

Interview, published in: P&A-Extra (1/2019)

Switches face hard times on the island of Helgoland

"For us it is all about the Extreme"

Cold, heat, UV rays, saltwater: on the island of Helgoland in the North Sea, the conditions are tough. For one year, steute tested its switchgear products there. In conversation with P&A, steute representatives Rainer Lumme, Product Manager Extreme, and Carsten Both, Head of Industrial Development, explain how this came about, what results the tests produced, and why such tests are becoming increasingly important.

You go to a lot of effort to test your devices and their resilience. A short while ago, you even completed device tests on the island of Helgoland. What was that all about?

Rainer Lumme: The aim of these tests was to expose our switchgear to very extreme conditions, beyond those of standard tests, in order to discover any potential weak-points in our devices. We worked in close

a laboratory, but that only reflects reality up to a certain point. On the island of Helgoland, we were able to expose our switchgear to the sea and the elements for a whole year, from September 2017 to September 2018. In other words, to precisely the kind of environment in which our devices are often used. We wanted to see the impact of this exposure on the materials and device operability.



"With these tests on Helgoland we wanted to see our switchgear in action in real-life conditions. Laboratory tests only reflect reality up to a certain point."

Carsten Both, Head of Industrial Development, steute

Which switches did you test? And more importantly: did they all still work at the end of the test phase?

Both: We thought about what would really make sense for our Extreme business unit. For the first test phase we opted

cooperation with the Fraunhofer Institute for Manufacturing Technology and Advanced Materials (IFAM).

Carsten Both: With these tests we wanted to see our switchgear in action in real-life conditions. Tests are normally conducted in

for some foot switches, pull-wire switches and our standard small and large Ex switches. All devices exposed to splash water are still functioning, with no problems at all. The internal parts, such as switching inserts, plungers or pedal axes,

“Such tests are going to be increasingly important for us when talking to our customers. Now we can prove that we have tested our devices in conditions which really do occur in real applications.”

Rainer Lumme, Product Manager Extreme,



are also free of corrosion. Even some of the switches which were exposed to the tides are still working perfectly. We are therefore very pleased with the results.

How did the cooperation with IFAM come about?

Both: That was a happy coincidence. I was on holiday on the island and went for a walk by the harbour. From a distance I could see the IFAM field tests and my first impulse was to climb over the fence and take a closer look (laughs). Of course I didn't, but after my holiday I researched the test centre to find out more about what it does. I discovered that it is mainly concerned with material and coating tests. This was very exciting for us and we initiated talks with those responsible. These talks led to us commissioning a 1-year test, which we realised in cooperation. It was also interesting for IFAM because we wanted to test not just materials or coatings, but complete devices.

Lumme: It was brilliant for us that Carsten stumbled across the test site. We just had to grab the opportunity immediately. For us it is all about the Extreme, the motto of our business unit. The most important thing is that our switches can withstand whatever environment we put them in. We have built up a very comprehensive product range especially designed for Extreme condi-

tions. Not only in Ex zones, but also regarding other tough requirements, such as corrosion resistance, high IP protection class, or resistance to high and/or low temperatures.

What did the test installation look like?

Both: We mounted our switches on plastic boards and then IFAM fixed them to metal racks installed at different heights. Overall there were two different levels. The first installation was at tidal level, in other words our devices were exposed to the changing water movements of the North Sea in order to investigate any limitations in this situation. The other level – where most of our switches were installed – was in splash water. Now and again the waves splash this high, and the rest of the time the switches are exposed to the rain and the sun. We left the switches there all through the Winter and then took a brief look after 6 months and documented the interim results. Then they came back into their racks and were left for another 6 months all through the Summer.

But is all that effort really necessary? You already test your products comprehensively in your own laboratory.

Both: Normally we conduct a salt spray test to DIN EN ISO 9227 for 1000 hours. Many industrial companies do the same. But this

standard test is primarily aimed at testing coatings. The devices are permanently wet and in the salt spray throughout the test period, and that is actually completely unrealistic. What we were missing was the context of real-life conditions outdoors. There you have dry and hot days when the salty switches dry out, and very rainy days. Plus UV rays and crashing waves. In addition, barnacles and other things become attached to the switches under water, a situation which we cannot simulate in the laboratory.

Lumme: It is realistic, and that is important for us when talking to our customers. Now we can prove that we have tested our devices in conditions which really do occur in real applications.

Have your customers started to demand such proof?

Lumme: More and more. A customer from France, for example, works with nuclear power stations. Following the tsunami disaster in Japan, all nuclear power stations built on the coast now have to be safeguarded against high waves. Correspondingly, all electrical equipment must be waterproof and able to withstand saltwater and dirt. Another customer is a manufacturer of valves for offshore applications. He also wanted proof of whether our switches really are suitable for applications out at sea. Thanks to these tests on Helgoland, we are now able to give our customers confirmation of this suitability.

Both: Also, it is very important to us to be on a par with the customer, to be able to say: we know exactly what you mean. We have conducted tests, and we have learnt from them, enabling us to speak to customers at a whole new level.

And what have you learnt?

Both: For example, we are no longer completely satisfied with our adhesive labels in truly Extreme conditions. Barnacles are able to bury underneath them and push them up. In contrast, we now know that our laser inscriptions can withstand Extreme sunshine. Sometimes the colour is even enriched, which we had not realised before.

Was this a topic for your customers?

Both: Yes, many customers were of the opinion that laser inscriptions would not be suitable because they would fade. Now we can prove that the opposite is true. Another example: we tested silicone cables and can now recommend this material compared with tests conducted on cables made of normal nitrile butadiene rubber (NBR), which did not deliver such satisfactory results.

Are you planning further tests?

Lumme: Definitely. The next round of tests at the IFAM centre has already started. We are now testing our new ZS 92 S emergency pull-wire switch and ZS 92 SR belt alignment switch, amongst other things. And in the future we shall certainly be exploiting this opportunity further.

The interview was conducted by: Florian Mayr, P&A

Images: steute Technologies GmbH & Co. KG