



sbpsonne

Research & Development



PV

- AgriPV
 - Suitable structures:
 - wide span
 - movable PV for vineyards
 - Adaptable to parking lots
 - Modelling, simulation and optimization -> DeepBluSky
 - Micro climate and PV yields
 - Cooperation with Uni Hohenheim, Geisenheim, ISE
- FPV
 - Floating PV system with air cushions and bifacial membrane
 - Wave loads from wave channel

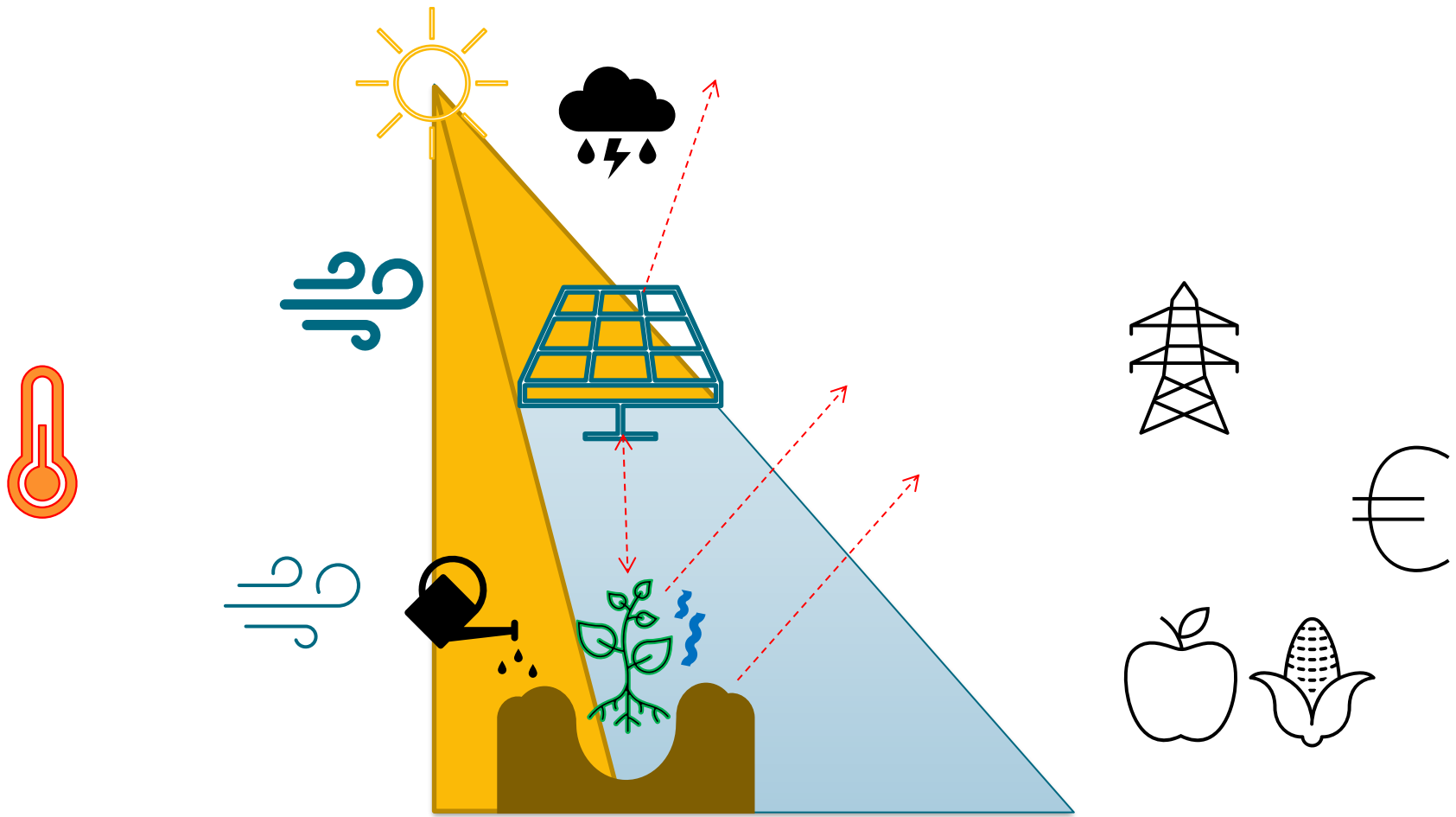
CSP

- Troughs: EuroTrough, HelioTrough, UltimateTrough
- Heliostat: Stellio (48.5 m²) and joint development small heliostat (6.4 m²)
- Aim point strategy for heliostats
- Process heat for industry (smelting, drying, food processing)

