



ABSOLICON
S O L A R C O L L E C T O R S

Joakim Byström

CEO

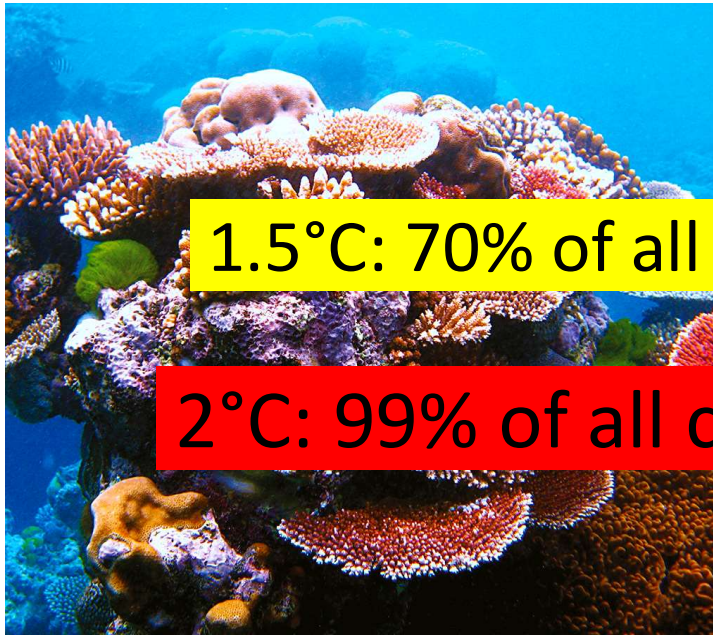
“limiting global temperature increase well below 2 degrees Celsius, while urging efforts to limit the increase to 1.5 degrees”

**Net-zero emissions of greenhouse gases
“ in the second half of this century”**

PARIS 2015

The Eiffel Tower is illuminated at night against a dark blue sky. A sign at the base of the tower reads "CLIMATACTION". The tower's structure is lit with warm yellow lights, and the sky is a deep, clear blue. The overall scene is a nighttime view of the Paris landmark.

Coral bleaching



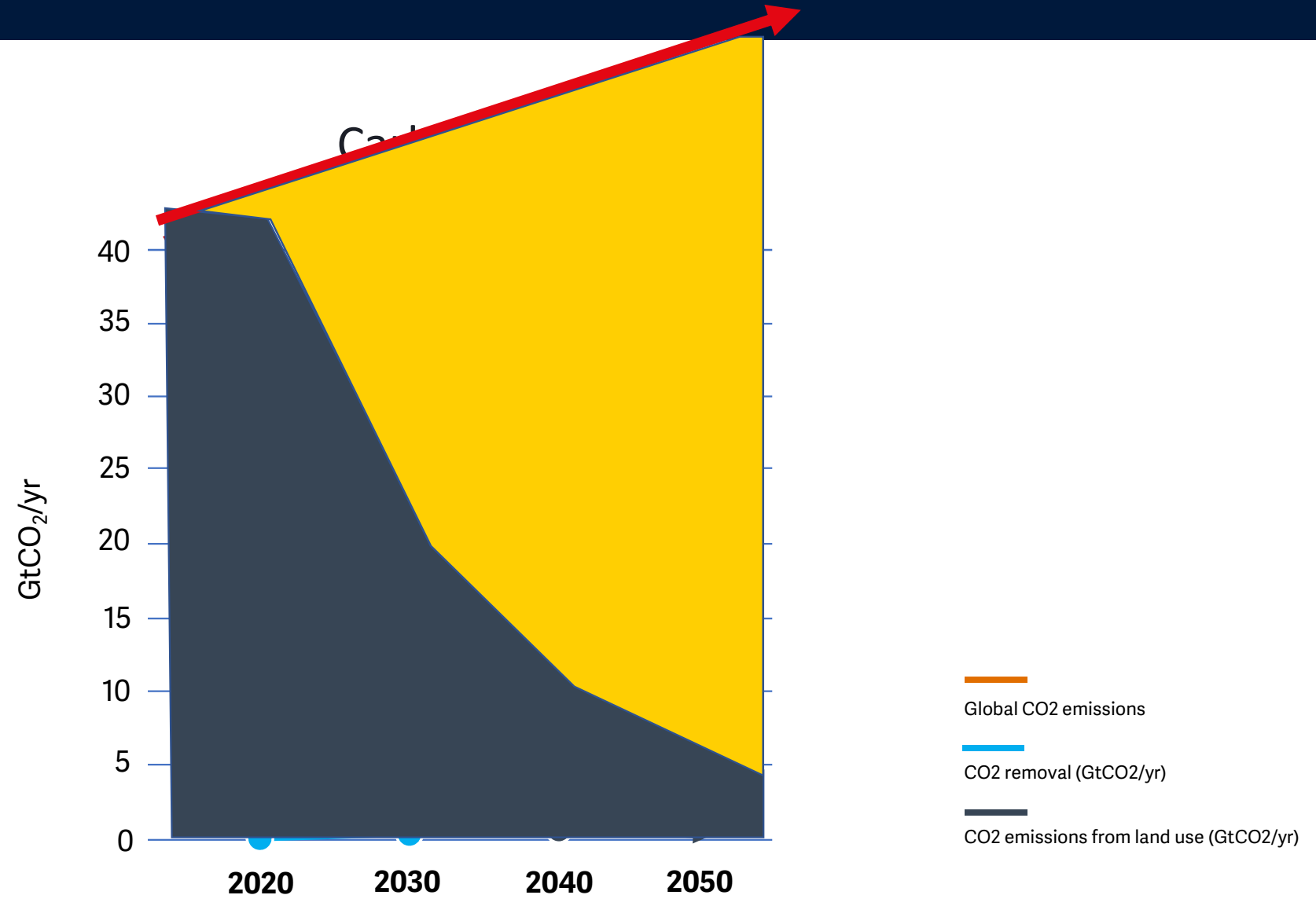
1.5°C: 70% of all coral reefs are destroyed

