SOLAR DESALINATION A KEY PARAMETER AGAINST CLIMATE CHANGE

June 2008

SOLAR DESALINATION

- 500 m³ Des. Water/ KWp · year
- Possibility to store Desalinated Water during the Autumn – Winter – Spring period (October – April)
- Central Desalination Facilities
- Household Size Desalination
- Hotel Size Desalination
- Rural Use Desalination

Immediate Application in the islands

- Each KWp PROTEAS installed shaves 5,0 KWe of Peak Power
- The cost for PPC/DESMIE of this 5,0 KWe Peak Power shaving compensate the subsidized price of the PV KWH for the next 20 years
- Each KWp PROTEAS produces :
  - 1800KWH/y electricity
  - 1200 - 1600 KWH/y substituted A/C Electricity
  - 4000 – 6000 KWA/y thermal energy (S domestic hot water)
  - 6 tons avoided CO_2 / KWp·year
  - Alternatively to electricity : 500m³ desalinated water/y·KWp

THE IMMEDIATE APPLICATIONS IN THE ISLANDS INVOLVES

- No upper limit for the hybrid PV Capacity in the islands with the given feed-in tariff
- Operation of ESCO companies (witch will install the trigeneration Units on the rooftops of private houses, hotels, public buildings or central for small communities against part of the income generated.
- This income will include the following :
  - Income from PV electricity (to be extended as above)
  - Income from A/C substituted electricity
  - Income from domestic hot water
  - Income from Water desalination
  - Income from the produced Green Certificates

- Problems to set aside for the above activity
  - Permission to ASCOS for the activity (a) above
  - No limits for Hybrid PV feed-in tariffs
  - Price for substituted A/C electricity (measured as consumed solar hot water)
  - Price for domestic hot water
  - Price for solar desalination water
  - Inclusion of the Green Certificates produsedfrom solar Air Condition (A/C) and Production of Domestic Hot Water in the Green Certificates Certification of Origin

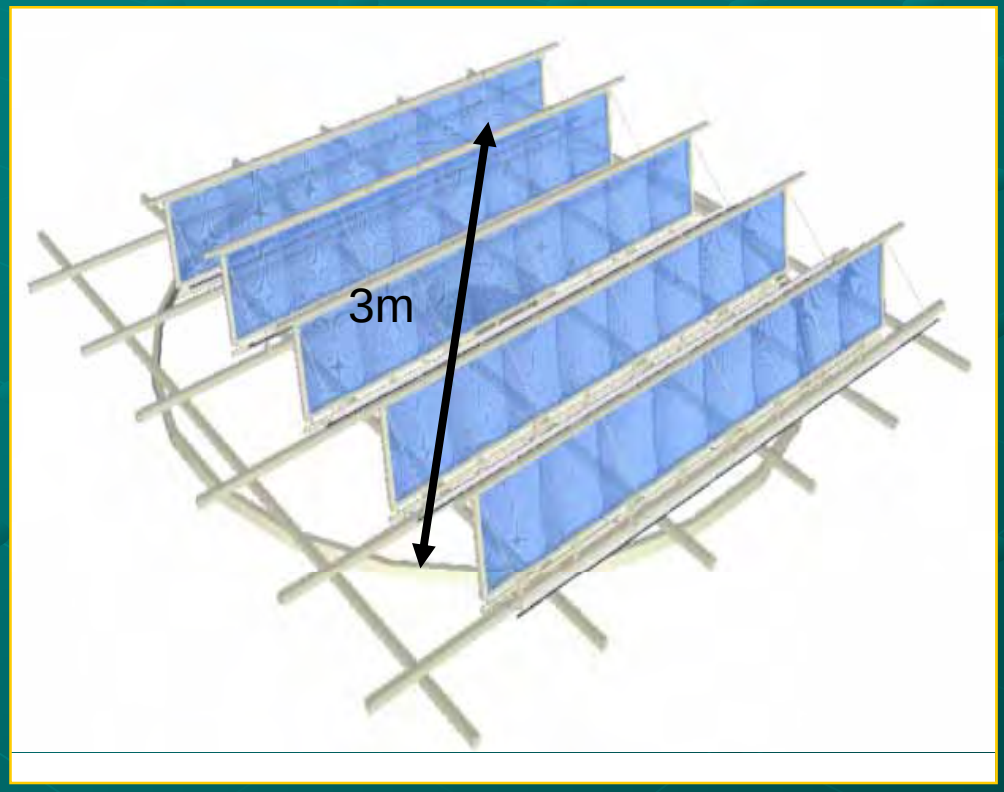
- The cost of oil – generated electricity is presently 4-6 times up the price paid to PPC. The difference paid by rest consumers in Greece
- With solar electricity, this extra cost will be avoided.
- Solar Green Certificates will avoid penalties of hundreds of million euros expected after 2013
- Local employment due to local production, installation and maintenance of the Trigeneration Systems
- GREEN ISLANDS are attractive to European visitors
- Better Environment
- Fight the Climate Change.

