the agreement we go for editing the HPC Map.

The Compressor Map Editor

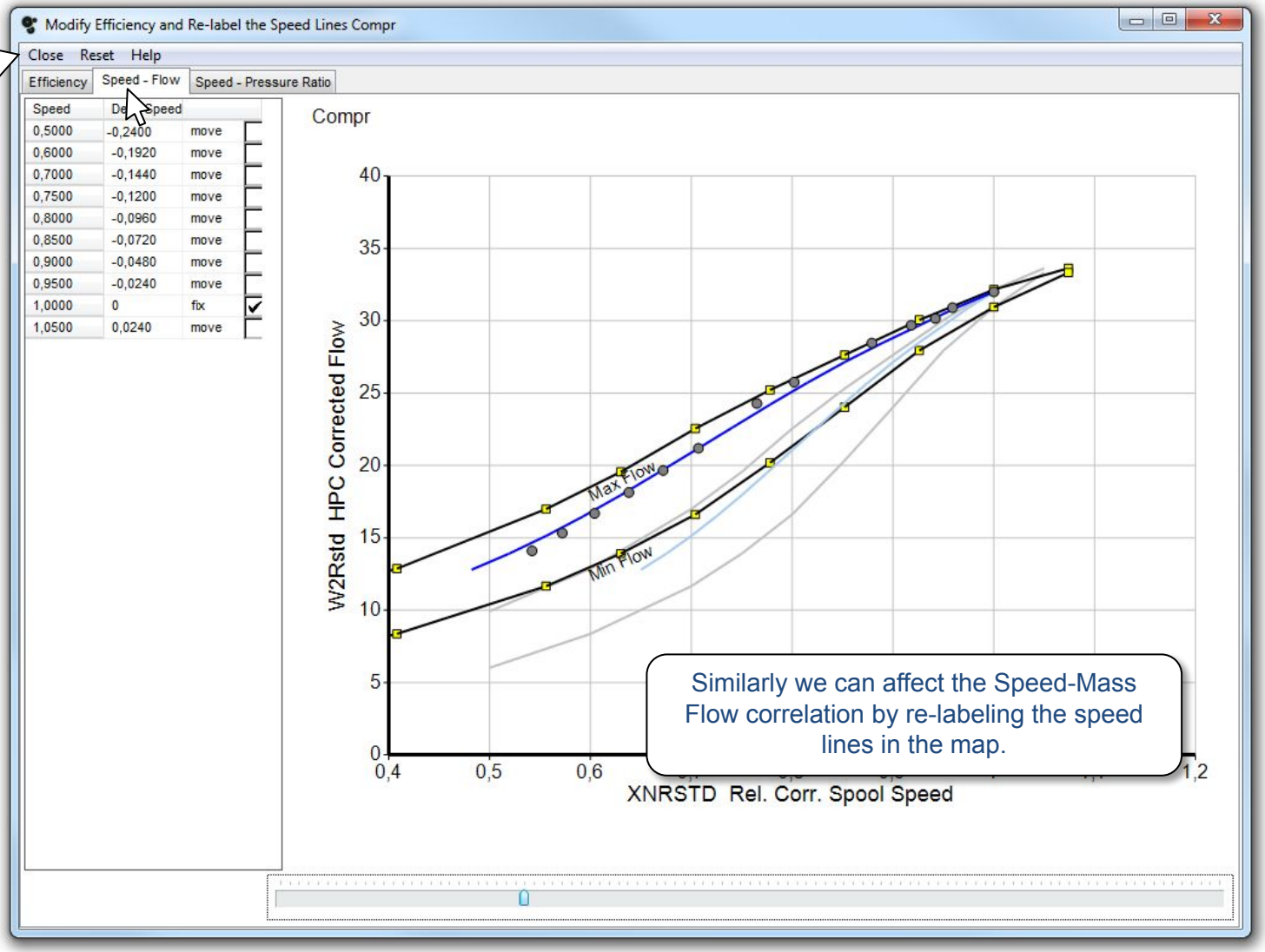
Click on Speed to modify the speed-mass flow correlation



