

UMUWA SOLAR POWER STATION

INTRODUCTION

The solar power station at Umuwa is situated on the lands of the Anangu Pitjantjatjara people in northern South Australia, several hours drive southwest of Alice Springs.



The project was the first deployment of the CS500 solar concentrator system, and consists of 10 dishes. It is connected to a diesel powered mini-grid that serves a number of nearby indigenous communities.

The project cost AUD \$2.5M, offset by grants from the Australian and South Australian Governments and the Aboriginal and Torres Straits Islanders Commission (ATSIC).

The project will save 140,000 litres of diesel and 510 tonnes of Greenhouse emissions each year.

CONFIGURATION

The CS500 dishes are installed close to the new diesel generation house and all 10 dishes are equipped with 22% efficient silicon-based photovoltaic (PV) cells. The power station has a rated capacity of 220kW.



The power station was originally designed to use an air fluid cooler to reject heat from the system. While this design worked adequately, Solar Systems installed an alternative system which uses polythene pipes buried 1.5m below the earth's surface, effectively using the ground as a heat sink. This has proved highly effective, and has reduced the cooling circuit average operating temperature by 10-15°C, which boosts PV cell output and improves cell life. It has also reduced parasitic losses to further increase the overall plant efficiency.

Electricity is converted to grid-quality alternating current and exported to the local electricity grid, providing extra capacity and support to the diesel generators.

The power station was completed in September 2003.

ACHIEVEMENTS

This project was Solar Systems first power station installed in a commercial context. It was also in a remarkably remote location, some 6 hours from Alice Springs. This was indeed a significant challenge for our suppliers as well as our own construction staff, requiring complete self-sufficiency and ability to work safely in hot, dusty and harsh conditions.



The installation provided an enormous sense of achievement in that it proved the technology would work reliably in such an application. It also provided a rich source of practical lessons that were incorporated into later projects.

The Umuwa power station was the subject of a site visit during the 2003 World Solar Concentrator Conference, held in Alice Springs.