

Office Overview and Renewable Energy Activities at Schlaich Bergermann und Partners

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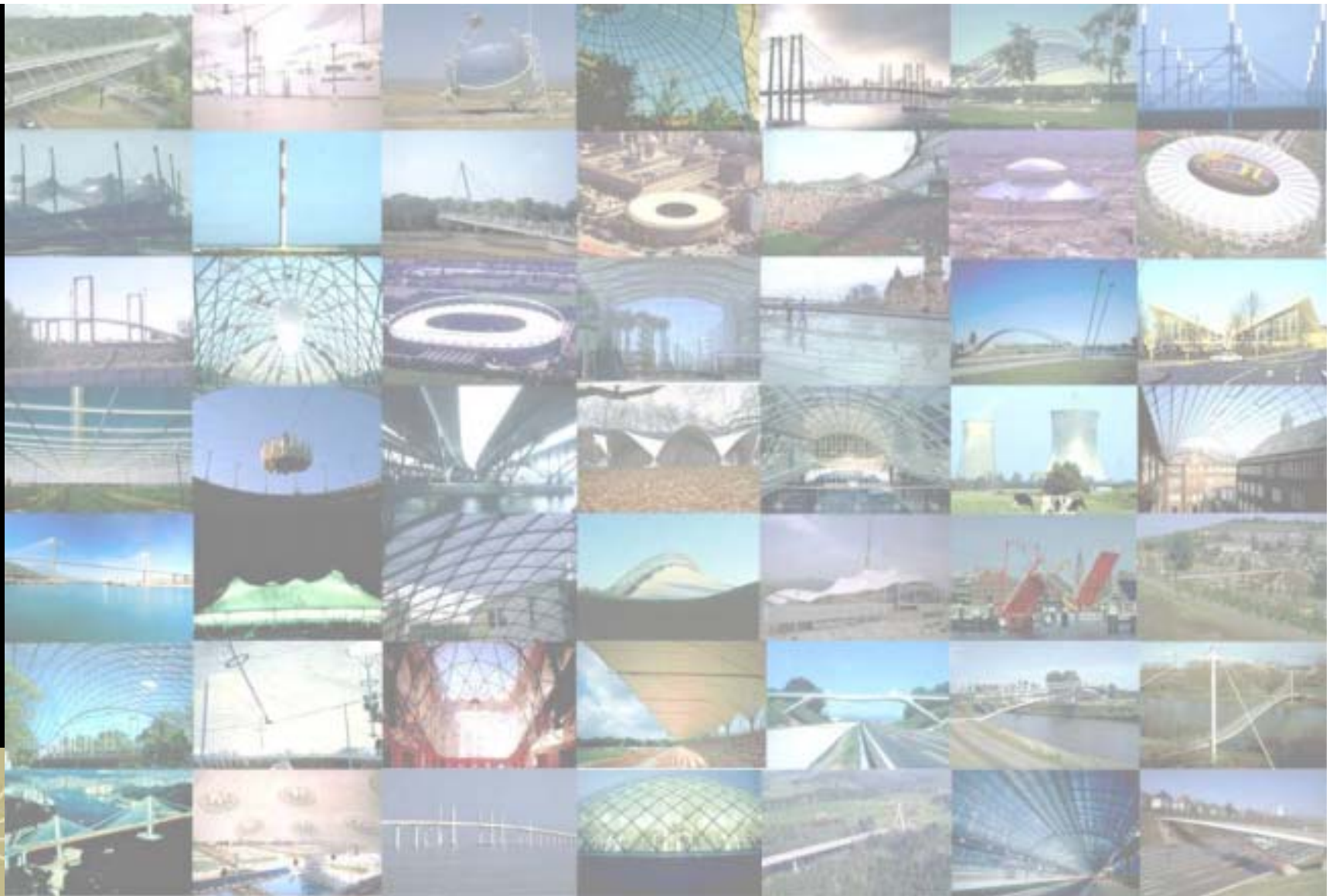
Wolfgang Schiel



