

Customised enclosures enable effective crack monitoring for domestic properties

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The customisation of heavy duty all weather industrial enclosures has enabled a crack monitoring device manufacturer to expand its service from infrastructure projects to the domestic property market. Moniteye has designed a new device that identifies structural cracking in houses. The unit's sensitive electronic monitoring equipment is protected by a customised industrial enclosure developed by Spelsberg.

Moniteye's new crack monitoring device is for residential housing installation to enable remedial action and rapidly resolve insurance claims, and it changes the way structural challenges are monitored. The device measures crack width changes over time and transfers data remotely via mobile phone network, removing the need for an inspection by an engineer. It provides daily reports – or more frequently if required – for improved clarity on the structural situation compared to an on-site check that typically takes place once every six weeks. The monitoring equipment also saves time, manual resources, and travel emissions. Crucial for the Covid-19 era, the new device also reduces person-to-person contact, as the unit can be used to monitor internal as well as external cracks.

While Moniteye has provided infrastructure monitoring devices for over 10 years, the equipment used on structures such as road and rail was over specified and not competitive for mass market domestic use. The company's previous enclosure

supplier wasn't able to support the development requirements to enable cost effective production, so Moniteye needed a new partner to house its device. Protecting the device's PCB, sensor, modem with SIM card, and battery, a bespoke enclosure design would be required that could secure the electrical components from all weather conditions, condensation and impact, within a single compact unit. Moniteye received recommendation to engage with Spelsberg, and the industrial enclosure specialist was able to rapidly provide the customisation required.

“The unique advantage of the crack monitoring device for domestic housing is that it's contained within an all-in-one-box solution, instead of several individual devices,” says Moniteye's Director, Alex Keal. “Not only is this more appealing for the house owner, it makes installation, maintenance and monitoring faster and more efficient and this design has been strongly assisted by Spelsberg's customised enclosure.”

Custom design included an initial batch of 150 units, which Spelsberg was able to manufacture before scaling up for mass market production. The industrial enclosure manufacturer designed the box based on Moniteye's specification. A key element of the bespoke plan included a clear polycarbonate plate, CNC machined at Spelsberg's UK site, that would house a magnet. Installed on the opposing side of the crack to the sensor, which is housed within the main device, the unit monitors the distance between the sensor and the plate to show movement over time.

The design brief for the domestic device meant it had to be as compact as possible, so Spelsberg installed cable glands and inserts for space optimal component location and wiring. The enclosure also had to accommodate a tilt sensor, creating a dual purpose device dependent on the cause of structural damage.

As the unit could be installed outside, protection from the elements was provided with an IP67 rating, meaning the monitoring equipment could withstand the heaviest

rain or snow and be impermeable by dust. To avoid condensation damaging the equipment, Spelsberg's design included a pressure compensation device with an air-permeable membrane that would prevent condensate build-up without reducing the IP rating.

Rugged protection from impact was provided by a tough polycarbonate exterior that gave an IK08 rating, meaning protection against an equivalent of 1.7kg released from a height of 30cm. The enclosure was completed with a bespoke label applied to the customised design that was based on Spelsberg's durable TG boxes, also available as standard products.

"The box had to be durable, but it also had to efficiently house the equipment within a single enclosure. Crucially, the solution including customisation work had to meet the cost for a mass market product," says Alex.

"Spelsberg's enclosure with bespoke design and manufacture has helped us achieve a market-first that will ultimately increase the efficiency of the insurance process and improve the remedial action response time against structural damage."

Image captions:



Image 1: Sensitive electronic monitoring equipment is protected by a customised industrial enclosure developed by Spelsberg.

Image 2: Spelsberg TG Boxes design to Customers required specifications

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About Spelsberg

Spelsberg is one of the largest manufacturers of electrical enclosures in the world. With over 4,000 enclosures available as standard and further customisation possible, it offers solutions for almost any application.

With the largest supply of non-metallic enclosures, ex-stock in the UK, its products are often available for delivery within 24 hours; customisation is possible on any product, including bespoke entries, engraved corporate logos or fitted terminals, within 48 hours. Products can be ordered direct from Spelsberg or from most leading supply specialists including RS, Rapid, Farnell and CPC.

Press contact:

Spelsberg els UK Ltd.

Chris Lloyd

Tel.: +44 (0)1952 605849

cil@spelsberg.co.uk

PR agency:

DMA Europa

Elizabeth Patrick

Progress House, Great Western Avenue, Worcester,
WR5 1AQ, UK

Tel.: +44 (0)1905 917477

liz@dmaeuropa.com

news.dmaeuropa.com