

# **36.6MW<sub>TH</sub> INTEGRATED ENERGY SYSTEM BASED ON CSP**

*for Sundrop Farms, Australia*





# FROM IDEA to reality



Winter 2014  
Feasibility study



Spring 2015  
Civil work begins



Winter 2015  
Solar tower & solar field completed



Summer 2016  
Commissioning begins



Autumn 2016  
Plant opening

## PROJECT FACTS

# Growing tomatoes IN THE DESERT

### CUSTOMER NEED

- 200,000 m<sup>2</sup> greenhouses
- 17,000 tons tomatoes / year

### REQUIRED ENERGY MIX

- 20,000 MWh heat / year
- 250,000 m<sup>3</sup> water / year
- 1,700 MWh electricity / year

### INTEGRATED ENERGY SYSTEM BASED ON CSP

- 51,505 m<sup>2</sup> heliostats
- 127 m high solar tower

### ENVIRONMENTAL SAVINGS

- 400,000 tons CO<sub>2</sub> / 25 years

As a pioneer within arid climate agricultural business, Sundrop Farms has a unique concept of growing high-value crops in the South Australian desert using seawater and sunlight as main resources. Their pilot plant's positive operational experience since 2010 encouraged the large-scale application of the technology, expanding operation by 20 hectares with the aim of producing over 17,000 tonnes of fresh vegetables annually for the Australian consumers - this accounts for apprx. 15% of Australia's entire tomato market.

Aalborg CSP first completed the pre-engineering study and determined technical and economic viability of the project as well as the scope of the system. Based on the positive findings, in December 2014 Aalborg CSP received the order to supply the Integrated Energy System which is the first large-scale Concentrated Solar Power (CSP)-based technology in the world to provide multiple energy streams (heating, fresh water and electricity) for horticultural activities.

Since the official opening ceremony held in October 2016, the Integrated Energy System has been harvesting the sun in the most efficient way to satisfy multiple energy demands for sustainable vegetable growth.

*“Strong partnerships are essential to the Sundrop model and Aalborg CSP have consistently delivered on promises and guaranteed the reliable operation of our greenhouses, contributing to the success of this truly sustainable, world-first facility”*  
- Philipp Saumweber, CEO of Sundrop Farms.

# Harvesting the sun IN THE MOST EFFICIENT WAY

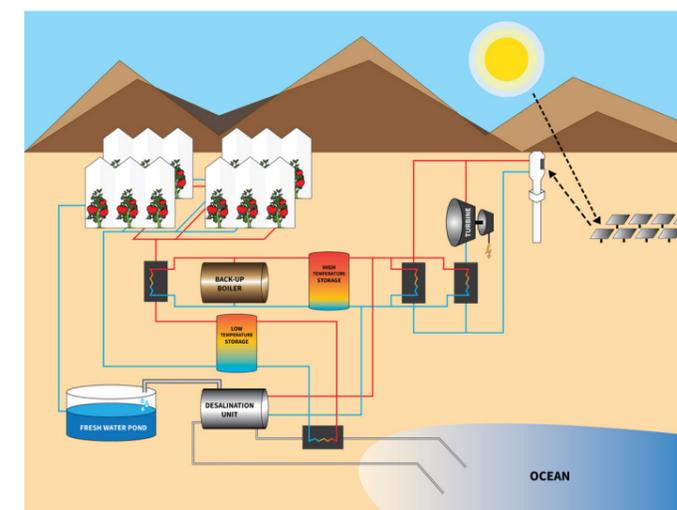


Illustration of the integrated energy system in Port Augusta

Unlike other CSP plants in the world that produce a single energy output, such as electricity only, the Integrated Energy System in Port Augusta harnesses the sun in the most efficient way to satisfy multiple energy demands.

More than 23,000 heliostats (computer-controlled mirrors) installed in the desert ground collect the sun's rays and reflect them onto the top of a 127 m high solar tower.

Here, the concentration of energy generates high temperatures which is then used to:

- **heat** the greenhouses in wintertime and on cold summer nights
- provide **fresh water** by desalinating seawater drawn from the nearby Spencer Gulf (5 km from the site)
- periodically run a steam turbine to produce **electricity**.

Energy production is tailored to the seasonal needs of the greenhouses and is balanced throughout the year to achieve the lowest possible energy costs.

*“The Integrated Energy System is the first of its kind in the world and it changes the way we are thinking about energy production today. It is an intelligent way to sustainably satisfy different energy needs in remote areas at the time the industrial facility would need it”* - Svante Bundgaard, CEO of Aalborg CSP.

# **CHANGING ENERGY** *around the world*

Aalborg CSP is a leading developer and supplier of innovative renewable technologies aiming to change the way energy is produced today. Relying on extensive experience from some of the most efficient concentrated solar power (CSP) projects around the world, the company designs and delivers green technologies and integrated energy systems to lower the cost of energy for industries and power plants worldwide.

Aalborg CSP places strong focus on R&D activities and partners with knowledge-based companies and institutions to create leading-edge technologies. As a result, the Aalborg CSP engineering design is centred on a value-adding concept providing solutions that excel in operation, increase plant revenue and contribute to a greener future.

Headquartered in Aalborg (Denmark) and with sales & service offices in Spain and Australia, Aalborg CSP has realised more than 1,700 MWth cost effective green energy solutions to a variety of industries worldwide.



**3 sales & service locations**  
**more than 1,700 MWth solar installations**

**AALBORG CSP**  
- Changing Energy

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