



# Panametrics, key in wind power generation

## Summary

Wind turbines are playing an increasingly key role in the global energy mix, contributing significantly to the shift toward renewable power sources. Large-scale wind turbine models contain several components that generate heat—such as gearboxes, converters, and transformers. If these systems are not properly cooled and maintained within their optimal operating range, signs of early degradation, efficiency loss, or premature failure can quickly appear.

To address these thermal challenges, water/glycol mixture closed-loop cooling systems are widely adopted in wind turbine designs. These systems are engineered to maintain critical components within their optimal temperature range.

In large-scale wind turbine deployments, it is crucial to minimize installation time, avoid process shutdowns, and reduce maintenance requirements, especially for offshore installations. For this reason, cooling systems must be designed for rapid integration, often using modular components to maximize speed of integration and minimize complex and labour-intensive tasks in the field.

## Application

|                          |                                         |
|--------------------------|-----------------------------------------|
| Medium:                  | water/glycol mixture                    |
| Pipe size and thickness: | 63mm x 3 mm (2.5"x0.12")                |
| Pipe material:           | SS316                                   |
| Flow rate:               | unidirectional 0 to 500 l/min (132 GPM) |
| Temperature:             | 2–25°C (35–77°F)                        |
| Requested accuracy:      | <±2% of reading                         |

## Benefits:

- Easy to set up and program
- No process interruption
- Reliability and accuracy



AT20 transducers installed on the cooling line

## Challenges

Maintaining a large-scale cooling system for a wind turbine farm is complex. Several parameters must be live monitored to ensure optimal performance. From a flow measurement perspective, using an inline meter requires cutting pipes and shutting down the process to drain the coolant for regular maintenance, which represents an unnecessary waste of coolant, time and money. Especially when this operation is carried at the scale of a wind farm involving dozens if not hundreds of turbines.

Panametrics' customer, a wind-turbine OEM operator, based in continent, recognized the criticality of accurate and reliable flow measurements across its cooling system processes. The customer invited Panametrics to review the challenges and present a solution.

## Solution

Panametrics selected its Aquatrans AT600 ultrasonic flowmeter with AT20 transducers. The AT600 is installed in the cooling loop as can be seen in the picture. After a few successful tests with four AT600 flowmeters, the customer was convinced. Impressed by the accuracy, reliability, and—crucially—the ability to install the system without operational downtime, the customer has decided to standardize this measurement approach and plans to order and install several dozen AT600 flowmeters across its cooling loops.