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Solar Heat for Industrial Processes towards Food and Agro Industries commitment in Renewables

Solar Heat for Industrial Processes

Webinar 3, 17/06/2021

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 792276.

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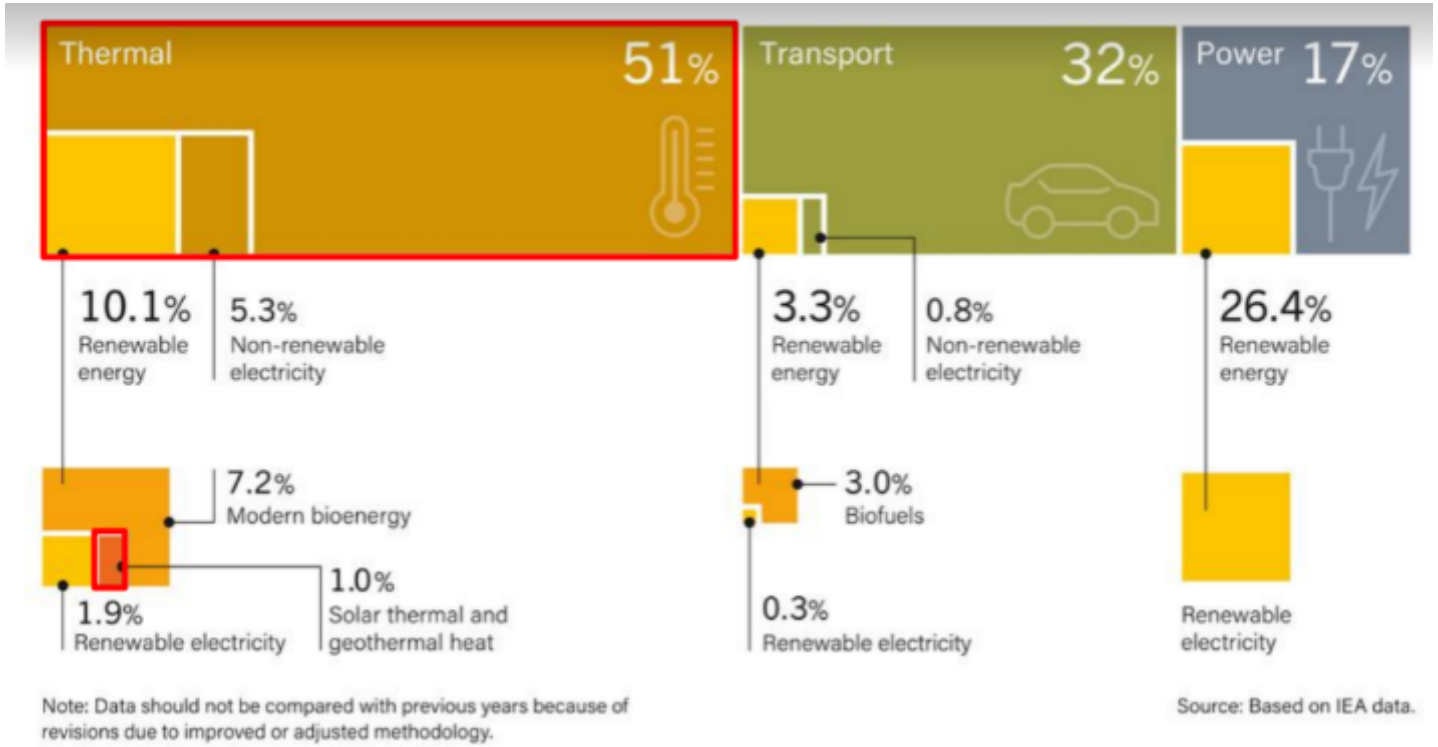
The energy needs in industry

The global trend has been for electricity to transform the energy sector, while:



With strong growth in demand for cooling

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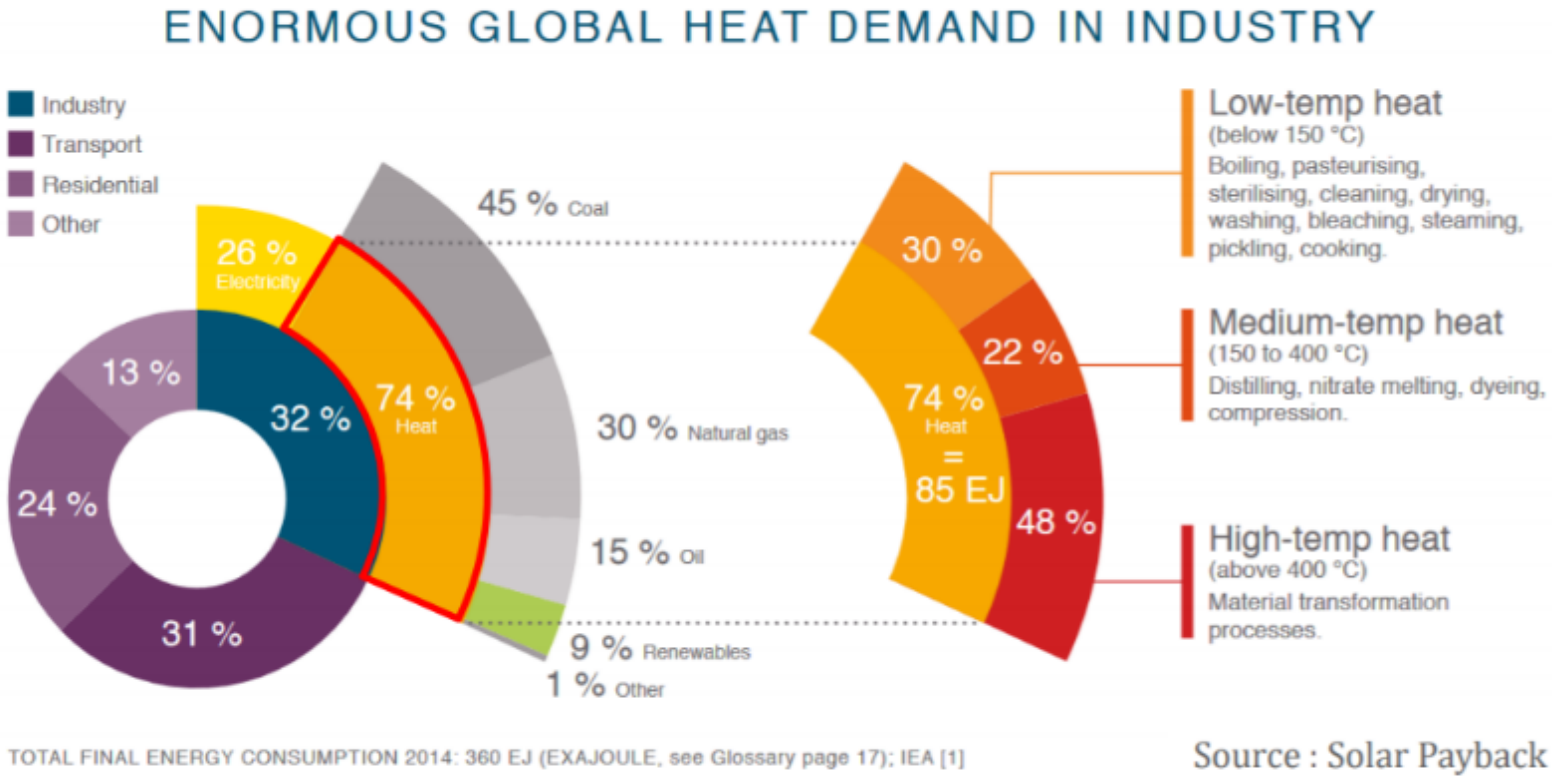
The energy needs in industry