2°C: 99% of all coral reefs are destroyed

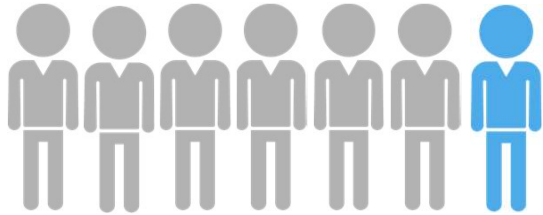
Healthy table coral © Toby Hudson/Wikipedia Commons



Dead table corals killed by bleaching, Northern Great Barrier Reef © Greg Torda, ARC Centre of Excellence for Coral Reef Studies

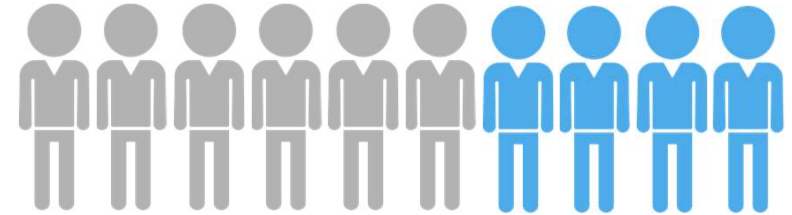


Population and GDP growth



Today

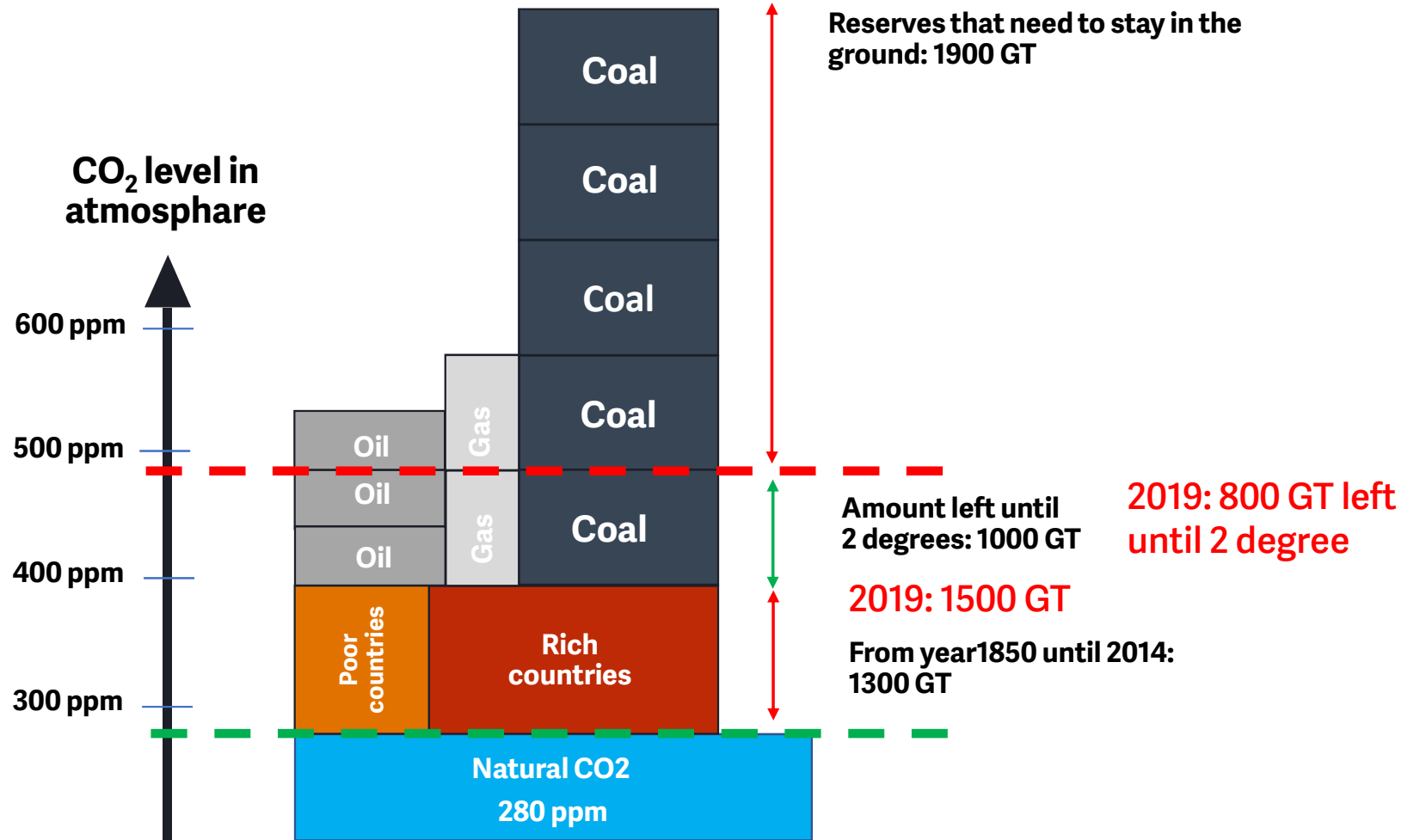
