

## Concentrated Photovoltaic Thermal (CPVT) = Efficient Solar Co-Gen

1. TEAM Support
2. Menova Vision
3. Solution
4. Technology Plan & Platform
5. Customer's Value Proposition



*The Dawn of Low-Cost  
Renewable Energy*

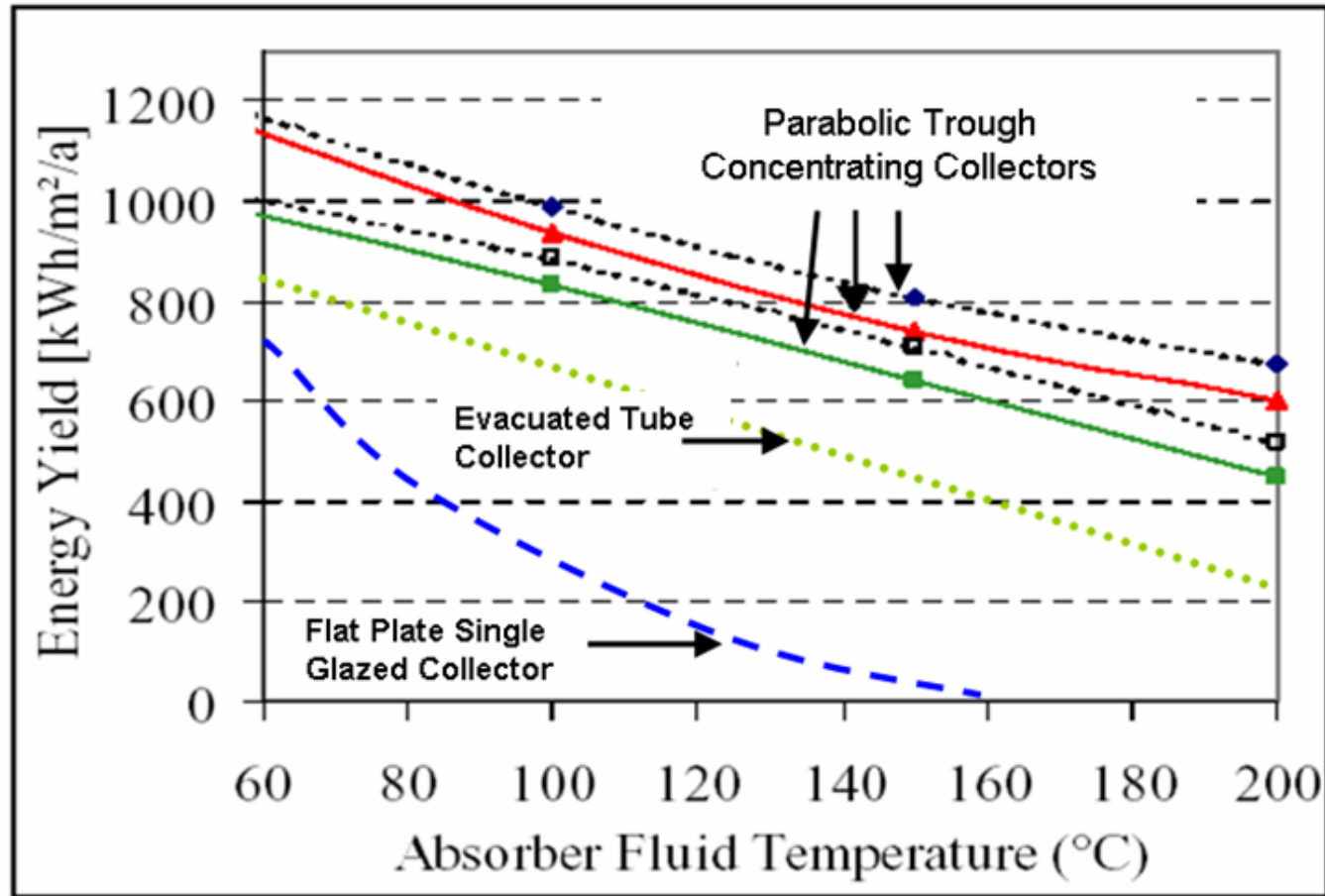
# TEAM (Technology Early Action Measures) Support

... what it means to Menova

- Project Enabling
  - Financially cross the valley between high cost low volume production to low cost product
- Managed technically by NRCan
  - Testing
  - Performance Analysis
  - Due Diligence
- Networking
- Demonstration Support
  - Schools, CCHT, Roger's House, Residences

From our Early  
Adopters and  
Menova...Thank you  
TEAM 😊

Menova Energy is focused on providing sustainable renewable energy solutions for valued customers

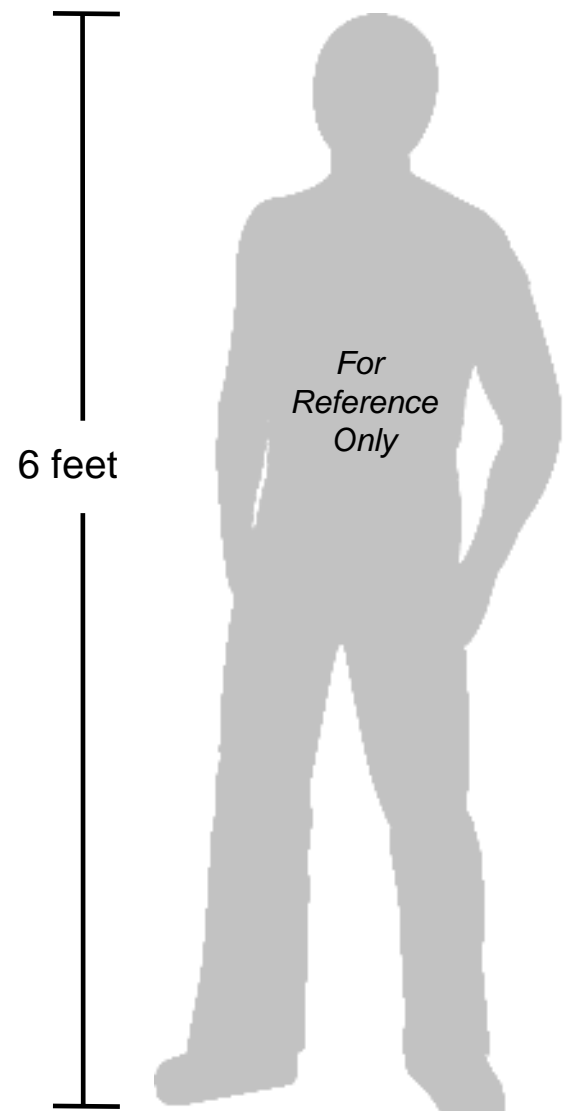
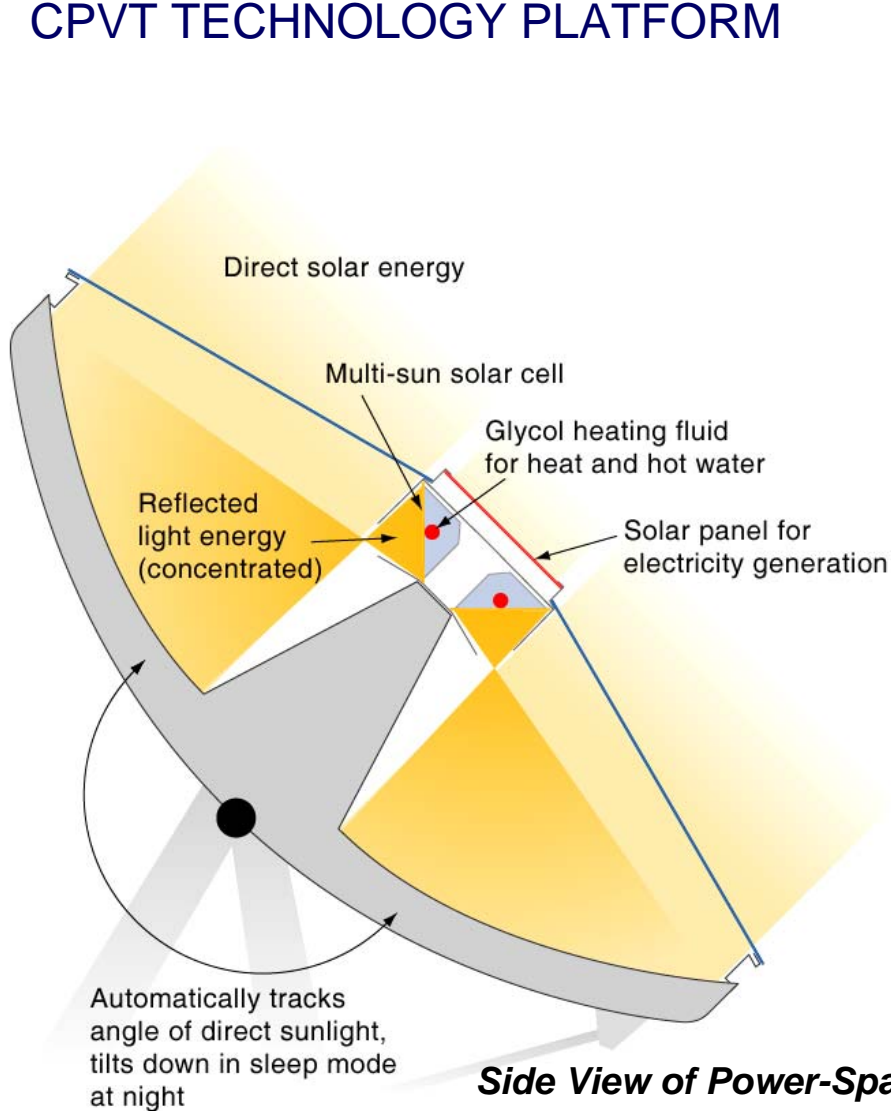