INDUSTRIAL HEAT DEMAND ON THE RISE

1.7 %

Average annual growth of industrial heat demand until 2030 [4]

90 %

Met by coal, oil and gas

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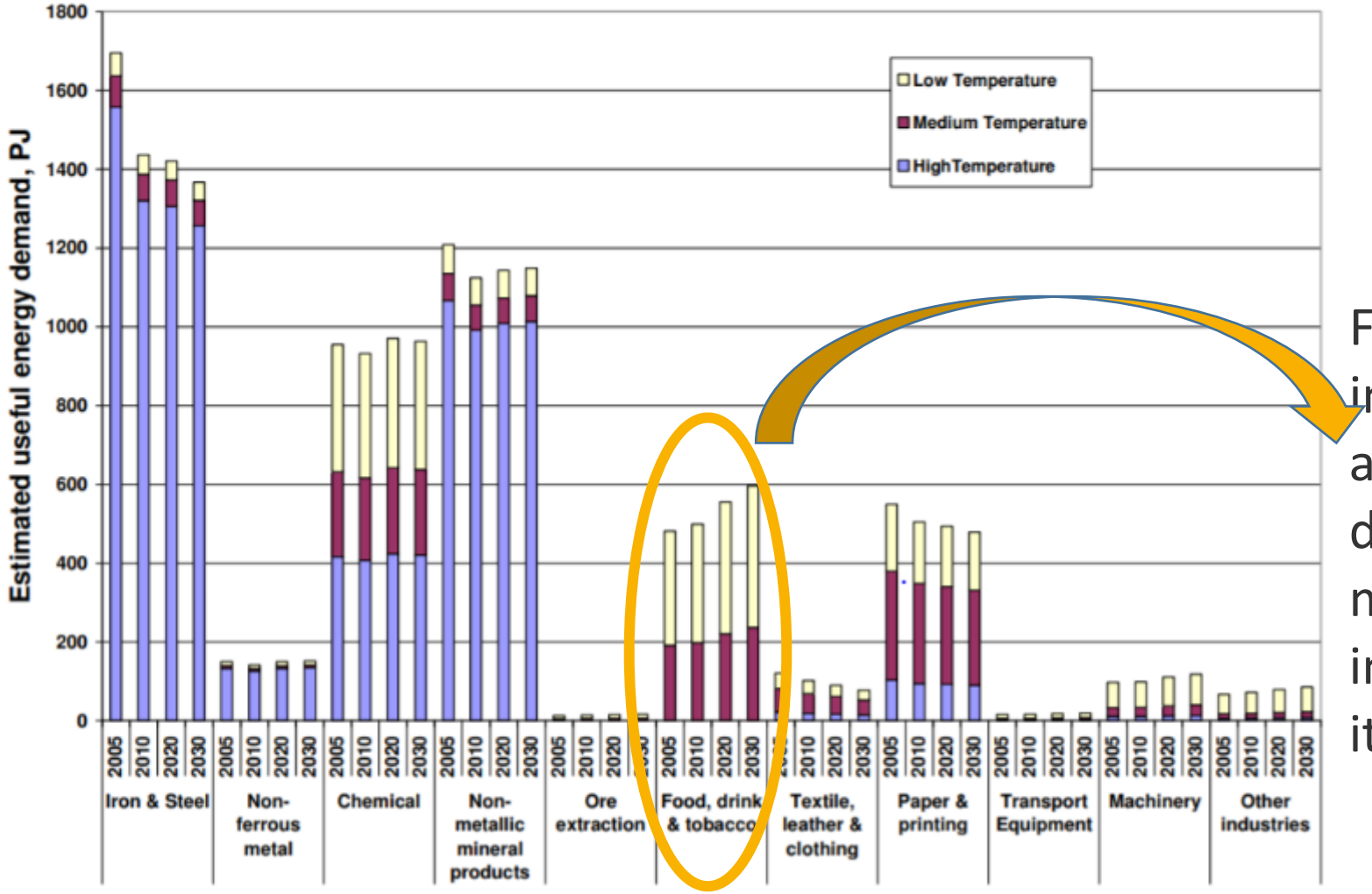
Targeting the right industries



Fostering the integration of solar heat in industrial processes - SHIP from agro-food sector, by developing and demonstrating a set of tools and methods for the development of industrial solar heat projects during its whole life-cycle.

Industrial processes and temperature levels

Industrial Sector	Unit operation	Temperature range (°C)
Food	Drying	30-90
	Washing	60-90
	Pasteurising	60-80
	Boiling	95-105
	Sterilising	110-120
	Heat Treatment	40-60
Beverages	Washing	60-80
	Sterilising	60-90
	Pasteurising	60-70
Paper Industry	Cooking and Drying	60-80
	Boiler feed water	60-90
	Bleaching	130-150
Metal Surface Treatment	Treatment, electro-plating, etc.	30-80
Bricks and Blocks	Curing	60-140

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Industrial processes and temperature levels

Industrial Sector	Unit operation	Temperature range (°C)
Textile Industry	Bleaching	60-100
	Dyeing	70-90
	Drying, De-greasing	100-130
	Washing	40-80
	Fixing	160-180
	Pressing	80-100
Chemical Industry	Soaps	200-260
	Synthetic rubber	150-200
	Processing heat	120-180
	Pre-heating water	60-90
Plastic Industry	Preparation	120-140
	Distillation	140-150
	Separation	200-220
	Extension	140-160
	Drying	180-200
	Blending	120-140
Flour By-products	Sterilising	60-90
All Industrial Sectors	Pre-heating of boiler feed water	30-100
	Industrial solar cooling	55-180
	Heating of factory buildings	30-80

