Kiosk Technologies that Stand Up to the Elements

Thinking Outside the Box

By XXXX, Ploygon

For outdoor terminals to continue to function for a number of years in tough environments, they have to fulfil numerous basic conditions in a wide variety of different areas. Making the right decisions is crucial; this includes everything from the best choice of material and hardware to the design of the enclosure. The complex demands made of outdoor terminals are best illustrated by taking a few specific projects by way of example.

The development process starts by selecting the most suitable hardware for the respective climatic requirements. Only an extremely bright display will also be visible outdoors. It is important that the brightness is automatically adjusted to the ambient light, otherwise the display will dazzle users at night.

For Eurogate's kiosks, Polygon used a display with special background lighting (Planon) to ensure that the monitor has a long service life. At the container ports in Hamburg and Bremerhaven, truck drivers delivering goods use the terminals for quick check-in (the monitor is installed at a height of 2.50 m and can be operated from the truck cab) and terminals also provide valuable information on site. The integrated thermal printer has been equipped with an extremely large paper supply (approx. 500m). Although there is no so-called shutter, liquid is unable to penetrate the device.

Keeping Your Cool

For this application, in order to prevent any interruptions or obstacles to logistical processes, maximum availability and reliability are extremely important. The terminals are accessible via a front panel for maintenance purposes and hardware exchange, if necessary. As a result of different climatic conditions, the various components used, such as the computer, have to be suitable for use in an extended temperature range in order to withstand temperature peaks inside the terminal. As a rule, the built-in hardware components only generate a minimum amount of heat. A much greater problem is the heating of the terminal by the sun. In the case of enclosures with a relatively large surface area, this factor is often underestimated. Conducting away the energy generated by solar radiation can prove very difficult - during Expo in Lisbon, Portugal, the problem was solved by using a compact air-conditioning unit and by also foam-insulating the enclosure.

Furthermore, as a result of Lisbon's salt-air climate, high-quality stainless steel had to be used together with a special powder coating for the enclosures. A total of 80 terminals were installed at Expo in Lisbon.

The air-conditioning of the outdoor terminals for the Volkswagen AG Autostadt in Wolfsburg posed a particular challenge. As part of a major project, Polygon was commissioned to develop 10 outdoor terminals that looked, in every detail, like the compact indoor terminals it had already manufactured. Polygon's solution was to develop a special tank that was installed in the ground in order to hold the air-conditioning system (water cycle with heat exchanger) and other electrical components. The built-in system can be used to either cool or heat the enclosure. Additional thermostats are fitted to ensure that, in the event of a power failure, the terminal will only allow the computer to start up again once a certain internal temperature has been attained; this prevents a short-circuit due to condensation.

Alternatively, an air-conditioning unit is redundant if the enclosure design protects against climatic conditions. The enclosure of our OutPOInt standard terminal features a double wall that provides protection against most of the potentially harmful thermal energy generated by the sun.

DHL's super-sealed 'Packstation'.

For Volkswagen's Autostadt terminals,a special tank was installed in the ground to hold the air-conditioning system.

Outdoor terminals have to be resistant to external influences, such as vandalism. This means using robust materials to make it as difficult possible for unauthorised persons to break into them. Doors and other openings have to be designed to prevent the use of various objects, such as levers, to pry them open. Of course, terminals also have to have labyrinthine seals to prevent the penetration of liquids. These points were extremely important considerations for our customer DHL when developing its so-called 'Packstation,' since the terminal serves as interface to the stored goods.

Once the development stage has been completed, we subject the prototype to comprehensive function tests in order to check that the various requirements (such as impermeability to liquids) are met. As part of compulsory CE certification, all terminals are tested by an accredited laboratory to ensure that they meet the relevant standards and requirements.

Polygon has been developing and manufacturing outdoor terminals in response to individual customer requirements and problems for over ten years.

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