

HelioFocus

Solar Concentrated Power

CSP HYBRIDISATION? - EILAT EILOT 2012 -

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COMPANY CONFIDENTIAL

16 July 2014

Concentrated Solar Power

Benefits over other renewables “at National level” – Storage & Hybridization.

Why Renewable?, why Solar?

- Technology development & establishing new industry - benefit at national level.
- Hybridization – an opportunity to widely apply CSP technologies.

Solar would not cover all national energy needs.

For high radiation countries, 20% to 25% Electrical solar energy out of the total annual consumption is an achievable goal.

BUT

For equivalent energy with the same overall emission savings and other clean electricity benefits, we can pay much less by allowing Hybridization.

Suggested Concept:

We can allow:

The Solar Hybrid Fossil fuel produced electricity price to reflect the market fossil fuel generated electricity price.

Only pure solar part should be considered “Clean”

Produced Solar part can be clearly measured and evaluated – standards can be set

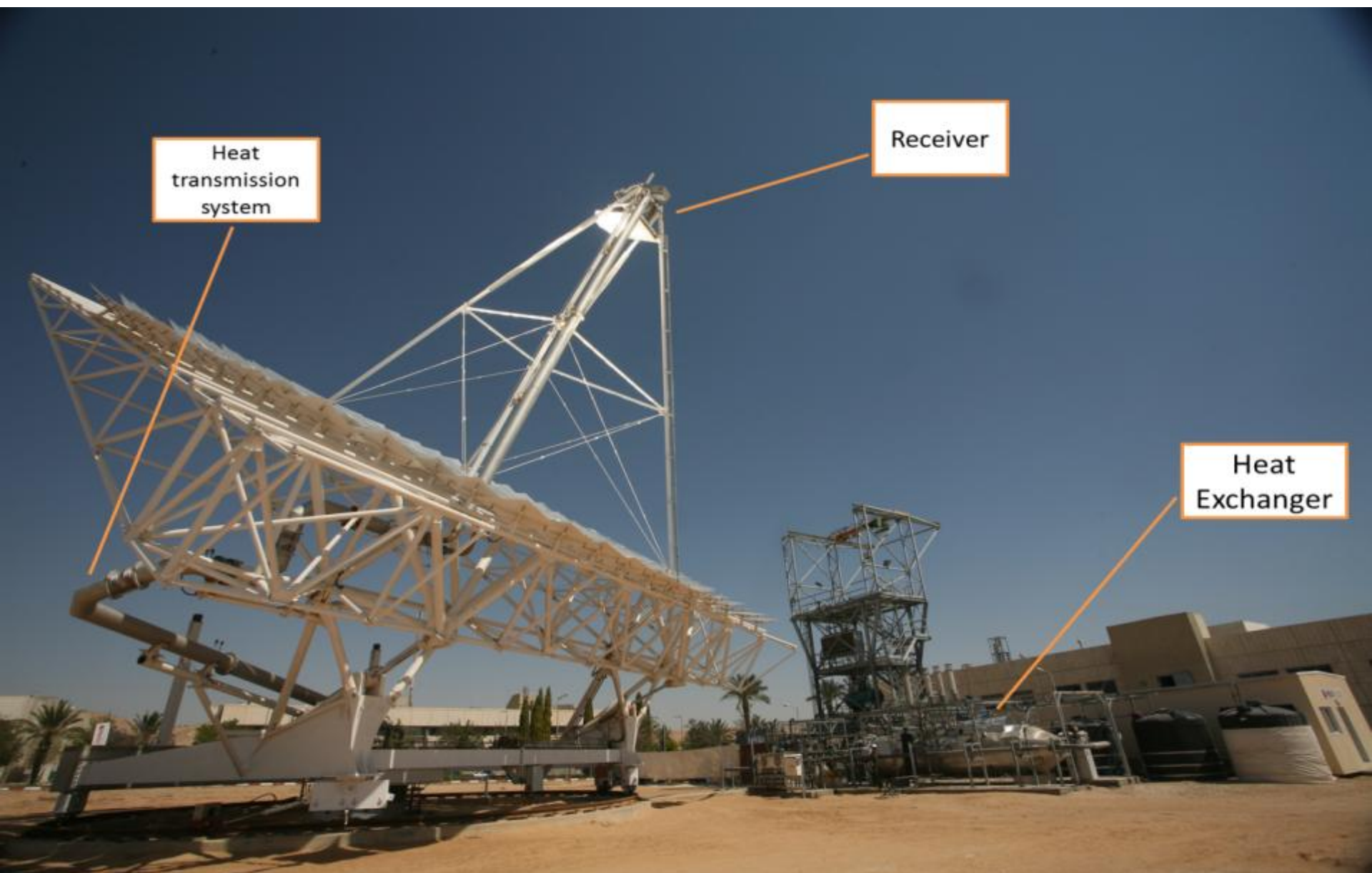
Recent evaluation works on CSP for cost reduction & the relevant market size (SunShot, GMT research, SEPA EPRI and others) - shows a huge benefit (cost effectiveness and overall emission reduction) for Solar Hybrid system.