Climate chambers

- Mahlow: protect Kita from airplane noise
- Charlottenburg: synergy between greenhouse & seminar room
- Eichwalde: school





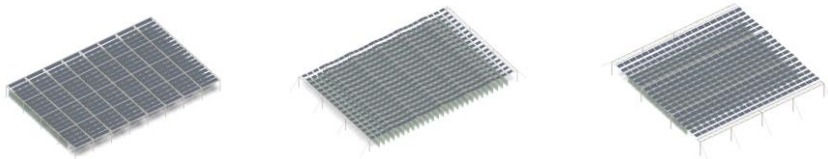
An integrated solution for climate resilience, energy transition and plant protection for sustainable viticultural landscapes

- Viticulture is particularly affected by the consequences of climate change
- Young vines are in particular need of protection as they do not yet have the resilience of older vines. Agri-PV could be used here to increase resilience through its shading effect, among other things.
- Shade tolerance in the first few years differs greatly from that in subsequent years.
- Develop a mobile Agri-PV system specifically for use with young vines.

Project partners:

- Fraunhofer ISE
- Hochschule Geisenheim University (HGU)
- sbp sonne





Criteria	Variant 1 Beams & columns	Variant 2 Cables slope parallel	Variant 3 Cables in slope line
Surface weight	100%	~ 40%	~ 50%
Structural efficiency	o	+	+
Sustainability	100%	~ 60%	~ 70%
Cost estimation	100%	~ 80%	~ 80%
PV-Yield	+	+	+
Construction work & maintence	+	o	-
Integration in landscape	-	o	+
<i>Result</i>	-	o	+

Evaluation of the 3 Options

Preliminary evaluation regarding structural integrity, construction, material consumption, agricultural constraints.

The study indicates that Option 3 is most applicable structure for vineyard:

lightweight construction, intergrates within vineyard environment, best **adaptability** for agricultural purposes.

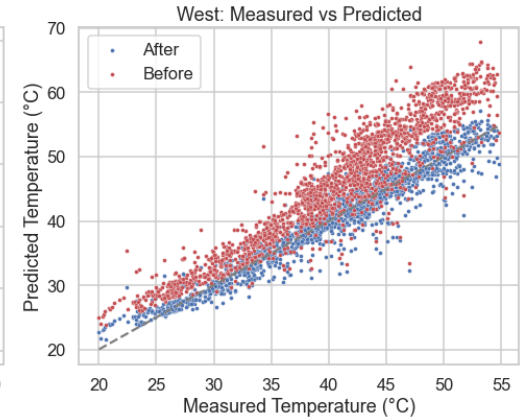
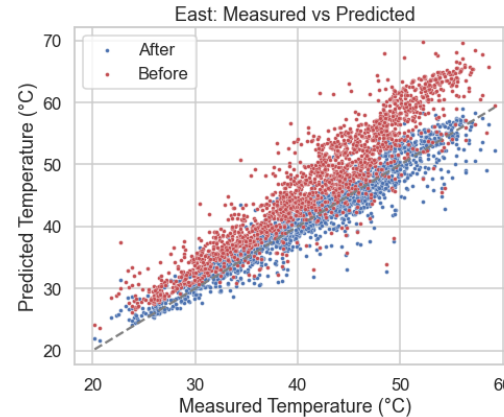
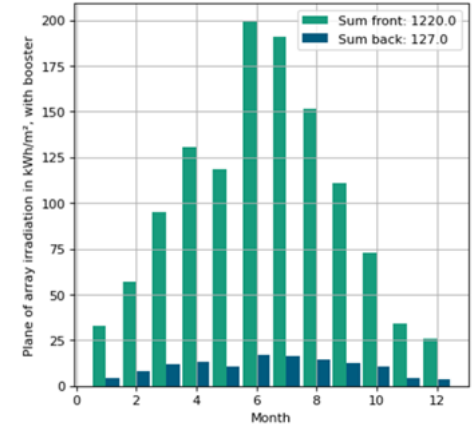


