



# Steam Turbine Series Part 2: Modifying a Steam Turbine Model in THERMOFLEX

Using Steam Turbine Assembly menu  
to make model match known  
specifications

# Feature Awareness Webinar Series

## Thermoflow Training and Support

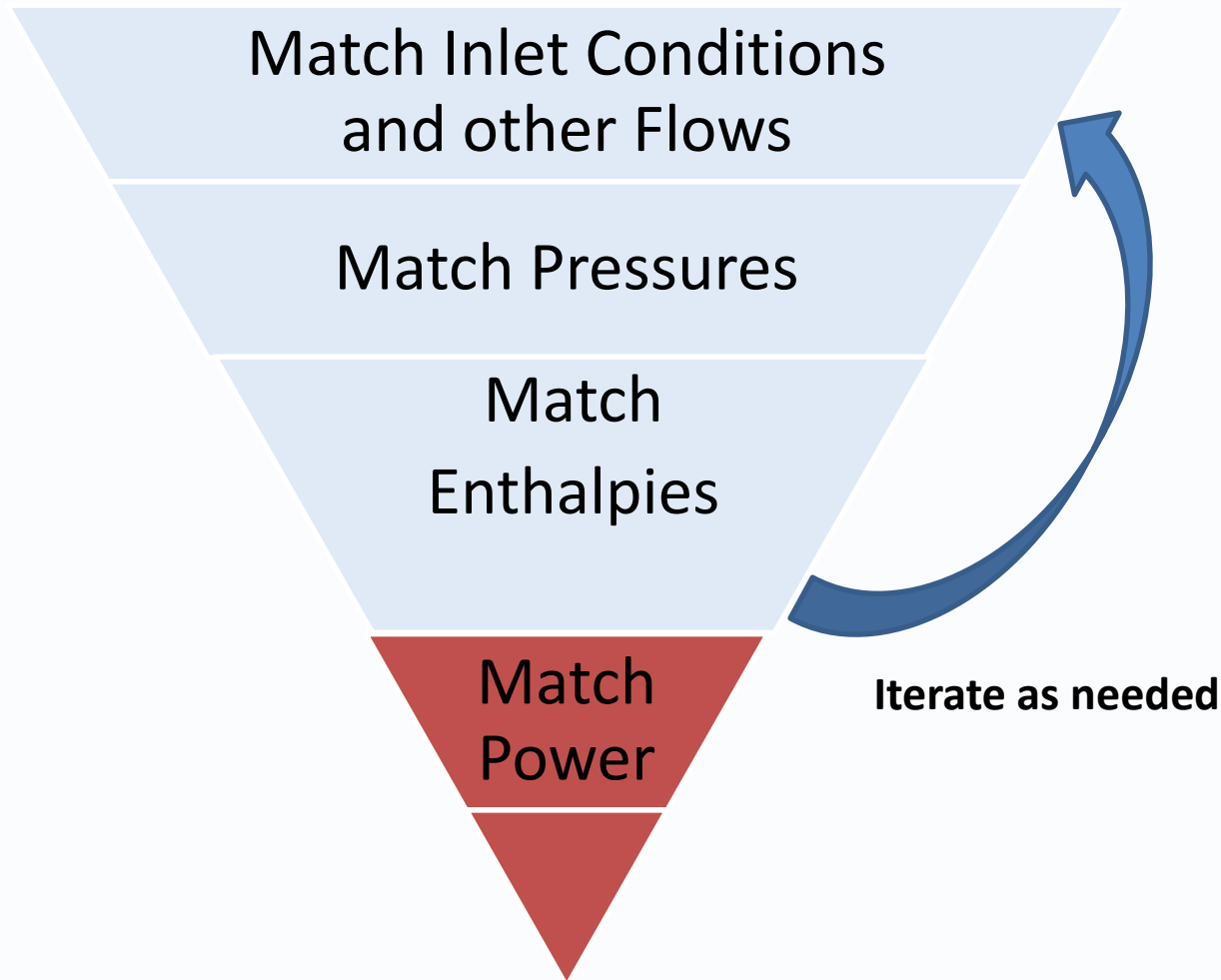
- Standard Training
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- 17- Total Plant Cost in THERMOFLEX
- 18- Steam Turbine Tuning
- 19 - Creating Your Own THERMOFLEX Component
- 20 – Cooling System Optimization
- 21 – Steam Turbine Modeling Series Part I
- 22 – Steam Turbine Modeling Series Part II**