The System

- Solar TRIgeneration System

  Production of: Electrical, Two-level Thermal and Cooling Power

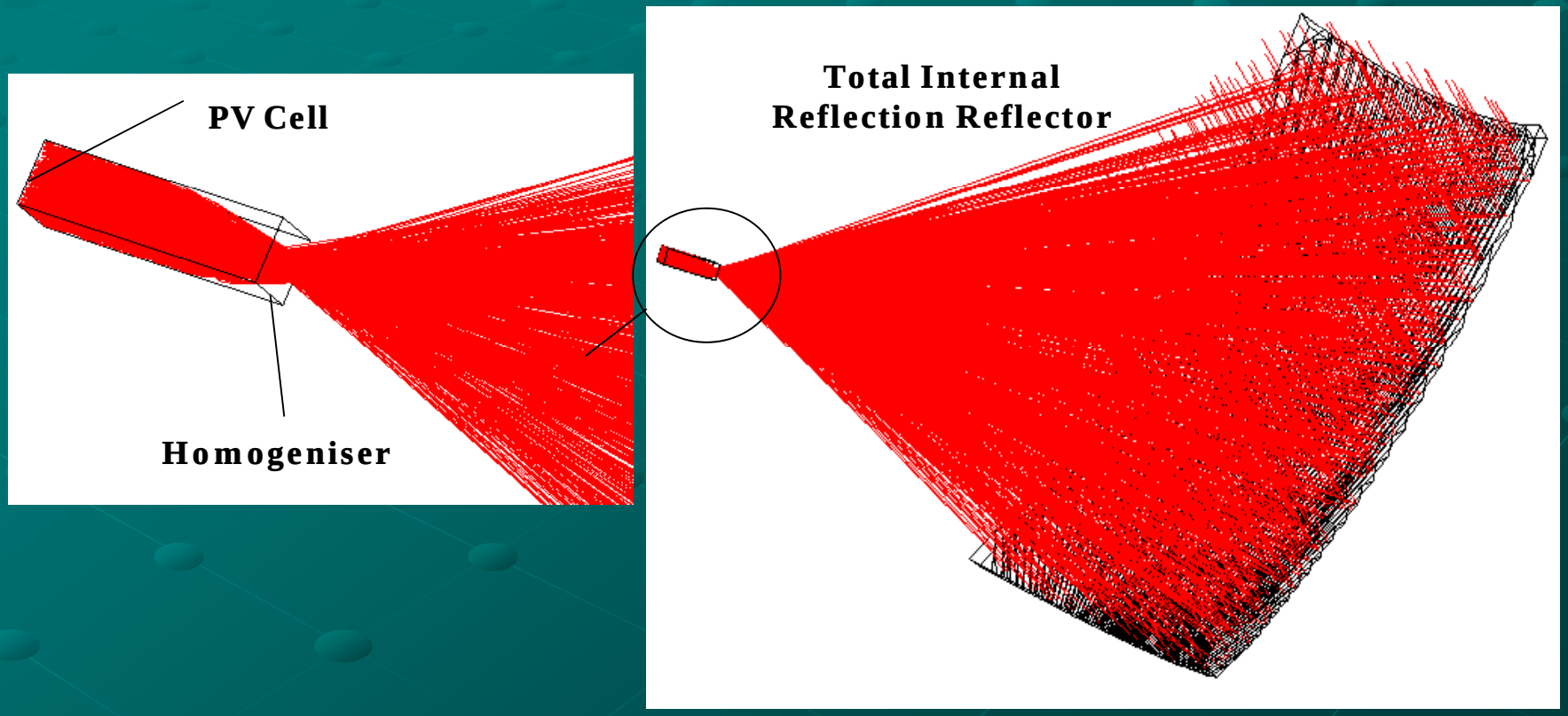
  Typical Unit: 500Wp | 250Lt Hot Water | 8000BTU | 500Lt Warm Water