Different concepts for Hybridization should be considered where the evaluation should be the overall solar energy produced with no benefits to the fossil fuels produced electricity

Hybridization concept – many options

Different fossil / Solar combinations options;

Ramat Hovav team generation test site



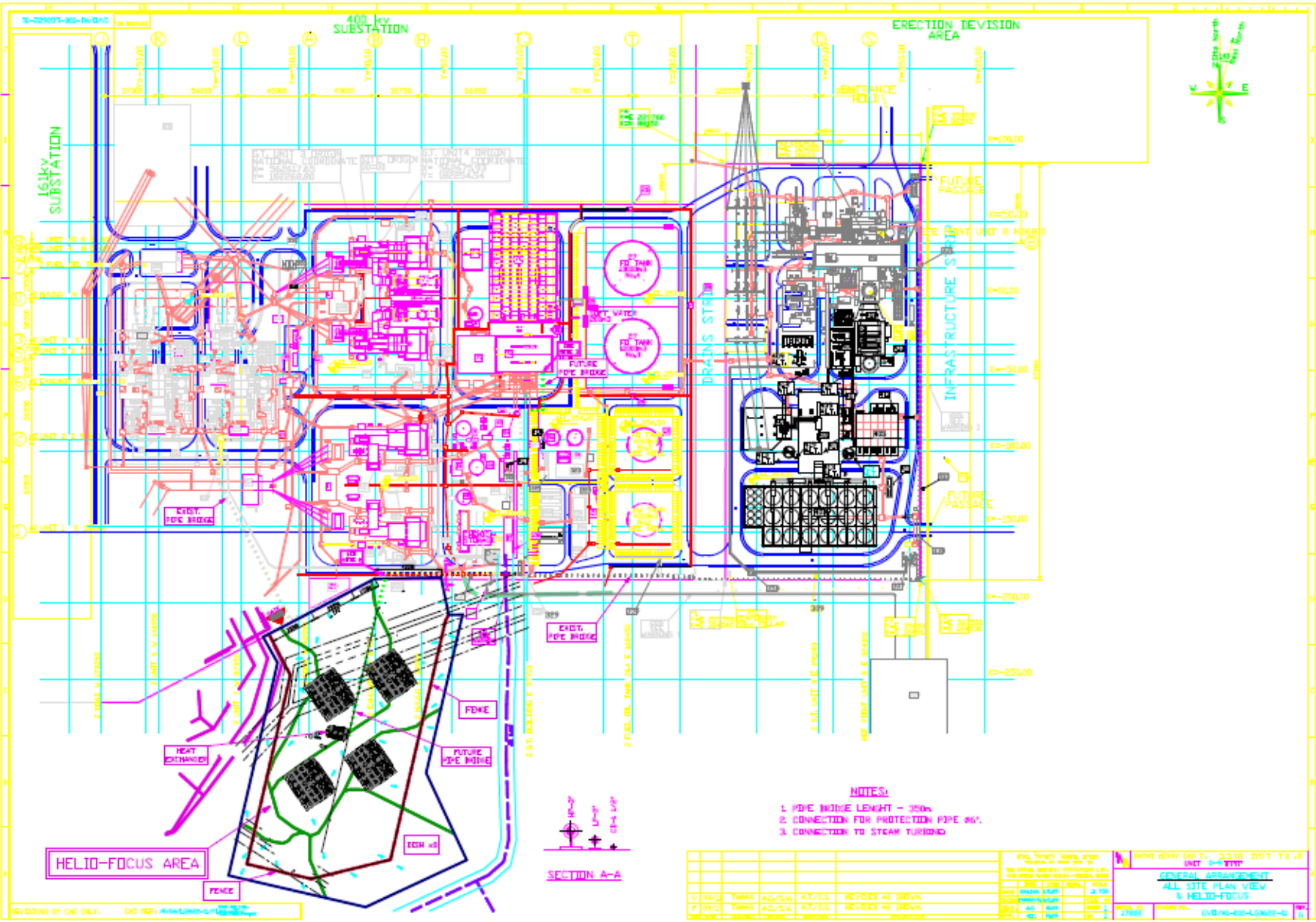
StarDust Boosting Product Layout