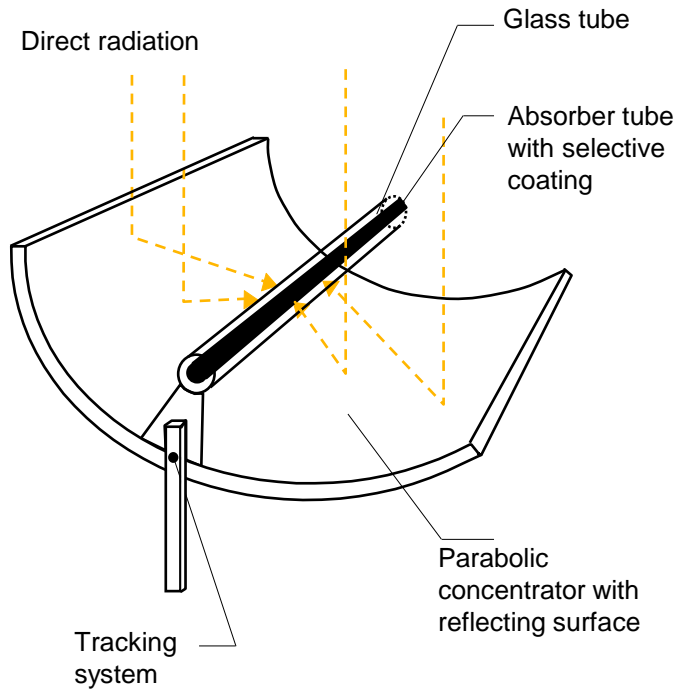
- Inflatable
- Light weight and easy to transport
- Bifacial (Checked by Fraunhofer ISE)



Fraunhofer ISE confirms performance boost

- **Bifacial gain:** Rear irradiance is 9 % of front irradiance for white membrane
- **Cooling:** Faiman parameters show lower module temperature than for typical ground-mounted PV.

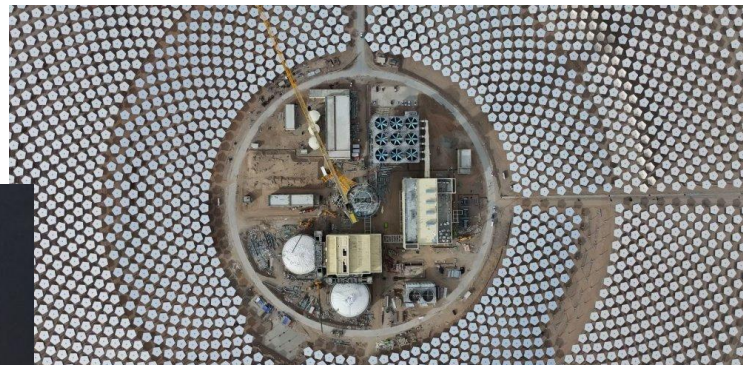




Ultimate Trough Testloop in California, USA
UT deployed in Doha, Saudi Arabia



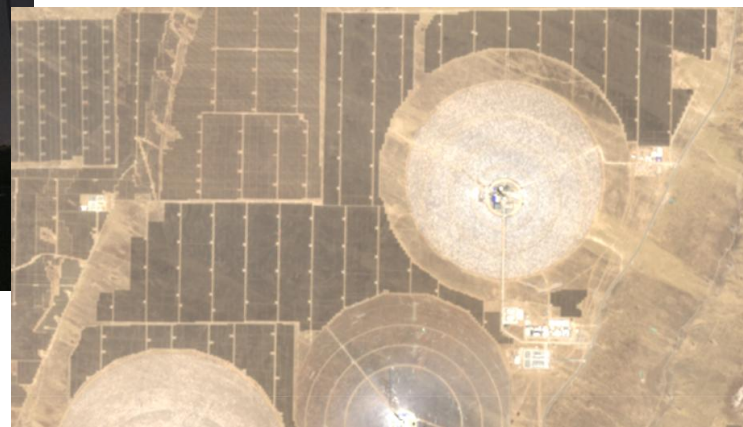
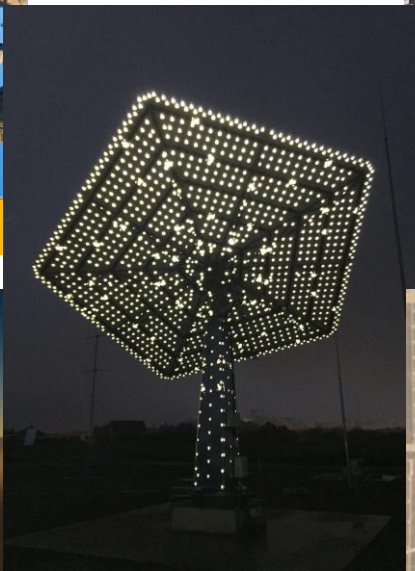
Hami, Xinjiang, 2020, 50 MW