November 2007. Frankfurt

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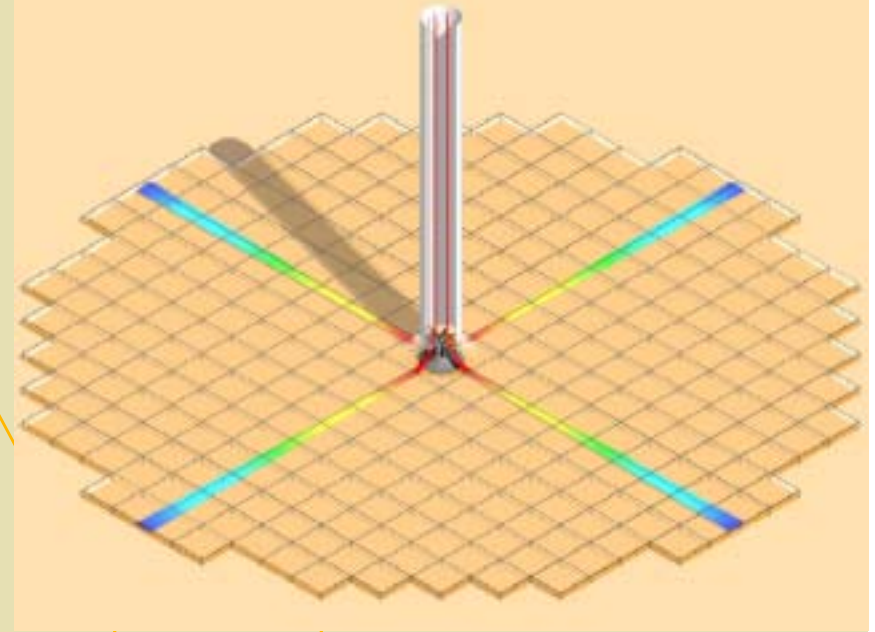
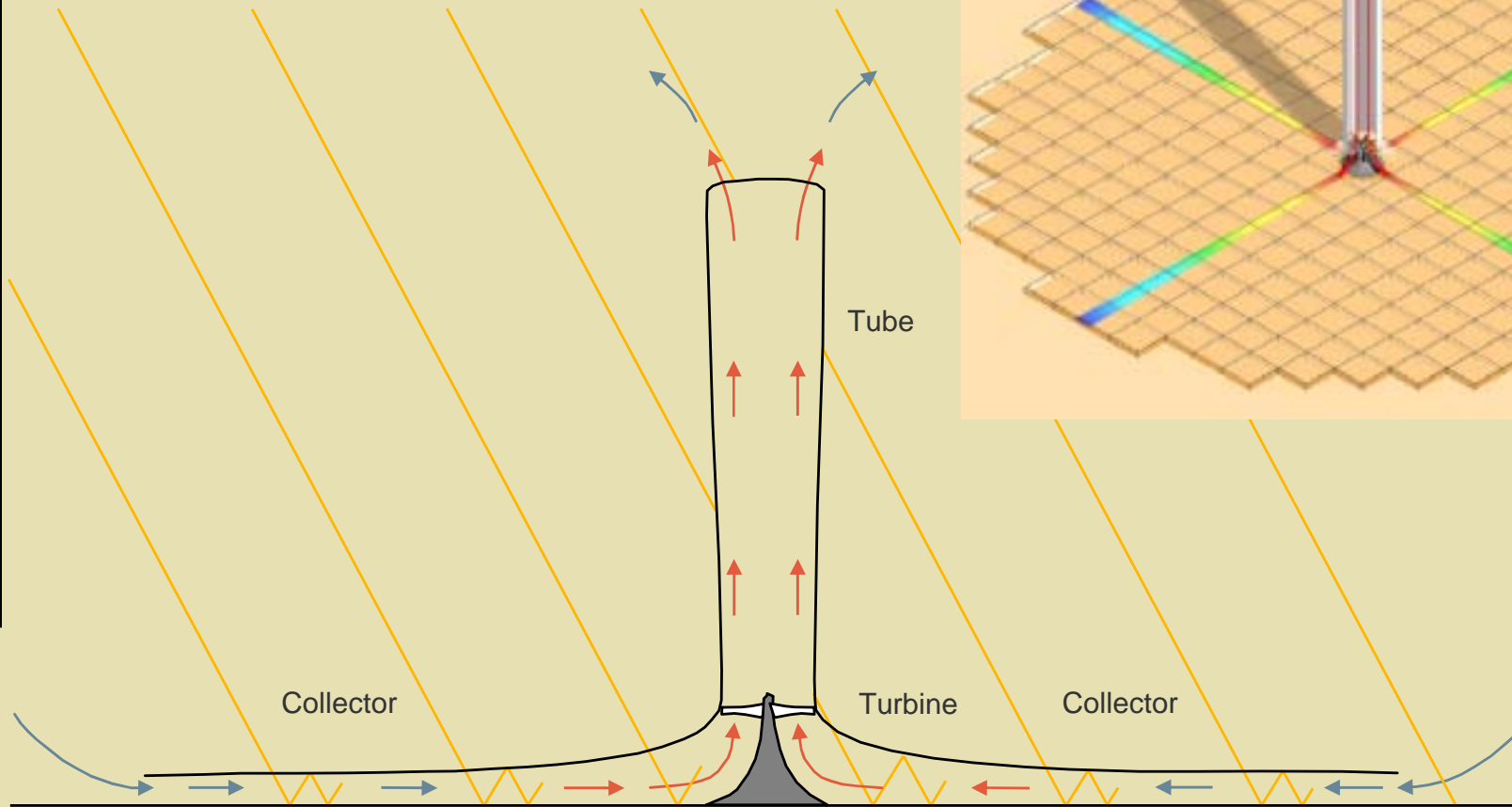
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