The Solar technologies vs temperature level

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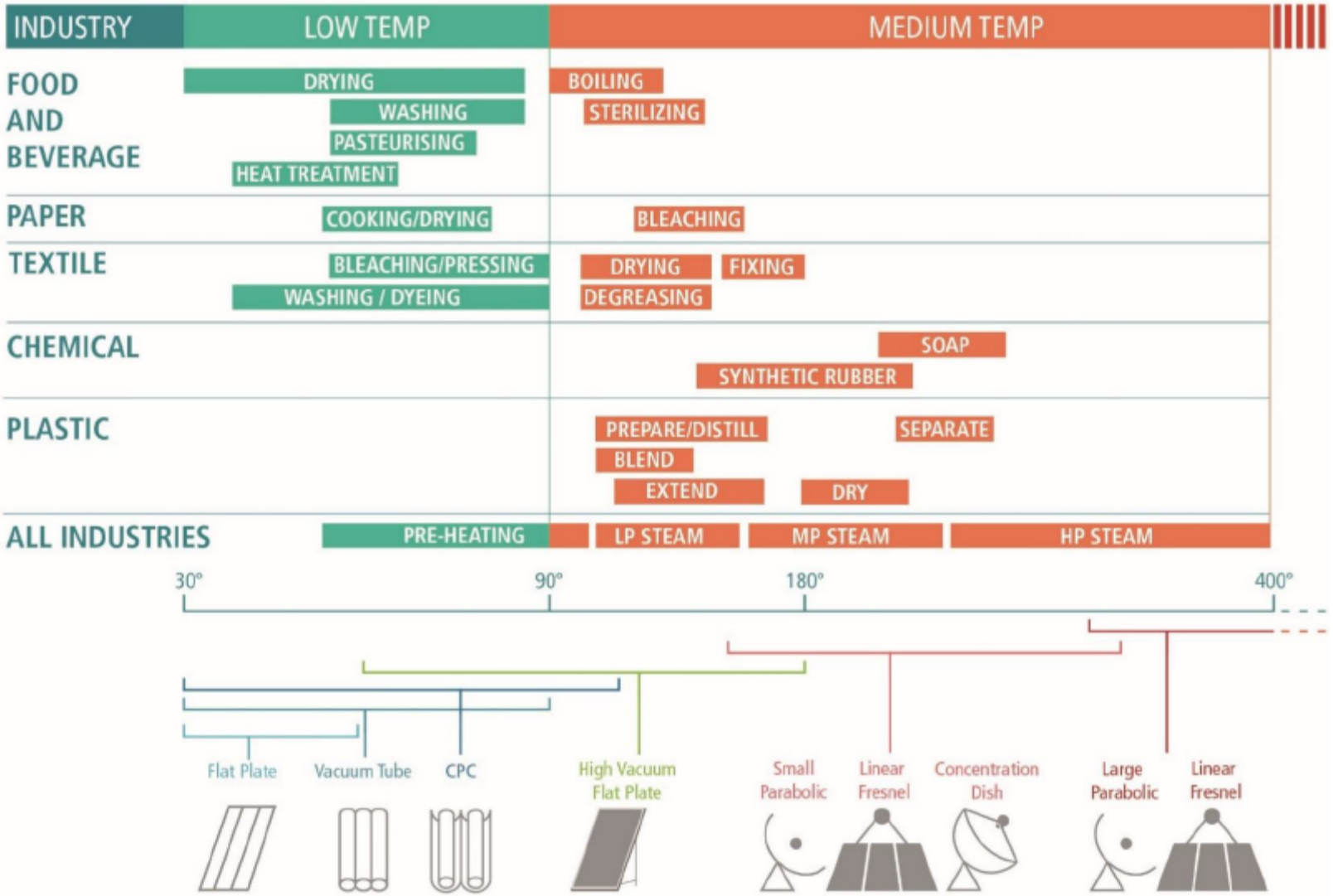

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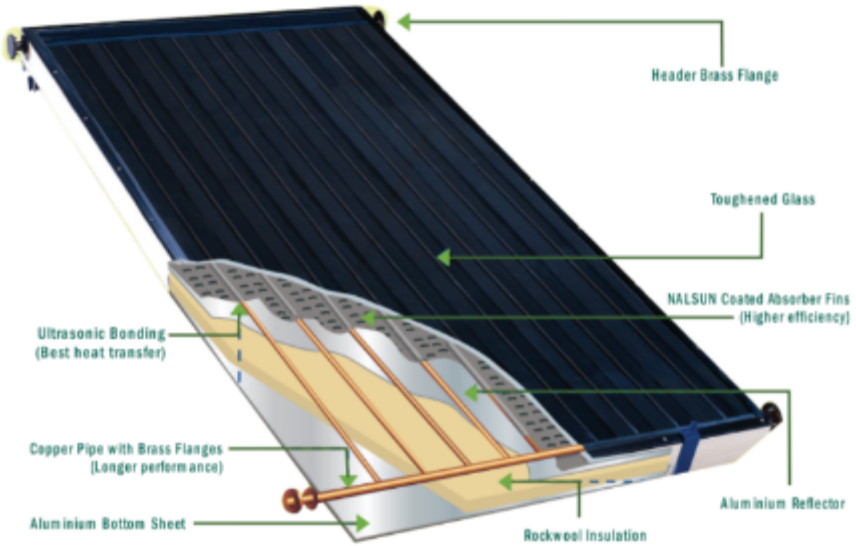
Flat Plate



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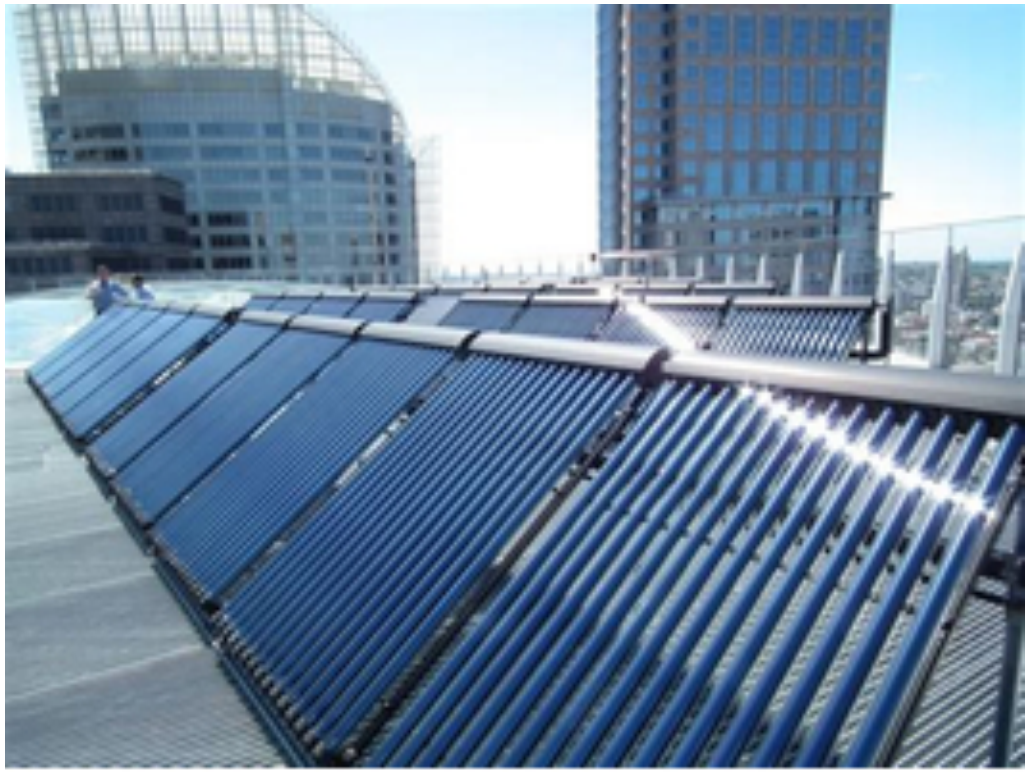
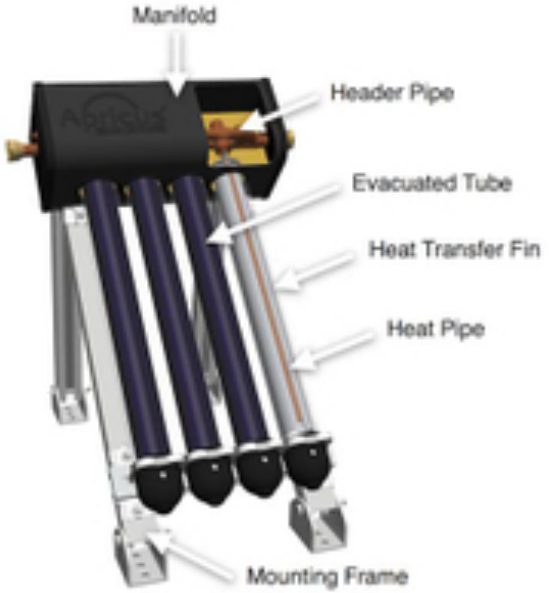
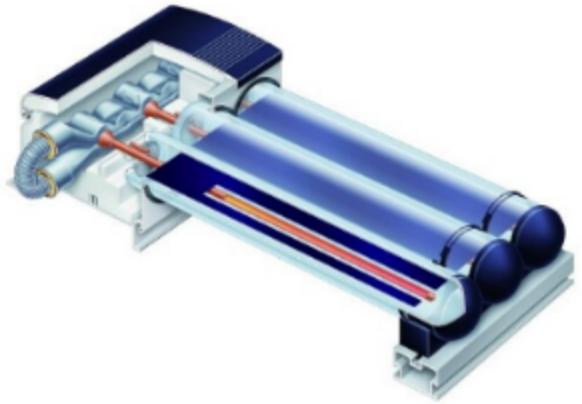
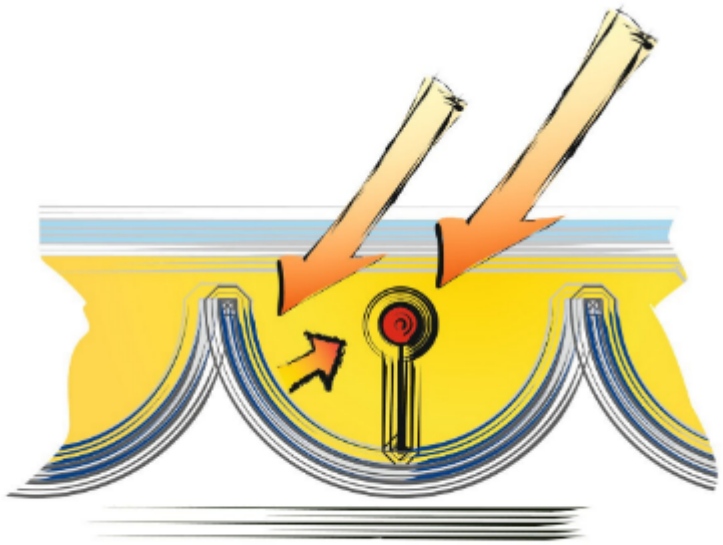
Vacuum tube