*Annual energy yield in Huelva for parabolic trough as a function of the process temperature.*

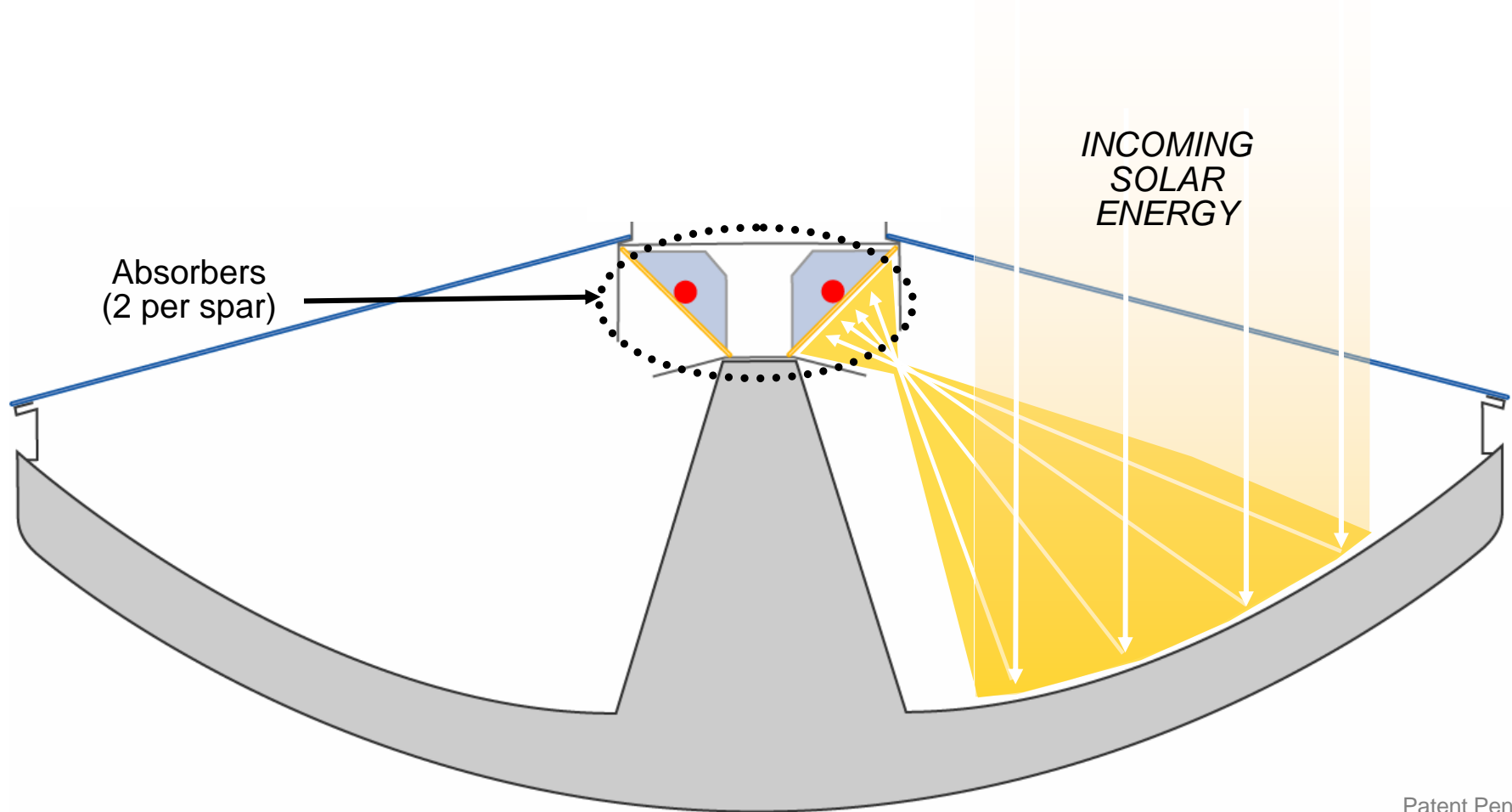
Data Reference THE POTENTIAL OF SOLAR HEAT IN INDUSTRIAL PROCESSES.  
A STATE OF THE ART REVIEW FOR SPAIN AND PORTUGAL

