

# Arts & Leisure Case Study

## Vienna Zoo

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Elephants, it seems, are sensitive creatures – or at least the soles of their feet are. If these become too hot, they dry out and are then susceptible to injury. Hardly surprising then that in the elephant house at Vienna Zoo the underfloor heating is closely controlled – just one of many critical tasks performed by the zoo's Trend building management system installed by IWKA Regler und Kompensatoren Vertriebsgesellschaft mbH.

Shortly to celebrate its 250th anniversary, Vienna's Tiergarten Schönbrunn is the world's oldest surviving zoo. In recent years, almost all parts of it have undergone major renovation and the whole site will soon have been fully modernised. Next year will bring the opening of an exciting new attraction, an indoor tropical rain forest.



In 1994, the zoo's central boilerhouse was taken out of action and its role taken over by the city's district heating scheme. This afforded the first opportunity for the installation of Trend controls. IWKA fitted them in the site's forty heat exchanger stations, where they provide weather compensated control of flow water temperature. Today, the much-expanded Trend system controls and monitors some 90% of the zoo's heating, ventilation and air conditioning plant, including that which serves the elephant, hippo and mandrill houses, the aquarium and the songbird aviary. It now comprises 55 IQ controllers of various sizes, these being distributed across two inter-linked local area networks with a total length of 5000m.

The zoo's aquarium, whose visitor areas have a high cooling load, is among the more heavily serviced buildings. Here, IQs control a variable air volume system to achieve optimum space temperatures in the different zones. To minimise energy consumption, the controls use measurements from an air quality sensor to vary the ventilation rates in accordance with occupancy levels. Monitoring the water temperature of the various pools is another duty that the controllers perform; they generate an alarm if the level deviates more than +/- 2oC from setpoint. Close monitoring of pool water is also critical in the hippo house. Here the temperature must not exceed 28oC.

In the elephant house, the design of the building services reflects the fact that the animals like it hotter than the humans who come to view them. The provision of comfort cooling is thus mainly for the visitor areas. The elephants are kept warm by a wall heating system, the underfloor heating having been specifically installed to keep their feet healthy. Staff maintain a close watch on the condition of the elephants' feet and if necessary adjust the control setpoint (normally it is set at 25oC). The animals also enjoy the modern convenience of hot showers, the copious quantities of water for which are warmed by IQ-controlled solar heating.

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To enable the zoo keepers to monitor environmental conditions and make changes to control settings, Trend Network Display Panels have been fitted in the various areas covered by the system. The main operator interface is a PC-based Trend 945 supervisor situated in the office of the zoo's technical manager.

Alarms generated by the IQ controllers (eg, plant faults or out-of-limit temperatures) are displayed at the 945 supervisor. Alarm messages are also transmitted, via GSM, to the mobile phone of the technical manager, whose job requires that he is frequently away from his desk.

At night, any alarms are automatically retransmitted to an off-site bureau, which if necessary will call out a maintenance contractor.

IWKA will soon expand the Trend system to take in the new rain forest building. Functions will include humidity control and the switching of special climatic effects – ie, rain, mist, thunder and lightening. The simulated rain and mist will naturally affect humidity levels and the RH control strategy will be configured to take account of this. As Vienna Zoo has illustrated, Trend building management systems are perfectly designed for ease of expansion. This is due both to the flexibility of their network architecture and to Trend's policy of new product backward compatibility. This latter feature has meant that the latest controller designs can be easily integrated into existing installations, just as has happened at the zoo.

IWKA, whose headquarters are in Vienna, is Trend's distributor in Austria, Hungary, the Czech Republic and Slovakia (E-mail: [msrl@iwka.at](mailto:msrl@iwka.at)).

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