



## HACT: Highly Accelerated Corrosion Testing

5 years of corrosion in just one week

### Short of time?

Imagine or maybe recall a situation where you need to decide on which material to use in a new design but do not have time to wait for significant results of a standard test.

### New corrosion test

In just one week, HACT is able to produce corrosion equivalent to that observed after more than 10 years of use in a "normal outdoor environment" without substantial sources of pollution, or 5 years in a maritime environment. This makes HACT an efficient and quick way to test the corrosion resistance of materials. This is especially a time saving way to compare different solutions before making the final choice of materials to be used in a new product. HACT is particularly relevant when determining the durability of equipment and materials used in corrosive environments, i.e. ships, wind turbines and cars, early in the development phase.

### HACT is based on real life influence parameters

Experience shows that it is mainly ordinary atmospheric corrosion, and in particular salt spray/mist, which causes problems for the reliability of products intended for outdoor use.

DELTA's new HACT test is based on the following selected parameters, which give realistic results quickly:

- Increased temperature
- Increased humidity
- Cyclic spraying with cold aerated salt water
- Cyclic drying with high air flow, adding additional oxygen to the corrosion process.

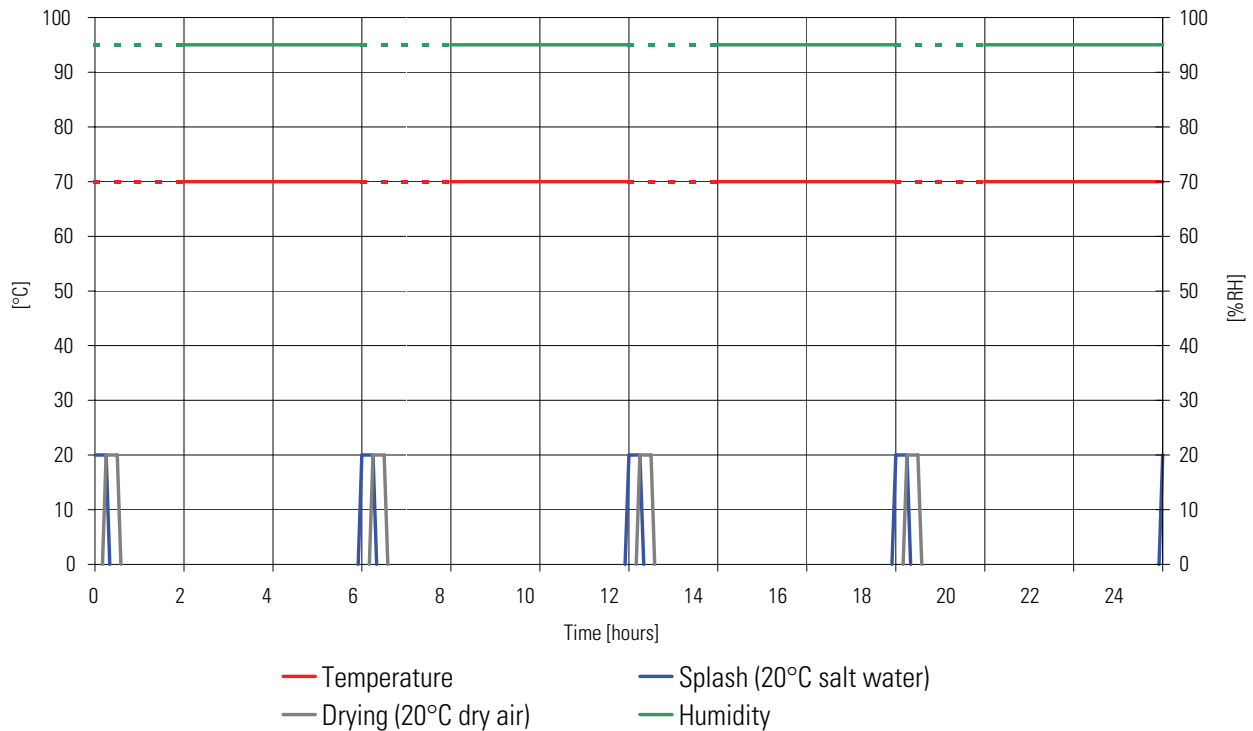
### Balancing sufficient acceleration of corrosion with realistic results

HACT is balancing sufficient acceleration of corrosion with realistic results. It is designed to include as many generally relevant corrosion agents as possible, i.e. temperature, humidity, water, salt, and oxygen. This makes HACT a generally applicable accelerated test which will give realistic results for many products and materials in severe use environments. However, HACT does not use aggressive pollutants, such as gases, chemicals etc. Put simply: HACT is a very efficient method but may not be suitable for all products. Before deciding on a HACT test, consult DELTA's specialists, who can also give advice on alternative test methods, should HACT be unsuitable for your product.

“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 realistic results on our products and we judge that 1-2 weeks will be enough to indicate whether or not the product is sufficiently corrosion resistant for off-shore use.”

**Technor Safe Ex AS**, Norway, a leading manufacturer of electronics enclosures for on/off-shore use worldwide, after trying HACT.

## DELTA HACT (Highly Accelerated Corrosion Testing) - Test profile



### HACT is based on the experience with HALT

Since 2002, DELTA has carried out thermo-mechanical HALT, Highly Accelerated Life Test, where weaknesses in a product are found by exposing it to combinations of temperature and vibrations exceeding by far the specified levels.

In particular, the HALT philosophy is useful in the development of new test methods to investigate other parameters, which could provoke failures on equipment, i.e. humidity, pressure, voltage variations, electromagnetic exposures etc.

Over the past couple of years, numerous reports from DELTA's clients have shown that in particular corrosion is causing problems in the field. And equipment developers/designers generally require that problems with humidity are found and solved during the development phase, as efficiently as temperature and mechanical problems with the thermo-mechanical HALT.

### HACT equipment

DELTA has a dedicated HACT chamber specially designed for performing the testing sequence automatically. Maximum size of test specimen: WxHxD = 150x40x50 cm.

### Practical info

DELTA can help you decide if HACT is relevant for your product by evaluating product or material together with the intended use of the product. The result of the HACT is documented in a short report listing the weaknesses of the tested product or material. Further, as an option, DELTA offers failure analysis of the tested products or materials in order to interpret the results and define corrective actions. The failure analysis may include visual inspection, EDX-analysis etc. The duration of the HACT is typically one week. It may be performed on the complete product/subparts/representative parts.

### Further information

Visit our web site [www.delta.dk/halt](http://www.delta.dk/halt) or contact

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