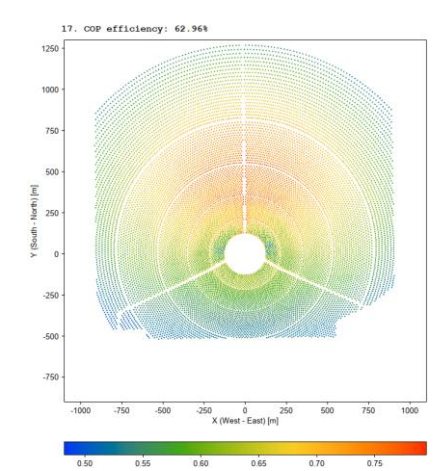
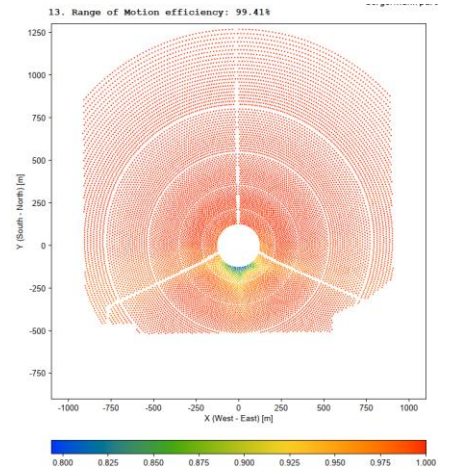
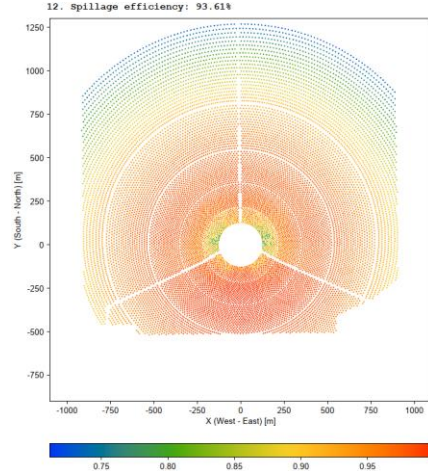
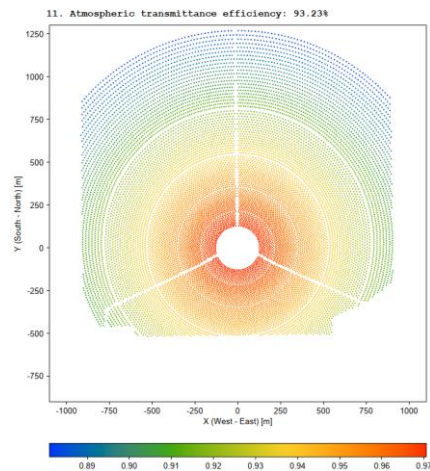
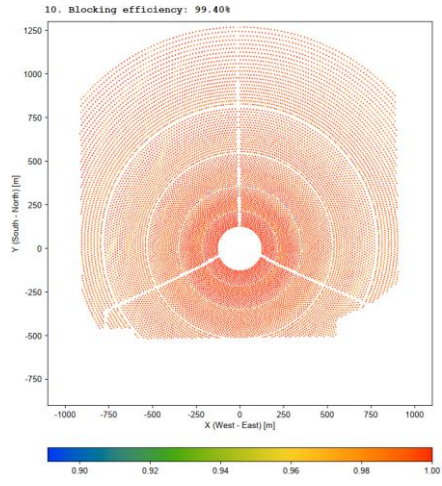
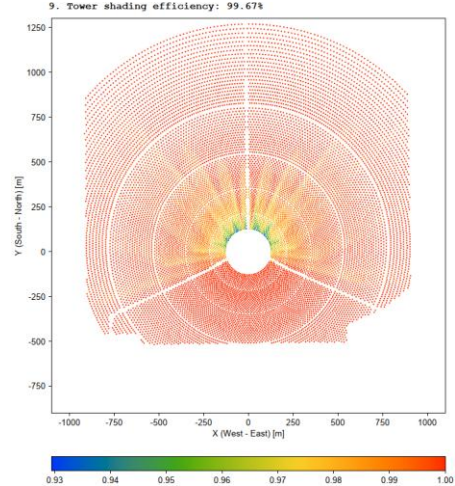
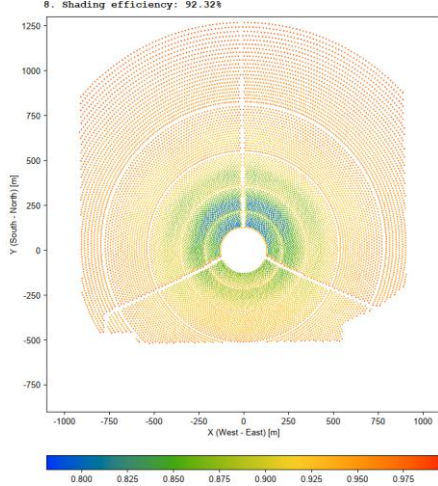
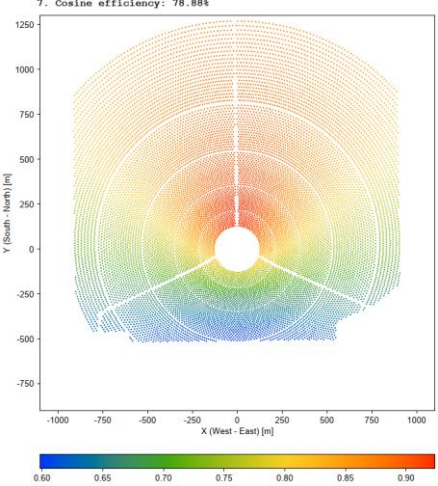
Aksay, Gansu, 2024, 110 MW