GasTurb

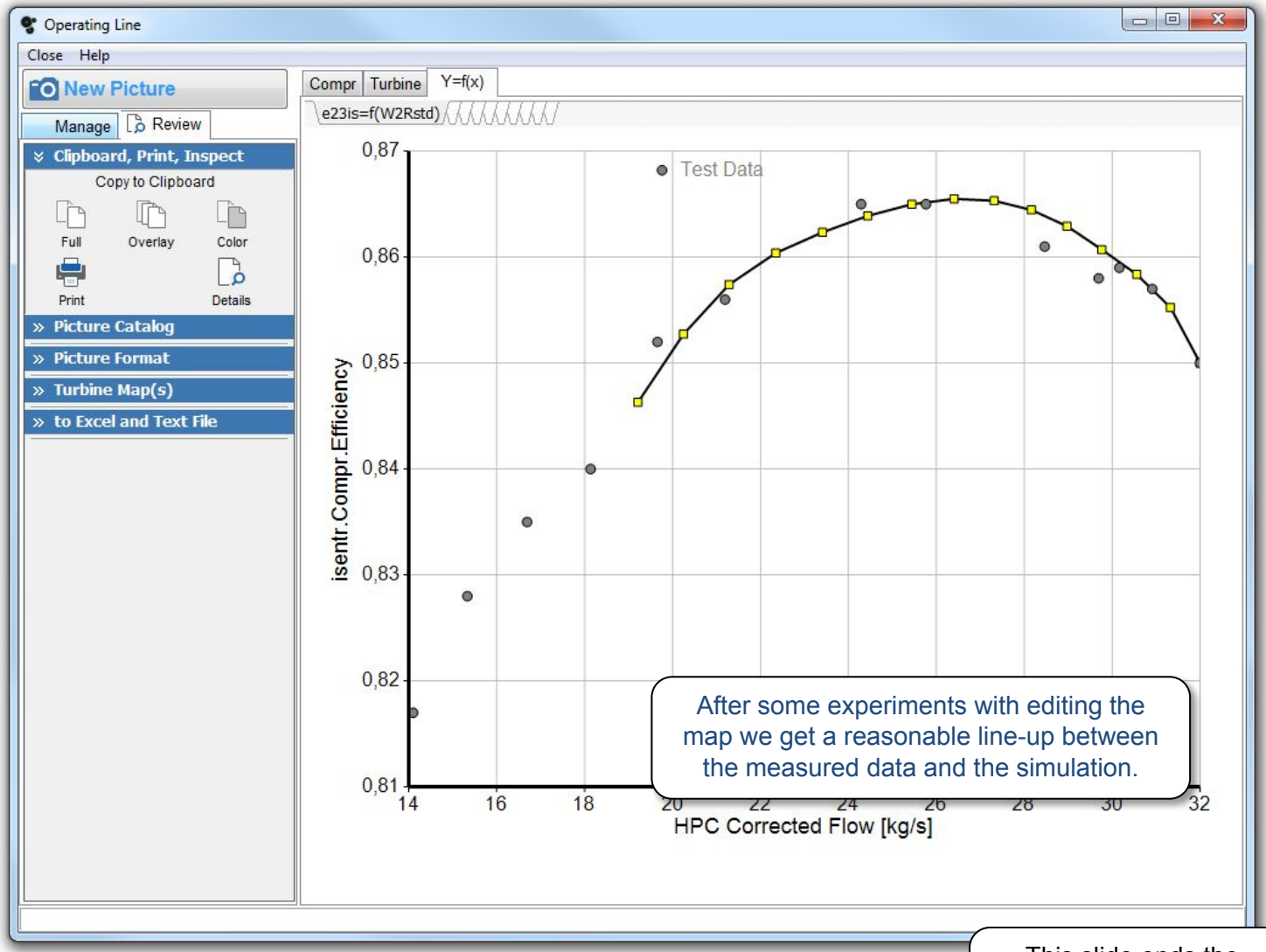
The Compressor Map Editor

The new compressor map should be saved after closing the map editor



Similarly we can affect the Speed-Mass Flow correlation by re-labeling the speed lines in the map.

The Simulation Agrees with the Measurements



This slide ends the **Component Maps Tutorial**