Solar IPP Project Development in Greece

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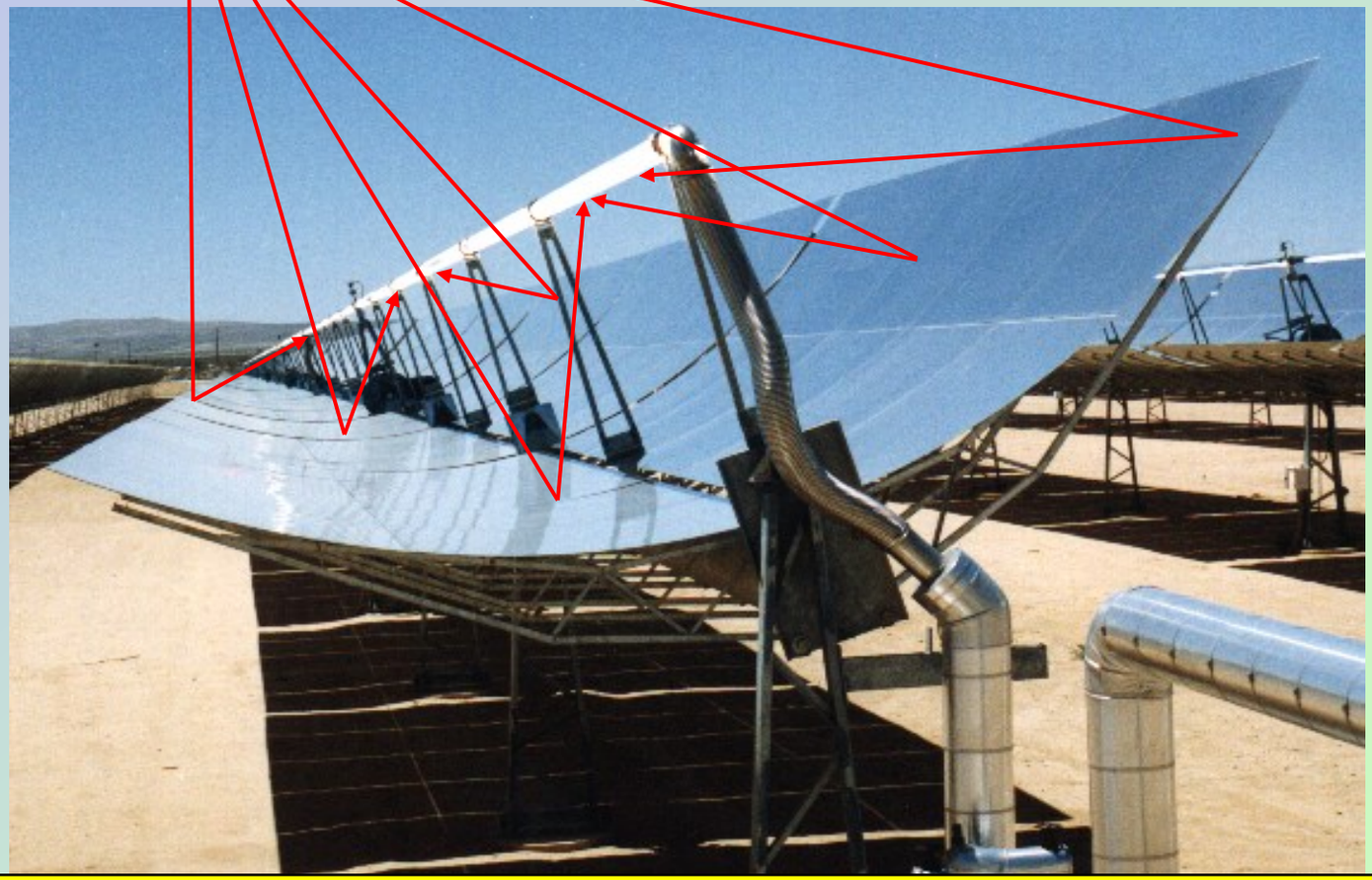
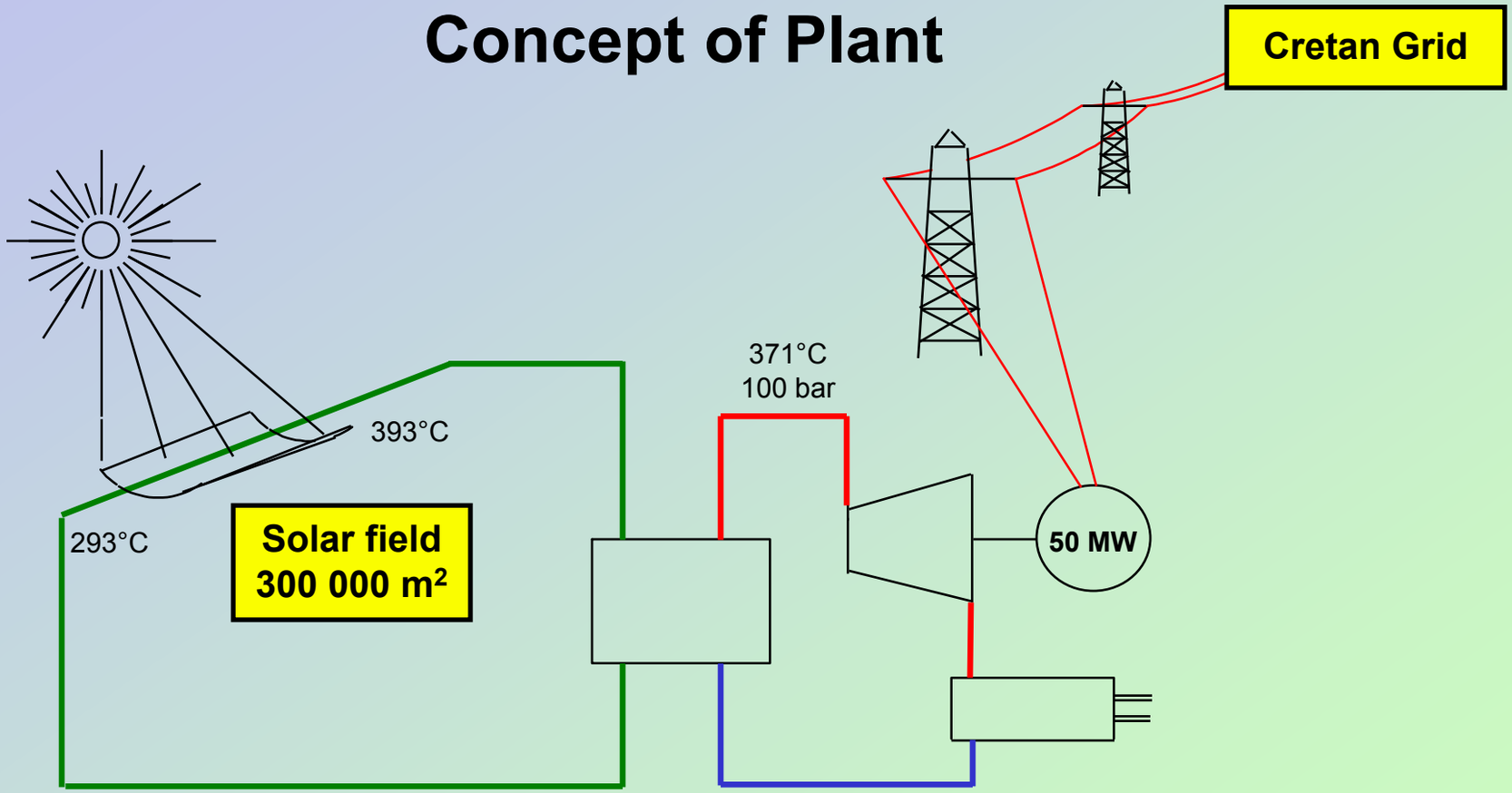
Parabolrinnenkollektor