7,4 billion people
1 billion middle class



Year 2050

10 billion people
4 billion middle class

Industrial production increase by 4 times until year 2050



Energy Investments 2018

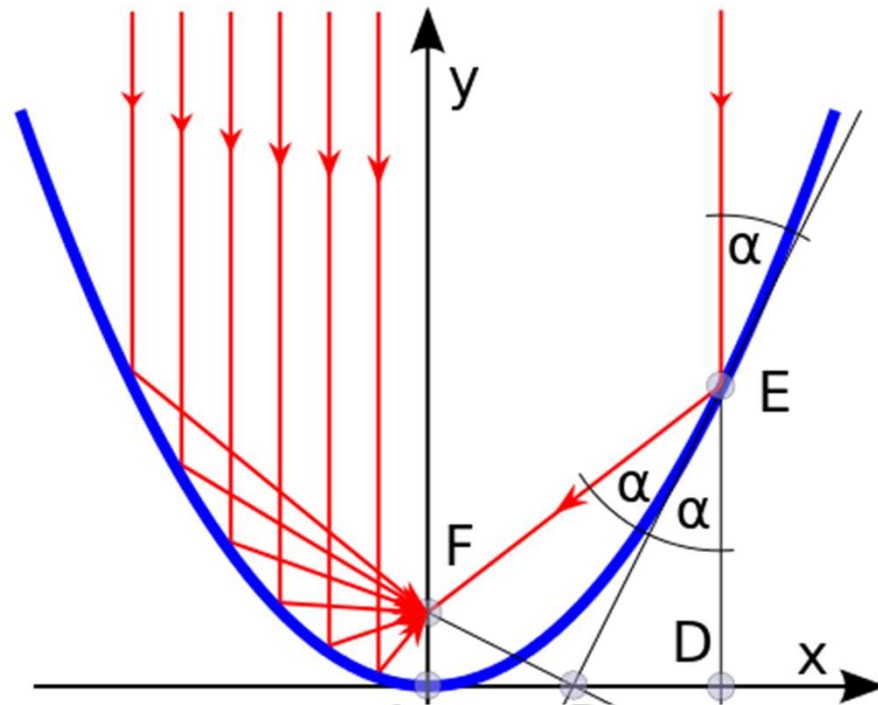
- *Renewable power (Wind and PV): \$300 billion*
- *Fossil and nuclear: \$177 billion*
- *New oil, gas and coal installations and exploration: **\$800 billion***