EUROSUN 2000, Copenhagen, June 2000

## CPVT TECHNOLOGY PLATFORM



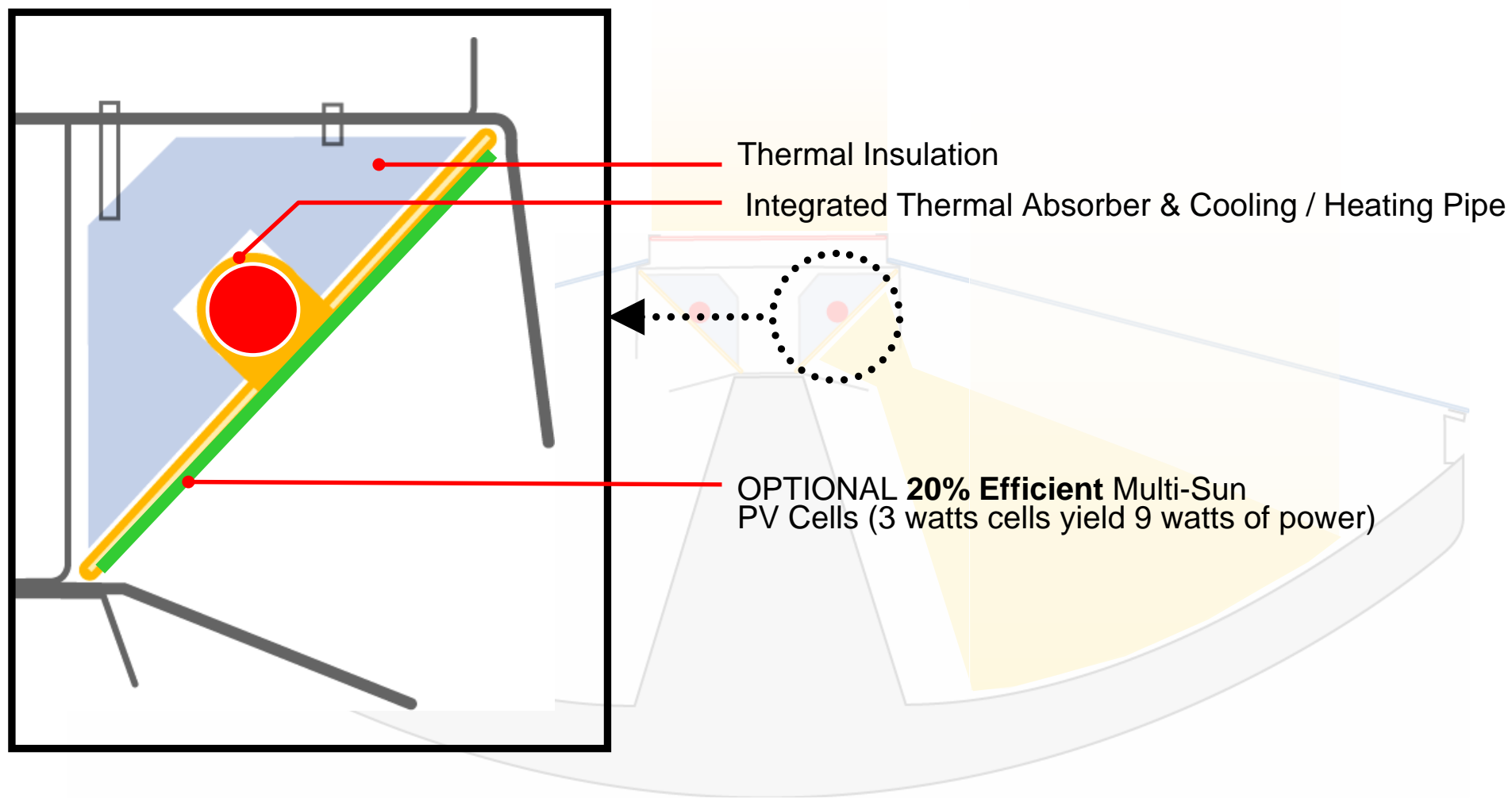
*Solar energy is reflected and concentrated onto two absorbers which in turn heats the glycol fluid.*



Patent Pending

## Close up of the Absorber

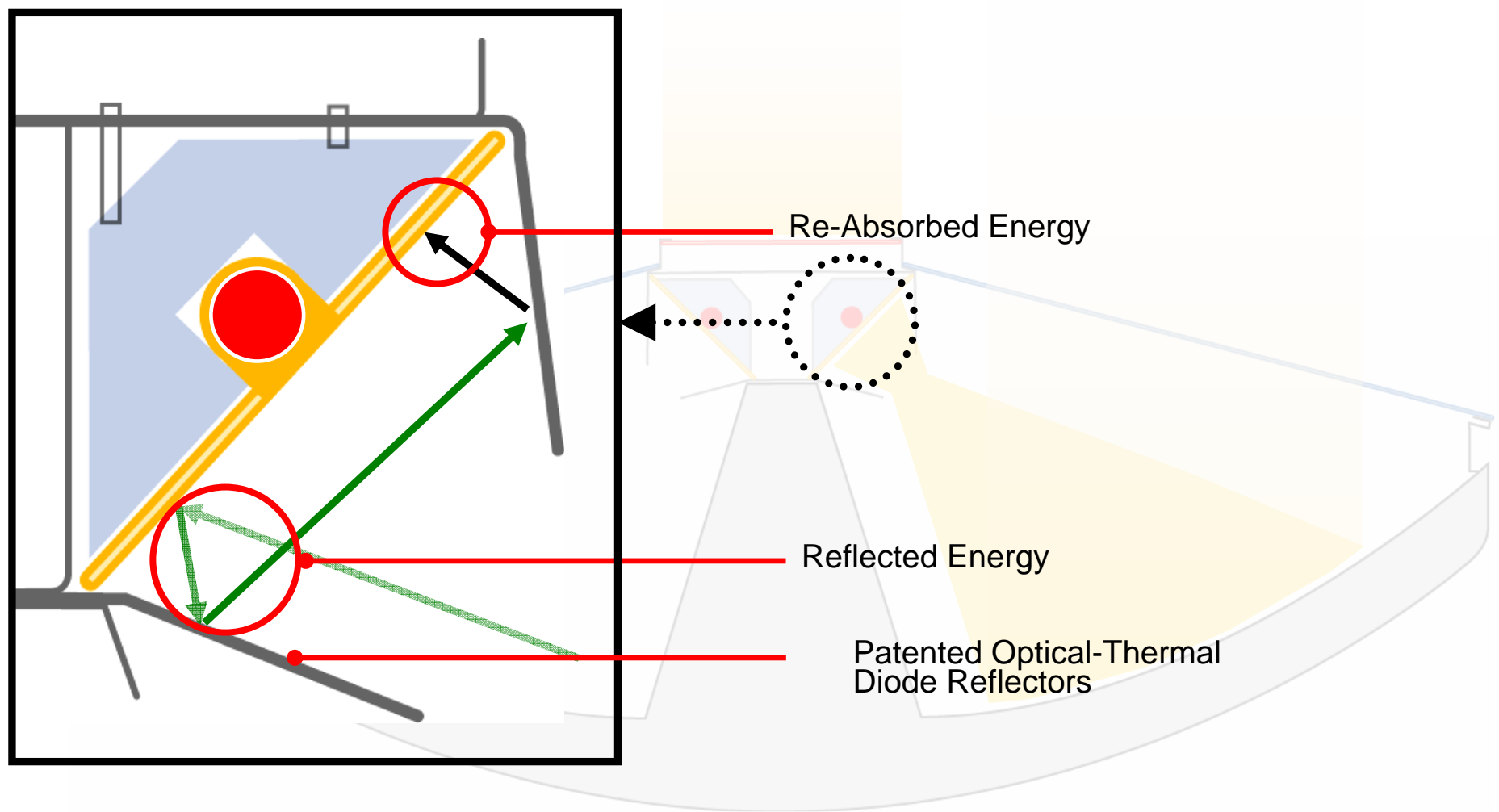
– illustrating thermal & solar power components