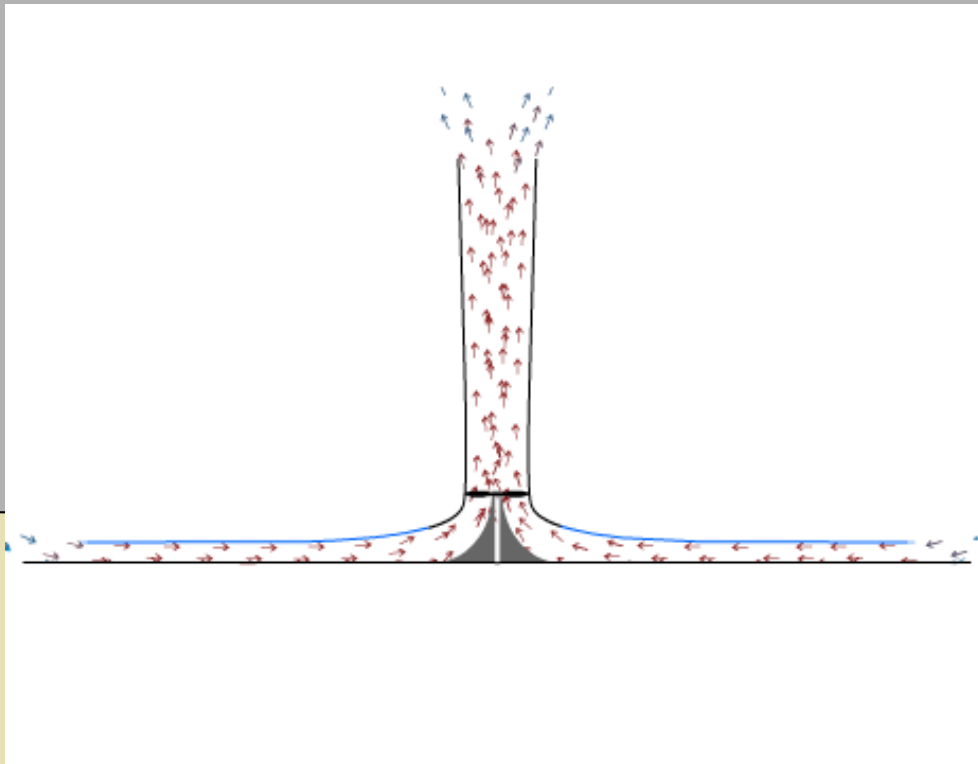
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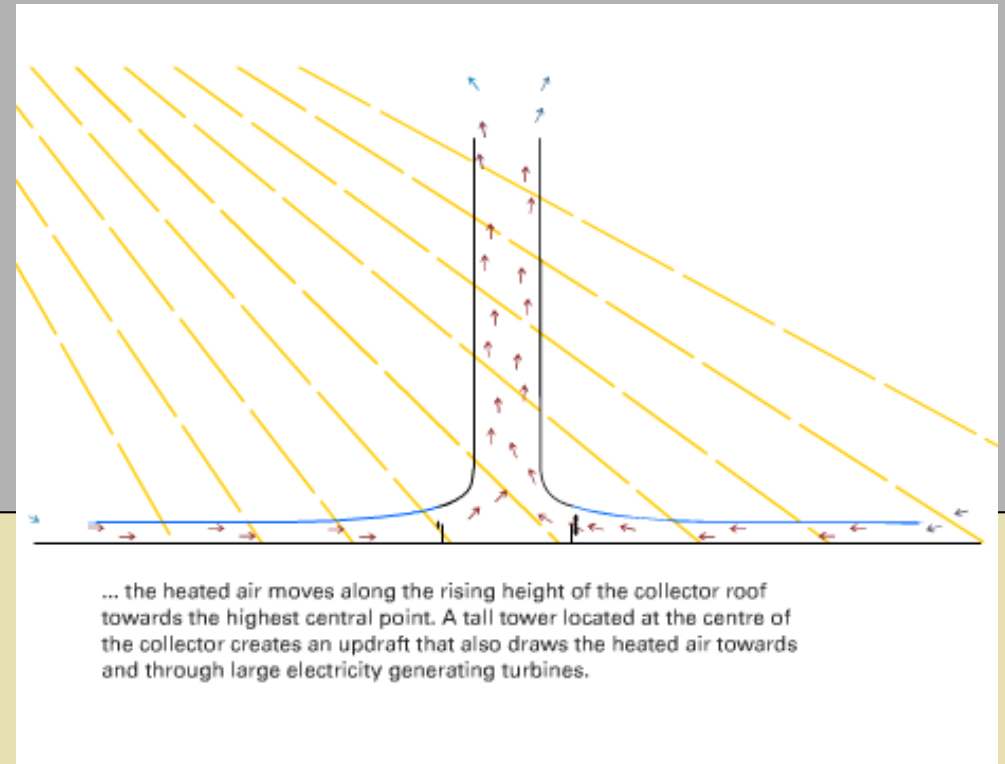
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Solar Chimney Principle