~100 dishes, 8km pipe length, single heat exchange system



*source: NREL, http://www.nrel.gov/analysis/power_databook/calc_pv.php

Stage 1 Layout – Power plant & Dish Location



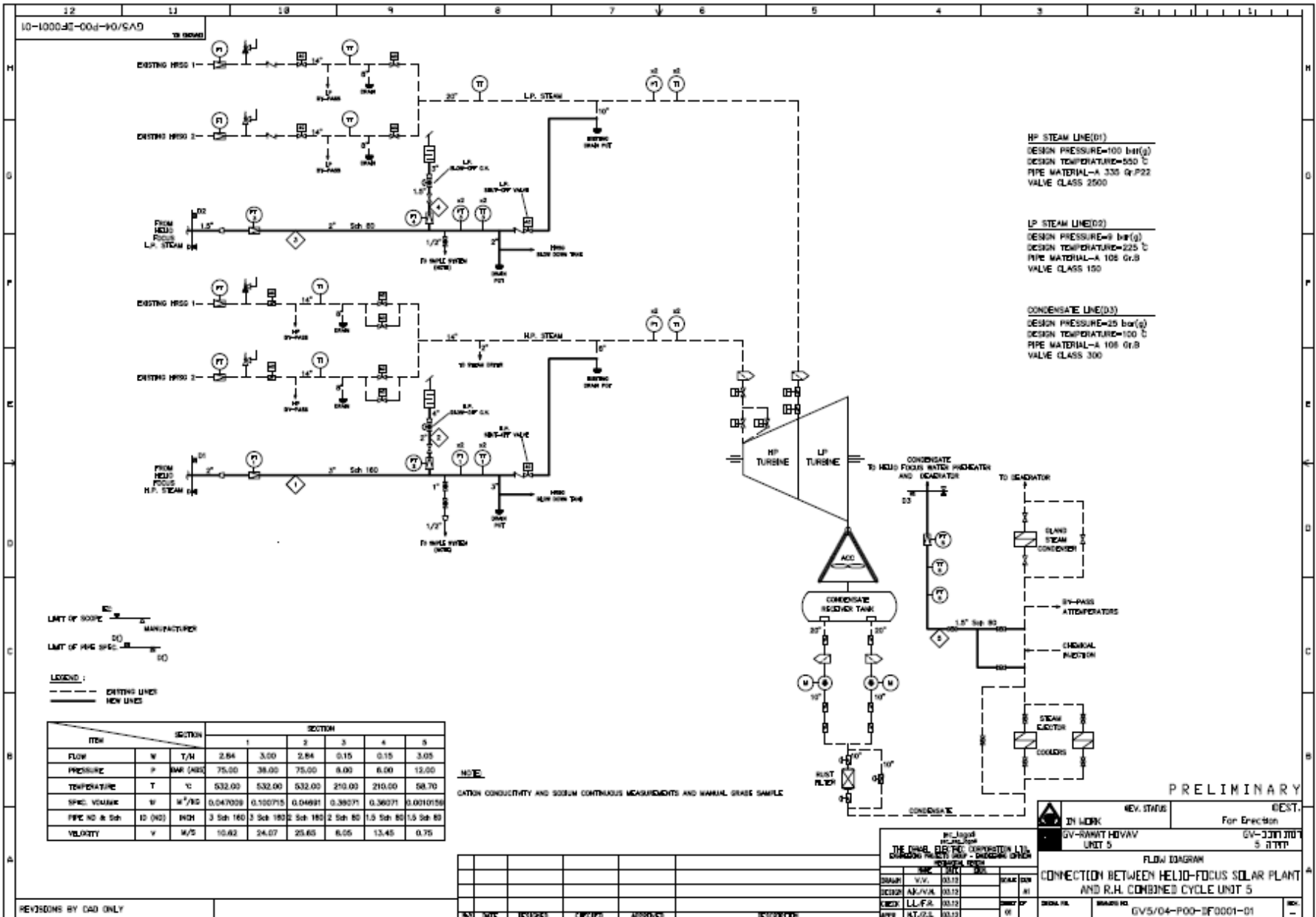
HELIODOMES BY ONE ONLY. CAD REF: HVM-L0008-011400-0000



- NOTES:**
1. PIPE BRIDGE LENGTH - 350m.
 2. CONNECTION FOR PROTECTION PIPE Ø67.
 3. CONNECTION TO STEAM TURBINE.