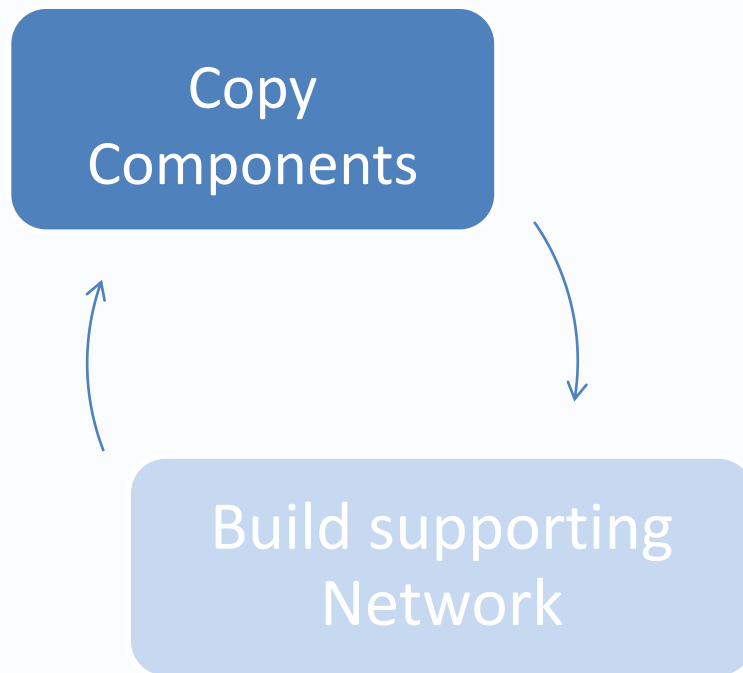


# Modify a Steam Turbine Model: Tasks

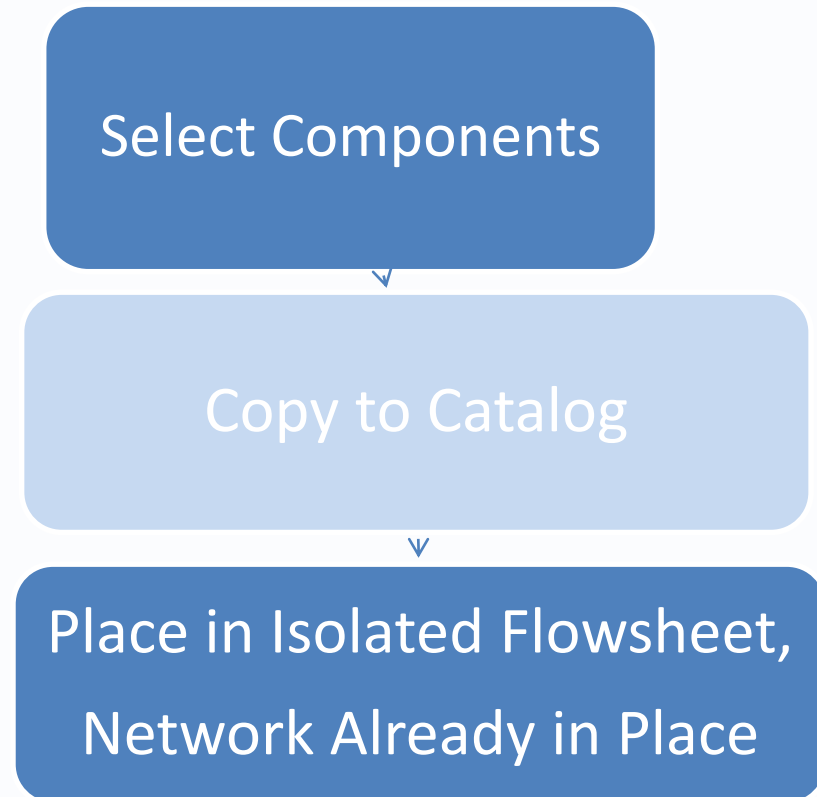


# Isolate a Steam Turbine Model: Then & Now

## Before

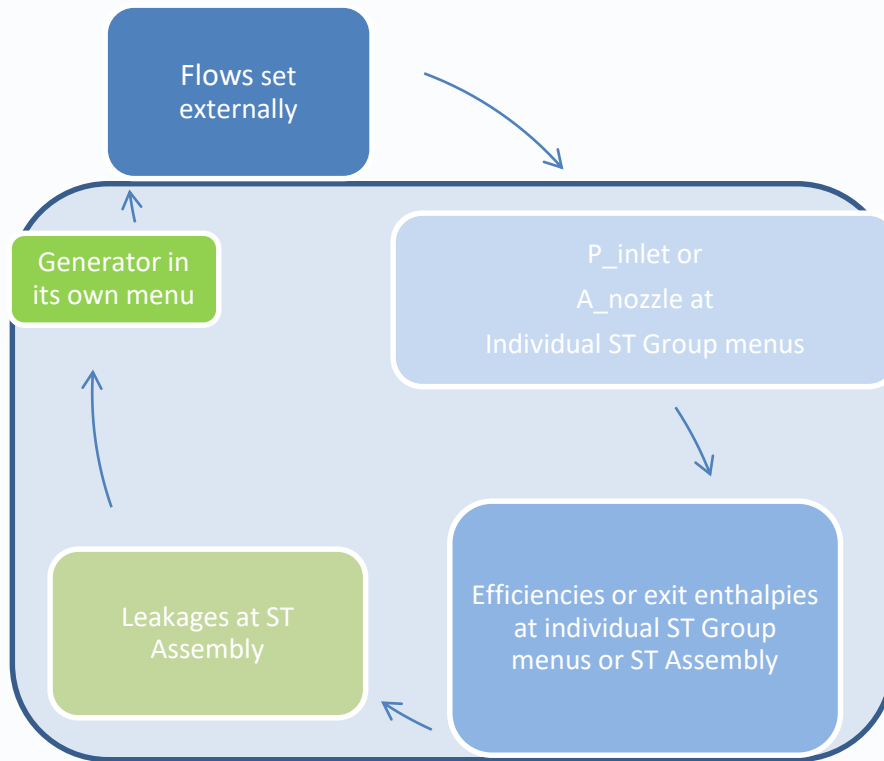


