

# 96 DEGREES IN THE SHADE

Qatar wants to host the 2022 World Cup. But first it has to convince FIFA that the game can even be played in a Qatari summer. So it got Arup Associates to create a micro-climate inside a 500-seat test stadium. Cool. **Stephen Kennett** reports

As Brazil prepares to host the next World Cup, other countries are already setting their sights on 2018 and beyond. One of these is Qatar, which has just unveiled the centrepiece of its bid for the 2022 event: an 86,000-seat stadium designed by Foster + Partners. If successful, it will become the first country in the Middle East to host football's biggest competition. Money is no concern: £2.5bn has been allocated to the tournament if Qatar does win. What is a problem is the country's climate. Any chance of success hinges on proving that the hot and humid summer conditions won't be too much for players.

Qatar is no stranger to football. For the past 60 years it has had a buzzing national league, but games are played on winter evenings. This is not an option for the World Cup: its games will have to take place in the

late afternoons of a blazing summer.

There are no hard-and-fast rules for spectators, but FIFA sets down recommendations aimed at preventing heat stress for players, and temperature and humidity are critical. FIFA uses wet-bulb measurements; this is the temperature you feel when your skin is wet and exposed to moving air. Between 29.4 and 32.1°C there is a high risk of heat stress, and at 32.2°C and above the risk becomes extreme, and football should not be played for more than 30 minutes without a break. In a Qatari summer, ambient dry temperatures can hit the mid-40s with relative humidity of 80%, which equates to an "extreme" risk.

"If measures aren't taken, you get into the situation where players need drips at half time and then it is brutal; it's not sport, it's torture," says Mike Beaven of Arup Associates.

The only way to prevent this is by air-conditioning the stadiums. But even an oil-rich state such as Qatar knows that expending lots of energy cooling outdoor spaces isn't going to win over FIFA officials or the watching world. So, at the end of

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