Eine Turbine



... the heated air moves along the rising height of the collector roof towards the highest central point. A tall tower located at the centre of the collector creates an updraft that also draws the heated air towards and through large electricity generating turbines.

Viele Turbinen



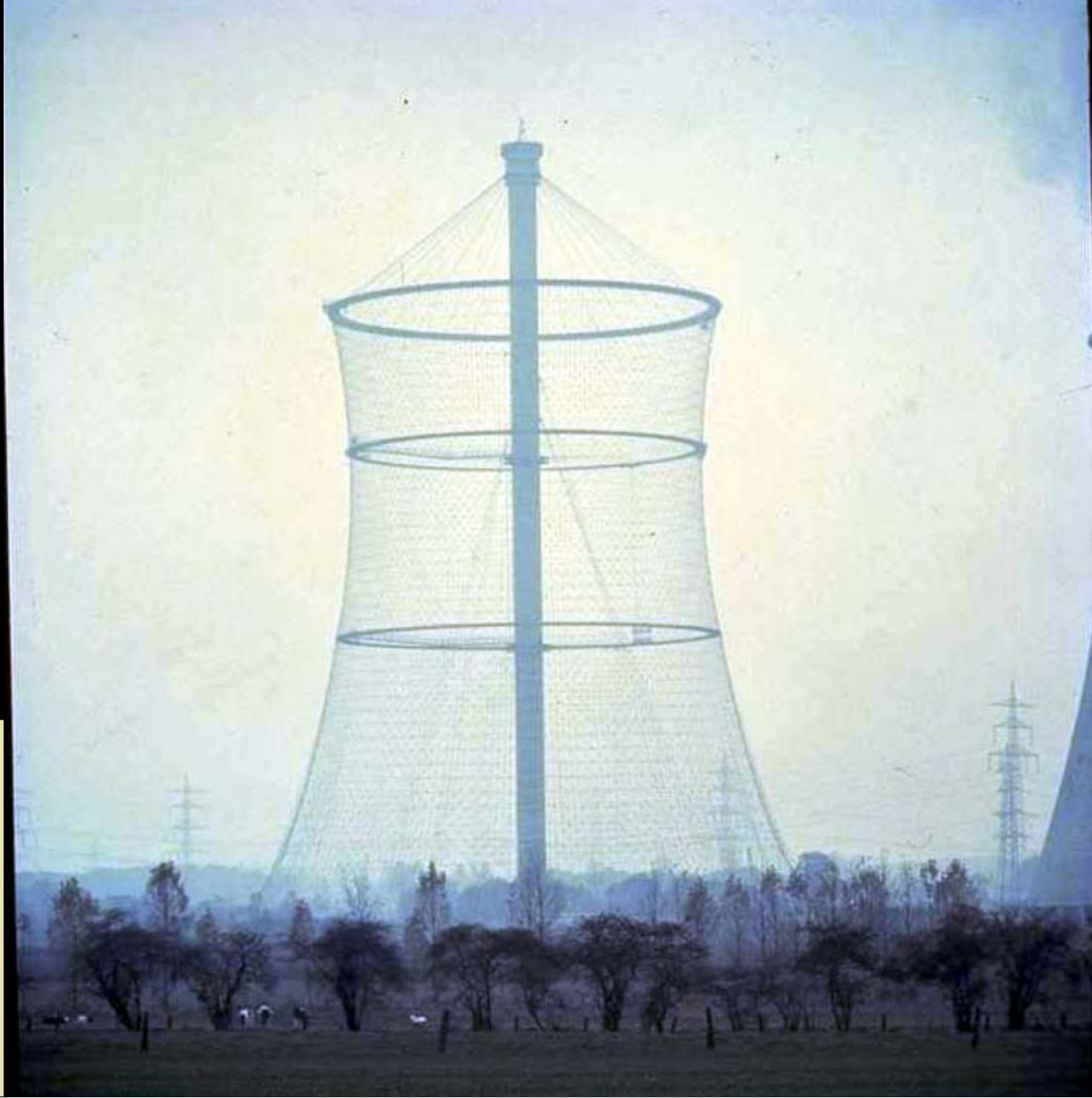
Solar Chimney Manzanares, Experimental Plant 1982, Spain



