# Webinar series on sensor technology

Sensors are a key component for the digitalization of the process industry. In this webinar series, experts on sensor development and technology will give an introduction on fundamentals regarding sensors and discuss a few relevant sensor technologies in more detail. The series also include a presentation on digital twins for process industry.

The webinar series is produced by SINTEF and Fraunhofer as part of the dissemination activities in the projects SAM (NFR IPN) and COGNITWIN (EU SPIRE) and will be arranged in cooperation with TEKNA. A program for the webinar series can be found below. All webinars will consist of a 30-minute presentation followed by a 15-minute Q&A session. All presentations will contain the following elements:

1. Theory
2. Application areas
3. 1-2 examples
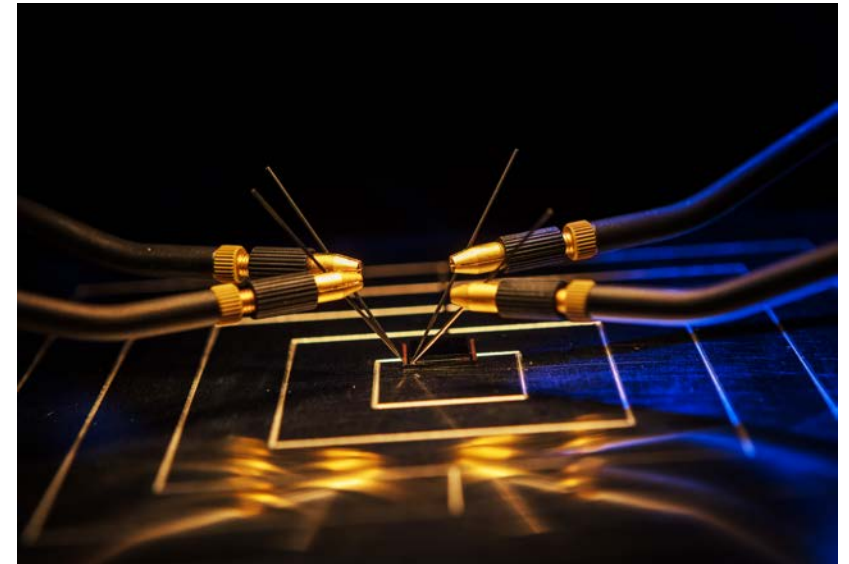
Program of Webinar series

6th October 09:00-09:45	**Fundamentals regarding sensors** Presented by André Larsen (SINTEF)
20th October 09:00-09:45	**Distributed fibre optic sensing** Presented by Magnus Hjelstuen (SINTEF)
3rd November 09:00-09:45	**Digital Twins for process industry** Presented by Ljiljana Stojanovic (Fraunhofer), Iñigo Unamuno Iriondo (Sidenor) and Nenad Stojanovic (Nissatech)
17th November 09:00-09:45	**Gas and particulate emission in industrial environments** Presented by Ole Kjos (SINTEF)
2nd December 09:00-09:45	**Thermocamera and Image Analysis** **NOTE: New date** Presented by Anders Hansen (SINTEF)

Fundamentals regarding sensors
Webinar – 6th October 2020
09:00-09:45

Watch a recording of the webinar here

From the early 80`s until today we have experienced an incredible accelerated development in the computer technology. The effort of making the technology faster and smaller also opened up for other industries to explore and improved their performances. The car industry had a huge effect on the development of better, faster, smaller and less expensive sensors, while the Oil and Gas industry required higher quality and high-end sensor solutions. In this short Webinar we will address some of these changes in the sensor development and address how this have improved the performance and accuracy of the "on the self" sensor solutions.

André Larsen
Senior project manager at SINTEF AS

Distributed fibre optic sensing
Webinar – 20th October 2020
09:00-09:45

This webinar cover the topic "distributed fibre optic sensing". Distributed fibre optic sensing is a technology that enables continuous, real-time measurements along the entire length of a fibre optic cable. Unlike traditional sensors that rely on discrete sensors measuring at pre-determined points, distributed sensing does not rely upon manufactured sensors but utilises the optical fibre itself. This unique property of the optical fibre makes the fibre to an advanced sensors that can measure physical parameters like temperature, acoustics/vibrations and strain along the full length of the fibre with a spatial resolution of less than 1m.

In this short Webinar we will explain how this technology works and show some applications where this technology is being used.

[Register for the webinar here](#)

Magnus Hjelstuen
Research manager at SINTEF Digital

Digital Twins for process industry
Webinar – 3rd November 2020
09:00-09:45

Register for the webinar here

This webinar covers the topics digital twin evolution from first principle to AI-enhanced twins and beyond, digital twin reference architectures and standards as well as organizational and technical challenges to model, develop, deploy and use digital twins. The main presenter in the webinar will be Ljiljana Stojanovic (Fraunhofer IOSB) who has expertise in identifying, developing, and implementing digital twin solutions. Iñigo Unamuno Iriondo (Sidenor) and Nenad Stojanovic (Nissatech) will present some applications for process industry with emphasis on the advantages of digital twin solutions.

Ljiljana Stojanovic
Head of Smart Factory Systems group at
Fraunhofer IOSB

Digital Twins for process industry
Webinar – 3rd November 2020
09:00-09:45

Nenad Stojanovic
CEO of Nissatech

Iñigo Unamuno
Responsible of industrial & innovation
projects at Sidenor

Gas and particulate emission in industrial environments
Webinar – 17th November 2020
09:00-09:45

Gas and dust measurements in industrial processes are often more complex and challenging than anticipated. Cross sensitivities, corrosive or dusty environment and representative sampling points are key challenges that effects measurements. Motivation for the measurements can differ, from process control (dynamics) to emission monitoring where accuracy is of essence. With the development of electronics in the last two decades, sensors with smaller size and lower cost have emerged, drastically expanding the possibilities to deploy sensors. Predictive emission monitoring systems where statistical models predict total emissions based on a few reliable, and easily obtained, parameters are also affecting measurement strategies. Lately fugitive emissions have attracted a lot of attention from governments. These emissions pose a significant challenge since they are uncontrolled and does not follow well defined and predictive flow patterns.

Register for the webinar here

Ole Kjos
Senior Research Scientist at SINTEF Industri

Thermal Cameras and Machine Vision
Webinar – 2nd December 2020
09:00-09:45

Once a futuristic technology for military night-vision, thermographic cameras have exploded onto the commercial market in the last 20 years. As the range of applications has expanded, new technologies, vendors, and data analysis solutions have emerged.

For high-temperature processes such as furnace inspection and metal casting, infrared cameras address a long-standing gap in online sensor data. High-quality thermal imagers penetrate smoke and flames, providing a sharp view in the harshest of environments. When combined with state-of-the-art image analysis, thermal cameras can give real-time insights into the physics and chemistry of high-temperature processes, leading to higher yield, better purity of product, and significant energy savings.

[Register for the webinar here](#)

Anders Hansen
Research Scientist at SINTEF Digital