## Close up of the Absorber

– Illustrating thermal energy path. The re-absorbed energy path maximizes the system efficiency





# FULL SYSTEM DIAGRAM

## Electricity

Power Spar's solar cells generate electricity which can be either:

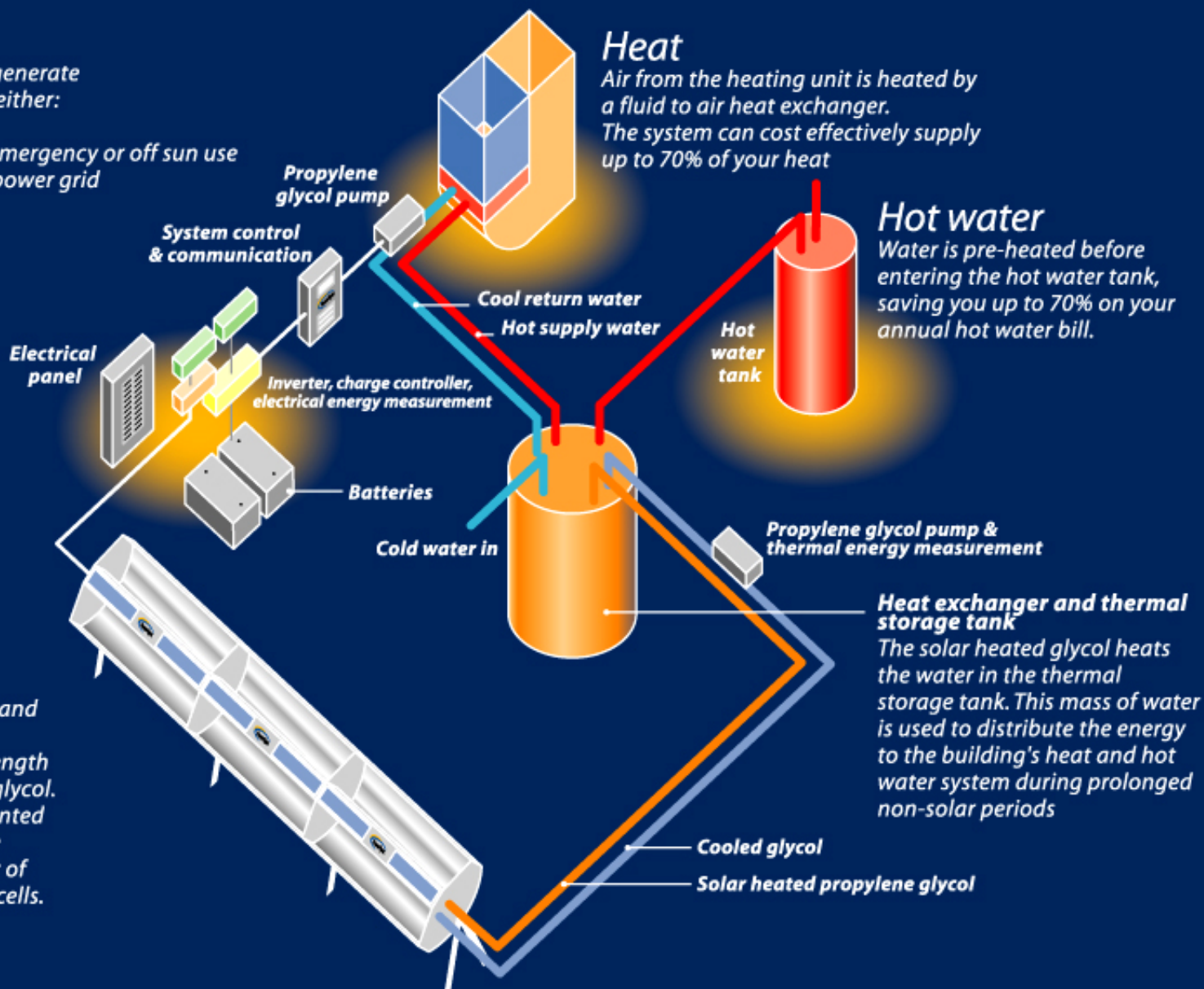
- directly used
- stored in batteries for emergency or off sun use
- directed back into the power grid (net metered/grid tied)

## Heat

Air from the heating unit is heated by a fluid to air heat exchanger. The system can cost effectively supply up to 70% of your heat

## Hot water

Water is pre-heated before entering the hot water tank, saving you up to 70% on your annual hot water bill.



## The Power-Spar solar concentrator array

Solar energy is reflected and concentrated onto two absorbers that run the length of the spar, heating the glycol. Optional solar cells mounted on the absorber produce electricity at 1/3 the cost of non-concentrated solar cells.

## Heat exchanger and thermal storage tank

The solar heated glycol heats the water in the thermal storage tank. This mass of water is used to distribute the energy to the building's heat and hot water system during prolonged non-solar periods

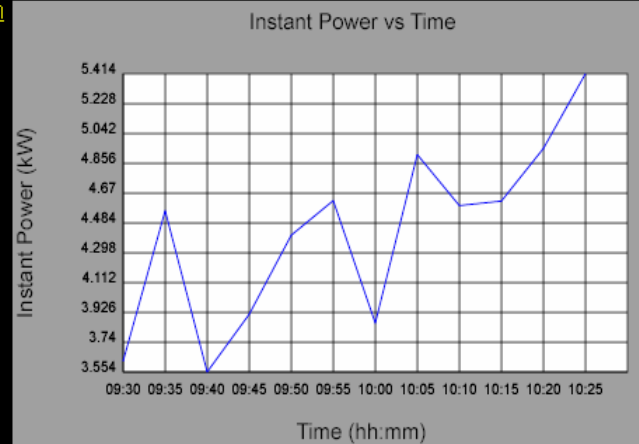
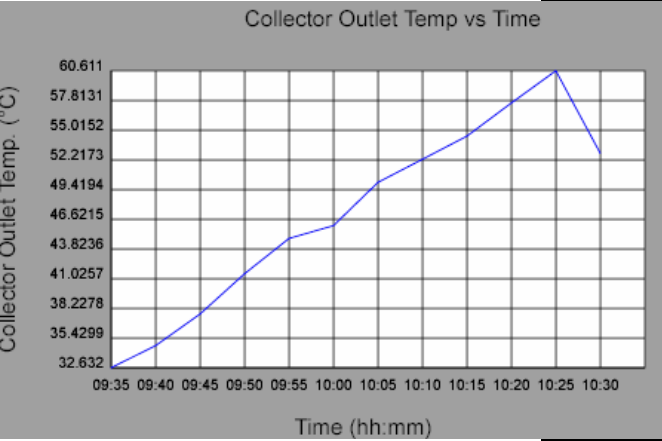
Jan 23, 2005  
-17 Deg C

[www.power-spar.com](http://www.power-spar.com)