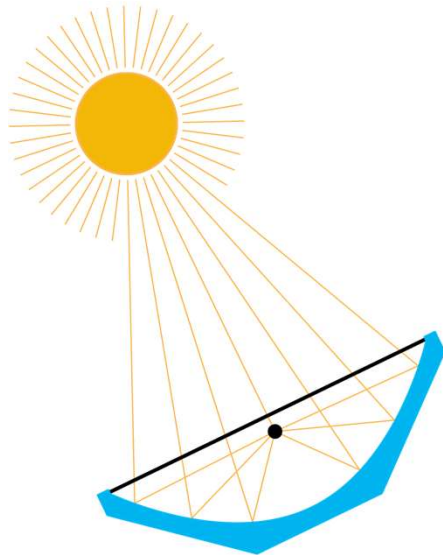
Large fields with solar concentrators can replace oil and gas for district heating and industries

Parabolic concentrator

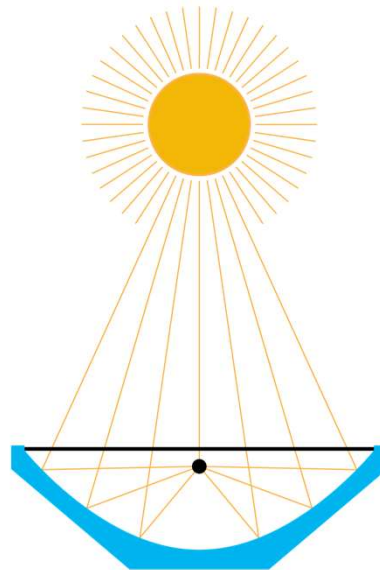


The collector is following the sun and is focusing the light like a magnifying glass

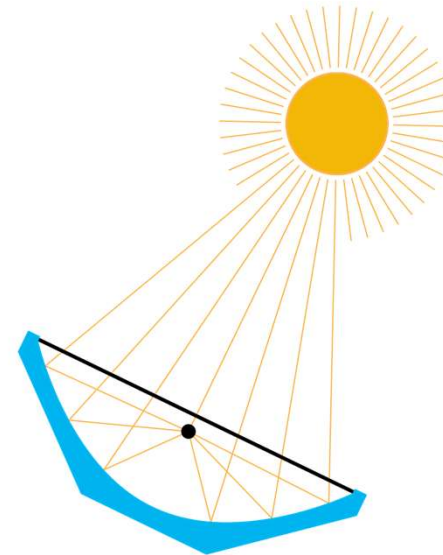
SUNRISE



NOON



SUNSET



INDUSTRI

Zero CO₂



Unilever has 500 factories around the world, burning the equivalent to 2000 trucks of oil every day.
They have committed to have **ZERO CO₂ in year 2030**



Carlsberg has **150 breweries** around the world.
They have decided to have **ZERO CO₂ in year 2030**