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Solar Tower Power Plant in Spain (Concept Design)

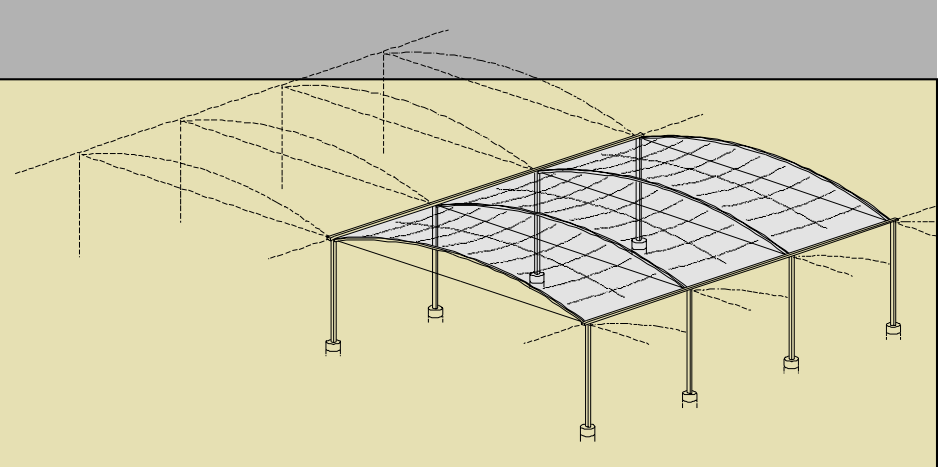
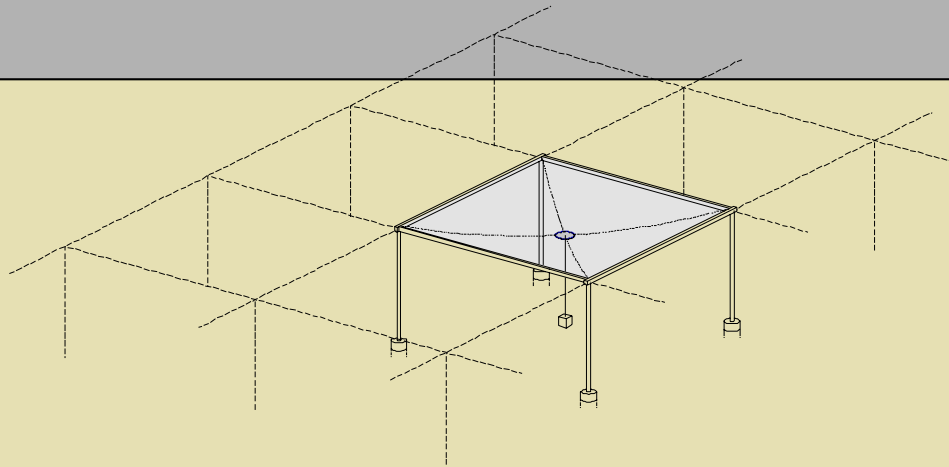
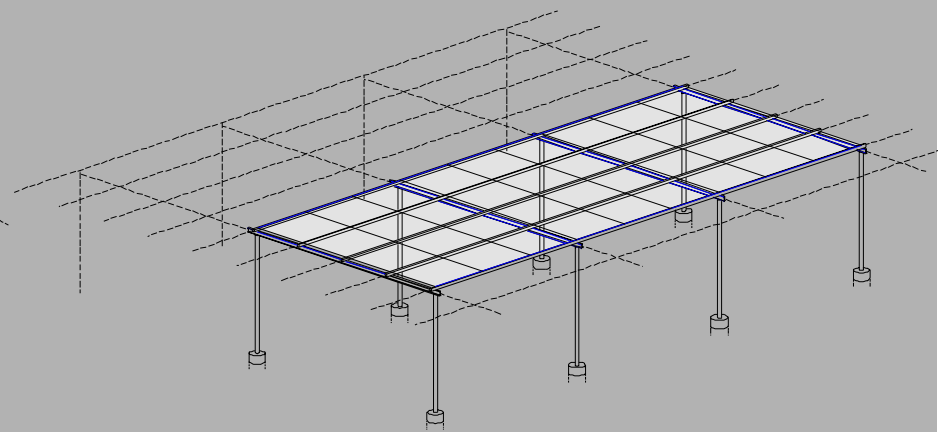
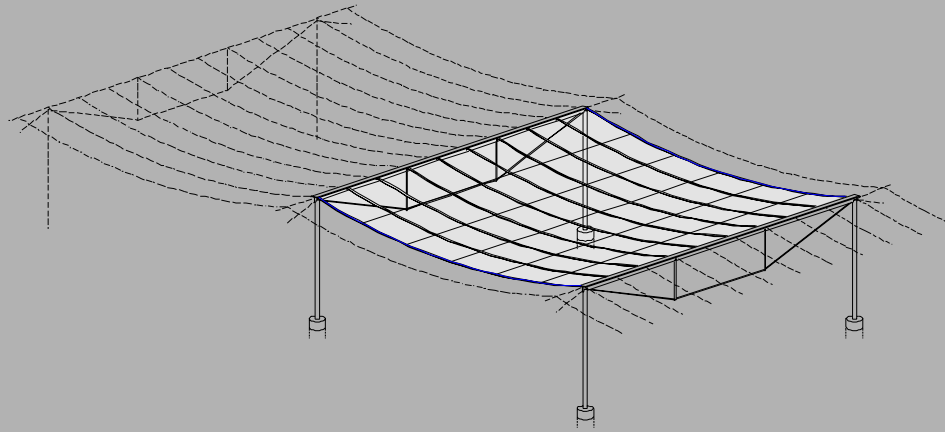






