



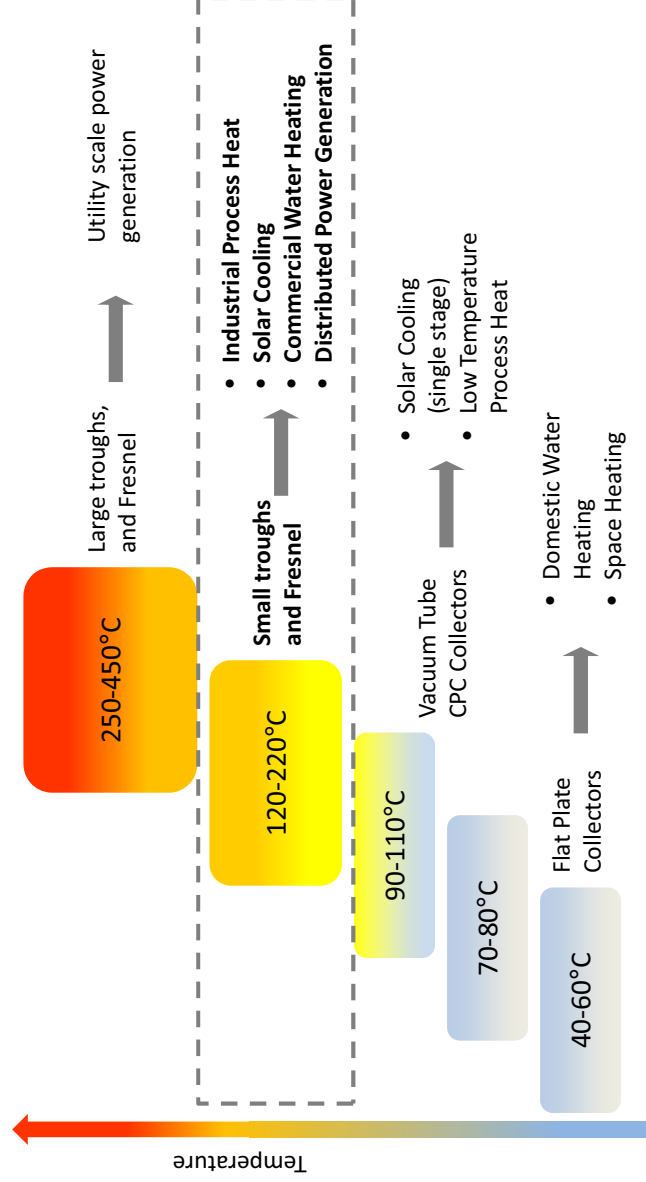
Solar process heat potentials and applications – a chance for concentrating collectors

SolarPaces 2009 Workshop on Medium Scale Solar Thermal Power

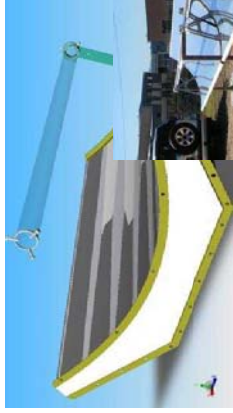
Antoine Millifoud, Director NEP Solar Pty Ltd



NEP Solar focuses on process heat for industry, an emerging sector



Our current product is the result of a four year design and improvement process, rewarded by the 2009 Intersolar AWARD in category solar thermal



2005 Concept



2006 Prototype 1



2007-08 Prototype 2

Two commercial projects signed and in execution, installation for November 2009

2009 Commercial



2009 ...



NEP SOLAR's new PolyTrough 1200 and 1800 collectors innovate along a number of key design dimensions leading to lower life cycle costs



- Innovative and proprietary composite carrier reflectors
 - Object/group based design
 - Torque tube approach
- Higher annual yields
- Lower cost in shipping and installation
- Ease of operations & maintenance
- Longevity structurally and in performance
- Scalable Design

Case Study 1 – Pharmaceutical Plant

Site	
Client	Confidential
Location	Jakarta, Indonesia
Latitude	-6.3°
Radiation (DNI)	~1300 kWh/m ²
Site Rating	
Process	
Temperature Range	150°C to 180°C
Fluid	Water
Solar field size	6912 m ²
Net Annual Efficiency	
Yield Rating	
Financial	
Total Invest	
Specific Invest	
Subvention	None
Fossil Fuel Price	n.a.
Economic Drivers	
Estimated Payback	n.a.
Other Motive	LEED Platinum Rating
Project Likelihood	