## Now, w/ Catalog



# Modify a Steam Turbine Model: Then & Now

## Before



## Now



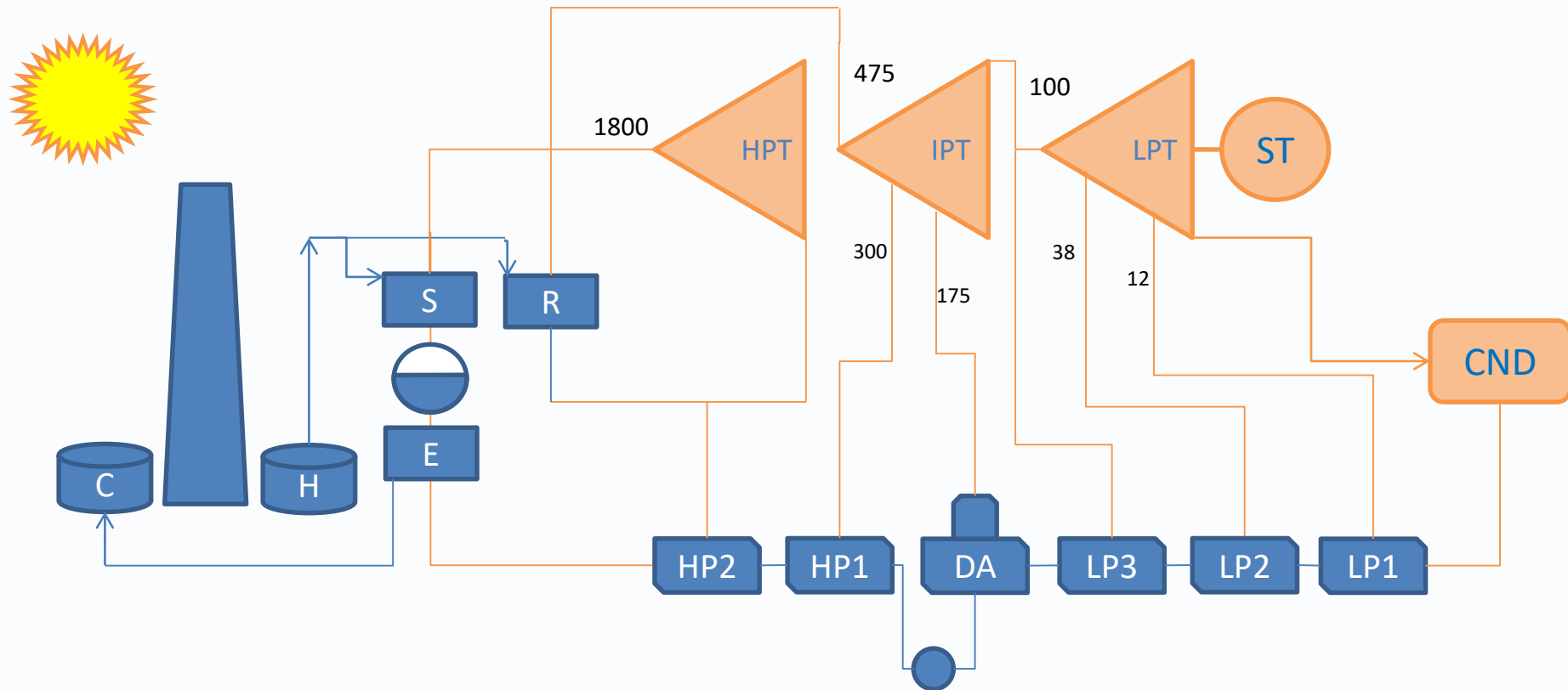
## Revised ST Assembly Menu

# Background:

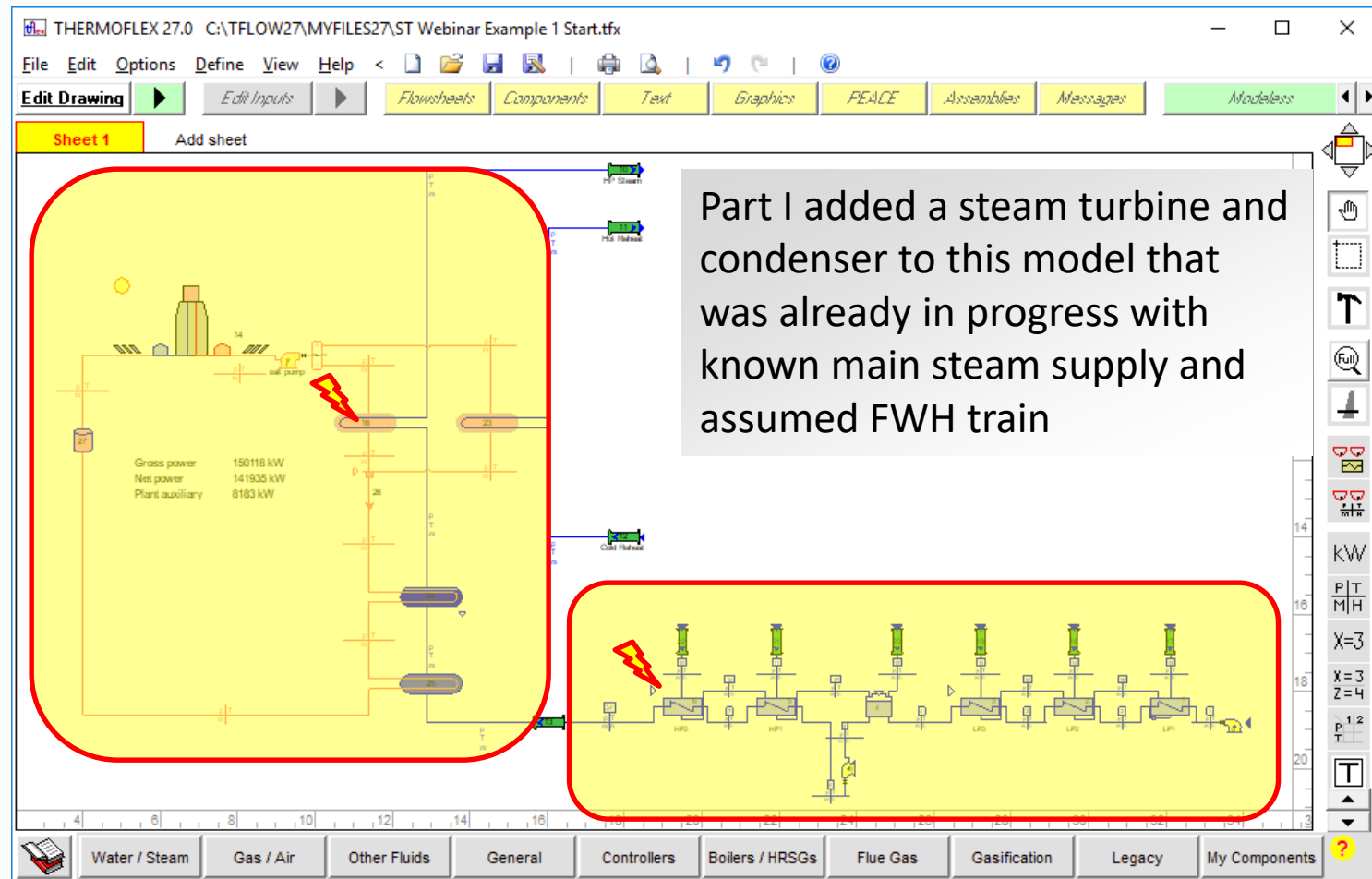
## Solar Rankine Cycle of Part I

New Piece

Already-built Pieces



In Part I, we began with a Starter Model, representing a prospective system model ...