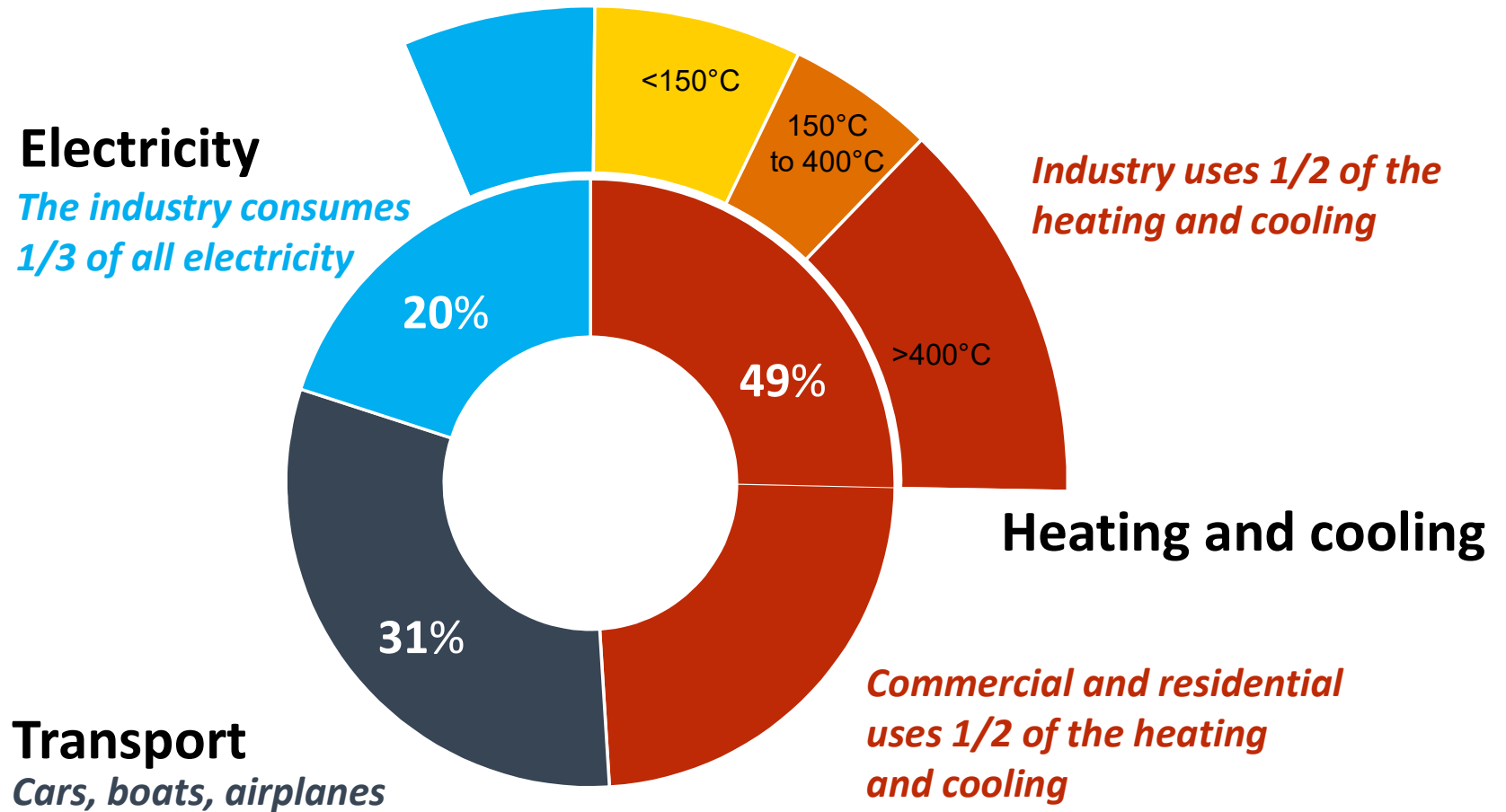


H&M sale **23 billion Euro**
All subcontractors **ZERO CO₂ in year 2030**



IKEA sale **38 billion Euro**
All subcontractors **ZERO CO₂ in year 2030**

Global final energy consumption



Textile, brewery and dairy industry normally
need $\frac{1}{4}$ **electricity** and $\frac{3}{4}$ **heat**



PV for electricity

18% efficiency

Storage in batteries



Solar Collectors for heat

76% thermal efficiency

Storage in hot water tanks

T160


*Heat and steam
up to 160°C*



Fulfilling technical demands

	Vacuum tubes	CSP	T160	Comment on T160
Glass breakage	xx	✓	✓	T16 has 4 mm hardened glass
Vacuum loss	xx	x	✓	No vacuum
Thermal expansion	✓	x	✓	Short tubes
Soiling and dirt	x	xx	✓	Nano coated flat glass
Easy cleaning	xx	xx	✓	Flat, durable, glass surface
Stagnation and overheating	x	✓	✓	Active overheating protection
Lifetime 25 years	xx	?	✓	Protected reflector, no vacuum
Rooftop mounting	✓	x	✓	20 kg/m ²
Rotation joint leakage	✓	x	✓	Pipe system stationary
Short installation time	✓	x	✓	Concentrator in one unit