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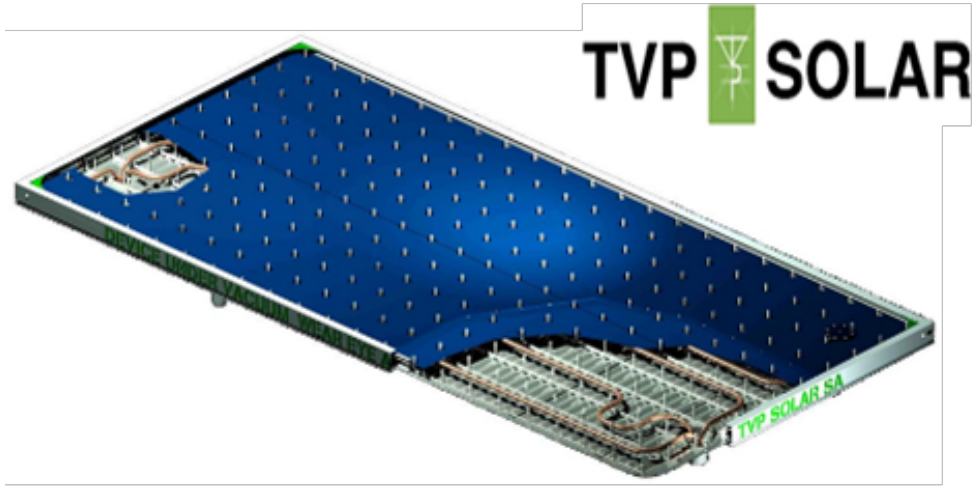
High Vacuum Flat Panel



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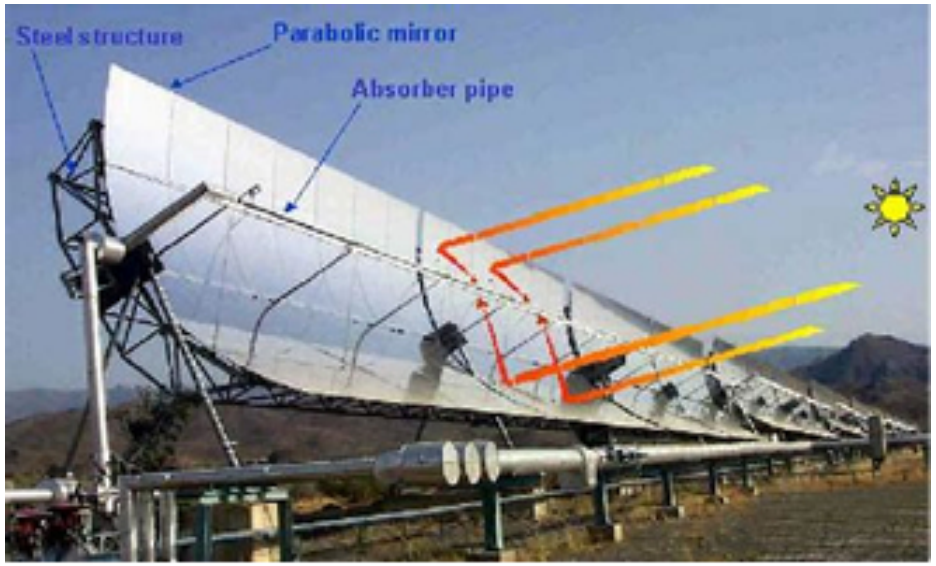
Parabolic Through



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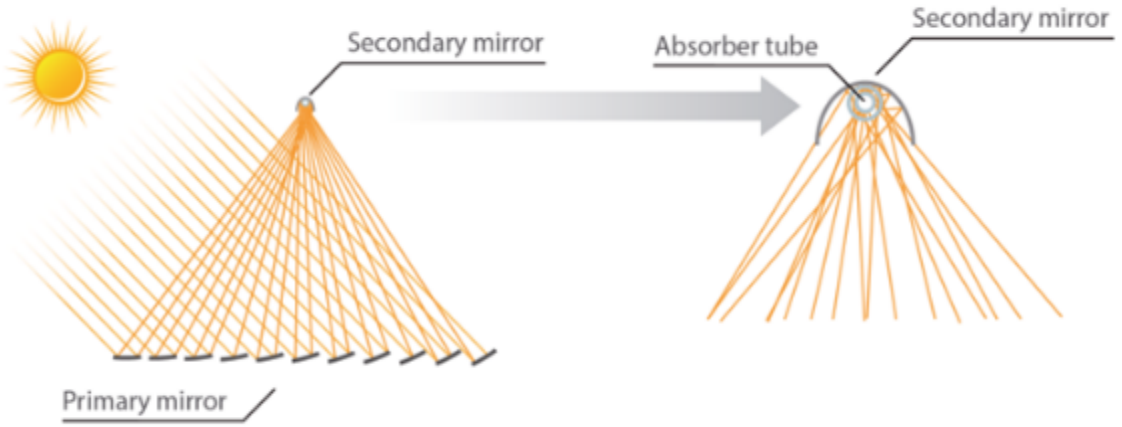
Linear Fresnel