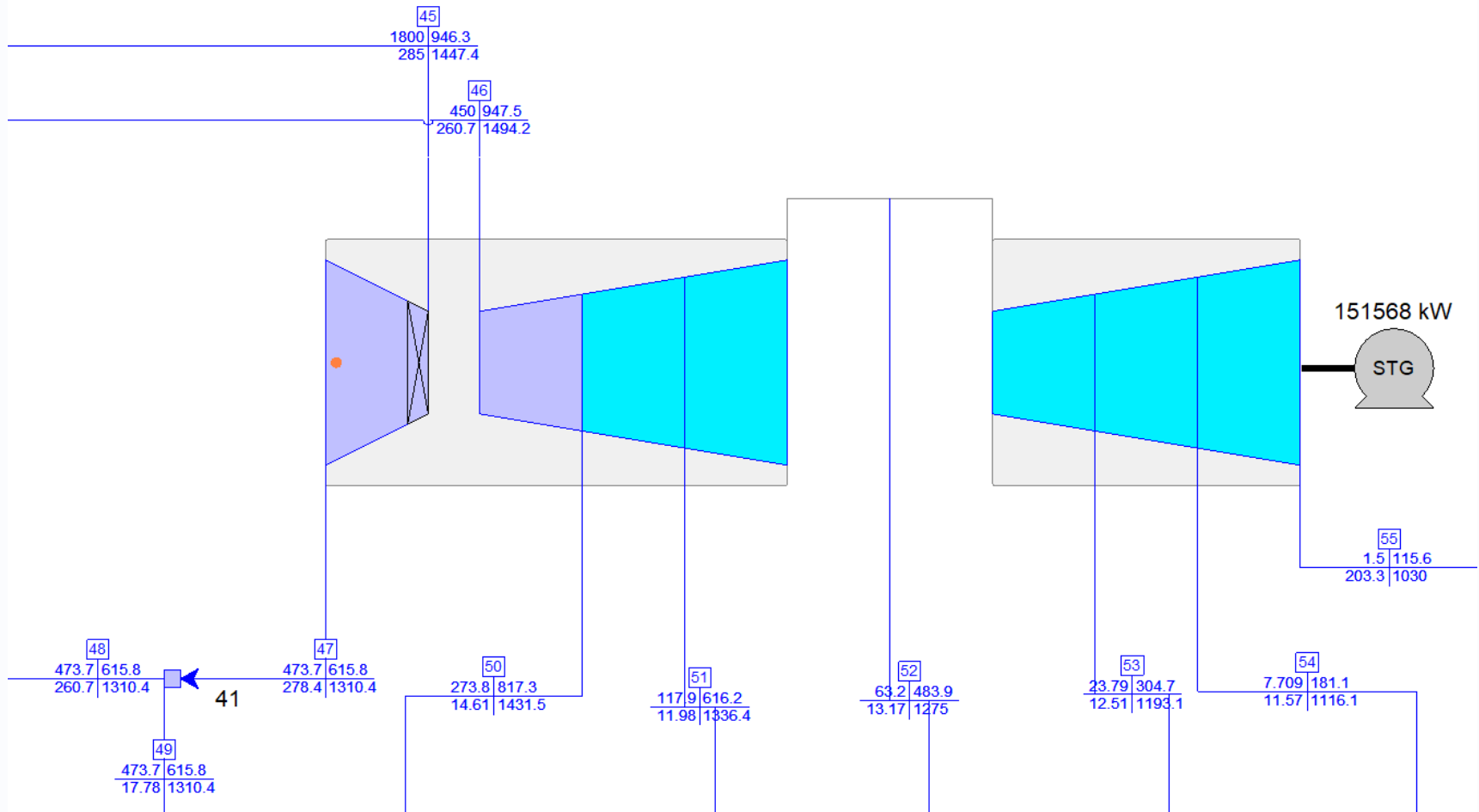


## Resulting Model

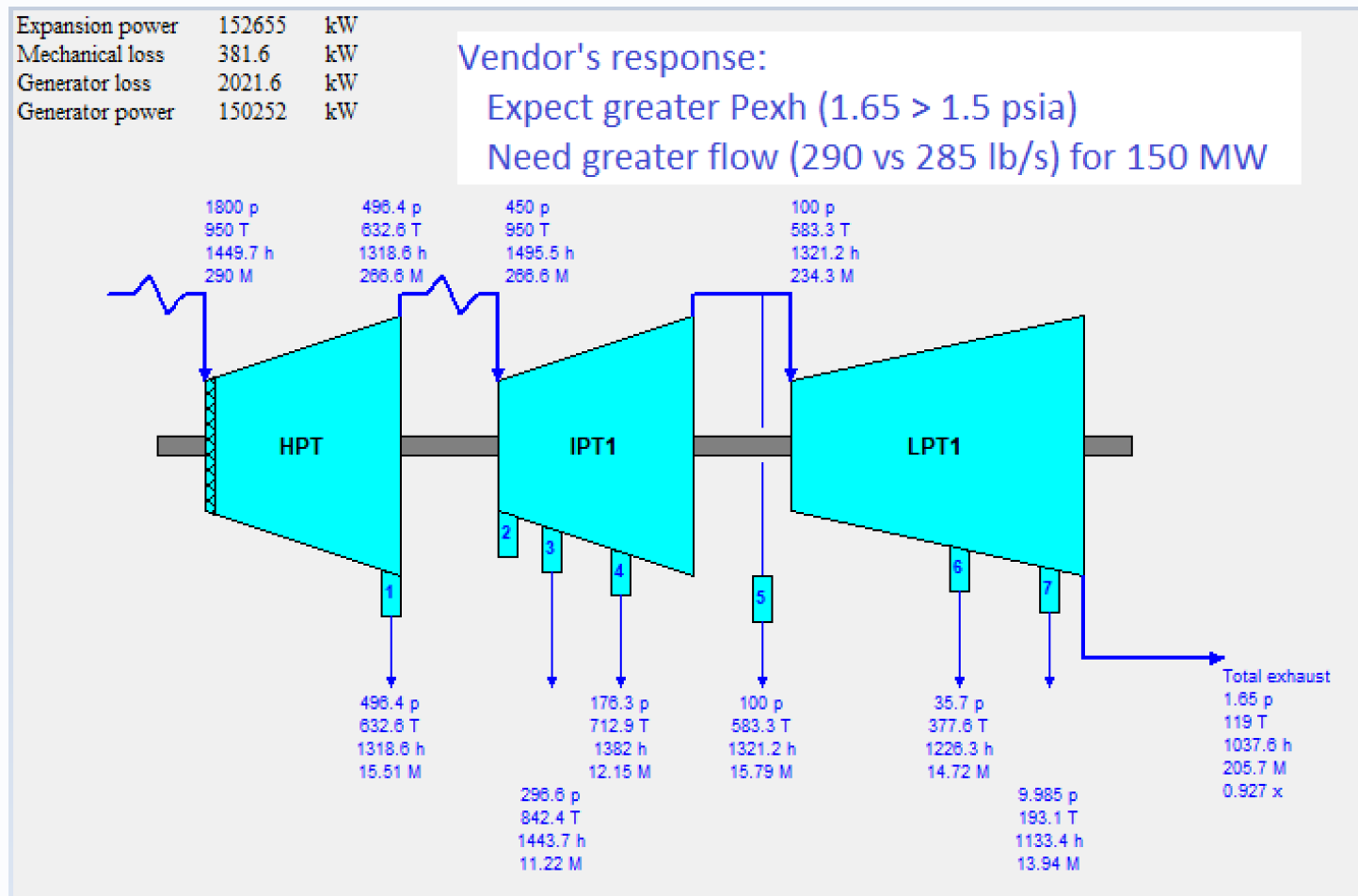




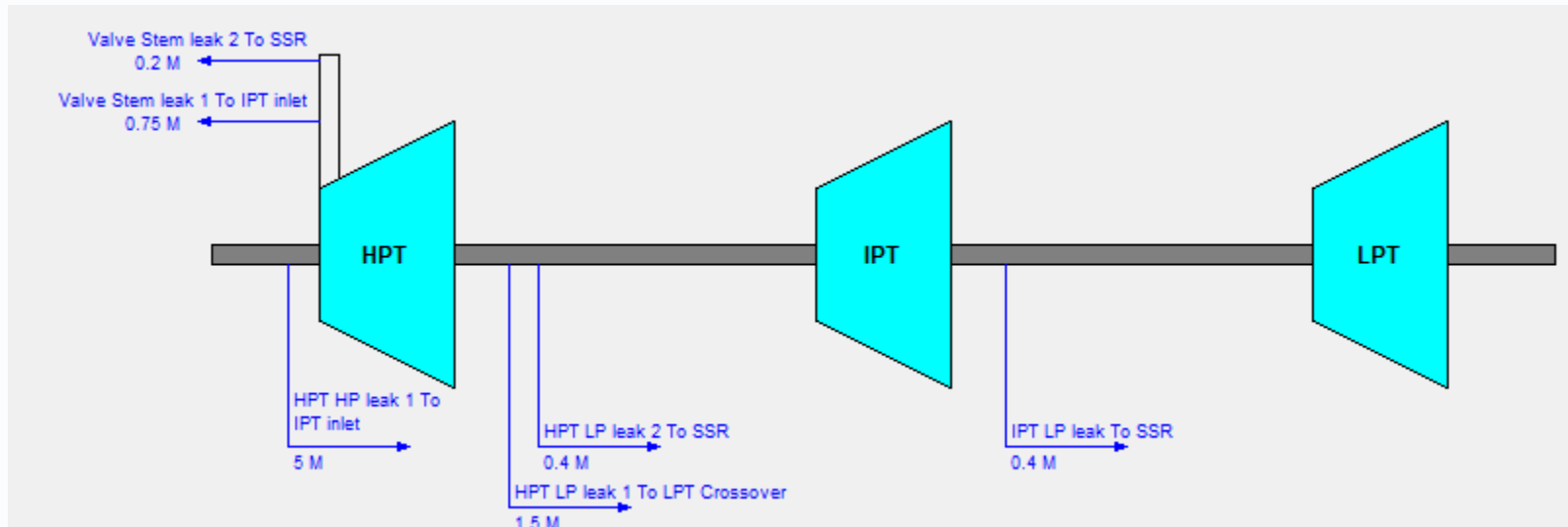
# A closer look at the turbine...



Responding to a request for a proposed turbine to fit these needs, a vendor responds with a heat balance of his own...