Kollektorvarianten

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200 MW Solar Tower Power Plant (Concept Design), Mildura, Australien

Aufwindkraftwerk: Abmessungen und Kosten am Beispiel eines sonnenreichen Schwellenlandes

Solar Updraft Towers						
capacity	5	30	50	100	200	MW
tower height	550	750	750	1000	1000	m
tower diameter	45	70	90	110	120	m
collector diameter	1250	2950	3750	4300	7000	m
tower cost	22	54	70	173	188	Mio. €
collector cost ^A	12	60	97	130	319	Mio. €
turbine cost incl. housing etc.	9	34	51	82	146	Mio. €
engineering, tests, misc.	5	19	28	46	48	Mio. €
total investment cost	48	167	246	431	701	Mio. €
grant	5	5	5	5	5	Mio. €
total investment cost - grant	43	162	241	426	696	Mio. €
annuity on investment ^{B,D}	3.4	12.6	18.8	33.3	54.5	Mio. €
o&m cost	0.2	0.7	1.1	1.9	3.3	Mio. €
electricity production ^C	14	87	153	320	680	GWh/yr
LEC (levelized electricity cost) ^D	0.26 €	0.15 €	0.13 €	0.11 €	0.08 €	€/kWh
non-energy revenues	1.0	1.0	1.0	1.0	1.0	Mio.€/yr
LEC incl. non-energy rev.	0.18 €	0.14 €	0.12 €	0.11 €	0.08 €	€/kWh
^A average labor cost 5 Euro/h						
^B depreciation time: 25 years, interest rate: 6%						
^C at 2300 kWh/(m ² yr) global solar insolation						
^D grant included in calculation						

Thank you very much for your attention

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