### **ABOUT**

# **Nissens Cooling Solutions**

Nissens Cooling Solutions (NCS) is a market leading supplier of customised cooling solutions for on- and offshore wind turbines and select industrial applications.

NCS provides end-to-end customer support from development, design of prototypes, preparation of initial sample to manufacturing and supply of the final product.

NCS is the development partner and tier 1 supplier to most top 10 wind Original Equipment Manufacturers (OEMs), and NCS is the development partner of niche quality solutions to heavy equipment OEMs.

NCS is headquartered in Horsens, Denmark. NCS employs about 1,000 employees across its own production and assembly facilities in Europe and China combined with global engineering and sales support as well as an in-house test centre in Denmark.

NCS recorded revenues of more than DKK 1.3bn in FY21\*.

## What is a cooling solution?

- Electric and electromechanical systems (for example in a wind turbine) develop heat as a byproduct when
  performing; such heat needs to be diverted to either prevent the system from malfunction or to unlock greater
  performance
- Cooling solutions are therefore a core part of most advanced electric and electrotechnical systems

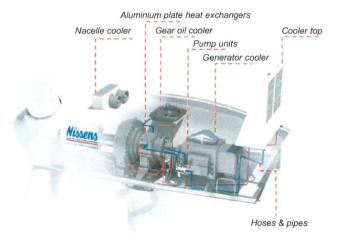
## What does NCS offer?

- Fully integrated supplier of customised cooling solutions, with inhouse R&D, engineering, production and sales
- Serving various end-segments (e.g., wind, trains, agriculture, mining, defence, construction)

## NCS Wind - Deep Dive

#### **Systems**

As a fully integrated supplier, NCS takes responsibility for all parts in a cooling system both in relation to engineering and the supply chain



Example of a cooling solution and its key components for the nacelle part of a WTG\*

### **Modules**

NCS assembles all parts in the cooling section of the WTG\* and delivers it as one part number for "plug & play" in the OEM production or at the site

Primary Heat Exchangers Coolers where hot oil, water or air from components is cooled, typically by cold water / glycol (e.g. nacelle cooler)

Pump Units and Hoses & Pipes

Pump units circulate liquid through hoses and pipes between the primary and secondary heat exchangers

Secondary Heat Exchangers Coolers where hot fluid is cooled and hot air is emitted (e.g. cooler tops and external coolers)

Example of the cooling process for a WTG\*



\* Financial year ends on 30 April

\* WTG: Wind Turbine Generator