

ALU **X** AIR

THE X-SERIES FROM NISSENS COOLING SOLUTIONS

The X-series from Nissens Cooling Solutions is a range of unique products, which are each designed and manufactured on the basis of proven technologies and Nissens Cooling Solutions excellence in handling aluminum processes. Our products are developed with customized features individually matching every customer's need. Common to them all: They are renowned for their high quality and proven performance. The X-series from Nissens Cooling Solutions aims at taking the market to the next level.

The X-series portfolio includes:

- AluXchanger
- AluXstream
- AluXsafe
- AluXair
- Full AluXstream
- Full AluXsafe



A unique air-to-air cooler for the wind turbine industry

In recent years, the need for air-to-air cooling has emerged in the wind turbine industry due to the significant size and power capacity of a modern wind turbine, which has also led to a steadily increasing requirement for climate control in the nacelle.

Modern wind turbines frequently use indirect cooling, for instance by means of liquid link solutions, but, today, the use of direct drive technology is becoming more common and it promotes the application of direct cooling.

To meet the needs of the demanding wind turbine industry, Nissens Cooling Solutions has developed a unique product for on- and offshore wind applications, AluXair.

The features of AluXair

With AluXair, Nissens Cooling Solutions offers a unique product solution with a number of benefits that deliver an answer to some of the most well-known challenges, when it comes to securing optimal cooling.

AluXair is an air-to-air cooler in aluminum, where the internal air is cooled by the ambient air through an integrated heat exchanger.

Nissens Cooling Solutions offers customized sizes of the exchanger, which makes it easy to integrate with other parts and components in any given application.

Small sized AluXair products are easy to fit into the available space in the application design made by our customers. The sizes of the main components in AluXair, the cores and the fans, are determined on the basis of the specifications for the individual product.

Where to apply AluXair

The product is developed specifically for the cooling in wind turbines.

AluXair is developed for:

- Cooling of standard generators
- Cooling of direct driven generators
- Climate control in the nacelle
- Air cooling of power electronics

The benefits of AluXair

Being designed on the basis of more than 20 years of proven technology performance in off-shore wind applications, no other products in the wind turbine market offer the unique features of Nissens Cooling Solutions' AluXair cooler.

RELIABILITY

In more than 30 years, we have designed and manufactured customized cooling solutions for the wind turbine industry in long-life aluminum materials and alloys.

LEAKAGE FREE – FULLY BRAZED SOLUTION

Brazed products offer strong metallic contact and optimal heat transfer. AluXair is a full-brazed product and 100% leakage free. Any use of sealing materials, like glue and silicon is avoided.

PROVEN PERFORMANCE

On the basis of proven technology and performance, we have supplied thousands of customized cooling solutions to the world's leading wind turbine manufacturers.

COMPETITIVE PRODUCT OFFER

AluXair is a competitive product with a weight that is approx. 25% lower than the weight of traditional products currently present in the market.

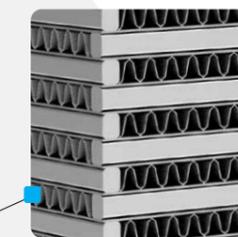
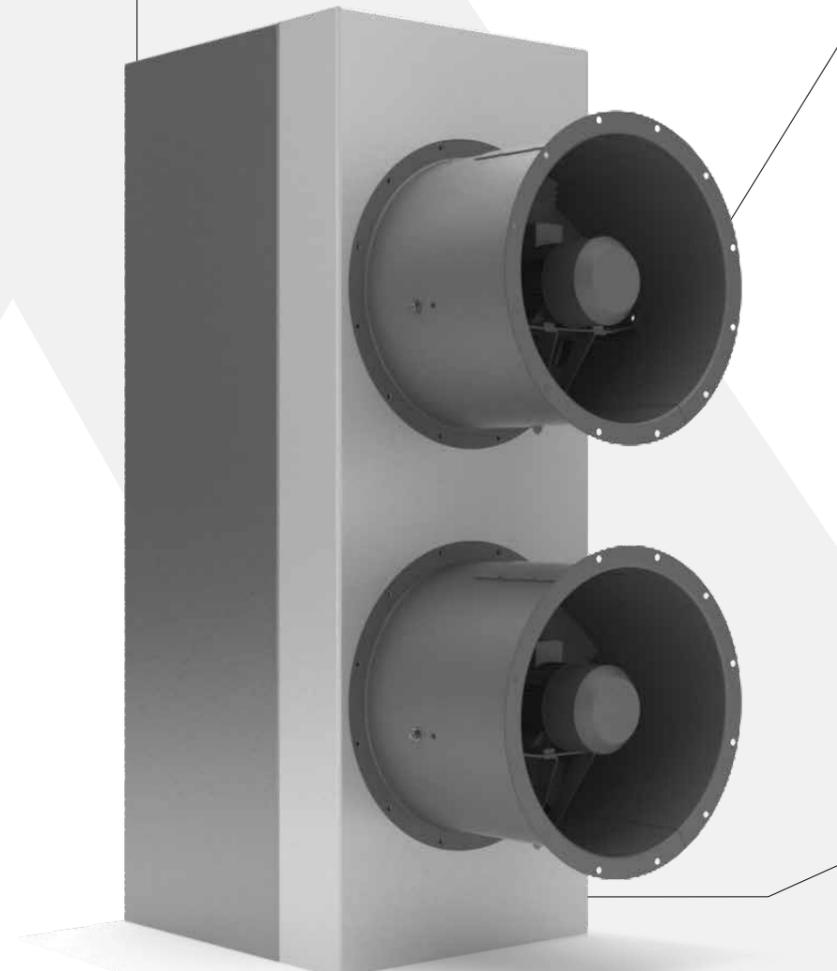
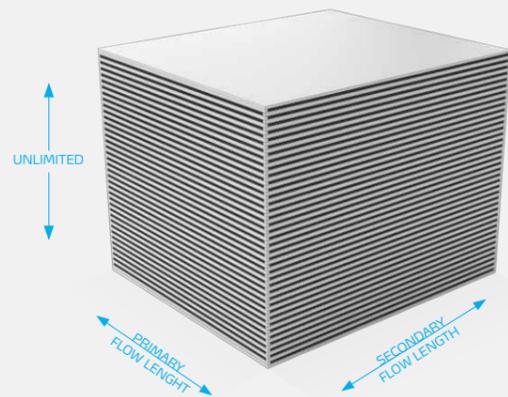
STRONG CORROSION PROTECTION

The strength of modern aluminum alloys is considerably higher compared to more traditional alloys, and the lifetime of aluminum products continues to increase thanks to improved corrosion properties.

SWAAT test results document that the number of "days to failure" of aluminum products has increased. As a result, our aluminum cooling products are strong alternatives to products manufactured in other materials, which have traditionally been perceived as being more corrosion-resistant by the market.



CUSTOMIZATION IS THE KEY.



ALUXAIR - YOUR RESPONSE TO A NUMBER OF CHALLENGES

- Smaller size
- Lower weight
- High reliability
- Competitive pricing
- Free of leakage
- Proven technology

ASIA

**Nissens Cooling System
(Tianjin) Co. Ltd., China**

Tel.: +86 22 8219 5600
ncs-asia@nissenscoolingsolutions.com

EUROPE

**Nissens Cooling Solutions A/S
Denmark**

Tel.: +45 7614 8000
ncs-europe@nissenscoolingsolutions.com

USA

**Nissens Cooling Solutions Inc.
USA**

Tel.: +1 704 987 0088
ncs-northamerica@nissenscoolingsolutions.com

www.nissenscoolingsolutions.com