SP test results 2016



REPORT
Centre for Applied Testing Laboratory

Contact person:
 Patrik Ollas
 Energy and Economy
 +46 10 518 51 56
 patrik.ollas@sp.se

Date: 2016-10-12
 Address: GP06089
 Page: 1 (1)



WEDS
Wärmeenergi
 & Energi
 & Teknik

Årsgata 17
 412 22
 Göteborg
 Sweden

Table 2 Collector thermal coefficients from quasi dynamic testing based on gross and aperture area

	Based on collector gross area	Based on collector aperture area	
	Value		Standard deviation
$\eta_{0,g}$	0.717	0.756	1 %
K_d	0.10	0.10	6 %
b_0	0.255	0.255	1 %
c_1	0.619	0.653	-4 %
c_2	-
c_3	-
c_4	-
c_5	1701	1794	-19 %
c_6	-

Table 3 Incidence angle modifier in east-west direction (θ_{ew})

θ	10	20	30	40	50	60	70	80	90
$K_d(\theta_{ew})$	1.00	0.98	0.96	0.92	0.86	0.75	0.51	0.25	0

SPF test results 2017

$$\eta_0 = 76,6\%, K_d = 8,58\%$$

$$a_1 = 0,3677 \text{ W(m}^2 \cdot \Delta T)$$

$$a_2 = 0,003224 \text{ w(m}^2 \cdot \Delta T^2)$$

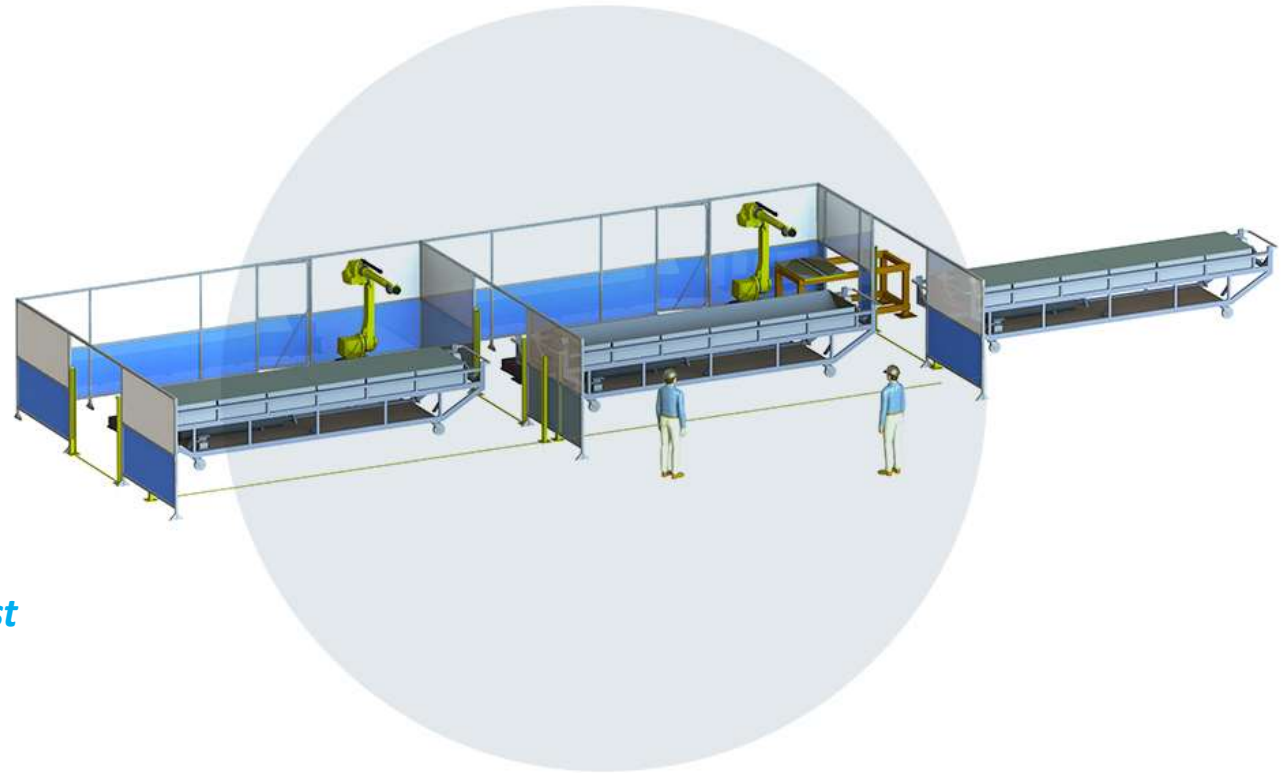
Absolicon

Production line

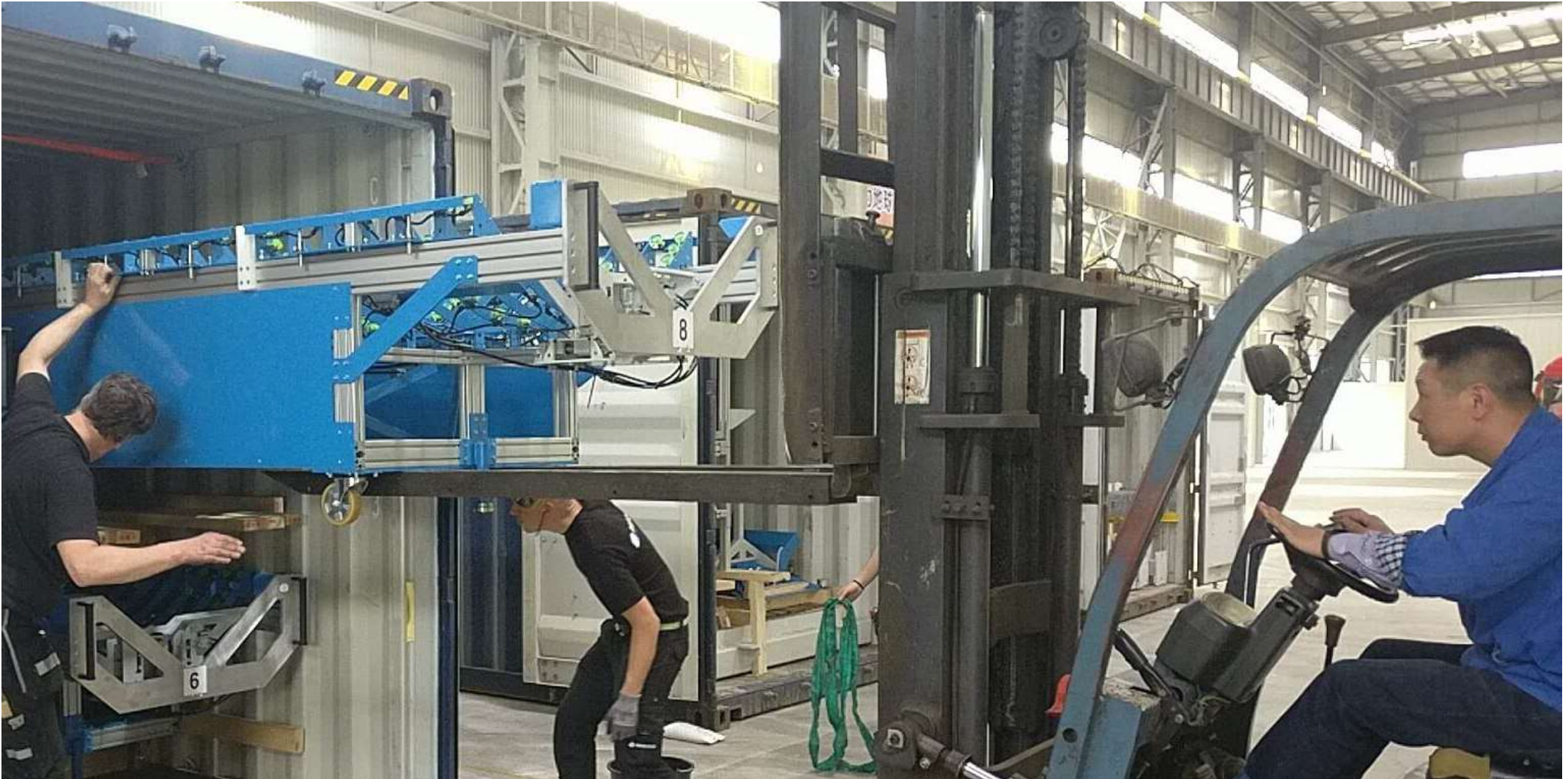
Absolicon is offering a complete production line for concentrating solar collectors T160