INDUSTRIAL SOLAR
renewables onsite

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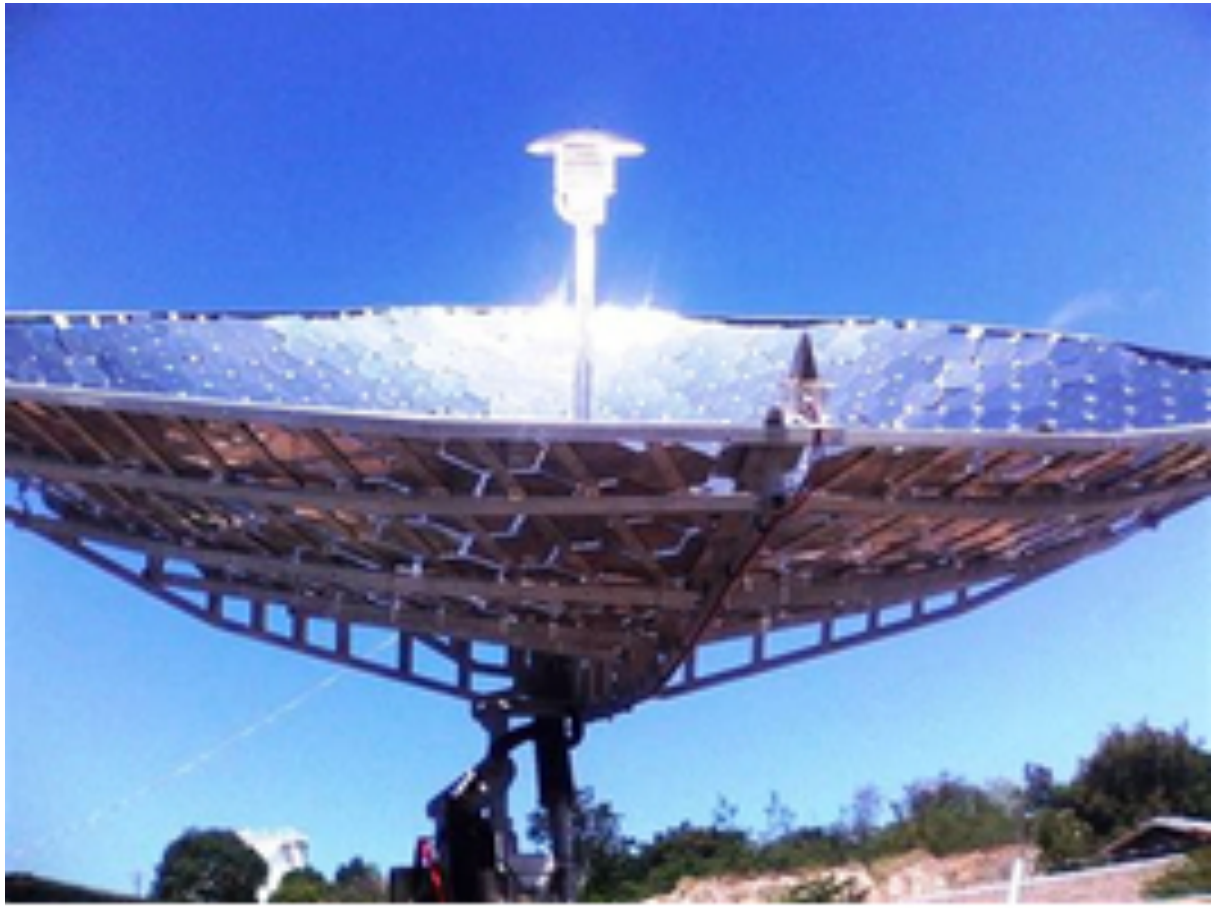
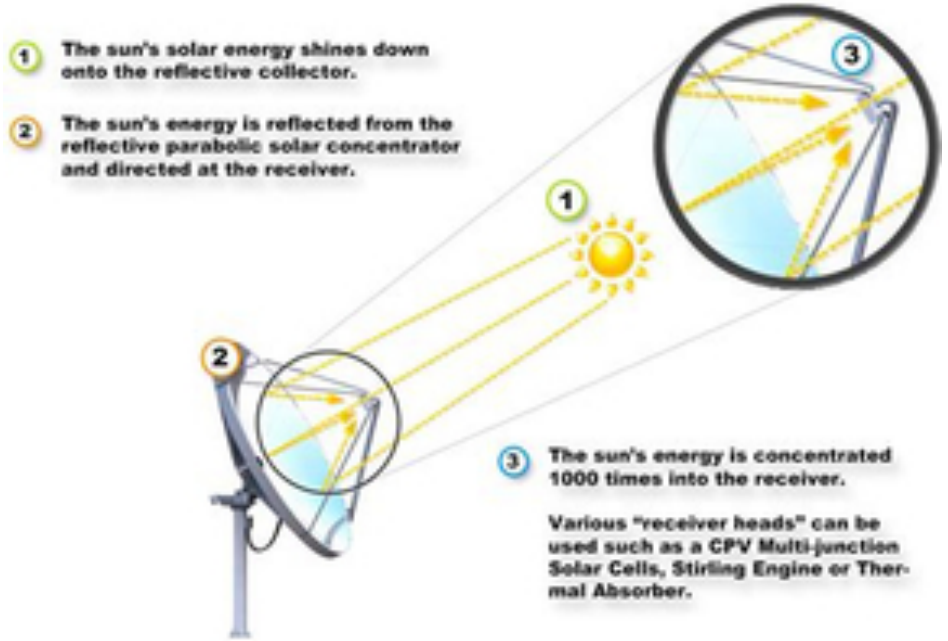
Dishes





