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Company Presentation

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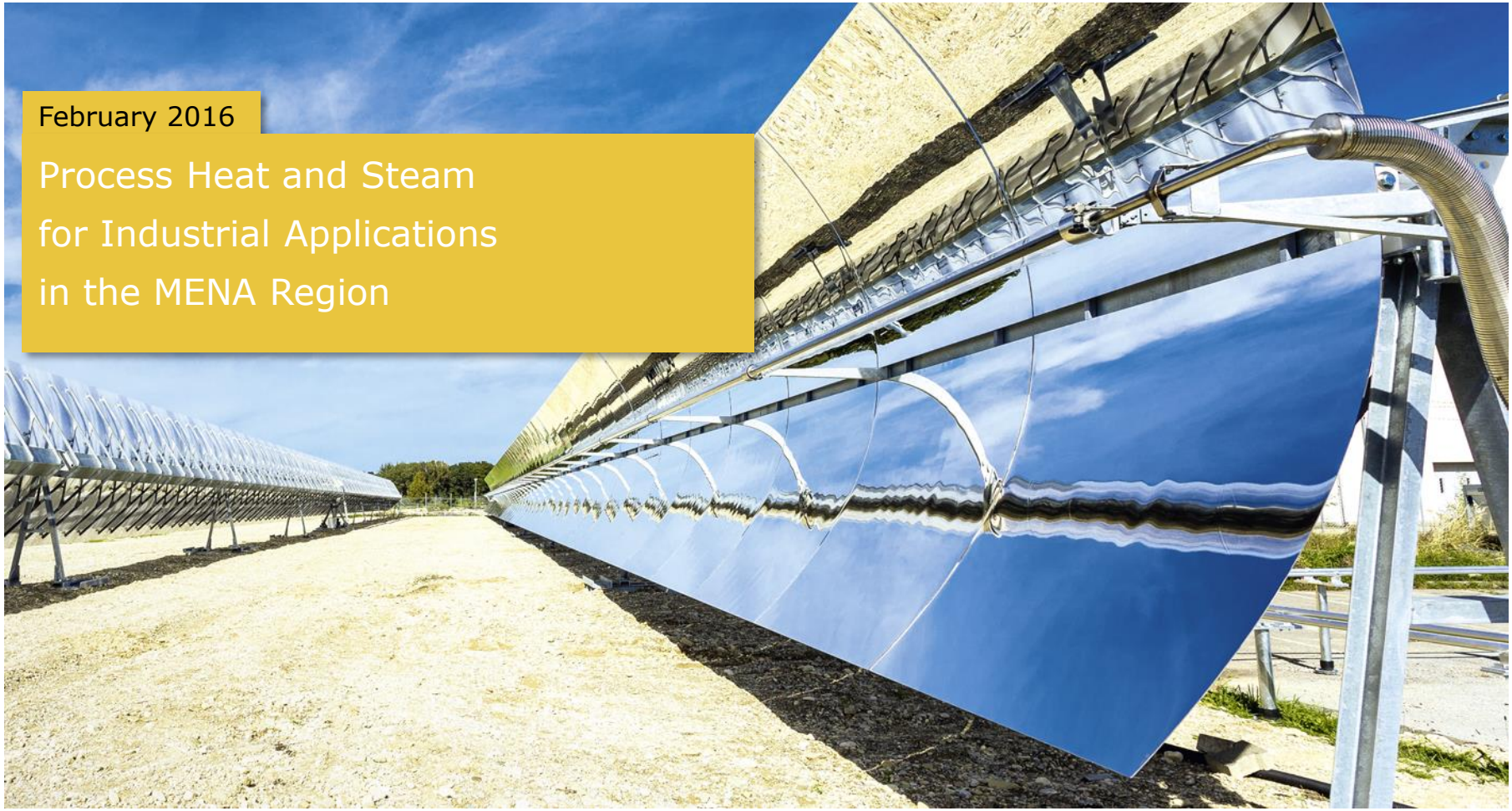

February 2016

Process Heat and Steam
for Industrial Applications
in the MENA Region

Fact Sheet

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- protarget AG Germany was founded in 2009 to develop, produce and sell turn-key parabolic trough power plants and solar steam boilers
- CSP plant for industrial process heat generation in Germany in operation since 2012, research plant in Cyprus in operation end 2016
- Commercial solar process heat projects in Chile, Cyprus, Morocco and Algeria at financing stage
- Key technologies and IP patented and approved by the German Aerospace Centre DLR and the TÜV Germany
- The key business objectives of protarget are :
  - The decentral supply of process heat or steam for industrial applications
  - Energy to be cost competitive with fossil fuels (Solar Energy cost @ 2.5€ Cent/kWh, equivalent to 0,25€/litre diesel)
  - Modular power plant concepts with industrial produced components
  - Commercial scale projects in the range of 0,25-50 $MW_{thermal}$
  - Product to be capable of including local content