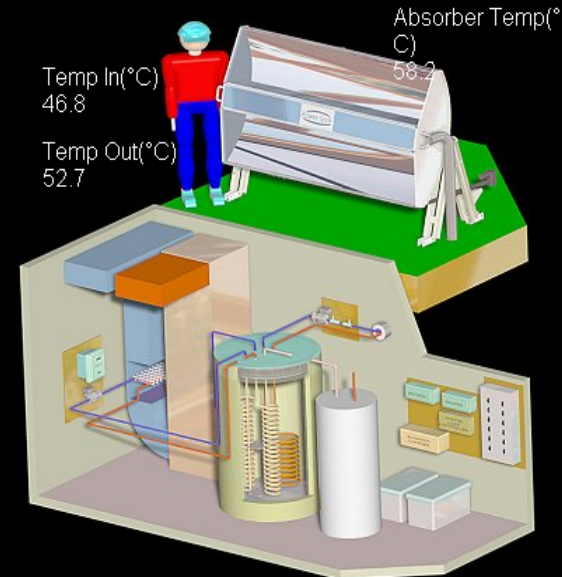


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[Outside Air Temp.](#) [Tank Temp.](#) [Instant Power](#) [Monthly Energy](#)  
[Collector Inlet Temp.](#) [Collector Outlet Temp.](#) [Flow](#)



<a href="#">Refresh</a>	Angle(°) 21.1	Outside Temp(°C) -17.0
	Pulses 300	Flow(l/s) 0.146
	Pump Speed (%) 33.0	Total Energy(kWh) 146

Tank Temp(°C)  
56.0

Status: **System OK**



**Sensible Solar Energy**  
[www.power-spar.com](http://www.power-spar.com)

Technology Early Action  
Measures (TEAM)

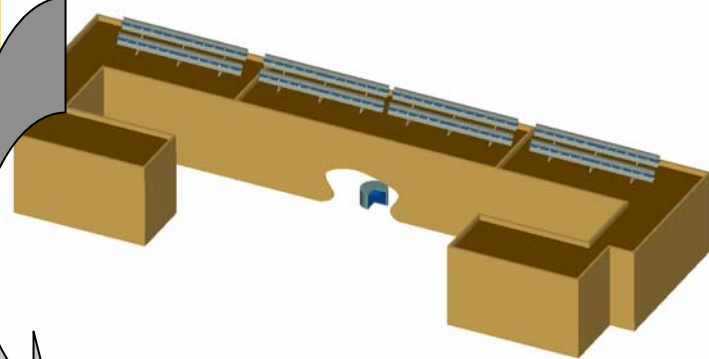
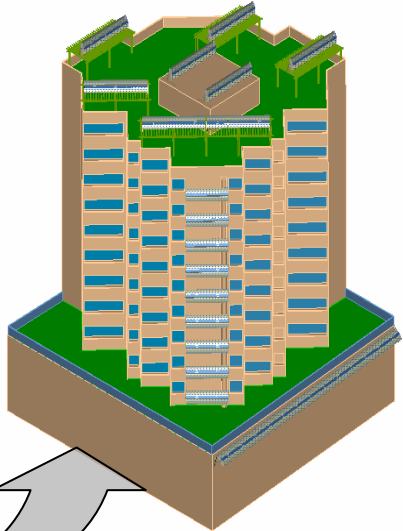


Government  
of Canada

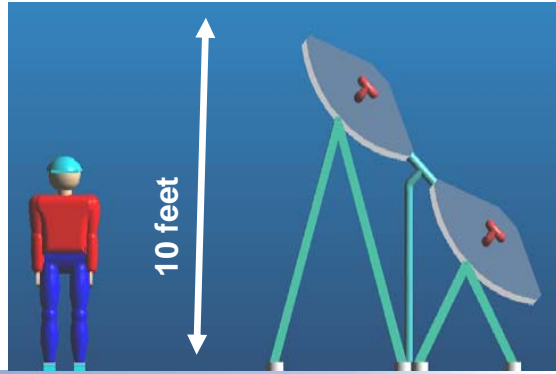
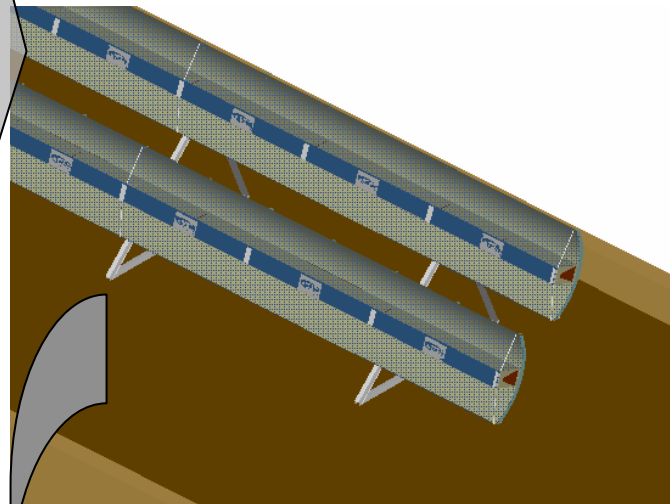
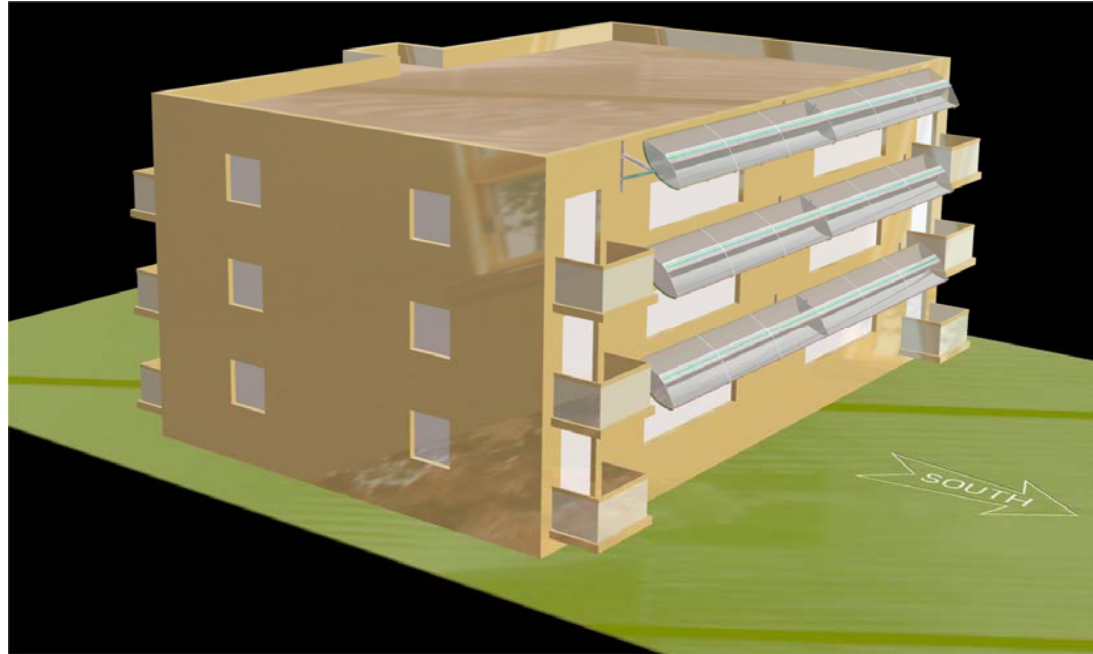