Dish requires dual axis tracking

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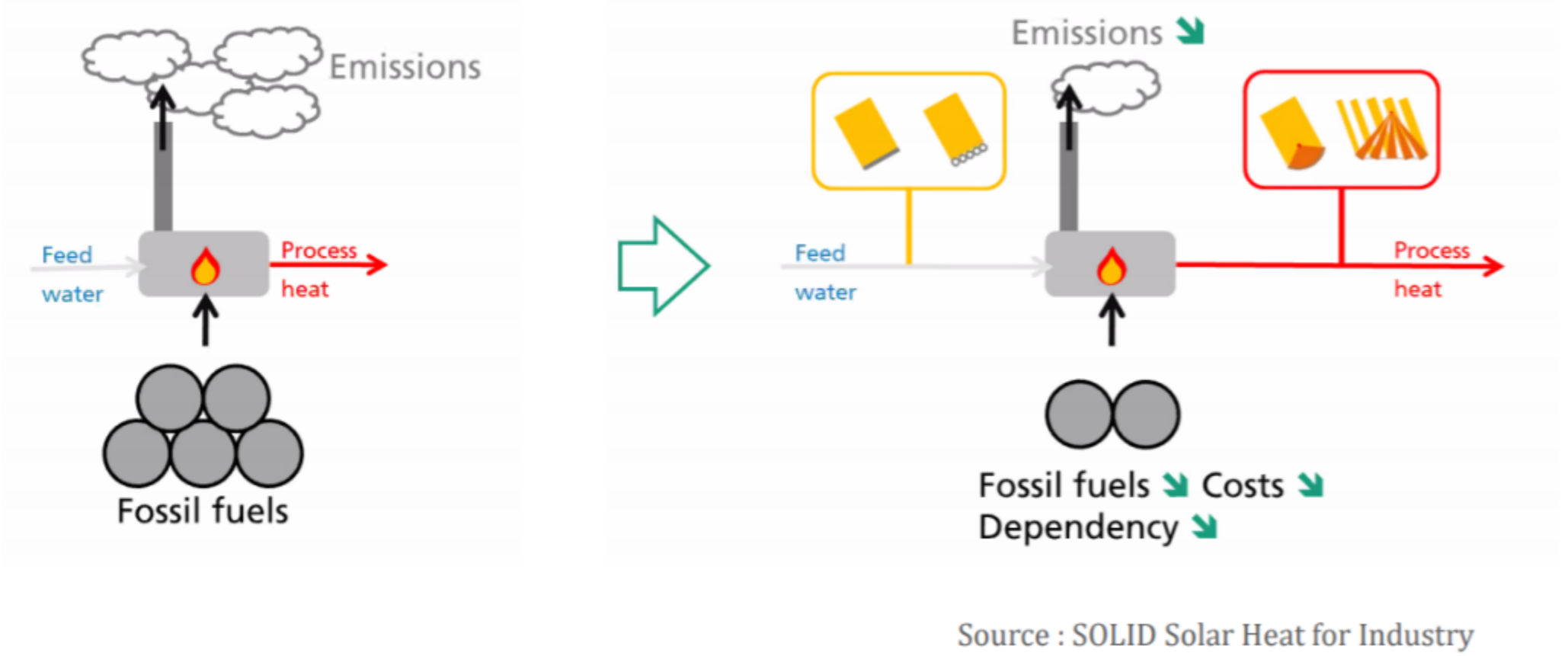
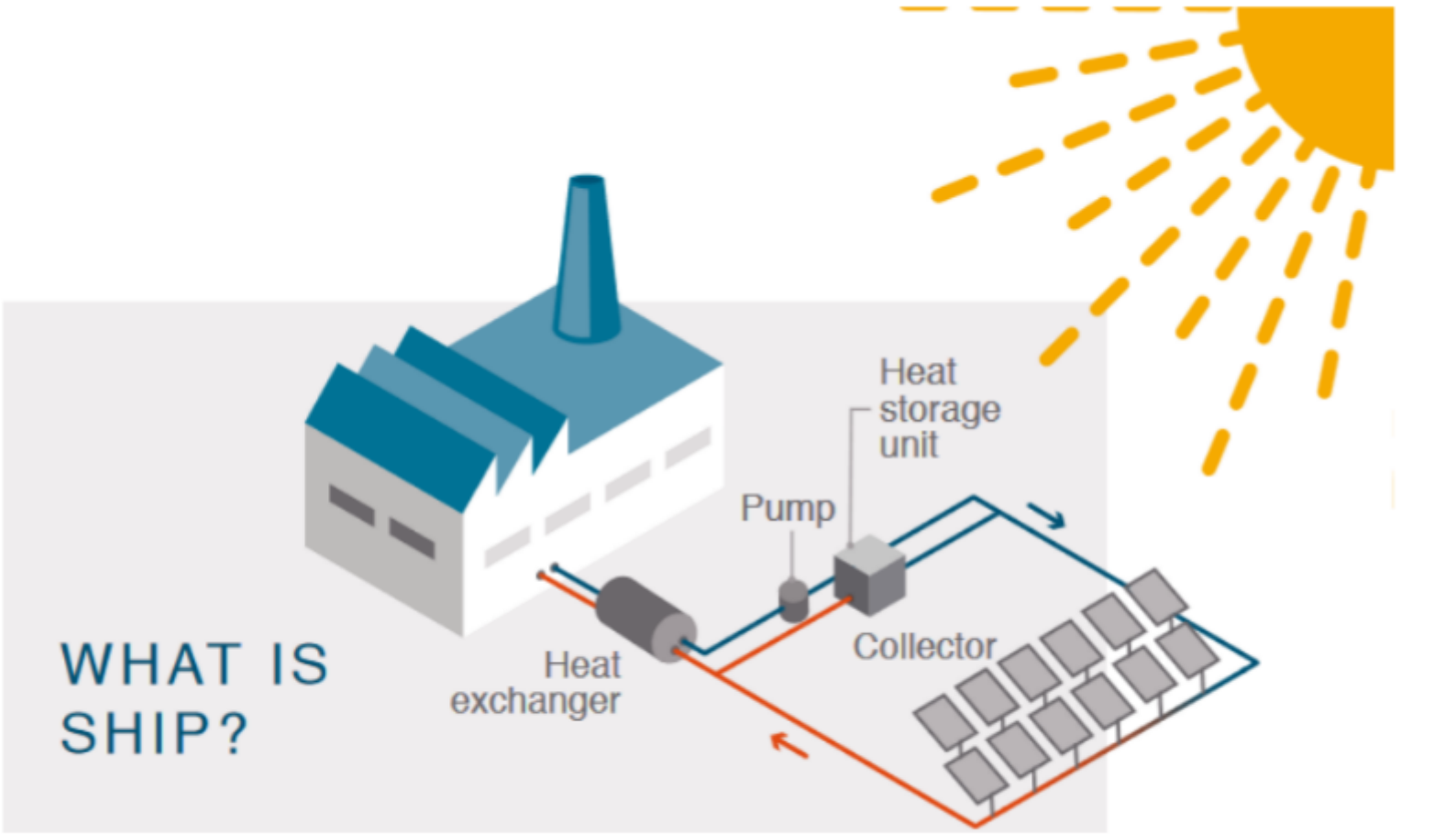
Why SHIP?