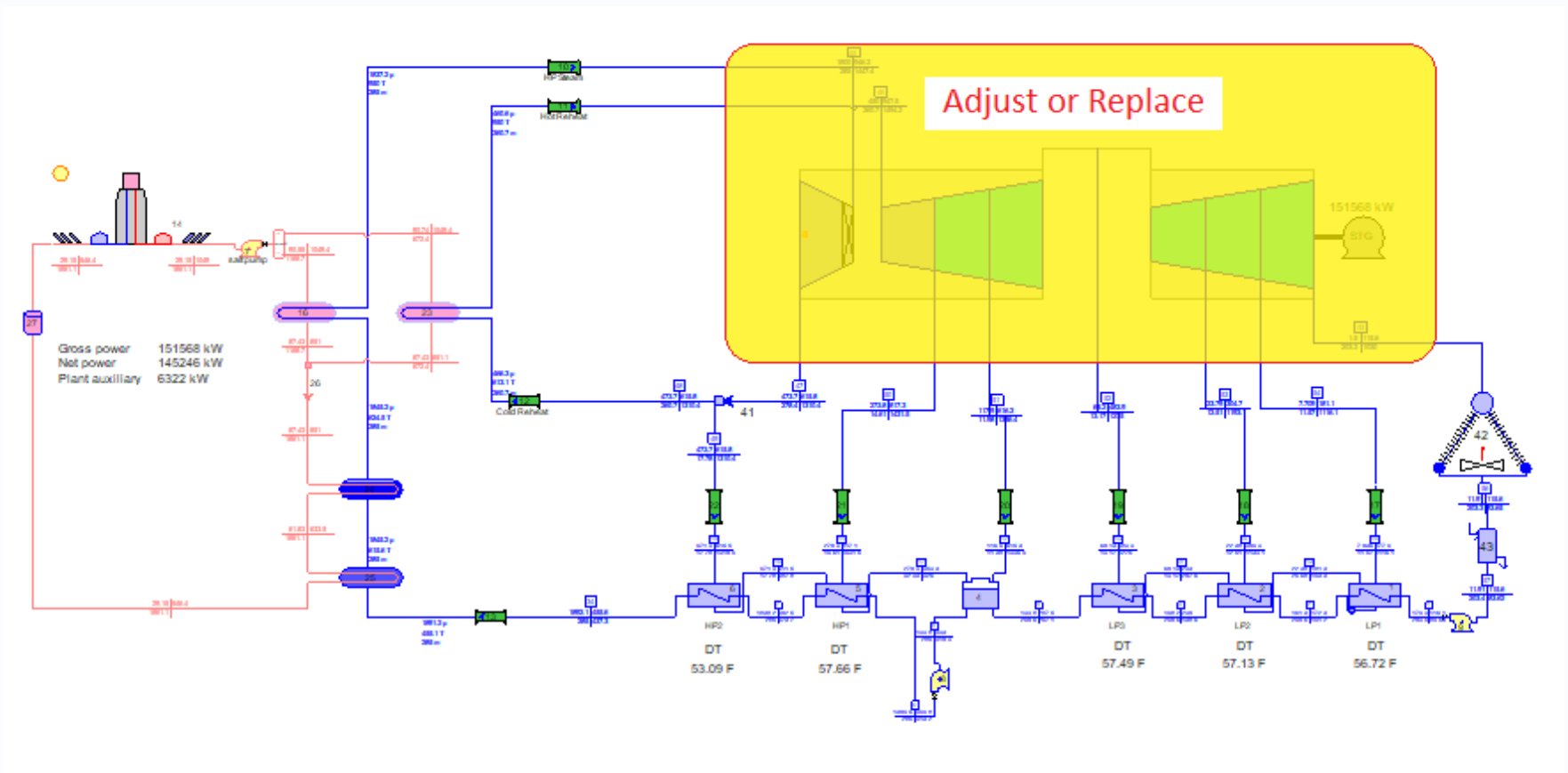


... with some details of packing leakages and exhaust loss.



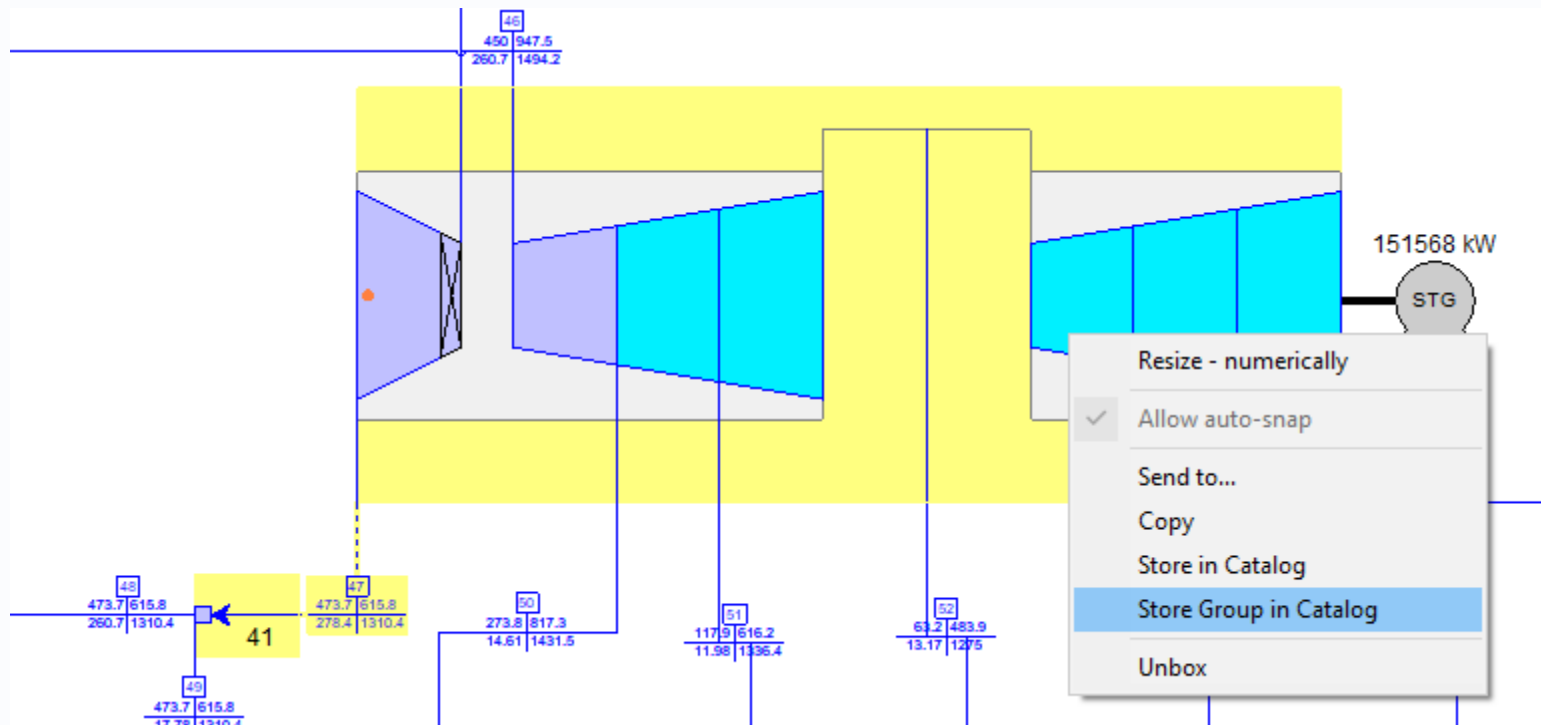
Last stage blade length	29.98	in
Last stage pitch diameter	85.00	in
Exhaust annulus area / end	55.60	ft <sup>2</sup>

This leaves you with the task of implementing the vendor's design of the steam turbine, merging it with your developing model.



