ideal for a variety of verticals and regions. "We are currently delivering illumination in a vast number of challenging and remote applications across the globe, such as oil fields in Kuwait and Dubai, oil pipelines in North Africa, and offshore platforms in UK and various Middle East regions," Thompson said.

Access Control

No stringent requirements are demanded of access control readers for commercial or residential applications. But when placed on the outside or in a critical environment, that's a different story.

"The reader has to withstand torrential rain in an outdoor installation," said Tom Su, Sales Manager at Hundure Technology, which is set to release an IP66 reader. "Plus, it has to be durable enough to be able to work properly in the long term in a harsh environment and withstand human-made damage."

Materials play an important part in toughening the products. Hundure, for example, uses as a main ingredient epoxy resin, which is an excellent electrical insulator and protects electrical components from short circuiting, dust, and moisture. "We have epoxy inside the reader to make it totally waterproof for outdoor installations," Su said.

Potting, or the filling of a complete electronic assembly with a solid or gelatinous compound for resistance to shock, vibration, moisture, and corrosive agents, is also used during the manufacturing process. "We use potting material for the majority of our readers, which seal them from any kind of water penetration," said Steven Katanas, Director of Sales for Australia and New Zealand at HID Global. "Potting completely encases all electronics and stands up well to many harsh outdoor environments. An outer case might get beat up a bit, but the inner electronics are durable."

The other critical element in an access control system, namely the cards, should not be overlooked, either. "Some cards use more durable materials than others.

For instance, a line of our smart cards use an ABS shell construction for durability in harsh environments, and can be used in diverse applications including physical access control, PC logon, biometric authentication, time and attendance, cashless vending, public transportation, airline ticketing, and customer loyalty programs," Katanas said.

Perimeter Intrusion Detection

Perimeter intrusion detection systems (PIDSs) are almost always placed on the outside of important premises such as airports, power plants, and certain government facilities. Sometimes equipment is deployed at places with highly intensive electromagnetic waves, and electromagnetic interference (EMI) may occur. PIDSs with EMI-resistant capabilities are therefore a plus. "One of our perimeter security taut-wire products was installed around a Radio Free Europe site, which transmits one megawatt power of short wave radio using curtain array antenna. These are extreme RF condition," said Hagai Katz, Senior VP Marketing and Business Development at Magal Security Systems. "The most demanding conditions were for sections of the fence, which happen to reside right below the antennas' feeders, absorbing very high radio frequency radiation. In spite of all, the system has managed to perform perfectly."

Heavy winds are also a threat to equipment or products placed on the outside, and manufacturers have different ways to overcome that. For example, Navtech Radar, which makes radar-based PIDSs, puts all the moving parts inside wind-resistant enclosures. "Normally if you have a rotating part exposed to the wind, then the wind pushes on that rotating part, moving it in a way you don't want it to move," said Philip Avery, MD of Navtech Radar. "All our rotating parts are inside an enclosure. There is a plastic radome that protects the rotating parts from the wind and other elements."

Any fixings — connectors, screws, and

Ingress Protection Ratings

Index	First index (level of protection against foreign bodies)	Second index (level of protection against water)
0	No protection	No protection
1	Large foreign bodies, diam. >50 mm	Water dripping/falling vertically
2	Medium-sized foreign bodies, diam. >12	Water sprayed at an angle (up to 15° degrees from the vertical)
3	Small foreign bodies, diam. >2.5 mm	Spray water (any direction up to 60° degrees from the vertical)
4	Granular foreign bodies, diam. >1 mm	Spray water from all directions (limited ingress permitted)
5	Dust protected; dust deposits are permitted, but their volume must not affect the function of the unit	Low pressure water jets from all directions (limited ingress permitted)
6	Dust-proof	High pressure jets from all directions (limited ingress permitted)
7		Temporary immersion, 15 cm to 1 m
8		Permanent Immersion, under pressure

Source: *Lumascape*

others — that hold the radar together should also be protected. Navtech Radar, for example, is considering putting plastic coating on the connectors to protect them from corrosion, which may occur at heavily corrosive environments like road tunnels.

"Different parts of the radar are bolted together using screws, and the last thing you want is to have those screws heavily corroded so the radar will fall apart," Avery said. "You need to make sure that not only the main body of your system is made of the right material, but the fixings that hold it together are also made of the right material."

Door Phones/Intercom/PA

Placed at the entries of residences, door phones should be able to adapt to various local climatic conditions. "Our products are used in high-temperature regions such as the Middle East and Africa, and also used in low-temperature areas like Russia or Scandinavian countries," said Yoshi Nishiyama, who works for the international sales department of Aiphone. "Regarding the materials, we use environmental friendly materials complying with WEEE & RoHS. And the plastic materials we use are self-extinguishing materials against fire. All the metal materials for door phone units are designed against vandalism, and they have protection against water, sun light, acids, and so on."

For intercom and PA manufacturer Zenitel, it chooses polyamide as the material for making its industrial-grade PA call panels and intercom stations.

"Initially, our PA system was designed for the oil and gas industry and marine vessels. Polyamide is resistant to corrosion, so it's suitable for marine environments. Also that material is quite strong so it can withstand impact," said Piet De Vriendt, Commercial Product Manager for Vingtor-Stentofon at Zenitel. "Fewer and fewer companies are making intercom stations out of metal for industrial applications, as new technologies have improved for polyamide, which is also better for corrosion and chemical resistance."

THING TO LOOK FOR DURING INSTALLATION

For critical environment installations, a rule of thumb is to get products that are rated for conditions worse than where the equipment is being installed. "At the very least, users should make sure they are not installing equipment that is rated for a temperature- and humidity-controlled environment into an area where there will be considerable heat and moisture fluctuation," HID's Katanas said.

Integrators should also help clients build an infrastructure that presumes and prepares for changes in the future, including ensuring durable performance in harsh environments. "This requires a platform that is dynamic, open, and adaptable, and that ensures security is independent of hardware and media so that organizations can evolve their infrastructure to meet tomorrow's needs," he said.

With security products becoming increasingly network-centric, how to protect the network infrastructure in critical areas is also important. Some countries or regions even have rules about how IP-based equipment should be installed.

"The Middle East has requirements for transmission equipment that can tolerate very high temperatures. In India we have the same requirements, and in both markets high winds, dust, and sand are an issue, which the transmission equipment must also be able to withstand," said Sara Bullock, Business Development Director at AMG Systems, adding her company has devoted much R&D efforts on heat reduction.

"Our products carry many interfaces

> ## "The most important advice we can give to integrators and installers is to work with companies that have experience with setting up IP networks in critical environments. "
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> **Piet De Vriendt,** Commercial Product Manager, Vingtor-Stentofon, Zenitel

within the same box, which dramatically reduces the equipment required at the remote position, which in turn reduces heat within the cabinets," she said. "A critical factor is airflow. Our products have ventilation slots on the casing, and as long as they are mounted in the correct way, they allow airflow to be forced up through the units."

Zenitel's De Vriendt stressed the importance of collaborating with someone who is strong at IP setup in harsh conditions. "The most important advice we can give to integrators and installers is to have good cooperation with the consultants who specify the system and to work with companies that have experience with setting up IP networks in these environments," he said.

BUILT WITH DURABILITY

Today's surveillance equipment is built with durability in mind, able to resist various harsh environments to satisfy users' needs. With an understanding in these products, and knowledge on how they should be set up properly, users can have full assurance that their surveillance systems will run smoothly in the midst of inclement conditions. **a&s**