

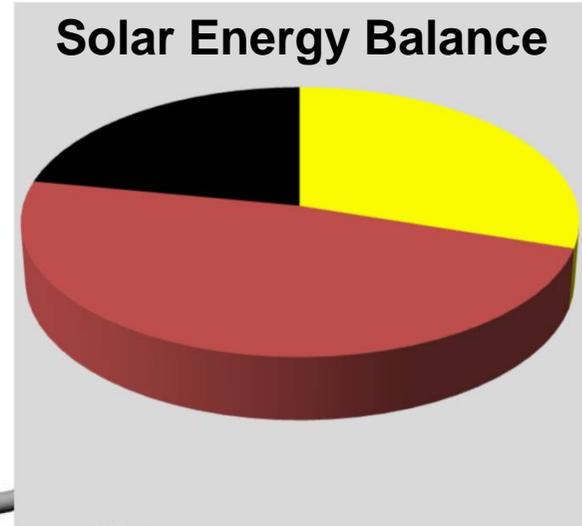
SunOyster Systems GmbH, Hamburg

SunOyster cooling - SOcool

Johannes Kneer, 29 October 2017



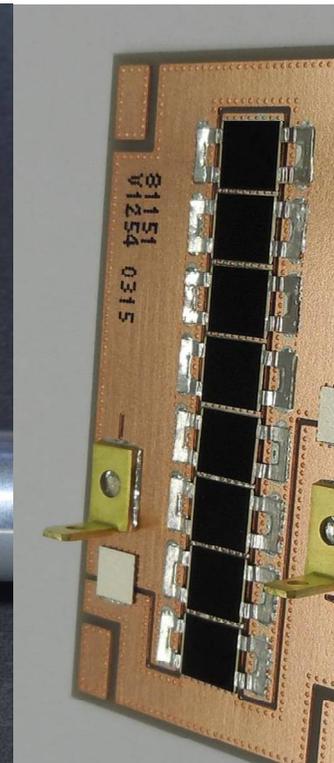
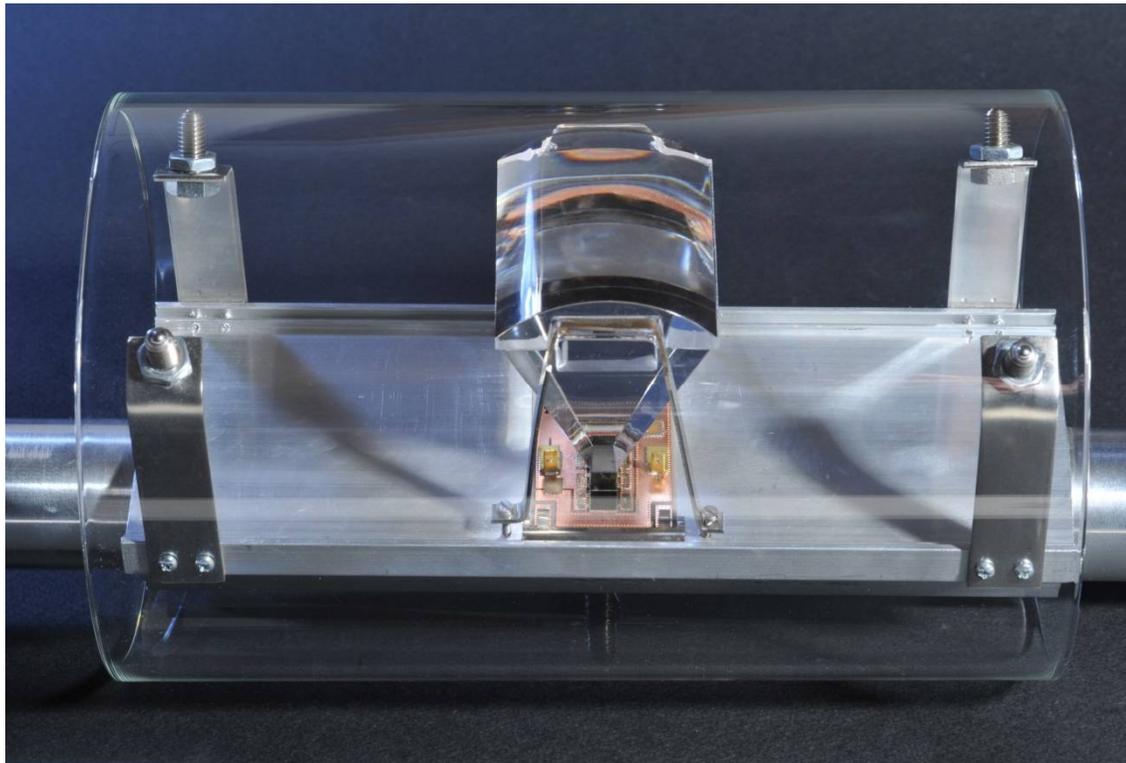
SunOyster converts up to 75% of the solar radiation into heat + el. power