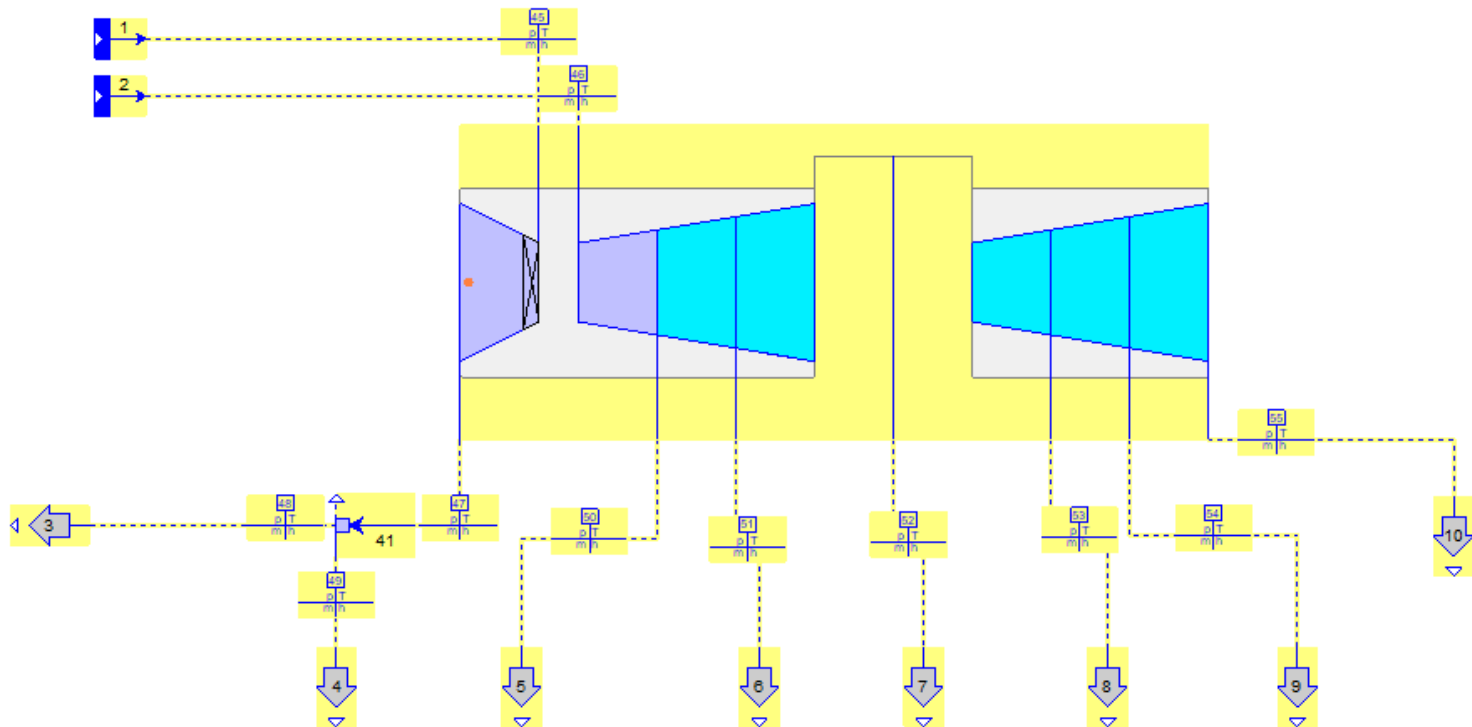
Adjusting in place leaves a lot of potential conflicts to be wrestled with. The recommended procedure is to make a copy of the subsystem, adjust it all by itself, then bring it back, as an already-designed, finished product in Off-Design.

You could copy to a new file or flowsheet directly, or place a copy in a Catalog.



*Copied ST and Splitter 41 to "SolarST\_plus"*

An advantage of the Catalog is that, when you import that stored sub-model to a new file, it brings with it a full complement of associated elements to support the sub-model on its own.



*Opened a new TFX file and selected “SolarST\_plus” from Catalog. It comes equipped with Sources and Processes as supporting elements.*

# The Steps Involved...

- Isolate in a flowsheet free from network. I've chosen to push to and pull from a Catalog
- Impose incoming flow conditions, outgoing pressures and flows, check leakages if known, check overall flow match
- Impose whatever's needed for pressure match
- Set efficiencies or exit enthalpies, set known or assumed exhaust loss
- If all the above is done right, any small remaining disparity in power is due to generator or mechanical losses.
- Convert to Off-Design, compute, then copy modified model back to main flowsheet.

website: [www.Thermoflow.ir](http://www.Thermoflow.ir)  
Telegram: @Thermoflow\_users

# Final Results