Implementation



### Building Integrated Heat & Power

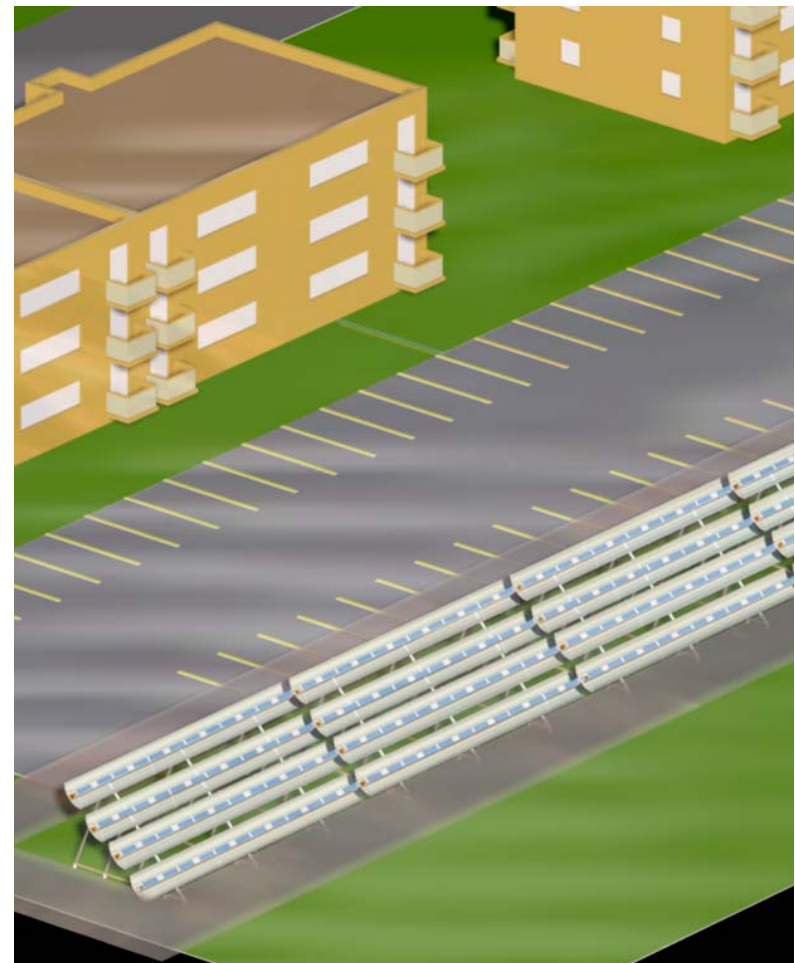
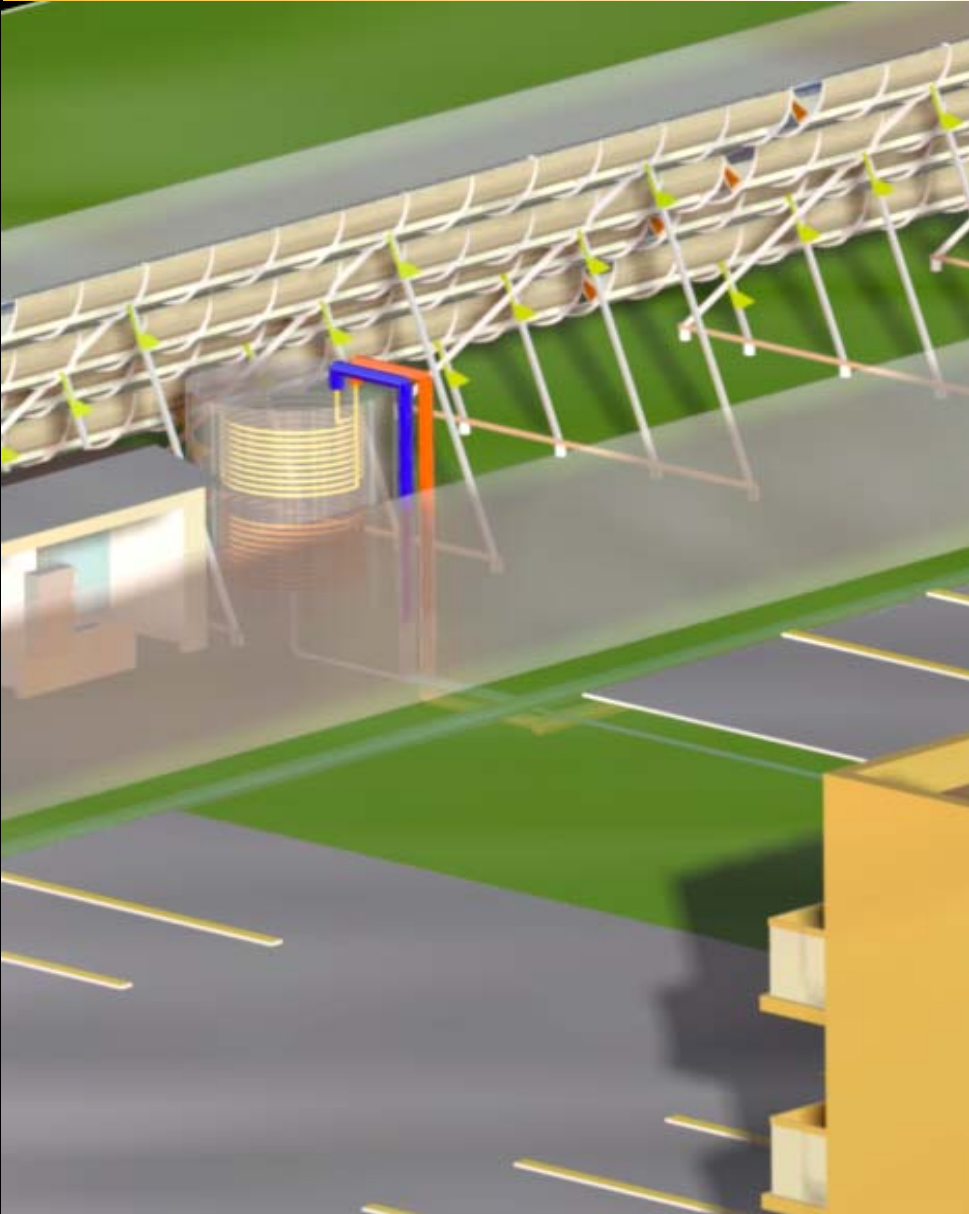