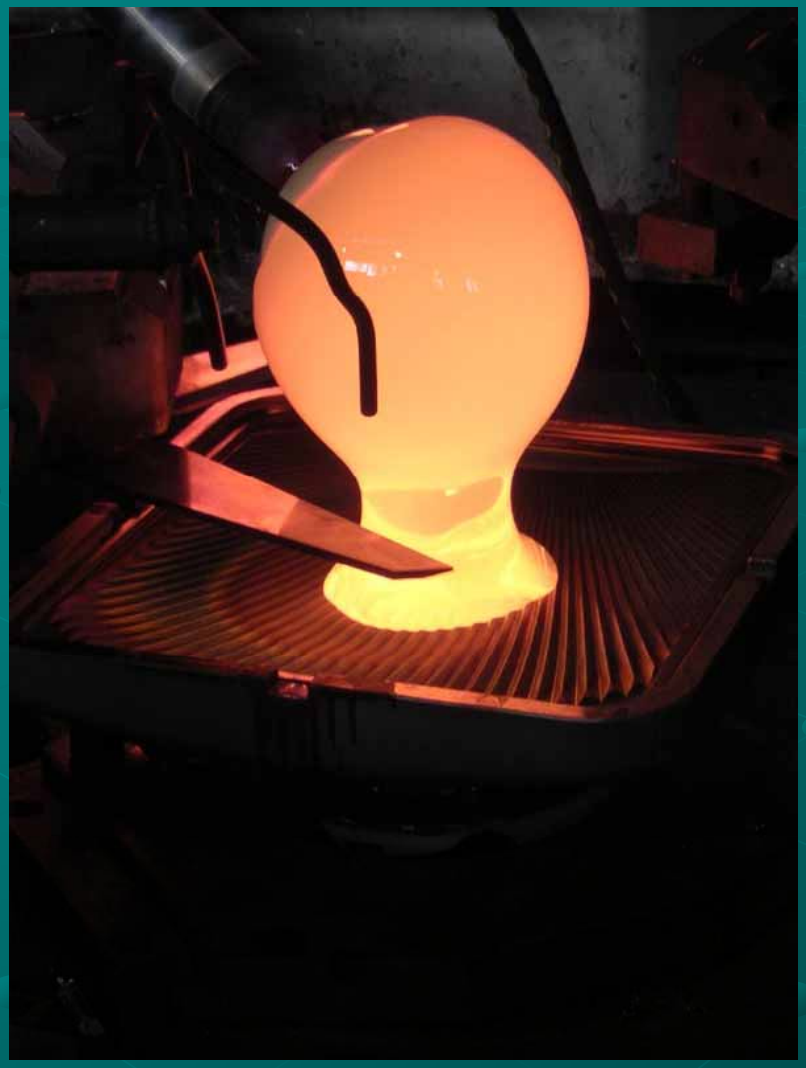
- Innovative Optical System
- Concentrating PV Cells
- Advanced Absorption Chiller
- Metal Constructions
- Tracking System
- Control System

