CASE STUDY

Kranji Racecourse

– a one horse race when it comes to winning lighting control

Horse racing in Singapore has a long history, dating back to colonial times with the first race taking place in 1843. The Singapore Turf Club (STC), managed by the Malaysian Racing Association, has been in its current location at Kranji since 1999.

The original facilities and track design, which includes six tracks, visitor areas and corporate facilities, were hailed as state-of-the-art at the time and received an award from the Philadelphia Chapter of the American Institute of Architects for its 'fun and whimsical' design. When commissioned in 2000, the course was floodlit with more than 40 lighting towers fitted with 1,800 watt ArenaVision Philips luminaires.

In 2007, the Singapore government released a tender to upgrade the racecourse infrastructure. With a short time frame in which to respond, Control Tech Asia, the long-standing Philips Dynalite VAR in Singapore, designed a lighting control system based on core products and technical expertise to meet the needs of this world-class racecourse.

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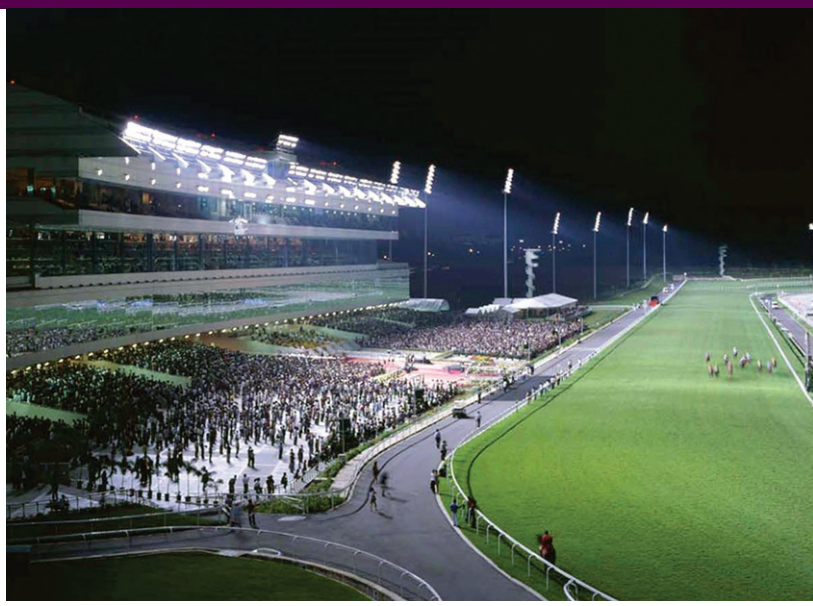
Client requirements

A key criteria for the racecourse upgrade was the monitoring and control of the lighting towers to ensure they were secure and always available for training and race meetings.

STC required triple redundancy to ensure the lights would remain on when needed. In addition, the flood-lighting system needed to have both timed and manual control capabilities for onsite and remote operation.

Monitoring the energy consumption of each lighting tower was also a fundamental element of the tender as the STC strives to improve the facility's overall energy efficiency.



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The Philips Dynalite solution

The scope and complexity of the project required Philips Dynalite to use an intelligent building as an analogy when designing the system.

The overall system has three networks to provide the required level of redundancy.

According to Ray Bond, Business Development Manager, Southeast Asia for Philips Dynalite, controllers would normally be run over a single bus network, but in this case there were two existing networks wired underground. The third layer needed to sit above the original two on a wireless network, giving three streams of data to guarantee the system always remains on when needed.

In addition, there would normally be one control room, however in this case there are three, giving 200% redundancy. This presented the challenge of making sure only one was in operation and not overridden by one of the redundant networks.

Thinking outside the square

Another challenge for the installation team was overcoming access restrictions. During installation, the racecourse was operational and there was no opportunity to 'shut' the facilities to allow the installers the freedom to connect, test and commission.

The solution was to install the lighting control system in the background until it was ready to be switched over. It had to be 100 per cent operational, first time.

All images of Kranji racecourse from EwingCole

Products and technology used

While the Philips Dynalite tender submission specified off-the-shelf products, it was the team's ability to integrate with an existing legacy power system and provide a maintenance agreement post-commission that gave the company the green light over other suppliers.

The product range used to control the lighting towers included the DDRC1220FR-GL and DDRC420FR DIN Rail relay controllers over the Firetide 5.8Ghz wireless network equipment.

Three desktop work stations and three maintenance laptops running the Philips Dynalite EnvisionManager and MapView software were supplied to oversee and manage the system.

In order to monitor energy consumption and component failure and integration with third-party power meters, the Philips Dynalite team wrote special software.

Weathering all conditions

Each tower's monitoring system is housed in an outdoor enclosure linked by cables and wireless networks. Linking the towers allows the maintenance crew to readily establish which tower is exhibiting abnormalities based on irregular power consumption behaviour and respond accordingly.

The use of outdoor enclosures to house the equipment in the high heat and humidity of Singapore presented a new set of challenges.

"Some of our equipment has been modified to tolerate the conditions to protect them from literally melting in the heat. A huge amount of protection has also been added to cope with the high risk of lightning strike in the tropical environment," said Bond.

Into the future

The second phase of the Kranji racecourse redevelopment will focus on the control of the broadcast monitors around the track. As race goers move around the complex, individual race and betting information are constantly broadcast and updated on the displays. With the monitors fully integrated, energy consumption of each screen can be monitored based on the amount being drawn.

As power consumption becomes a core requirement for many businesses in the region, Philips Dynalite has the capacity to provide monitoring equipment and energy-efficient LEDs and luminaires to help companies improve their energy savings.

Key client benefits

The Philips Dynalite advanced lighting control system has not only delivered excellent monitoring and control management for Kranji's lighting, but has also achieved significant energy savings.

The system has been able to meet the client's demanding lighting requirements while providing excellent visibility and visual comfort for race goers.

The flexibility of the Philips Dynalite lighting control equipment and its capacity to integrate with and optimise existing systems will ensure that the Kranji racecourse continues to be the number one horse racing venue in the region.

Fast facts

Project
Kranji Racecourse

Location
1 Turf Club Avenue, Singapore 738078

Operator
Singapore Turf Club

Value Added Partner
Control Tech Asia Pte. ltd

Products
DDRC1220FR, DDRC420FR, DNG100BT

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