Suns to benefit from solar

The Gold Coast Stadium redevelopment (officially known as Metricon Stadium), built at the site of the old Carrara stadium on the Gold Coast, Queensland, will be the home of the Gold Coast Suns AFL team, as well as a state-of-the-art solar photovoltaic (PV) roof.

The stadium's roof incorporates a solar photovoltaic (PV) roof that has been designed to generate 20 percent of the stadium's forecast annual energy consumption, in line with the Federal Government's target.

In a Queensland first, the installation of solar paneling will generate approximately 275 megawatt-hours (MWh) of electricity per annum. This is the equivalent to powering more than 250 homes in Queensland.

The PV paneling, which is five metres wide, will be installed over 450 metres of roofing.

Other energy efficiency measures already incorporated into the design of the stadium include high-efficiency air-conditioning, energy-efficient lighting, and water harvesting. Materials from the previous stadium, which was demolished, have also been recycled.

**Solar Technology**

The stadium's solar paneling uses Schiutter Optiplus sandwich glass panels, providing excellent visibility from below.

The cell packing has been designed to ensure sufficient light is passed to prevent a solid shadow line on the field; this was a key consideration for the design team.

Schiutter was able to demonstrate a proven track record and undertake the comprehensive testing demanded by the design team.

**Other Main Features**

Integration into the existing roof design proved to be an interesting task for the team, and a number of options were investigated. The solution involves 30 individual bays, each comprising eight 14- or 18-solar panel modules over a curved bay. Viewed from the front, the bays present as a series of curved elements.

Each panel slopes to the side and backwards to allow capture of stormwater.

Because of the horseshoe roof, each bay presents at a different azimuth or orientation to the sun, while each of the panels that make up the bay presents at a range of inclinations to the sun. The complex geometry required to incorporate the solar panels into the roof's iconic architectural design made the assessment of power generation time-consuming; however, it was determined that the electrical generation would not be adversely affected and the decision to proceed with the curved solar roof was justified.

Detailed investigation showed that the potential generation of the curved solar roof is from one to two percent less than an almost-flat roof design; however, the majority of panels have improved angles for self-cleaning, which makes the curved roof even or marginally better in terms of overall generation efficiency.

**Future Outlook**

Concept plans have been drawn up for approximately one megawatt of peak capacity on the site, with implementation being subject to future funding.

The Gold Coast Stadium Redevelopment received direct funding from the Queensland Government, via the Office of Clean Energy, FM

More Information

Gold Coast Stadium
www.ausstadiums.com

**Insider Comment...**

Connan Brown, senior associate - ESD manager, Norman Disney & Young, describes his experiences working on the stadium redevelopment:

"This was a very exciting project for Norman Disney & Young and also for me personally, but most importantly a very good result for the stadium stakeholders. Full credit to the architect and design team in achieving a fully integrated solar solution within a unique and iconic roof form - an outstanding aesthetic result."

Norman Disney & Young
www.fly.com