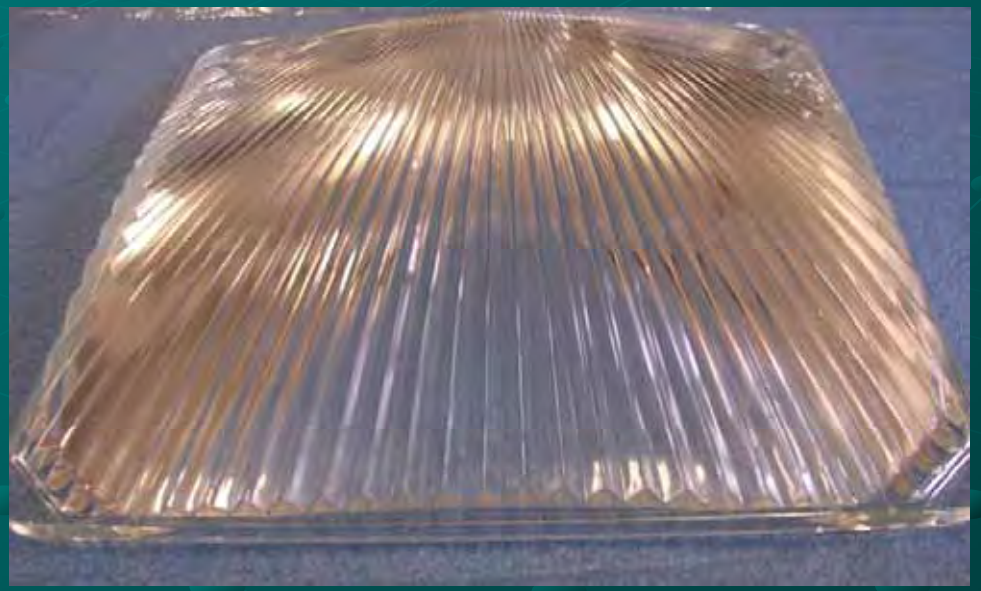
Total Internal Reflection Reflector (TIRR)