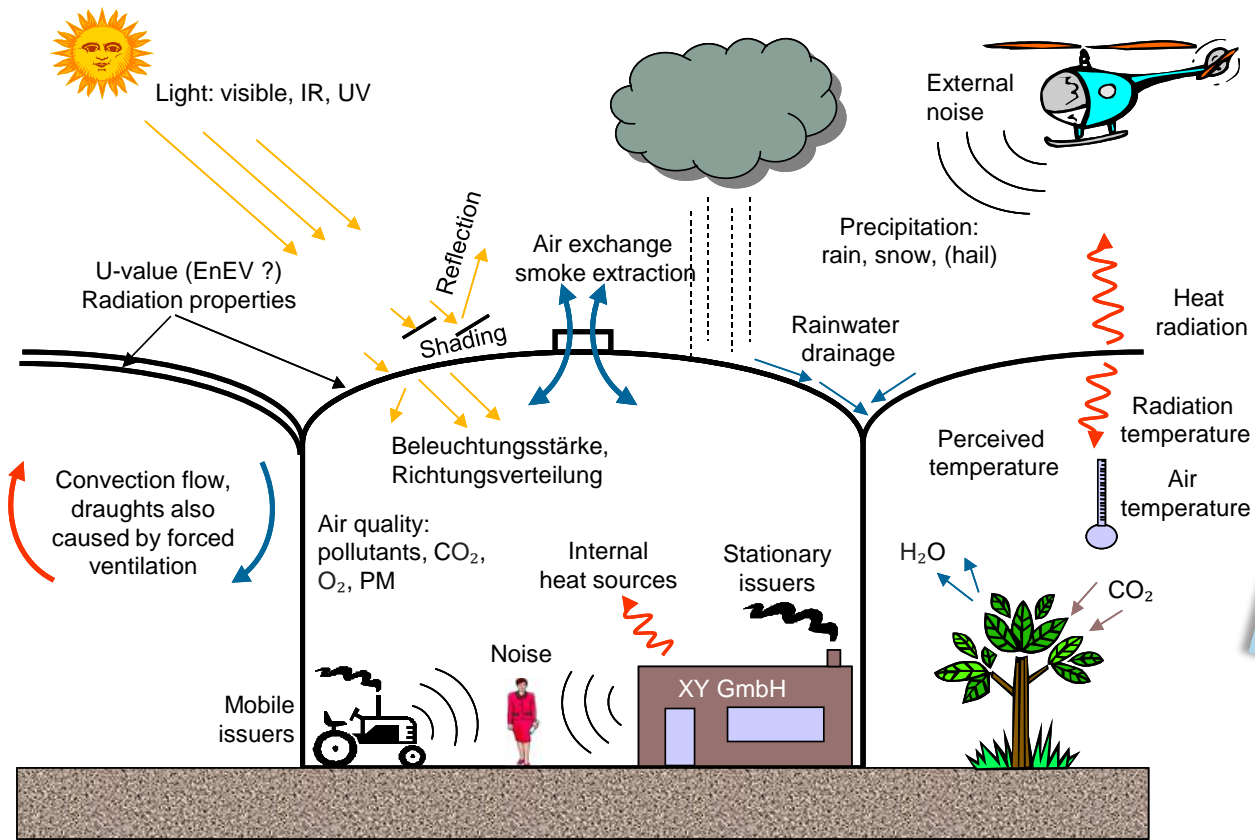


Aksay, Gansu, 2024, 110 MW

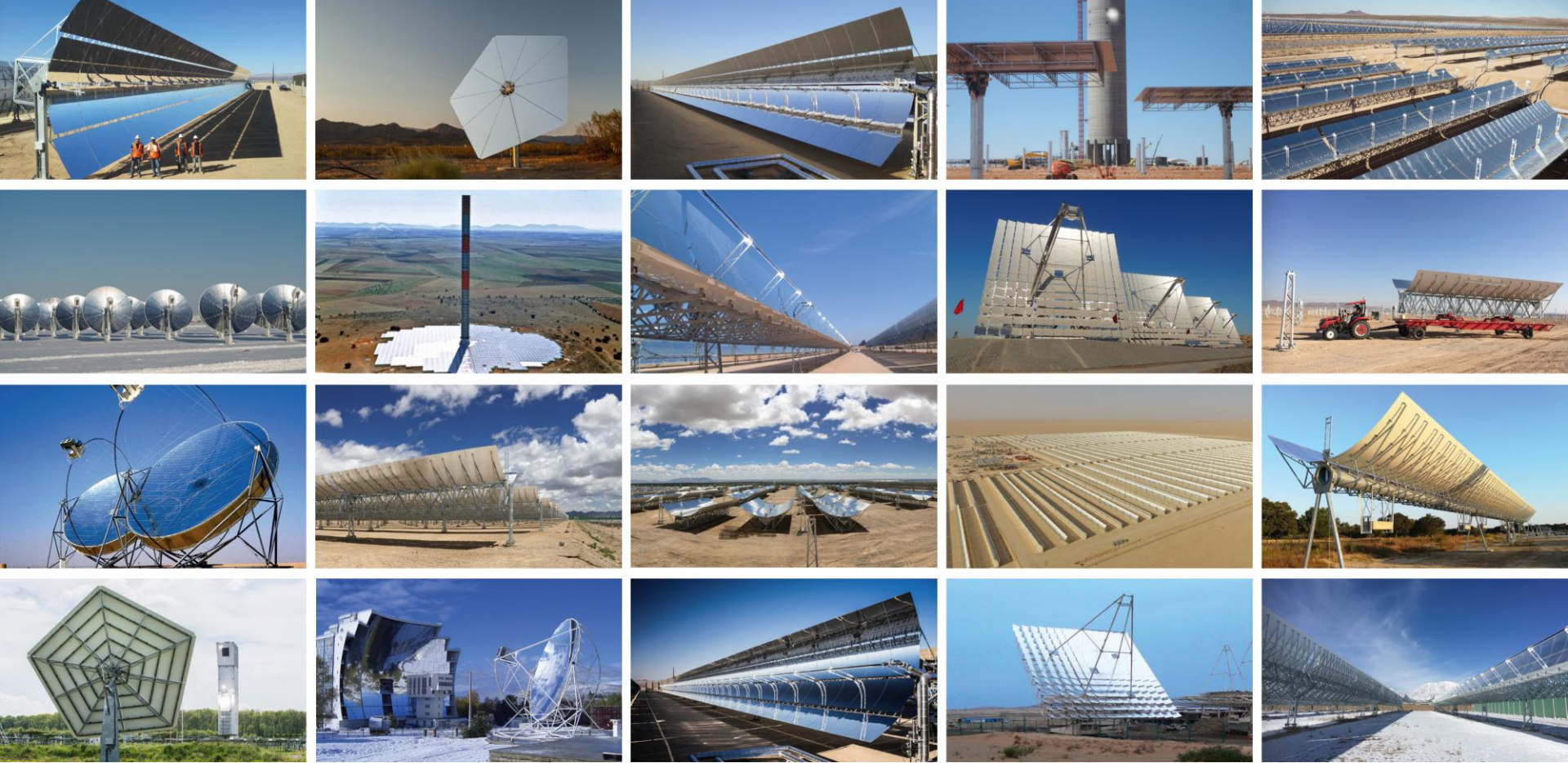


Gonghe, Qinghai, 2025, 110 MW









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