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Page 5

Case Study 2 – Textile Plant

Site	
Client	Confidential
Location	Toluca, Mexico
Latitude	19.3°
Radiation (DNI)	~1500 kWh/m ²
Site Rating	
Process	
Temperature Range	150°C to 220°C
Fluid	Oil
Solar field size	2880 m ²
Net Annual Efficiency	
Yield Rating	
Financial	
Total Invest	
Specific Invest	
Subvention	None
Fossil Fuel Price	0.035 €/kWh
Economic Drivers	
Estimated Payback	> 10 years
Other Motive	
Project Likelihood	

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Page 6

Case Study 3 – Chemical Salt Processing (Mining) Site

Site	
Client	Confidential
Location	Atacama, Chile
Latitude	-22.3°
Radiation (DNI)	~2800 kWh/m ²
Site Rating	
Process	
Temperature Range	100°C to 180°C
Fluid	Water
Solar field size	1150m ²
Net Annual Efficiency	
Yield Rating	

Financial	
Total Invest	
Specific Invest	
Subvention	None
Fossil Fuel Price	0.086 €/kWh
Economic Drivers	
Estimated Payback	4.4 years
Other Motive	
Project Likelihood	

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Page 7

Case Study 4 – Feed Water Preheating For Biomass Power Plant

Site	
Client	Confidential
Location	Guadeloupe
Latitude	16.2°
Radiation (DNI)	~1550 kWh/m ²
Site Rating	
Process	
Temperature Range	80°C to 180°C
Fluid	Water
Solar field size	6134 m ²
Net Annual Efficiency	
Yield Rating	

Financial	
Total Invest	
Specific Invest	
Subvention	None
Fossil Fuel Price	0.07 €/kWh
Economic Drivers	
Estimated Payback	8.5 years
Other Motive	Greenpower
Project Likelihood	

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Page 8

Key Learning to Date

- ▶ It's a multi-variable optimization issue – only the best combination of site parameters will be viable in the current climate
- ▶ Integration costs are high compared to field costs especially for smaller projects, often jeopardizing the viability of the projects
- ▶ Certifications like the LEED motivates clients to invest in integrated solar solutions
- ▶ Contracting will open many markets for solar process heat and cooling

Continuous mirror surface reduces gap and shading losses

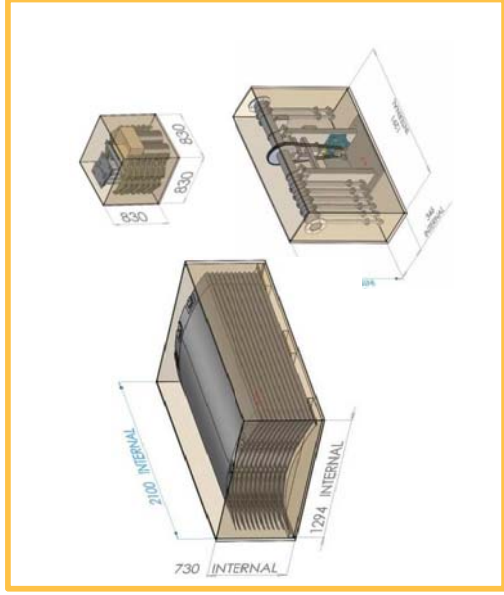


Problem with current technology:
Gap losses and shading



NEP Solar solution: continuous mirror surface

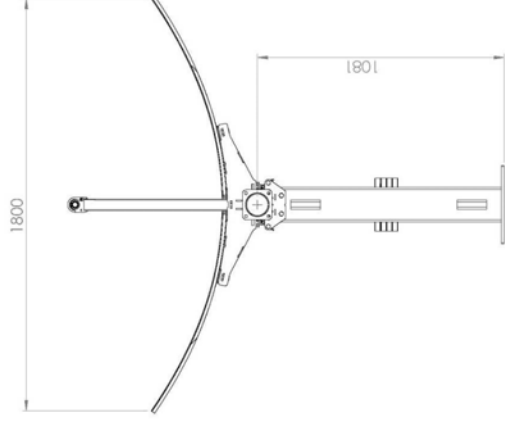
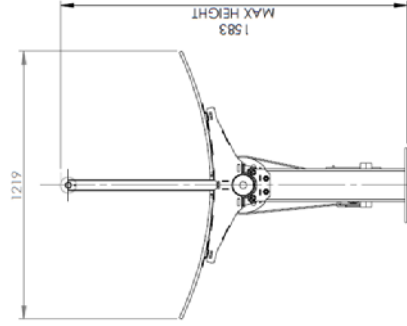
Composites allow for thin structures, greatly easing transport volume and handling



NEP Solar: Ultra-compact transport volume due to unique composite reflector design

Problem with current technology: Preassembled 3D reflector structure takes up a multiple of storage and transport volume

Design is scalable – PolyTrough 1200 is on the market, the PolyTrough 1800 soon



PolyTrough 1200 for roof-mounted applications to 220°C

PolyTrough 1800 for roof- or ground-mounted applications to 250°C