Double the Power.

We can generate 2 times as much electricity from a given area than standard voltaic panels.

We use highly efficient multi junction solar cells developed for the space program.



gefördert durch



Deutsche
Bundesstiftung Umwelt

www.dbu.de

Double the Power.



Focussing the sun generates a lot of heat, at a **high temperature**.



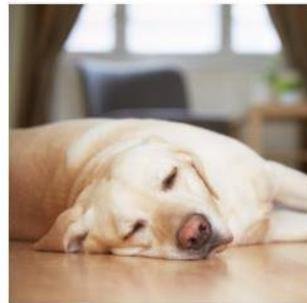
Water cooling produces hot water – a lot of it!

For every 1 kW of electricity, we also get 1.5kW of heat.



Warm Water

50°C – 70°C



Room Heating

25°C – 90°C



Desalination

25°C – 120°C



Process Heat

60°C – 170°C

up to 170°C Heat



Warm Water

50°C – 70°C



Room Heating

25°C – 90°C



Desalination

25°C – 120°C



Process Heat

60°C – 170°C

up to 170°C Heat



Cooling

55°C – 170°C



ORC Machine

90°C – 170°C



(Storage)

-30°C – 170°C



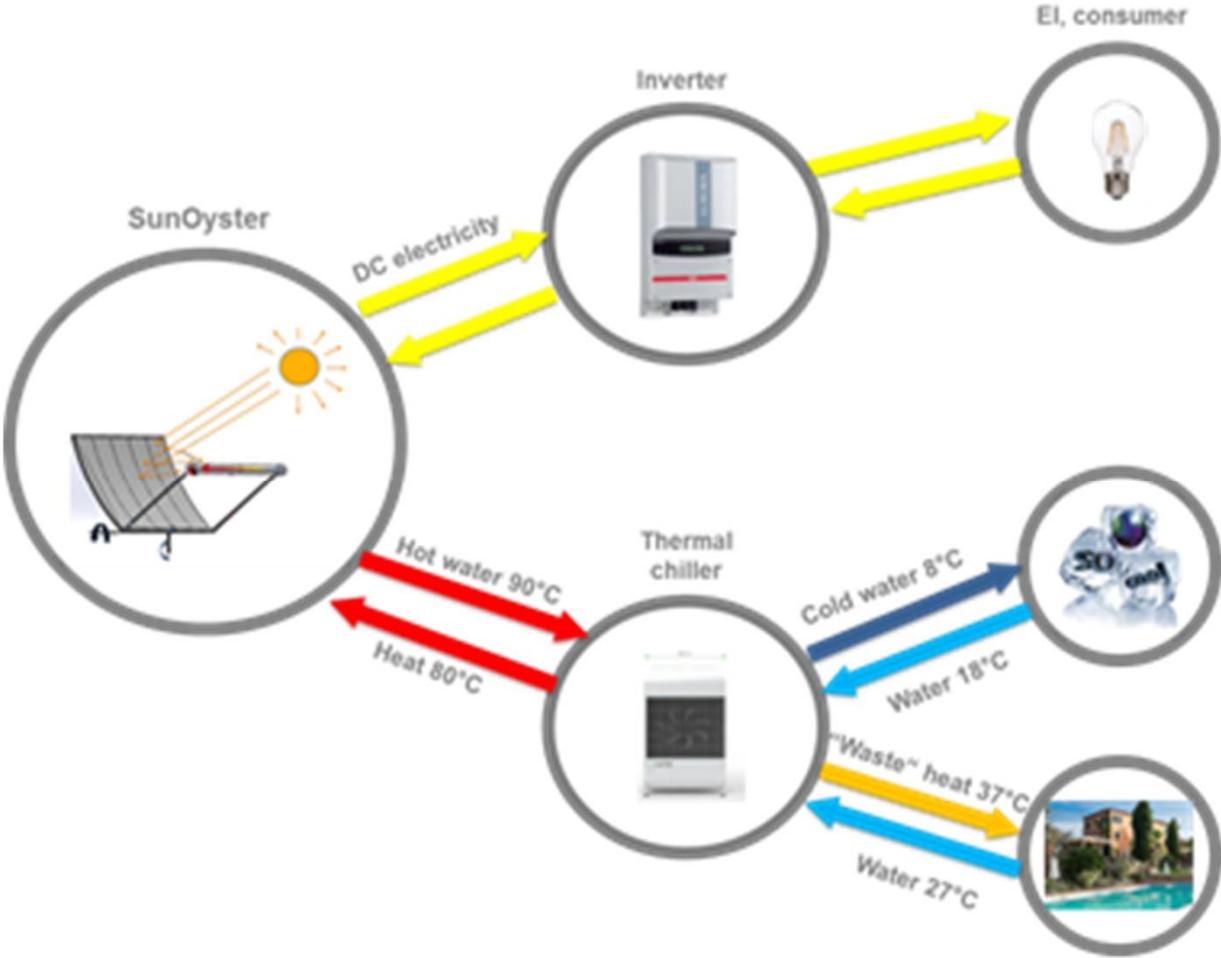
Pre-heating Steam Plants

100°C – 170°C

Double the Power.



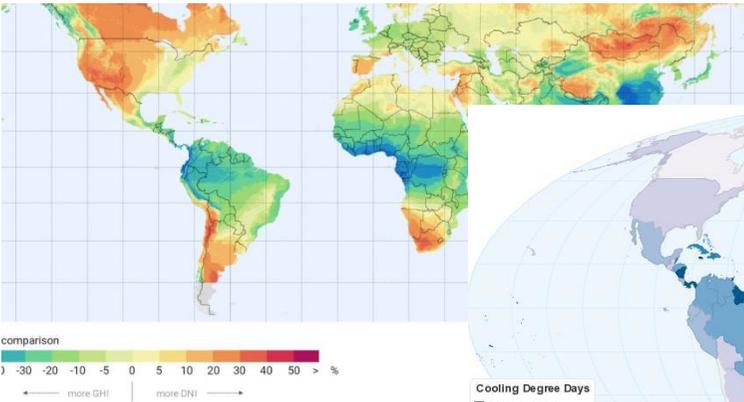
SunOyster is optimal for solar tri-generation of electricity, heat and cold



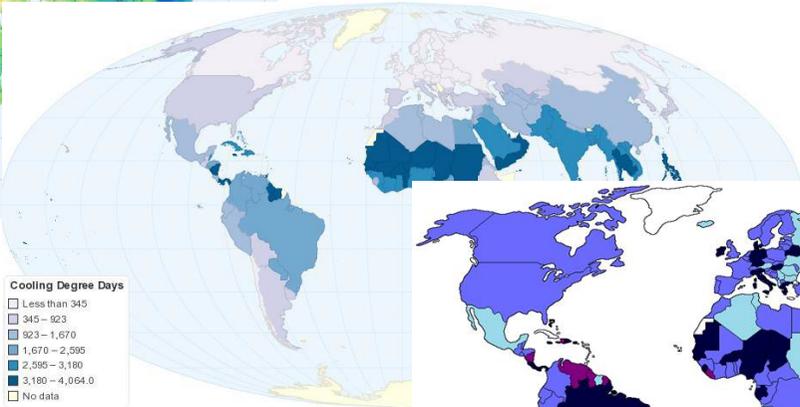
Double the Power.

