



D.4.4 OGULGÖNEN. Current Vision and Collaboration Potentials on CST Research and Applications

SOCAR's Global Activities



EXPLORATION Absheron Bulla Deniz Umid Zafar- Mashal Shafaq-Asiman Babek Garabadh Ashrafi-Dan Ulduzu-Aypara D230



Binegedi

Kurovdagh

Mishovdagh Kelameddin

Neftchala

Pirsahhat

Ramany

Shahdeniz

Surakhany

South West Gobustan Zigh and Hovsan

nd Gara

nli. Jafarli and Zar



Gas Processing Plant Heydar Aliyev Oil Refinery

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STAR Refinery



PETROCHEMICALS Azerikimva Production Union Petkim

SOCAR Carbamide Polypropylene Factory High Density Polyethylene Factory

SOCAR Methanol



TRANSPORTATION Baku Novorossiysk Oil Pipeline Baku Supsa Oil Pipeline Baku-Tbilisi-Ceyhan Oil Pipeline (BTC) South Caucasus Natural Gas Pipeline TANAP TAP Dubendi Terminal Kulevi Terminal SOCAR Terminal



SOCAR

SERVICES

Azerigas Production Union SOCAR Energy Ukraine SOCAR Georgia Gas SOCAR Georgia Petroleum SOCAR Petroleum SOCAR Petroleum SA Romania

SOCAR Trading

SOCAR Turkey Natural Gas Investment SOCAR Energy Switzerland

A1 and Pronto Oil in Austria



Structure of SOCAR Turkey Operations РЕТКІМ Turkey's first and only petrochemicals producer SOCAR STAR REFINERY Producer of diesel, jet fuel, LPG and naphtha TURKEY The Trans-Anatolian Natural Gas Pipeline Project, that will carry natural gas to TANAP Turkey and to Europe via Turkey SOCAR The largest container port in the Aegean Region TERMINAL SOCAR Natural gas trading, electricity supply, trading and wholesale Natural Gas SOCAR Energy Trading Natural gas and electric distribution company SOCAR Fiber optic line investment for electronic communications FIBER SOCAR Storage and operation STORAGE Wind Power Plant PETKIM WPP Real estate construction and consultancy SCR Bursagaz Serving more than 1 million subscribers in 11 districts of Bursa Serving more than 500 thousand subscribers in 10 districts of Kayseri Kayserigaz Turkey's Alternative Telecommunication Company Millenicom Enervis Energy efficiency and renewable energy HELE CONTRACTOR



With more than 50 years history, Petkim represents a giant production power which is of strategic importance for Turkey's economy and industry.



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A new aromatics and

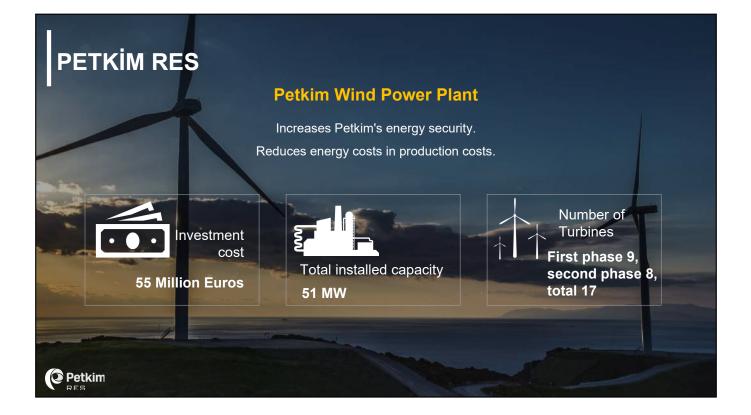
PTA production plant

1.250.000 tons/year

SOCAR Turkey and BP signed a Heads of Agreement for the possibility of forming a business partnership with the purpose of establishing and operating a petrochemical complex in Aliağa, which will allow the integrated use of raw materials produced at the STAR Refinery and the Petkim petrochemicals complex.







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Current R&D Case

R&D and Innovation Center as a separate entity

Planned to do R&D for all SOCAR subsidiaries

Consists of process and product development groups (possibly more)

Solar Heating

- basics of CST/CSP
- air heating
- steam generation
- complementary heat

High T (T>500°C) non-catalytic rxns

pyrolysis of ethane
pyrolysis of polymers
cracking rxns(?)

Catalytic rxns

- chemical looping (?)
- solar hydrogen
- field compatible pilots

Enervis

| Kay 1-2-3 Solar Power Plants Turnkey EPC service International product supply | Project Budget | Total Installed Power | Plant Location |
|---|----------------------|-----------------------------|-------------------|
| Embankment ground and special drilling works Construction erection with screw system | 2.7 M \$ | 3248 kWp | İncesu/Kayseri |
| Special manufacturing transformers | Total | Solar | Project |
| 60 staff on field and office | Construction | Panels | Duration |
| Camera and security system (24 hours) | Area | | - Studen |
| Production and performance tracking (365 days) | 52000 m ² | 12492 pc. | 4 months |
| Operation and maintenance services | | | |

Enervis

Kay 1-2-3 SPP Operations & Maintenance Services

Field and production tracking with remote access Monthly activity report Detailed performance measurements Daily production analysis Daily failure / downtime tracking Periodic field visits Periodic maintenance on 3rd and 6th months Detailed electrical / mechanical maintenance services Solar panel and field cleaning Service Fee 1000 \$/MW/month

Inverters (Kaco)

48 pc.

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