

## Invitation 2023

# CORROSION AND CORROSION PROTECTION TRAINING

*Optional: Additional day at Proton Technology in Bankeryd, Sweden*

To prevent damage, it is essential to understand what causes corrosion on components under certain operating conditions, and what the damage pattern of the corrosion looks like.

- After the seminar you will know the important corrosion mechanisms, triggers, and possible remedial measures.
- In addition, you will learn about the hydrogen produced during corrosion processes and its damage potential.
- Electrochemical tools as a method of examination and prediction are introduced.
- As a practical user, you will receive an excellent basis for better estimating and evaluating a wide variety of applications in advance.
- For users with a theoretical scientific background, the practical relevance is established by many examples from our failure analysis experience.

**Language:** in English

**Documentation:** Comprehensive course material and a signed certificate

**Target group:** Technical Employees and managers from development, testing, construction, quality assurance, maintenance, and service. Example: Engineers, Purchasers, Product specialists / designers, Quality technicians / managers, Corrosion engineers / specialists and more.

**Level:** Medium to Advanced

*(Preparatory Training on corrosion is available. A 5 hour on-demand lecture on a basic level will be included upon registration)*

**Price:** 1650 EUR/participant (maximum 20 participants).

*\*Additional day 650 EUR/participant (maximum 12 participants).*

## The training will be held twice in 2023

### March 2022 – Web based

The training is divided into three sessions held on-line

**Dates in March:** 7, 8, 13, and 14

**Time:** 09.00-13.00, with 2 breaks in between

**Additional day (on site):** September 21, at Proton Technology

### September 2022 – On Site

The training is 2 whole days at Proton Technology in Bankeryd, Sweden

**Dates in September:** 19 & 20

**Additional day:** September 21, at Proton Technology



### About the trainer

Prof. Dr.-Ing. Simon Oberhauser, shareholder of InnCoa GmbH in Neustadt/Danube, Germany. Simon was the Managing Director at the company for more than 12 years and since 2022 Simon is Professor for materials engineering at the Technische Hochschule Ingolstadt. After studies in general mechanical engineering at the same university, he earned a Ph.D. at the TU Bergakademie Freiberg in the field of materials science.

At InnCoa GmbH Simon and his team examine various cases of corrosion failures, feeding the industry with excellence and sustainable solutions. Trainings in the field of corrosion and corrosion protection for the automotive, solar as well as the industrial sector (BMW, Daimler, MAN etc.) has been a part of Simons profession for over 10 years. Simon is very well renowned and one of his primary skills is to combine the highest level of knowledge with the ability to bring out the essence to people with limited knowledge on corrosion.

## Content

### Basics of corrosion

#### Corrosion at higher temperatures:

- Dry corrosion and hot gas corrosion at higher temperatures: Oxidation, carburizing/"metal dusting", nitriding, sulfidation
- Electrochemical corrosion: "wet corrosion"
- Chemical reaction (Redox-reactions, some aspects and potential applications of electrochemical characterization)
- Corrosion during transportation
- Hydrogen blister formation and hydrogen embrittlement
- Galvanic corrosion (very often a challenge with light weight design)
- Cathodic protection

#### Corrosion under dynamic and tribological loads

- Corrosion fatigue, corrosion friction and fretting

#### Corrosion behavior of important material groups

- Aluminum, Steel & Stainless steel
- Ni-Basis, Stellite, Cu-Basis

#### Corrosion protection

- Basic rules for constructive corrosion protection
- Extracts of coatings or coverings (possibilities and risks)
- Corrosion protection on polymer basis
- Zinc flake coatings: in between of paint and metallic coverings
- Metallic coatings deposited from electrolytes, as well as electroless deposition and hot dip galvanization
- Thermal spray coatings
- Diffusion layers via pack cementation, gas phase or slurry processes

#### Booking training course

E-Mail: [technology@proton.se](mailto:technology@proton.se)

#### Contact

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## ADDITIONAL DAY at Proton Technology in Bankeryd, Sweden

Attendees, please bring your own cases on-site for discussion (coatings and coverings) & introduction of corrosion testing, chances and risks, overview about different testing methods and additional exercises on corrosion.

Proton Technology - leading independent laboratory in the field of corrosion and surface analysis. [www.protontechnology.se](http://www.protontechnology.se)

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