



# HACT provides five years of knowledge in just one week

As a leading manufacturer of electronics enclosures for on and off-shore use worldwide, Technor Safe Ex AS (Norway) know better than most about the large number of factors causing corrosion.

Having produced a new product with a new surface treatment, Technor needed to test the new product for corrosion resistance. Testing in real-time was completely unrealistic. Instead, Technor chose HACT (Highly Accelerated Corrosion Testing) and found out what five years of corrosion looks like in just one week.

### **Environmentally friendly solutions in an unfriendly environment**

Technor's electronics enclosure, made in stainless steel, is used mainly on North Sea platforms and in other harsh environments. The team at Technor need to know about the amount of corrosion which the product experiences and need to make sure that they are using the best surface treatment of

the casing to prevent corrosion. The surface treatment used by Technor is a widely used acid treatment. However, as a company interested in protecting the environment, Technor were hoping to find a greener alternative.

“Technor is a green company and therefore we want to implement a different surface treatment, which can give nearly as good protection as the acid treatment,” explains Eigil Tønnesen, QA/HSE Director at Technor. “Of course, we also have to know that our products can withstand the harsh elements, so we have to test the casing for corrosion. If we did this in real time, it would take years, so we needed to do an accelerated test. There are very few standards specifying these types of test.”

“We did some initial tests ourselves. We tested for a week and we could see that, as we expected, the untreated surface showed signs of corrosion, whereas the acid-treated surface was not corroding at all. But our knowledge was limited. We know what a box would look like in the North Sea, but we wanted to know what would happen to it after five or ten years and we also wanted to test alternative treatments, so we decided to continue testing with DELTA.”

And DELTA is the right company to help. DELTA has developed a new accelerated corrosion test called HACT (Highly Accelerated

ated Corrosion Testing). In just one week, HACT is able to produce corrosion equivalent to that observed after more than ten years of use in a "normal outdoor environment" without substantial sources of pollution or five years in a maritime environment.

"DELTA was able to give us the best results from an accelerated test, which we know of. There are no standards stating how a test should be done to demonstrate 5-10 years in the harsh environment of the North Sea. But DELTA offered HACT and were quickly able to give us the data we needed," Eigil Tønnesen says.

#### A fast and realistic test

The accelerated test, which DELTA offered, is based on the real parameters encountered by Technor in the North Sea.

Anders Kentved, Reliability Specialist, from DELTA explains: "The reason why DELTA developed HACT was that customers were approaching us after experiencing more corrosion of products in reality than they had demonstrated in traditional tests. Traditional corrosion tests are often run for 1-4 weeks, but in order to demonstrate 5-10 years in a harsh environment, 4-8 weeks or even more are needed. Our latest results show that with HACT this can be accomplished in 1-2 weeks. These results are based on our tests of a variety of products for maritime use."

"Our experiences show that it is mainly "ordinary" atmospheric corrosion and in particular salt spray or mist which causes problems for the reliability of products intended for outdoor use. Our new HACT test is based on parameters giving realistic results in a short time. These parameters are increased temperature and humidity, cyclic spraying with cold aerated salt water, and cyclic drying with a high air flow."

#### Future tests planned

"We have quickly been able to see the corrosion results of different surface treatments," Eigil Tønnesen explains, "and we have realised that we have not found the correct surface treatment yet. We are really satisfied with HACT and we are planning to send new boxes with new types of surface treatment for testing. The test is extremely relevant for us, since we are able to judge the corrosion resistance of different designs after only one week of testing. The test gives us realistic results regarding our products and we judge that 1-2 weeks will be enough to indicate if a product is sufficiently corrosion resistant for off-shore use."

"We now have the verification of different types of treatments compared to the acid treatment, enabling us to make an informed decision. We are still trying to find the correct treatment, and we will keep testing at DELTA until we do," Eigil Tønnesen concludes.



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