The THESEUS Solar Field will consist of 560 Parabolic Trough Collectors, each 100 meters long and 5.8 meters wide.

Concept of Plant



113 million kWh_e pure solar generated electricity per year

Technical Parameters

• Capacity	50 MWe (net)
• Site location	Frangokastelló, Crete
• Solar radiation (direct normal)	2400 kWh/m^2/a
• Technology	Parabolic trough collectors Rankine steam cycle
• Collector area	300 000 m^2
• Full load hours	2250 h/a
• Electricity to grid	113 GWh$_e$/a
• Project cost	120 MEuro

Location of the Site

Micro climate at southern coast of Crete gives best solar radiation in Europe
(Annual solar radiation = 2400 kWh/m²)

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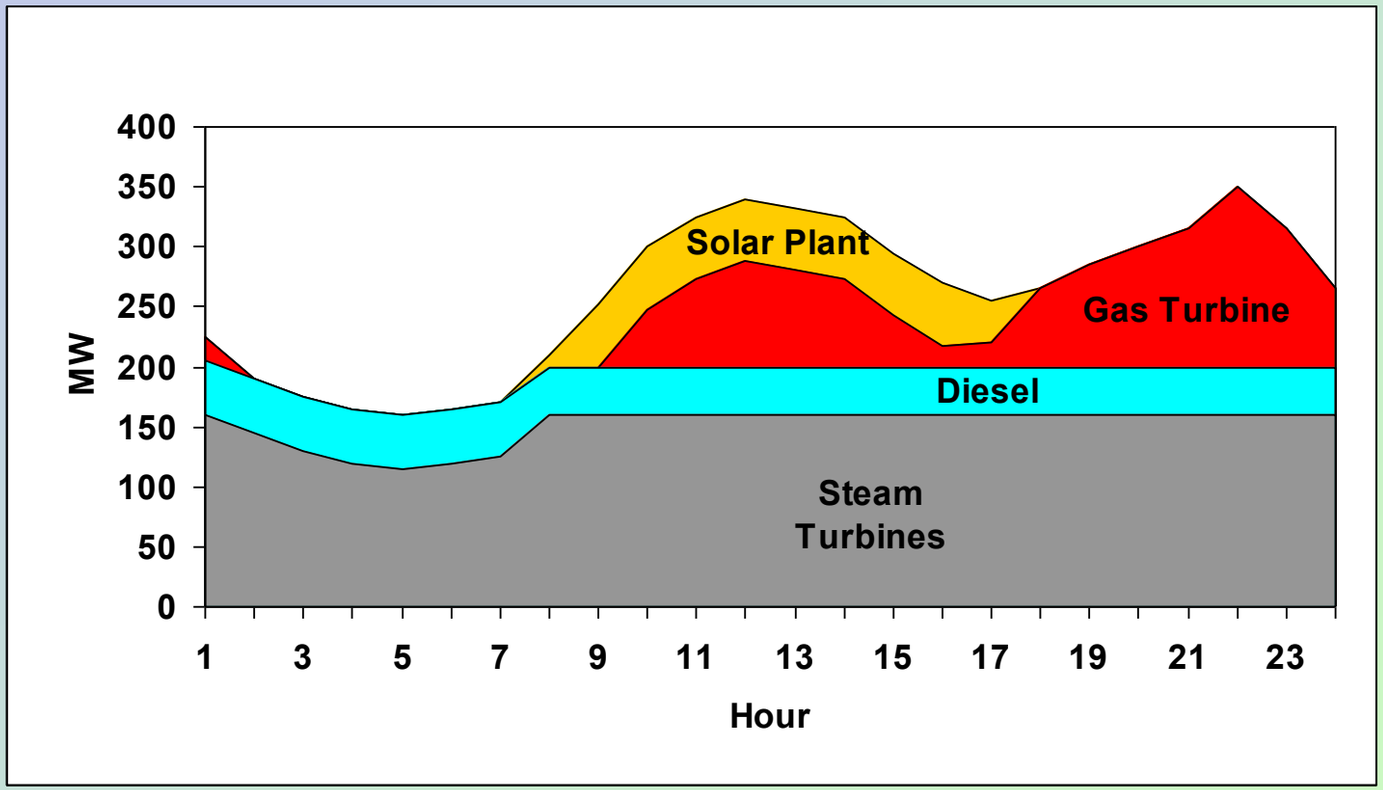
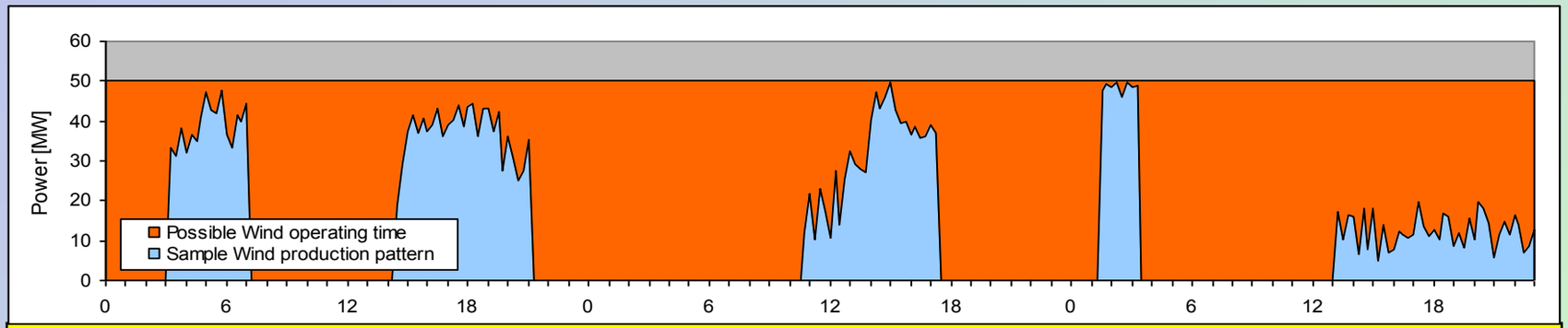
Power Production Profile for Crete

