



Rain Bird

# Water task

## Fine-tuning Europe's most advanced irrigation systems

**The majestic rise and fall of Slovenia's Julian Alps give way to the picturesque tranquility of Royal Bled's destination courses.**

The King's is the oldest and largest in Slovenia, dating back to 1937, and sits alongside the wooded Lake's Course.

Over a three-year period, architects Howard and William Swan led a team of specialists from 17 nations, extending the course to Championship length, redesigning and reconstructing greens, tees and bunkers and adding 10 new lakes to create a dramatically-changed layout. The strategically and skillfully remastered course was revealed to the golfing world in 2017 and since then it has been under the stewardship of Course Superintendent Steve Chappell.

### Location, location, location

Local specialists In-Aqua's water management proposal for the project covered water sourcing and lake management, in addition to irrigation system design, pumping and pH control, and central control programming with advanced weather and soil sensing features. Understanding the limited water availability and cost of water in the location was key to putting the right provision in place.

North-eastern Slovenia has a warm climate, with summer temperatures reaching the mid-thirties degrees Celsius. The area is prone to lightning, recorded as often as three or four days of the week, so a Rain Bird IC System was specified,

which eliminates the use of satellites and decoders and provides multi-function real-time response, along with diagnostics and end-user control.

The system is resistant to lightning strikes and with so many heads on the course, it enables a diagnostic test of the site to be conducted in three minutes — invaluable for fault detection and rectification minimising system downtime.

Royal Bled pays for irrigation water and on very free-draining land, more than 2,000m<sup>3</sup> can be applied each night during hot spells. This, coupled with a 6mm+ per day evapo-transpiration loss, presented high stakes for Simon Connaughton, who managed the grow-in of cool-season creeping bentgrass greens and rye/fescue tees and approaches. Continual soil moisture readings around the greens were critical when seeding and for a successful grow-in, while valve in head sprinklers ensured accurate application.

### New course characteristics

A Rain Bird Stratus II Central Control system operated via PC and mobile device manages the largest Rain

In order to fully understand the characteristics of the greens, we've had to programme the sensors - train them, by saturating each green then draining and evaluating it, seeing how long it takes to hydrate the profile and drain it down. I varied the placement and depth on the front nine holes, while they're set at a depth of 150mm and 250mm on the back nine. It's essential that we can monitor moisture levels throughout the profile. When hand-watering, readings are very different in the top 50-70mm to those further down, hence the varied placement. Rainfall can be sporadic, so the weather station and Rain Bird's Rain Watch feature, where rainfall is measured and deducted from the irrigation programme, ensures the course only receives what it needs.

"We now know that moisture content of 13% at 50mm is optimal for performance. Below 10%, the surface is drying too much and we're back to hand-watering. At 250mm depth, we're aiming to keep it at 15%. The sensors keep us at that optimal point.

"Data feeds into my course management reports, detailing our

water needs and usage. It also helps with other turf management decisions, such as when to apply nutrients when coming out of winter."

### Looking ahead

"I'm looking to add maps to our mobile interface for ease of sprinkler testing, and add IC Connect to our system, enabling us to receive data from different sensors across the site in real-time, then monitor and control of all aspects of the systems on both courses from one Central Control. I also plan to appoint an irrigation technician to assume responsibility for what is, for us, a critical asset. If you buy a fleet of machinery you want a skilled mechanic on your team to maintain it; irrigation systems require the same if you want to preserve and optimise your investment.

"Modern course management requires us to combine our knowledge and expertise with the new technologies. It's exciting and gives us new opportunities to learn, adapt, improve, share and collaborate for everyone's benefit."

Bird soil sensing system in Europe. Sensors are located on each green, measuring volumetric water content, soil temperature and salinity.

"Irrigation is essential for sustained plant health and that's my priority," Steve Chappell explained. "2018 was an evaluation season for us, learning as much as we could from our readings to ensure optimal turf health and playability and reduce water costs. With unpredictable weather and ET rates as significant as they are here, it's a leap of faith letting technology make those decisions.

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