Steam Technology

Solar Boiler for Process Steam Generation

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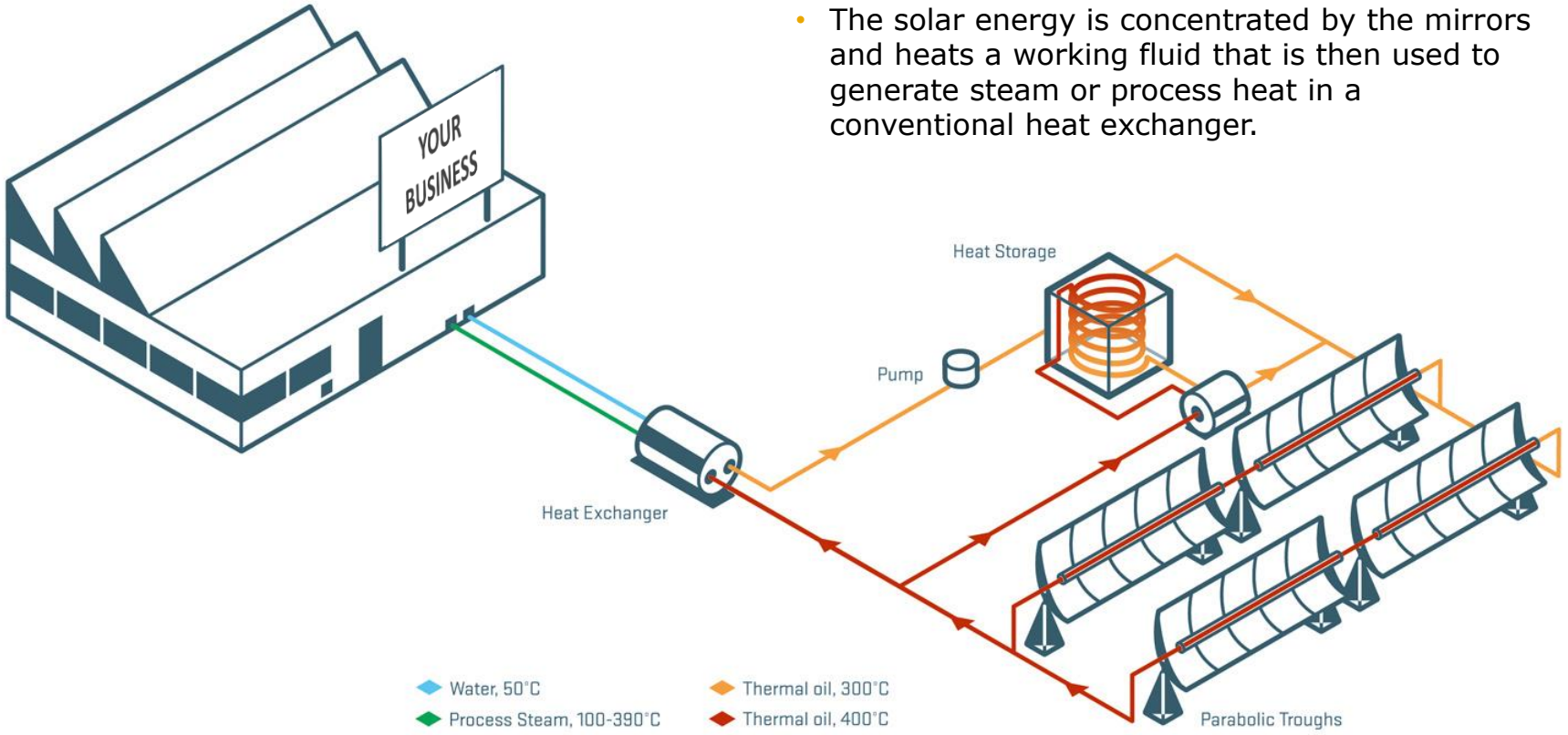
- A concentrating solar power (CSP) plant employs rows of large mirrors called parabolic troughs that move about one axis in order to track the sun throughout the day.
- The solar energy is concentrated by the mirrors and heats a working fluid that is then used to generate steam or process heat in a conventional heat exchanger.



Project Example Morocco

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Process Steam – Fish Canning Factory

- The fish canning factory in Casablanca, Morocco is one of north Africa's biggest fish processing plant.
- The factory build in 2006 requires for the boiling and preserving process of the cans, steam at 180°C
- At present, the factory produces its steam with two conventional steam boilers, about 12-15 hours per day
- The boilers run on heavy fuel oil (HFO) at a price of 500-600€ pro Tonne of oil.

Project Summary

- It is planned to build a 1,75 MW Solar Steam with 7 Loops
- Total project cost: 1,79 M€
- Annual fuel price increase: 3%
- Return on Investment: < 8 years
- Local project developer: XXXX
- Start of construction: July 2016

Project Example Algeria

Solar Crude Oil Pre-Heater + EOR

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- In an oil exploration camp in Algeria, 400 oil quells are powered with diesel generators with a total capacity of 250 MW!
- The diesel is produced in an on-site distillation facility.
- The required heat energy to process the crude oil into diesel, is powered with diesel
- By installing a solar crude oil pre-heater the current diesel consumption in the topping plant will be reduced by 34%
- Leading to a reduction in fuel consumption of 3.2 Million litre per year

- Return on investment 3-4 years [based on a diesel price of 1$/litre]
- The installation of a solar EOR system directly at the exploration site, will increase the yield of the wells of 40-60% depending on the heavy oil content.

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