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Implementation

# Hydro Easement Power Plant

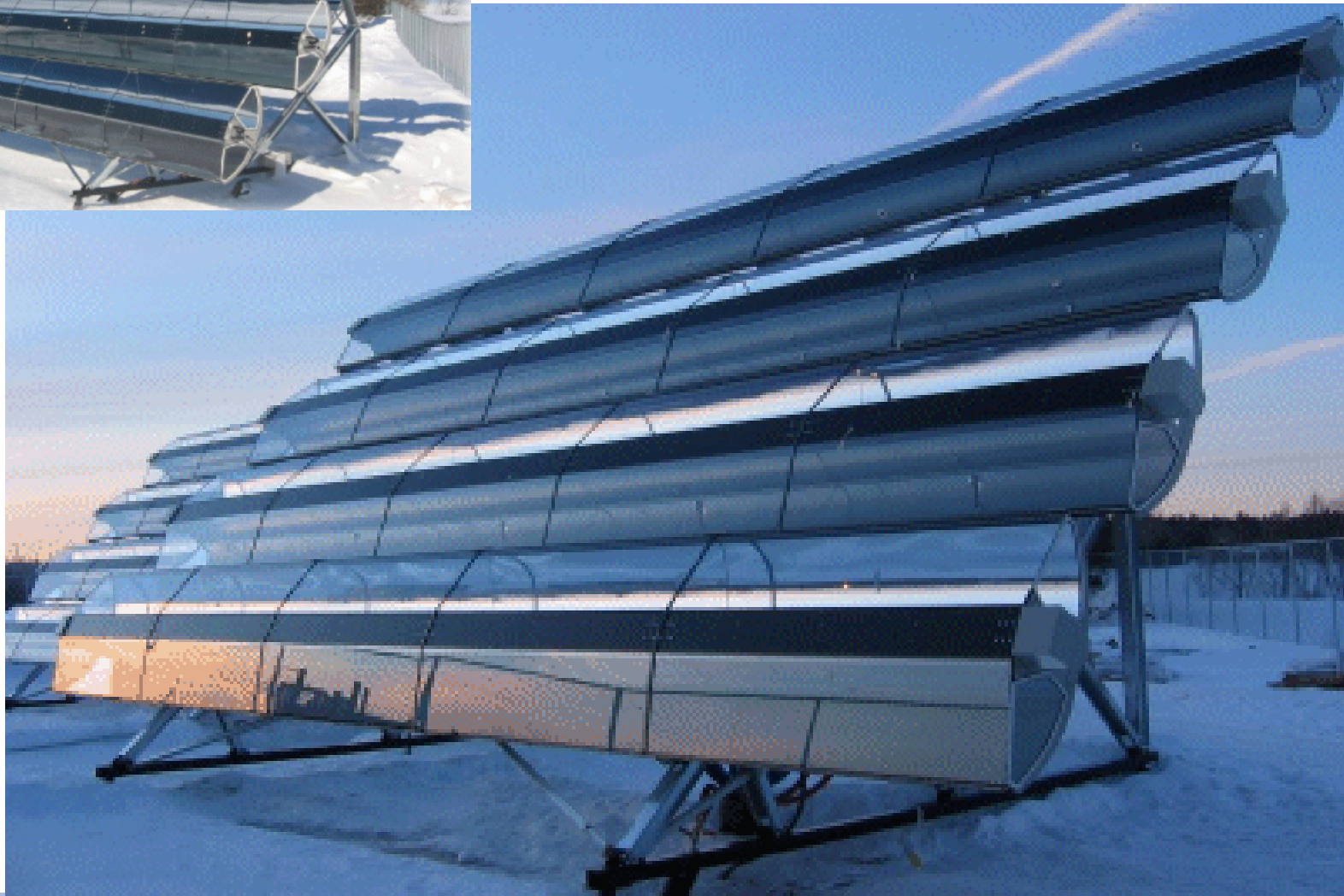


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Implementation

# 220 Panel 1 MBTU Solar School



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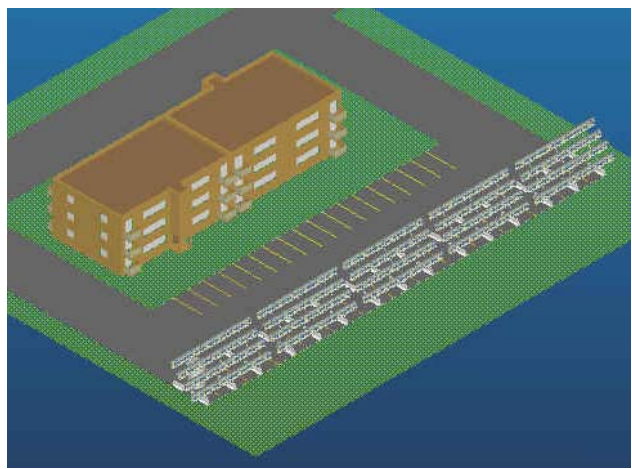
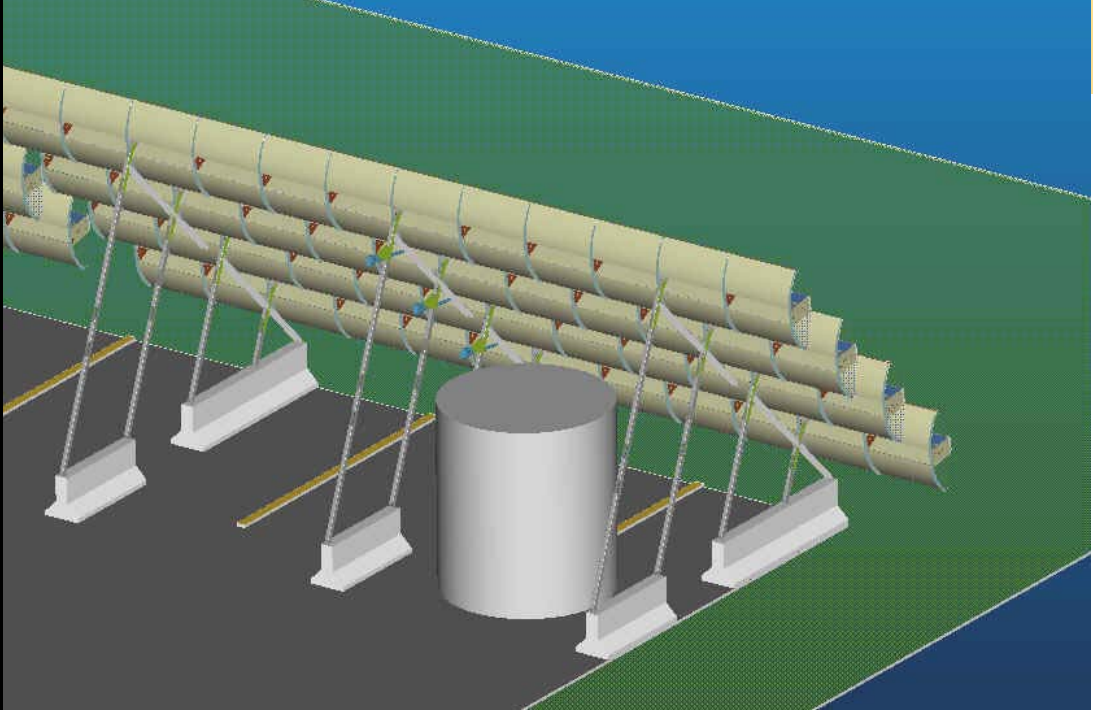




