

ILF Consulting Engineers

Consultancy Services for Concentrated Solar Power Plants



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Introduction: The ILF Group



The company

- Established by Mr. P. Lässer in **1967**,
in 1969 Mr. A. Feizlmayr joined the **company** ⇒ „ILF“
- 100% privately owned, **completely independent** with no affiliation to construction companies, suppliers or financial
- Clients: Private sector, public administrations, financial instit.
- Active in different business areas, **since 25 years in the Renewable Energy sector**
- **Global presence**: 30 offices worldwide; **since 35 years** local office in **Riyadh** with more than 150 employees
- **Turnover 2012: EUR 191 million**
- **Permanent staff 2012: 1850**



Introduction: CSP Technology comparison study for Dubai



Agenda

Project Description

Results & Conclusions

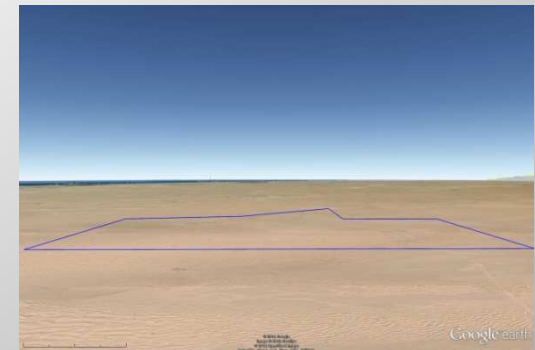


Project Description: Sheikh Mohammad bin Rashid Al Maktoum Solar Park



CSP & Photovoltaic: Dubai, Phase 2 : 1000 MW

- Client:** Dubai Electricity and Water Authority (DEWA)
- Project:** **Sheikh Mohammad bin Rashid Al Maktoum Solar Park 1,000 MW**
- Time frame :** 2012 - 2013
- Data:** Multi-technology solar park including **parabolic trough, solar power tower, Linear Fresnel** and photovoltaic
- Services:** Consultancy services:
- Conceptual Design Study for 1,000 MW CSP/PV Solar Park
 - Detailed technology selection report
 - Environmental impact assessment
 - Site investigations and survey
 - Economical and financial analysis
 - Implementation strategy



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Conceptual Design:

Based on **extraordinary experience of DLR** the basic **concepts for CSP** have been discussed and identified:

Parabolic trough collector, thermal oil as HTF with and without storage

Solar power tower system, molten salt as HTF with storage device

Linear Fresnel system, water / steam as HTF without storage

Detailed Simulations:

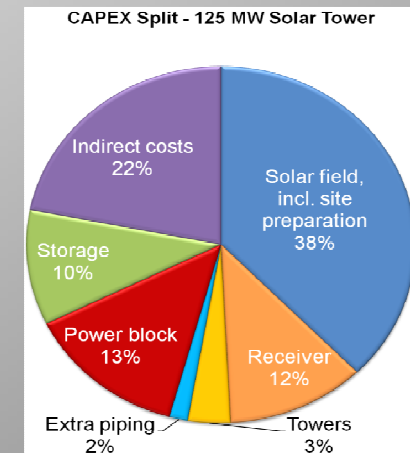
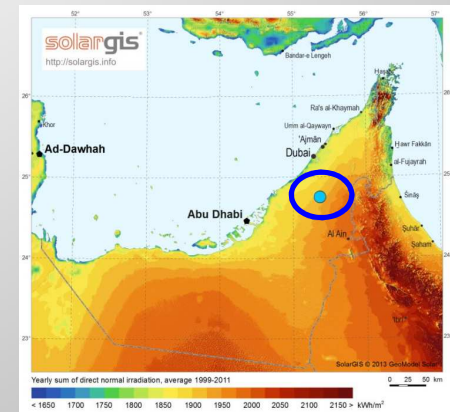
Advanced **solar field, storage simulation** provided by **DLR**

Power block, balance of plant design covered by **ILF**

Economical Analysis:

CAPEX and OPEX provided by **ILF**; aligned with DLR

LCOE calculation: **Financial parameters** defined by **ILF**

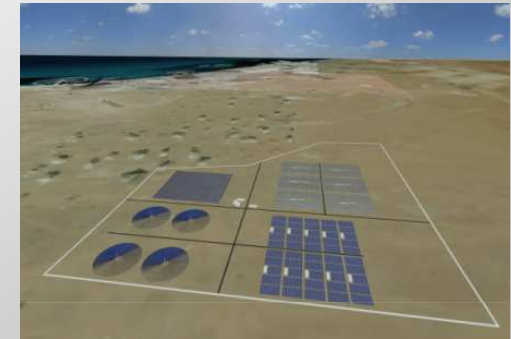


Results & Conclusions: Sheikh Mohammad bin Rashid Al Maktoum Solar Park



CSP & Photovoltaic: Dubai, Phase 2 : 1000 MW

- Investigation of the site showed **general suitability for implementation of 1000 MW solar park**
- **Low Direct Normal Irradiation (DNI)** because of **high aerosol loads** in the atmosphere
- LCOE calculations revealed **some uncertainties** regarding input values for **Solar Power Towers and Linear Fresnel**
- Linear focusing systems, e.g. **parabolic trough technology** **long term proven**; validation of techno-economic parameters possible



Results & Conclusions: Sheikh Mohammad bin Rashid Al Maktoum Solar Park



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- **Financial conditions** have a **major impact** on the absolute **LCOE** values: up to **1/3 of the LCOE** are **driven by financing conditions**
- A **decrease of LCOEs of approx. 40 % within the next 10 years** compared to today's costs is feasible
- **Ideal symbiosis between DLR and ILF: excellent** example for **collaboration between R&D and industry** in a currently highly innovative market



Consultancy Services for Concentrated Solar Power Plants Thank you for your attention



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