- Ray Tracing Simulation

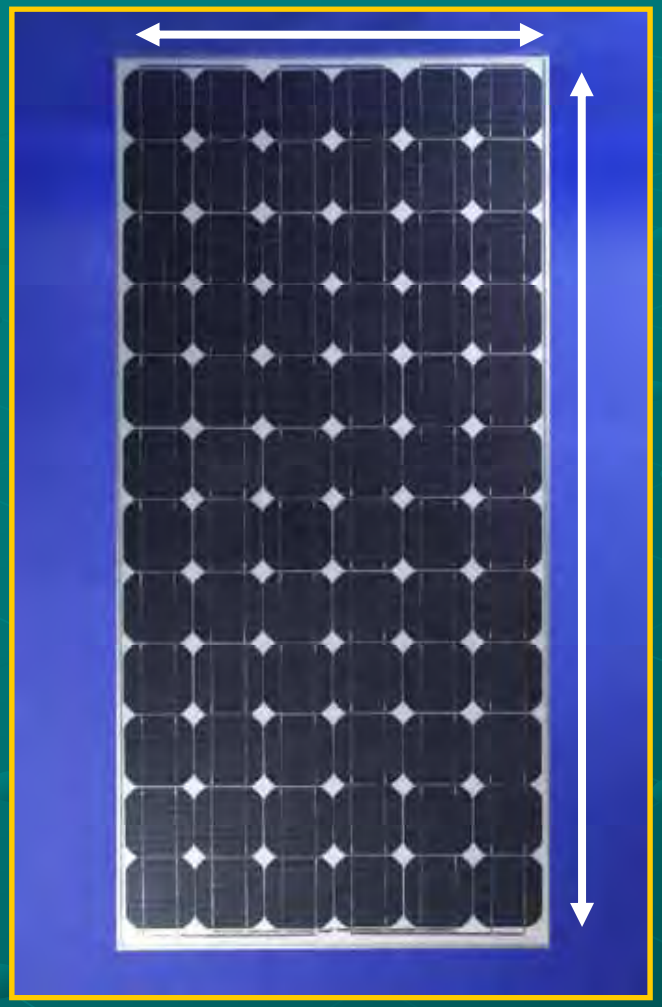


TIRR Glass Prototype in the Press





Concentrating Type PV 1:1000

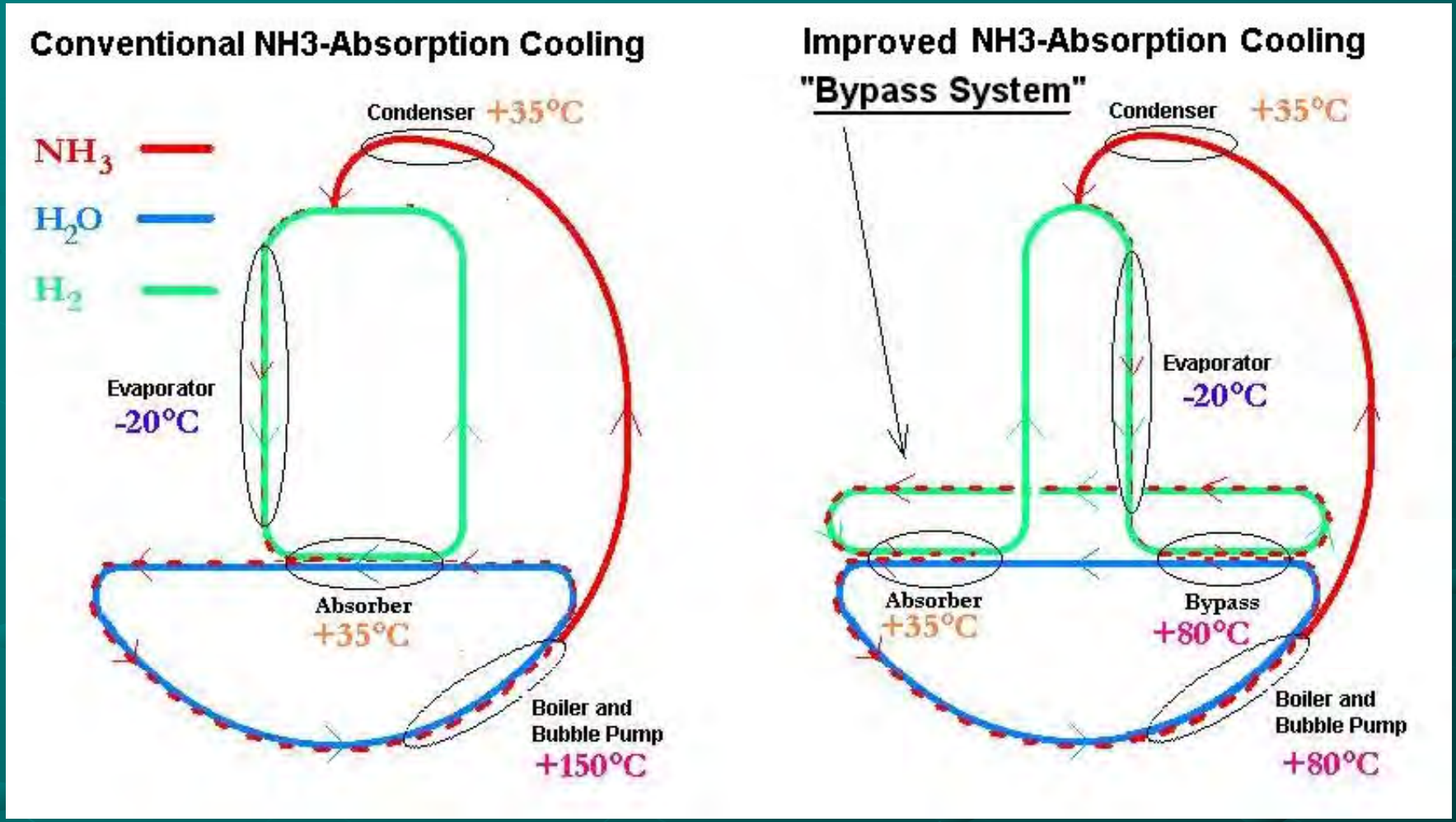


60 x 120cm

100Wp

2,5 x 2,5cm

Absorption Cycle of Ammonia



TRIgeneration Basic Unit Side View