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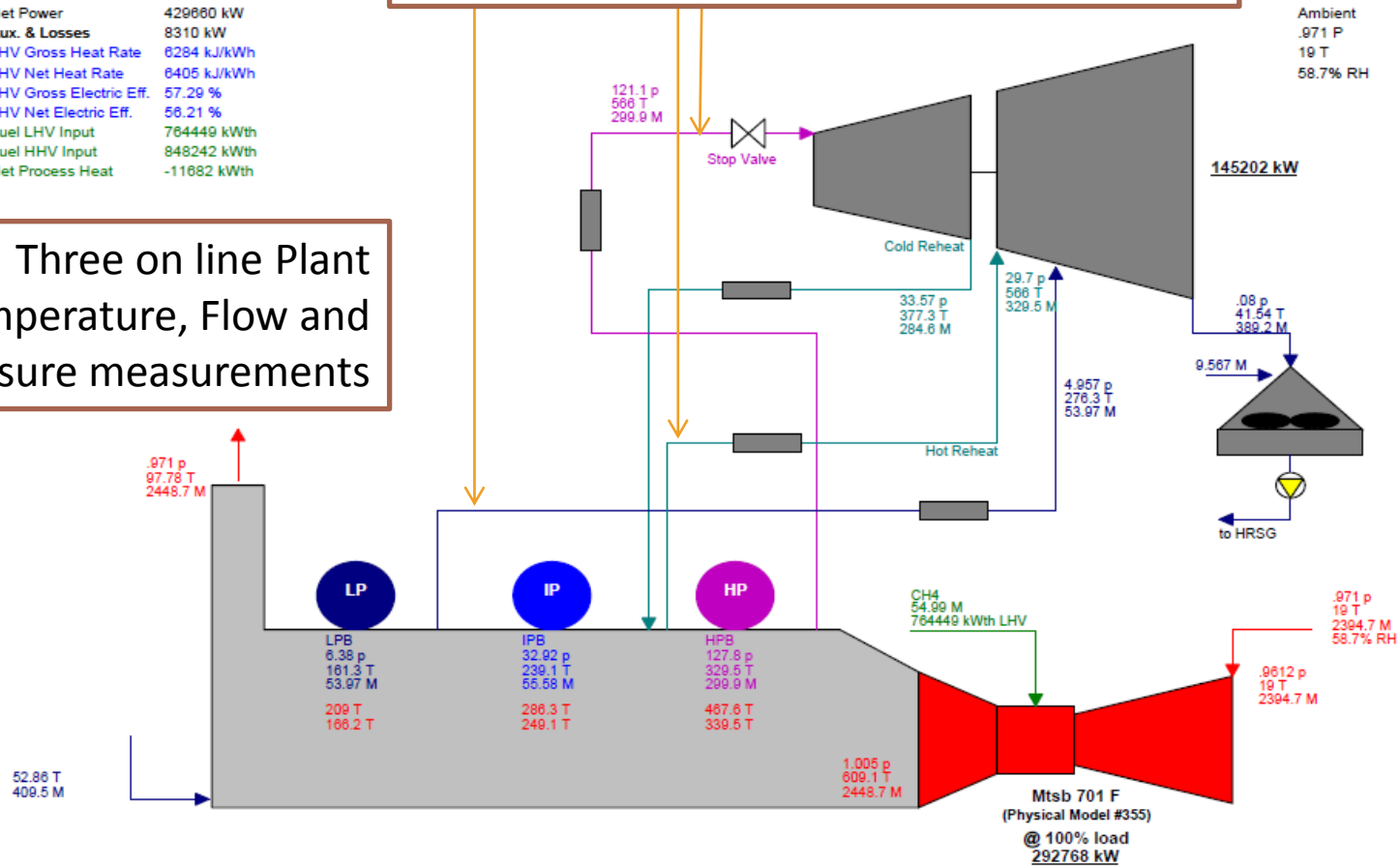
StarDust Project integration design



GT PRO 21.0 IEC
 Gross Power 437970 kW
 Net Power 429860 kW
 Aux. & Losses 8310 kW
 LHV Gross Heat Rate 6284 kJ/kWh
 LHV Net Heat Rate 6405 kJ/kWh
 LHV Gross Electric Eff. 57.29 %
 LHV Net Electric Eff. 56.21 %
 Fuel LHV Input 764449 kWth
 Fuel HHV Input 848242 kWth
 Net Process Heat -11882 kWth

Three pressure Inputs From Solar HEX

Three on line Plant
 Temperature, Flow and
 Pressure measurements



p [bar] T [C] M [t/h], Steam Properties: ThermoFlow - STQUIK
 279 12-21-2011 11:41:36 file=H:\My Documents\ThermoFlow\OPC extractions.gtp

GT PRO 21.0 IEC

Inner Mongolia, Phase A, 1MW

To be confirmed... 未確認稿 MF Vision

26.10.2012

Inner Mongolia Phase A 1 MW

To be confirmed 未確認稿 MF VISION

NOW



1st HelioFocus groundbreaking ceremony, Inner Mongolia, May 2012

Thank You!!

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