Khi Solar One CSP Project

This page provides information on Khi Solar One CSP project, a concentrating solar power (CSP) project, with data organized by background, participants, and power plant configuration.

Project Overview

Power Station:	Khi Solar One
Location:	Upington ZF Mgcawu District Municipality Northern Cape South Africa
Owners (%):	Abengoa
Technology	Power Tower
Solar Resource:	2952
Nominal Capacity:	50 MW
Status	Operational
Start Year:	2016

Status Date

Status Date	October 26, 2023

Background

Break Ground Date	2012
Expected Generation (GWh/year)	180
Lat/Long Location	-28.537,21.078

Participants

Developer	Abengoa Spain
EPC	Abener, Teyma Spain
Operator	Abengoa Solar

Electricity Generation Offtaker	Eskom

Costs

Total Construction Cost (2016)	$ 450.00 million
Total Cost USD (2020)	$466.59 million
Specific Cost/kW USD (2020)	$ 9331.8
LCOE USD/kWh (2020)	$ 0.22
Remuneration ZAR/kWh	2.69
Remuneration Start Year	2016
Remuneration USD/kWh Deflated (2020)	0.19
PPA or Tariff Period (Years)	20
Support Scheme Type	PPA
Concessional Funding or Other Support	European Investment Bank (EIB) €50 million; CTF $15 million; IFC app. $75 million;C Loan $15 million

Plant Configuration

Solar Field

Solar Field Aperture Area (m²)	576800
# of Heliostats (or dishes for dish systems)	4120
Heliostat Aperture Area (m²) (or dish aperature for dish systems)	140
Collector/Heliostat Manufacturer	Abengoa Spain
Collector/Heliostat Engineering or IP Owner	Abengoa Spain
Collector/Heliostat Model	ASUP 140

Solar Field (Receiver)

Receiver Working Fluid	Water/Steam
Receiver Working Fluid Category	Water
Tower Height (m)	200
Receiver Manufacturer	Cockerill Belgium

Power Block

Nominal Turbine or Power Cycle Capacity	50 MW
Power Cycle	Steam Rankine
Cooling Type	Dry

Thermal Energy Storage

Storage Type	Other
Storage Capacity (Hours)	2
Storage Description	Saturated steam