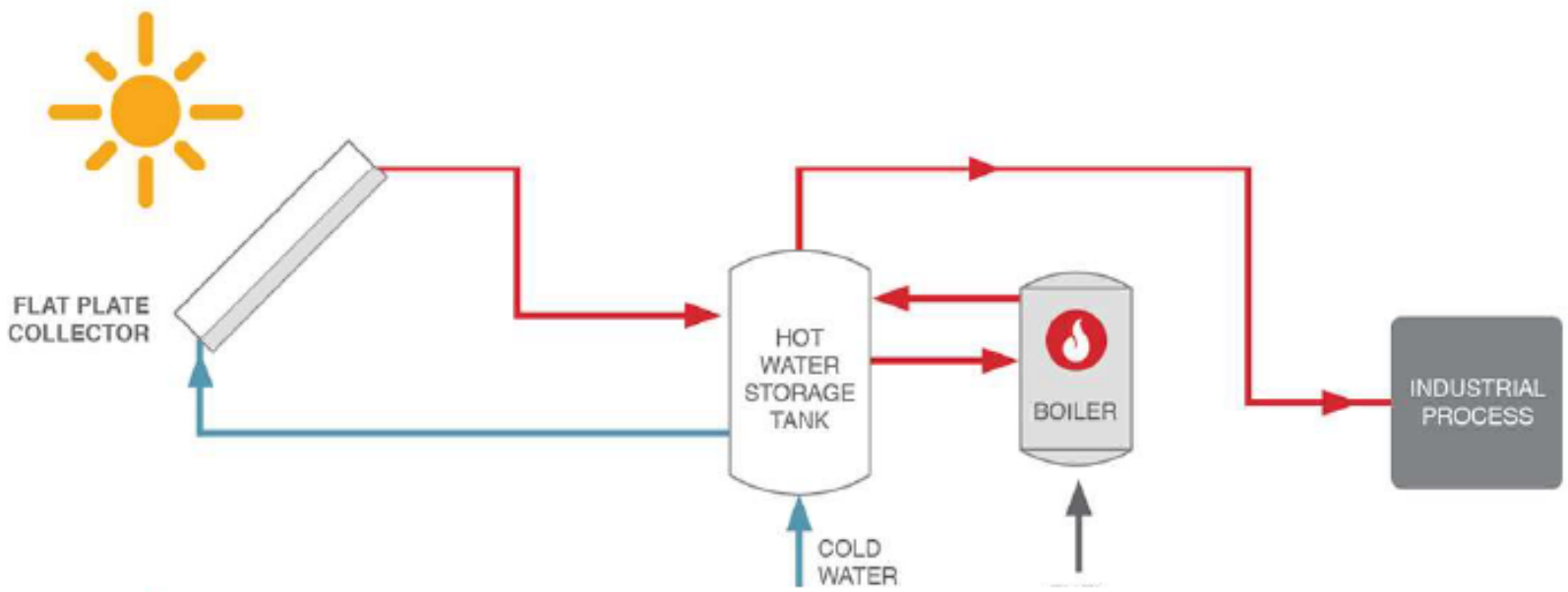


Source : SOLID Solar Heat for Industry



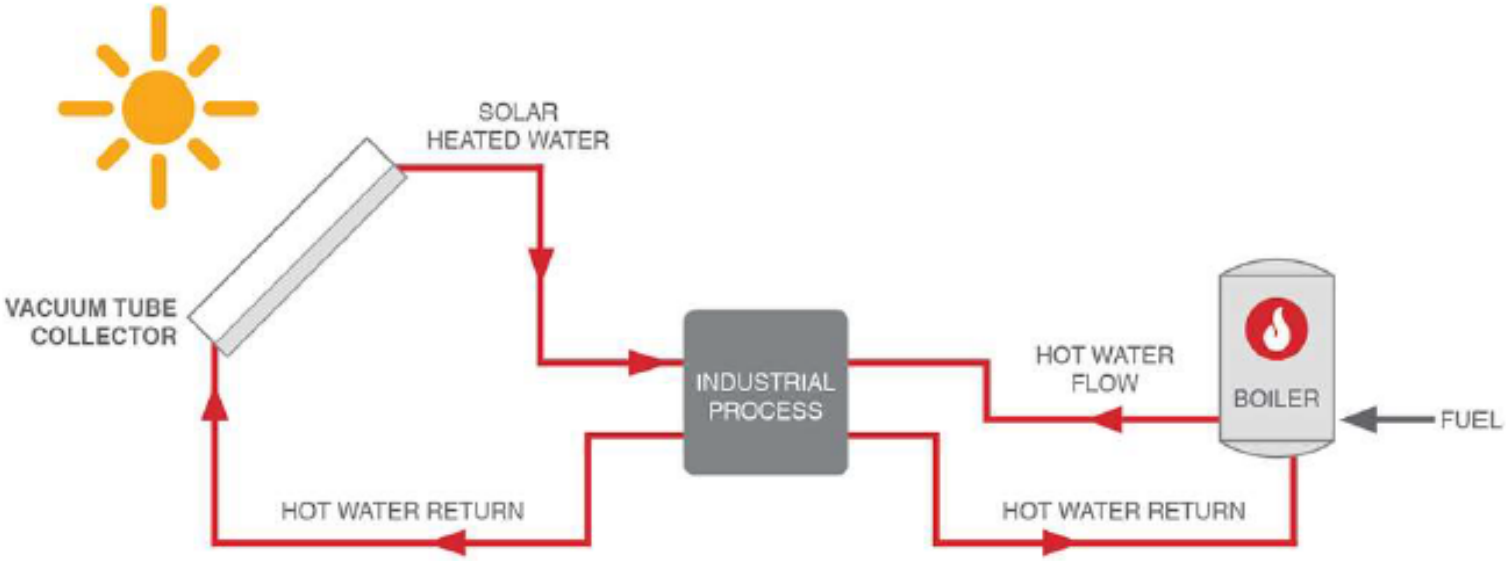
Source : SOLID Solar Heat for Industry

The different ways of integration in an existing process



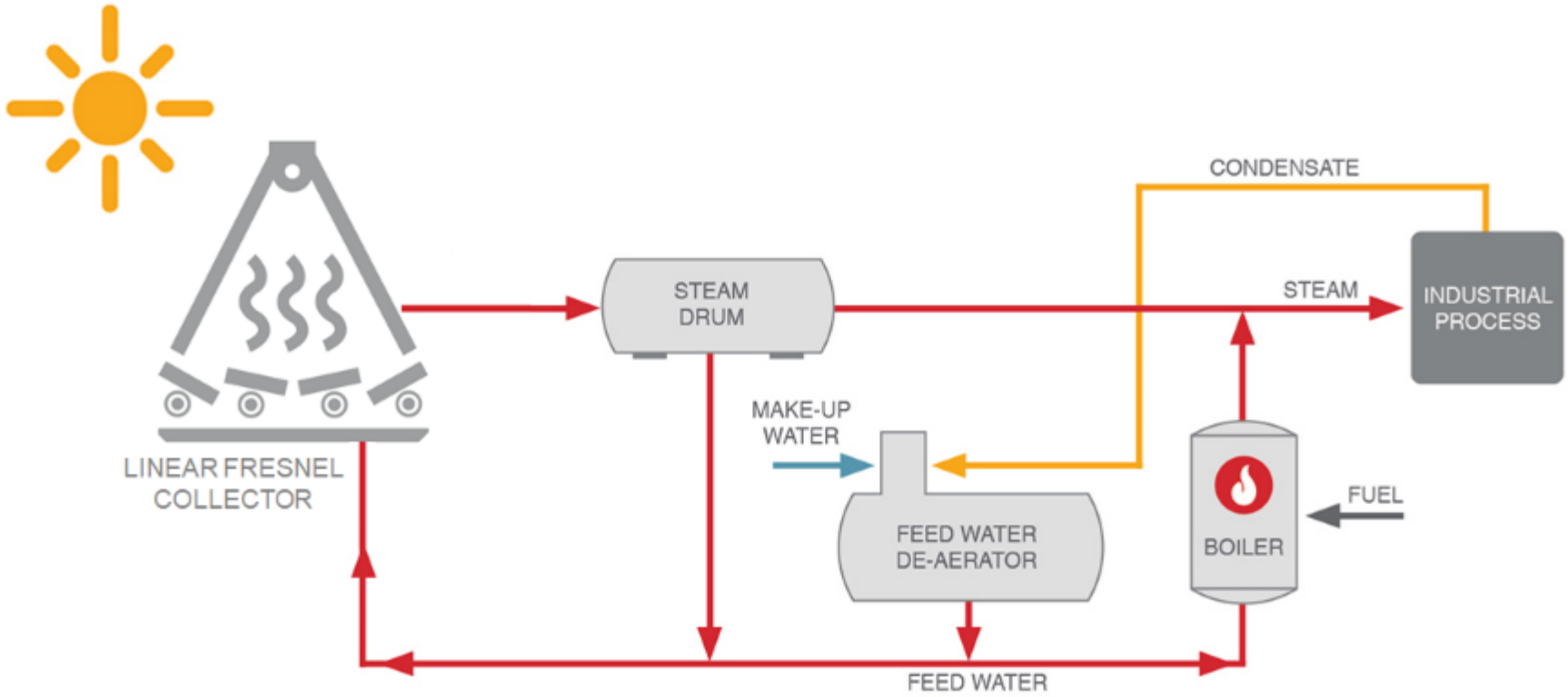
Water Preheating

The different ways of integration in an existing process



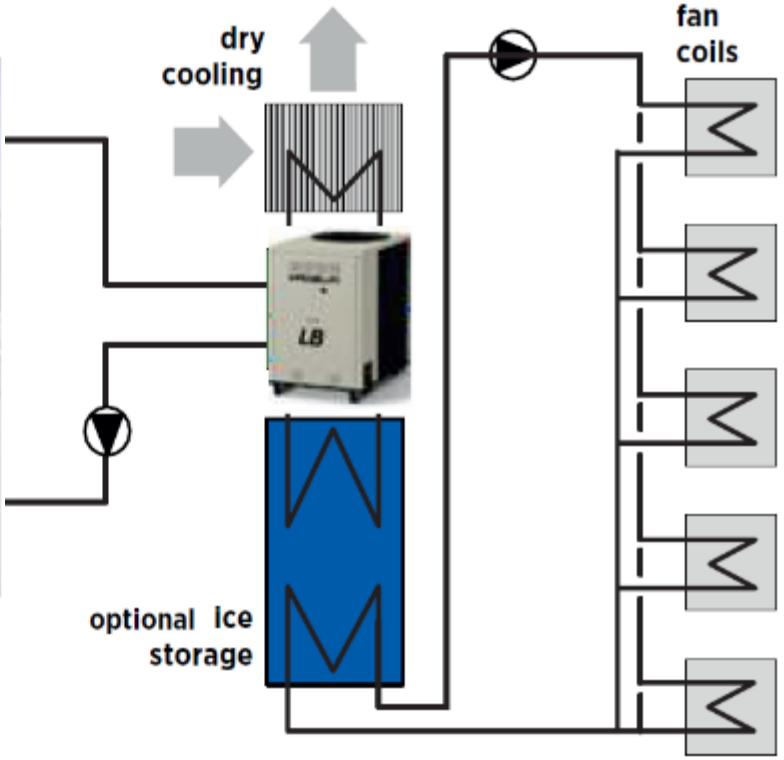
Process Heating

The different ways of integration in an existing process