Mass production

- *Reduced cost of labour*
- *Higher quality*
- *5,5 m² every 6th minute*
- *Lower component cost*
- *Larger fields reduces the installation cost*

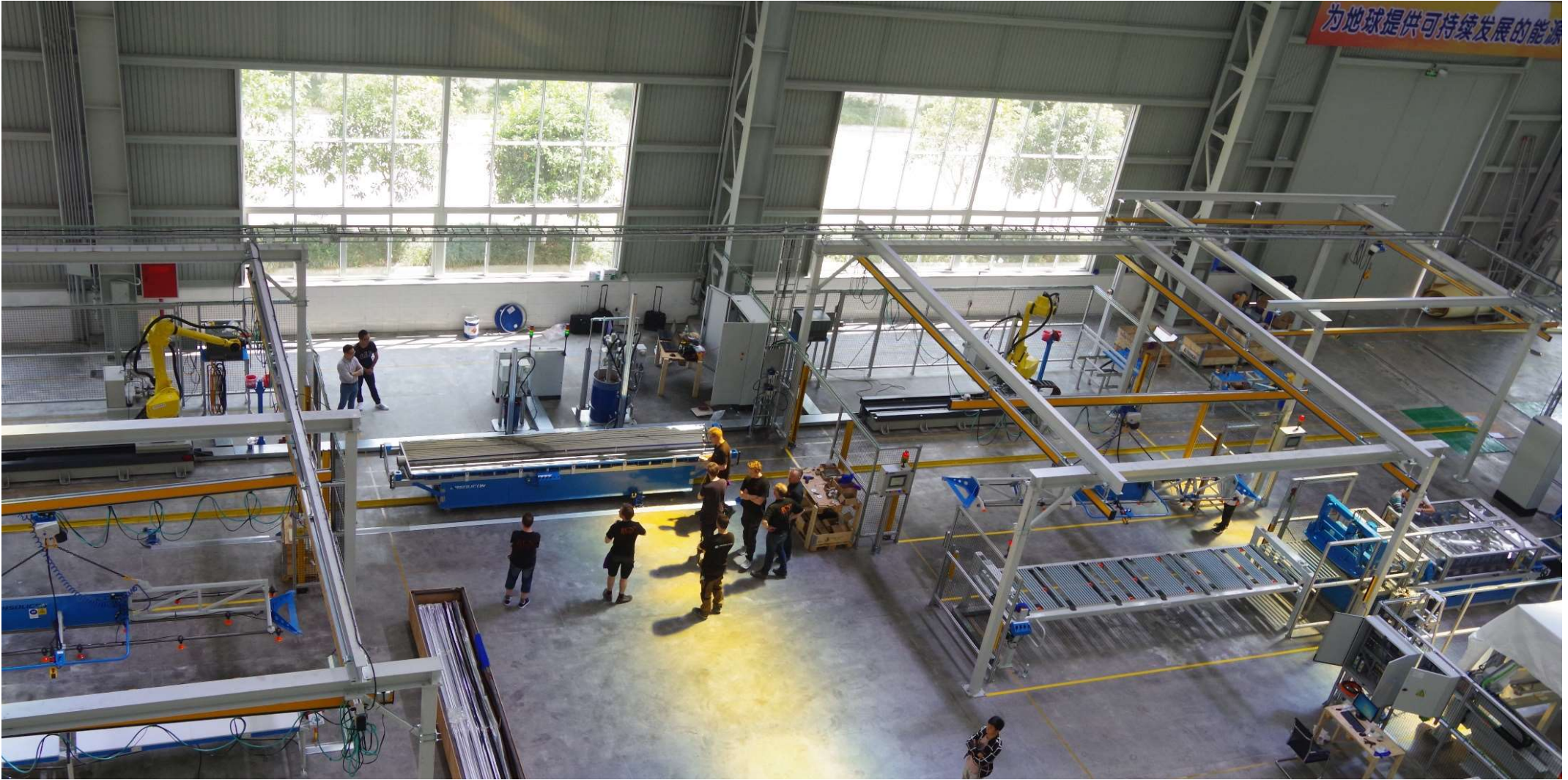














Botswana – growing industry in textile, leather, chemical industry and food & beverage

