

# Simcenter FLOEFD for Solid Edge

## Solution brief

Siemens Digital Industries Software

### Radionor optimizes designs for aerodynamic and thermodynamic performance

#### Next generation technology for long-range wireless connectivity

Radionor Communications was founded in 2000 and has developed next-generation phased array technology for long-range wireless connectivity and high-accuracy localization. The company delivers highly specialized products and systems for customers in need of long-range data links for military, aerospace and unmanned aircraft, as well as for advanced live television productions. Radionor's products for manned and unmanned aircraft are attached to aircraft fuselages and support internet protocol (IP) radio communication in closed networks. For example, Radionor antennas are used in the Norwegian Coastal Administration's surveillance aircraft.

"The equipment must have proper aerodynamic properties, especially if the aircraft are moving at rapid speeds," explains Atle Sægrov, CEO of Radionor

Communications. "It is important that we capture the numerical values of these properties. Aerodynamics are also of great importance for ground installations where antennas are in exposed locations. In these instances, we need to know how much wind pressure they can withstand and how much power the installations are exposed to."

#### CFD simulation that is easy to use

To simulate and predict the performance of its designs, Radionor selected Simcenter™ FLOEFD™ for Solid Edge® software, a computational fluid dynamics (CFD) analysis solution from Siemens Digital Industries Software. One of the key reasons for the selection was the software's tight integration with Solid Edge, Radionor's computer-aided design (CAD) software. Simcenter FLOEFD is fully embedded in Solid Edge and appears as an extra menu in the CAD program. Engineers can specify wind speeds up to hundreds of kilometers per hour to create a virtual wind tunnel around the product under study to run a simulation.

#### Challenges

- Understand aerodynamics and thermodynamics of radio communications equipment
- Determine optimal design parameters for cooling fins and materials

#### Solutions

- Implement Simcenter FLOEFD for Solid Edge software
- Full integration with Solid Edge CAD
- Easy to use and intuitive

#### Results

- Easier and faster simulations
- Accurate calculations of wind pressure and heat flows
- Acquired knowledge about critical stress points

## Solution focus



"When the simulation is finished it shows the total wind pressure and you can also view animations illustrating how the wind blows," says Sægrov. "We are experienced Solid Edge users; we know it like the back of our hand, thus it is beneficial to us that Simcenter FLOEFD is part of the CAD program we are already familiar with. Simcenter FLOEFD is also very intuitive and easy to use since you do not have to export data from one application to another to make simulations. We actually only needed a few hours of training before we started working with the tool."

"If you continue with the heat analysis simulation, you can see how the heat flows out, almost like a heat map of the product," Sægrov says. "Then it becomes much easier for us to set cooling fins exactly where they are needed, or switch to other materials if necessary."

### Fine analysis

In the past, Radionor also calculated aerodynamics and thermodynamics, but the calculations were much coarser. "Now the analyzes are much more accurate and it has become much easier to acquire knowledge about the critical points that are exposed to the most stress in a design," says Sægrov. "We are now able to uncover these points and make accurate force calculations on them, rather than oversizing the construction to be on the safe side. We usually start with a rough analysis that gives some indications, then we fine-tune and refine how accurate the simulation should be in the different places in the model."

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