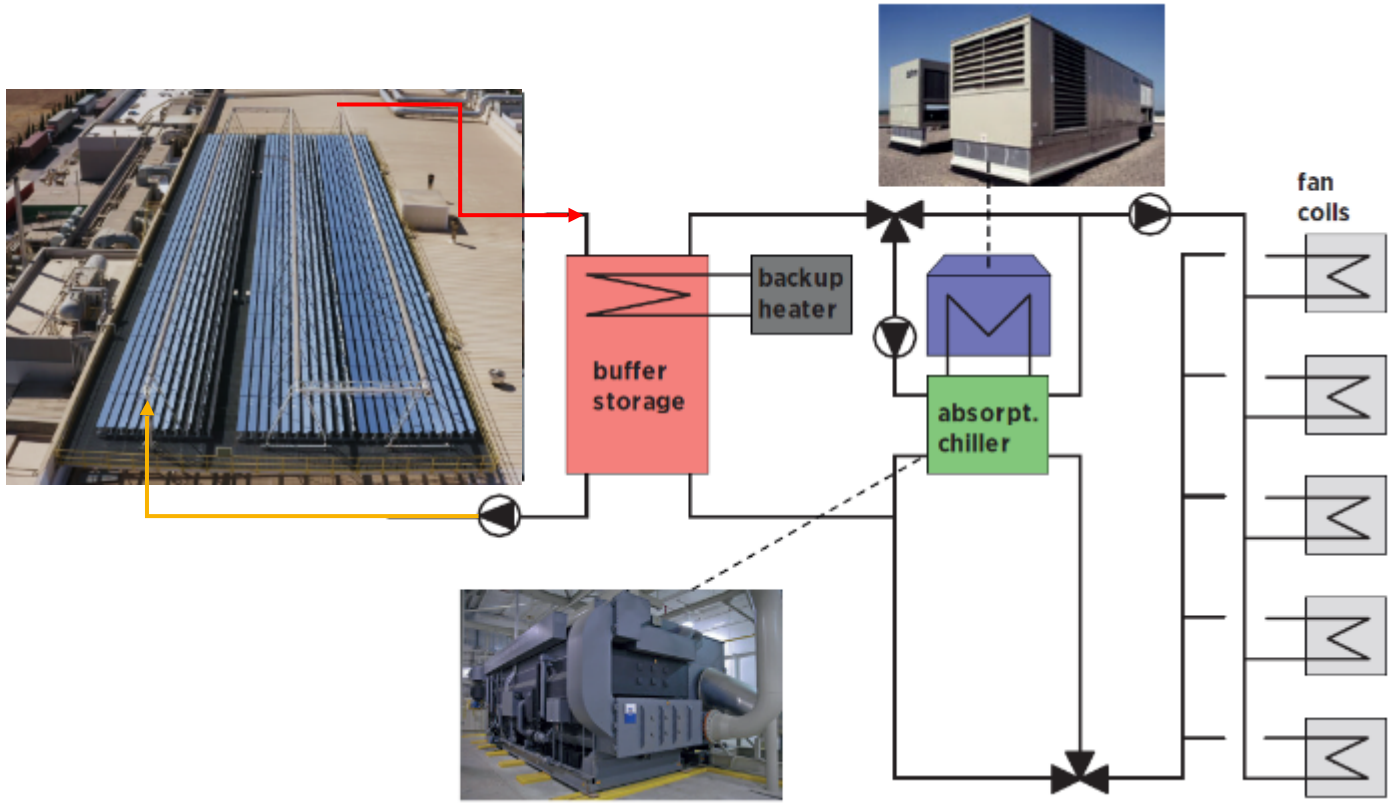
Direct Steam Generation

The different ways of integration in an existing process



Solar thermal cooling (ammonia-water chiller)

The different ways of integration in an existing process



Solar thermal cooling (lithium-bromide-water chiller)

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Thank you!

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