Italy and India turn out to be attractive markets after assessment of markets for tri-generation

DNI/GHI



Cooling days



Electricity price

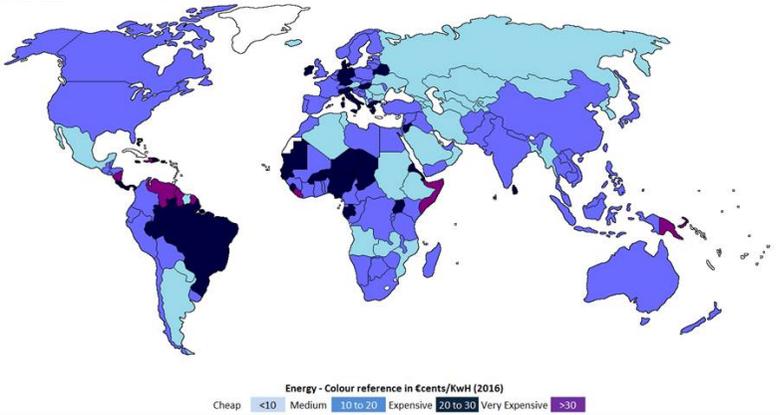


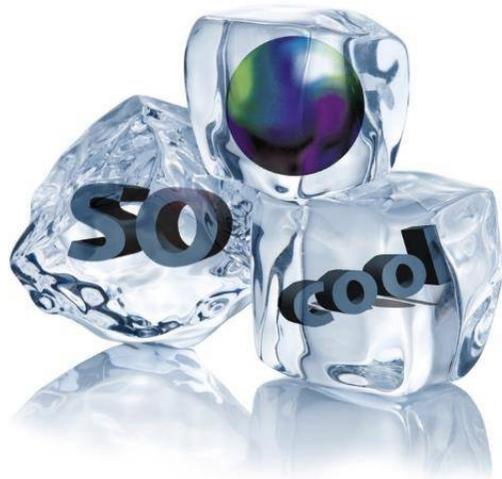
Fig. 12: Electricity prices in key countries (2016) – own graph based on doing business.org/

Examples of attractive system combinations: house with pool – office building – hotel

SunOyster Package	P1 House with pool			P2 Office building		P3 Hotel	
No. of SunOysters				7x 		24x 	
Picture of chiller							
Criterion	P1 House with pool			P2 Office building		P3 Hotel	
	Conv.	PV el	SOcool	Conv. Ref.	SOcool	Conv. Ref.	SOcool
kWh el [Ct]	24.3	8.0	7.1	21.9	7.7	21.1	7.6
kWh heat Ct	17.2	17.2	5.4	14.1	10.3	12.6	2.9
kWh el or sol. cold Ct	16.6	12.8	15.8	9.9	10.2	5.9	4.9
kWh th fossil cold Ct	-			18.7		15.6	
IRR [%]	-	27.6	37.2	-	36.8	-	38.7
Proj payback [a]	-	4.9	5.1	-	5.5	-	5.3
Equity payb. [a]	-	1.5	1.5	-	1.6	-	1.6

SunOyster tri-generation

„SOcool“ granted and kicked-off



Program	EU SME Instrument Phase 2
Topics	Solar cooling Heat from SunOyster coupled to thermal chillers
Grant	Over 1 million euro
Work packages	Pilot production, testing and certification, demo projects - hotel, office, house, Ramping up production, PR
Duration	24 months
Afterwards	Phase 3: Facilitation of mass roll-out

SunOyster Team



Dr. Carsten Corino,
Founder & GM



Matthew Laws,
CTO



Amelie Krahl
Marketing, PR



Johannes Kneer,
Head Thermal



Stephan Ulrich,
Workshop



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Thank you for your attention.

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