

Paraboloidal solar concentrator

At the Australian National University (ANU) researchers have developed a paraboloidal solar concentrator with 400 m² of mirrors. SG3, the third-generation demonstration model, features a hexagonal aperture and is mounted on a network of spherical nodes on a tubular steel frame. The paraboloidal dish-frame is hinged to a support base-frame which rotates on a reinforced concrete track. Fifty-four triangular reflector elements – composites of steel, polyurethane foam and silver-backed glass – are attached to the dish-frame to concentrate the solar radiation. Computer-controlled hydraulic rams track the dish around the vertical and horizontal axes. An insulated, cylindrical top-hat cavity at the focal point of the concentrator houses a solar boiler rated at 400 kW_{th}.

The boiler can produce a peak output of about 120 g/s of steam, superheated to about 460°C and 4.2 MPa. The superheated steam is passed to a four-cylinder uniflow steam engine, which drives a 65 kVA asynchronous generator. The dish weighs about 16.8 t, a specific weight per aperture of approximately 42 kg/m².

The SG3 can be used for various forms of cogeneration in general and is ideal for economically viable desalination. *Contact: Prof. Stephen Kaneff, Energy Research Centre/ANUTECH, Australian National University, Canberra ACT 0200, Australia. Tel: +61 (2) 6249 0027; Fax: +61 (2) 6249 0506; E-mail: stephen.kaneff@galaxy.anutech.com.au; Website: <http://www.anutech.com.au/physci/opps/bigdish.html>.*

Website: <http://www.caddet-re.org/html/100art7.htm>