Typical Summer Workday

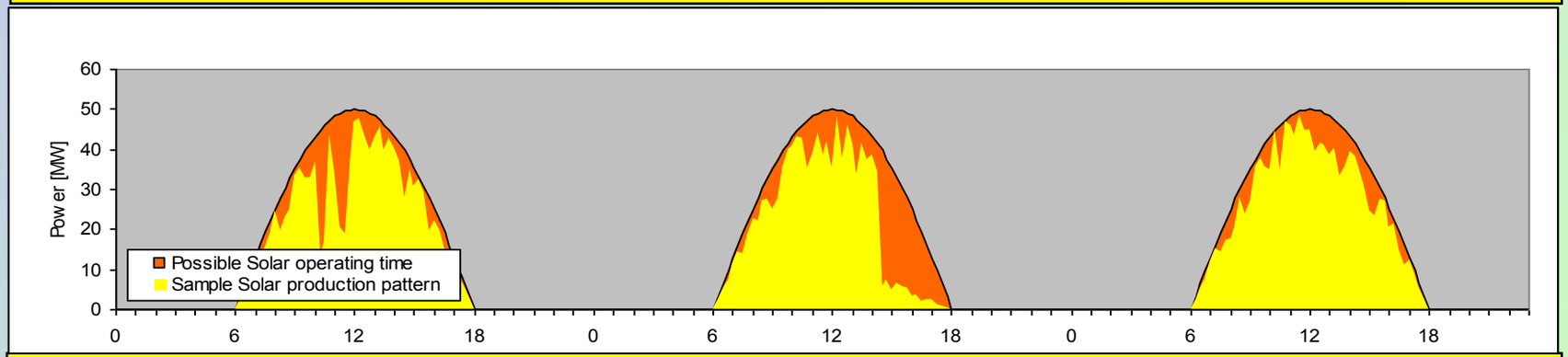


Solar plant avoids costly operation and emissions of gas turbines.

Comparison of Complementary Nature of Wind and Solar Thermal Electricity Generation



Wind energy is possible in any time period but is by its nature sporadic and unpredictable