# Multi-Resident Condominium



Implementation



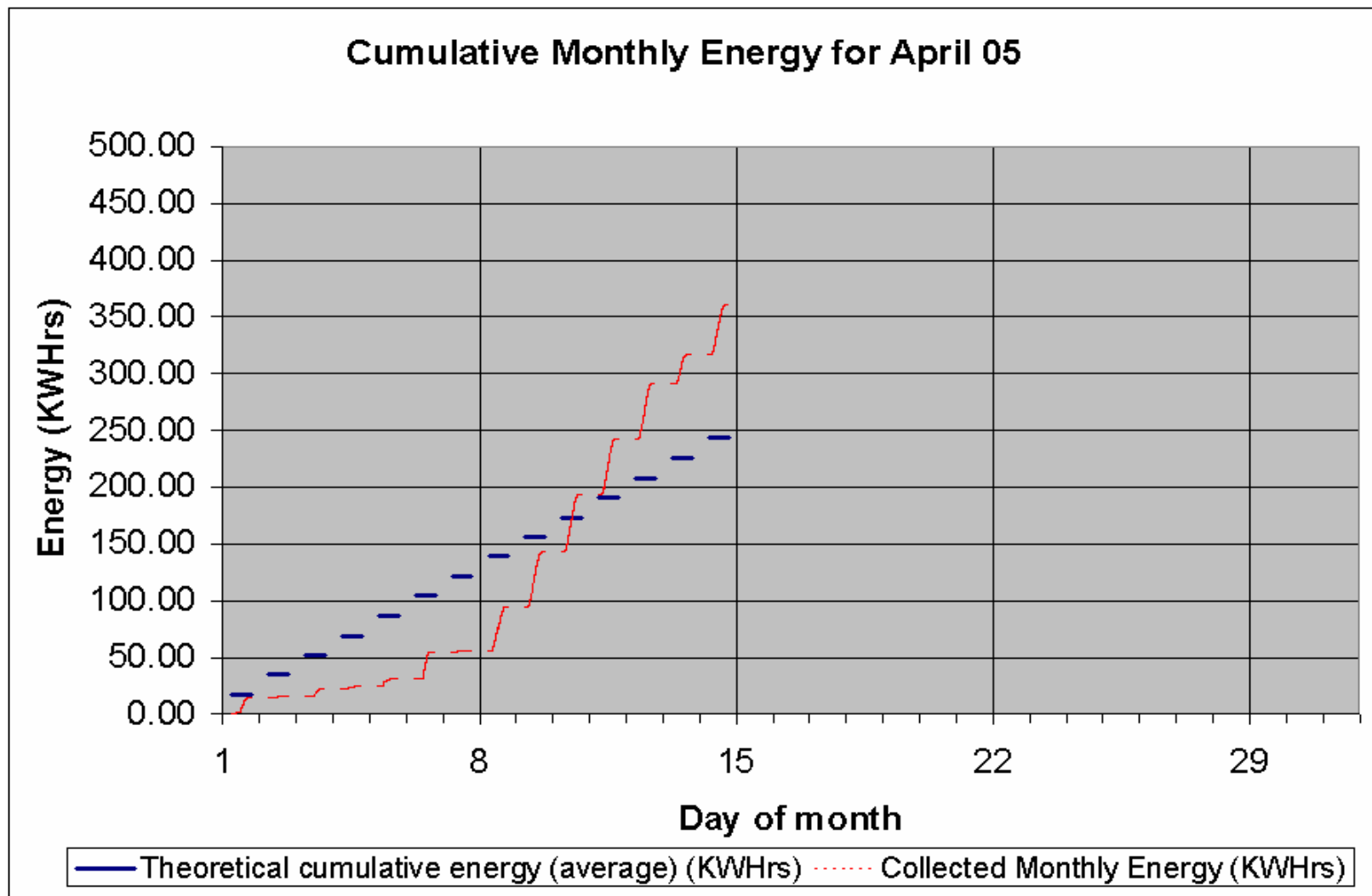
Parking  
Lot  
Power  
Plant



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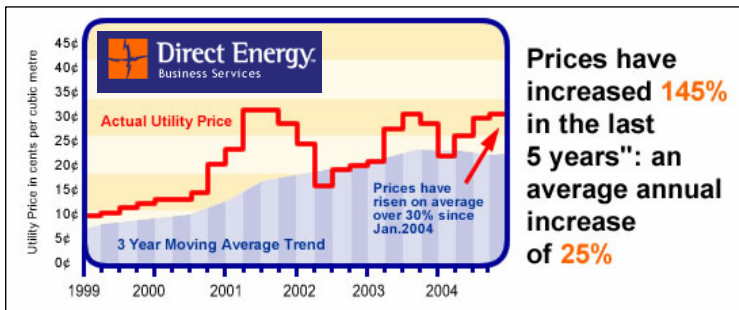
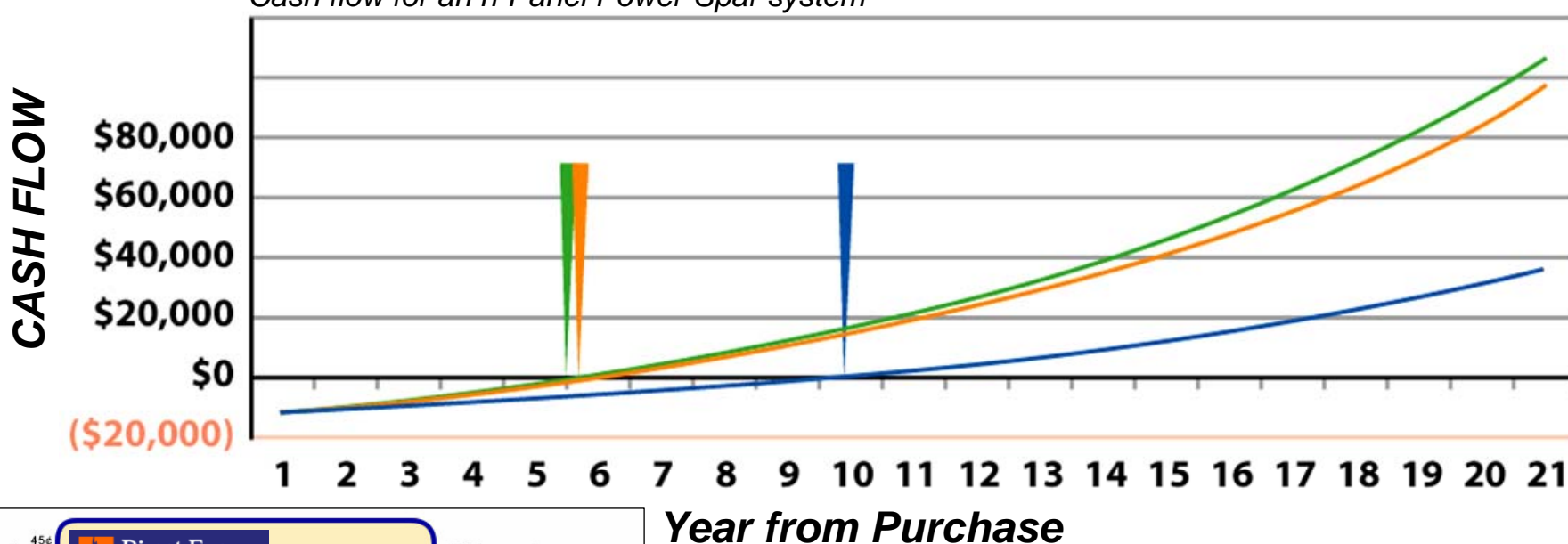






*Thermal heat & hot water only, no pool heating or solar cells deployed*

Cash flow for an n-Panel Power-Spar system



- Propane @ 0.52\$/L & 10%/yr. increase
- Electricity @ 0.11\$/KWH & 10%/yr. increase
- Natural Gas @ 0.045\$/KWH & 10%/yr. increase