Solar thermal energy is generally predictable and able to cover daily peaks

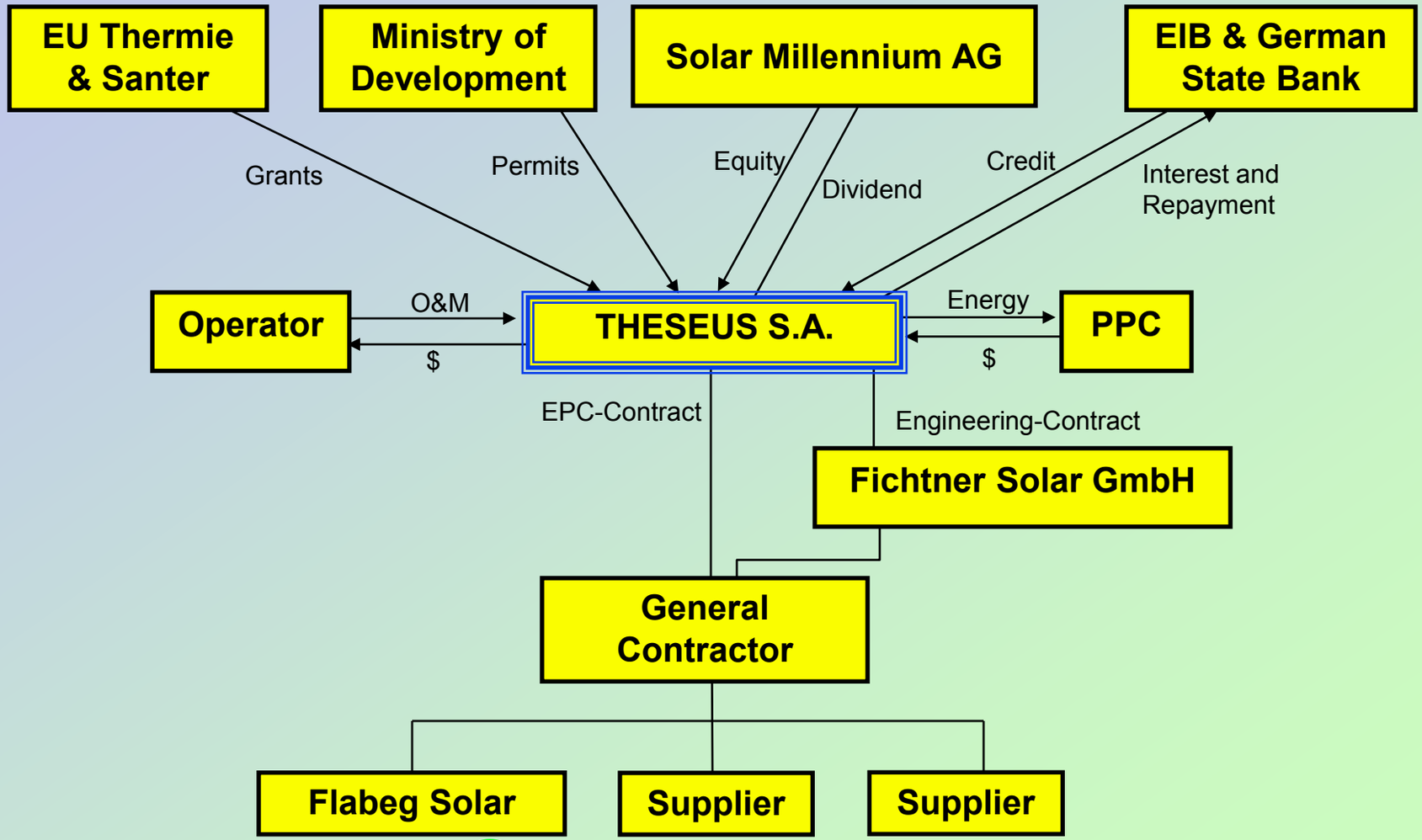
30% RENEWABLE LIMIT IS NOT APPROPRIATE FOR SOLAR THERMAL ELECTRICITY GENERATION

Solar Millennium GmbH

PILKINGTON SOLAR INTERNATIONAL

FICHTNER

Organization as IPP



Economics

- **Total Investment** — **120 MEuro**
- **Anticipated Financing**
  - **Equity** — **24 MEuro**
  - **Low interest loan** — **38 MEuro**
  - **Grants by European Union** — **48 MEuro**
  - **Grants by Greek and German Governments** — **10 MEuro**
- **Revenues** (113 GWhe/a @ 72.3 Euro/MWh) — **8.2 MEuro/yr**
- **Operating cost** — **1.6 MEuro/yr**

Benefits

- **Competitive electricity generation cost on Crete**
  - with grants less than average of existing fossil power plants in Crete
  - without grants less than gas turbine generation cost
- **Balance of payment**
  - **4 million Euro** saved every year by displacement of 28,000 tons of oil imports
- **Reduction of CO2 and other emissions**
  - **80,000 t CO_2** annually starting in first year of operation
- **Creation of more than 2 000 qualified jobs (man-years)**
  - for supply, construction and erection and operation
- **Pure solar renewable electricity generation with 95% security of supply in summer**
  - In general, excellent match with Cretan power demand profile
- **Higher Tax Revenues to Greece**
  - Income from manpower and capital is taxed higher than fuel imports