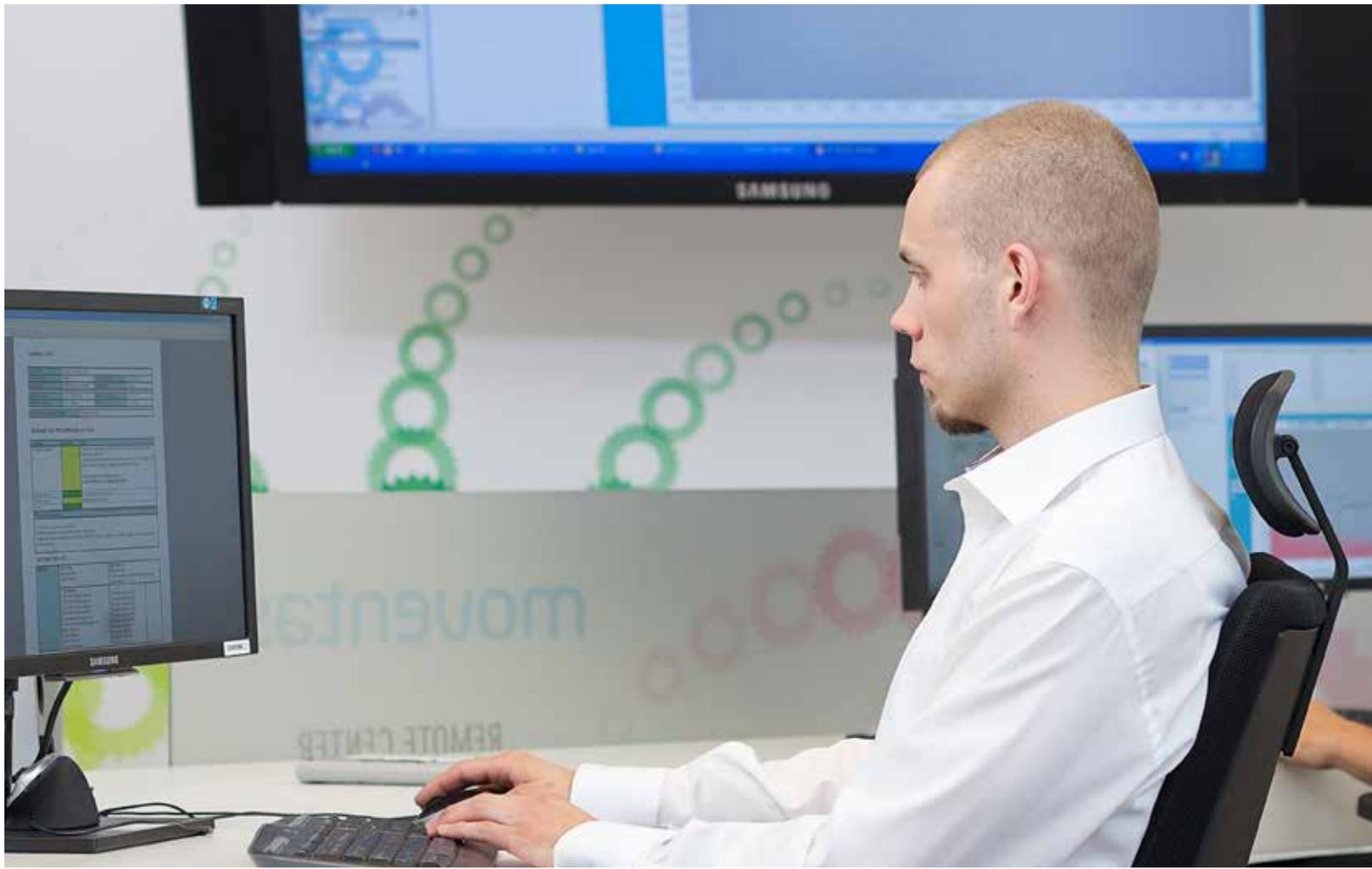


# CMaS

## Condition Management System





# *Everything under control – CMaS Condition Management System*

*Out of the office? Relax; everything is under control no matter where you are, thanks to CMaS.*



### **Remote Center**

**Moventas also provides proactive gear expertise on more than just a system level. Watching over thousands of wind gears around the globe, the Moventas Remote Center has experienced, field-proven gear specialists available for all customers on-call – 24 hours a day, seven days a week.**

**[cmas.support@moventas.com](mailto:cmas.support@moventas.com)  
Service 24/7 Hotline +358 40 523 9684**

CMaS has been developed to monitor how the gearbox and other drive train components in a wind turbine are performing, 24/7. It also anticipates possible upcoming failures, responding by providing you with timely updates and alerting maintenance crews.

What is even better, CMaS can do all this for thousands of units spread over a wide geographical area. Think what that could mean in terms of your cost efficiency.

For end-users, it guarantees the continuity of their energy yield. For energy utilities, it transforms conventional maintenance into smart, proactive maintenance and longer, more trouble-free operations. For turbine and system suppliers, it provides a new, value-added dimension to their product offering.

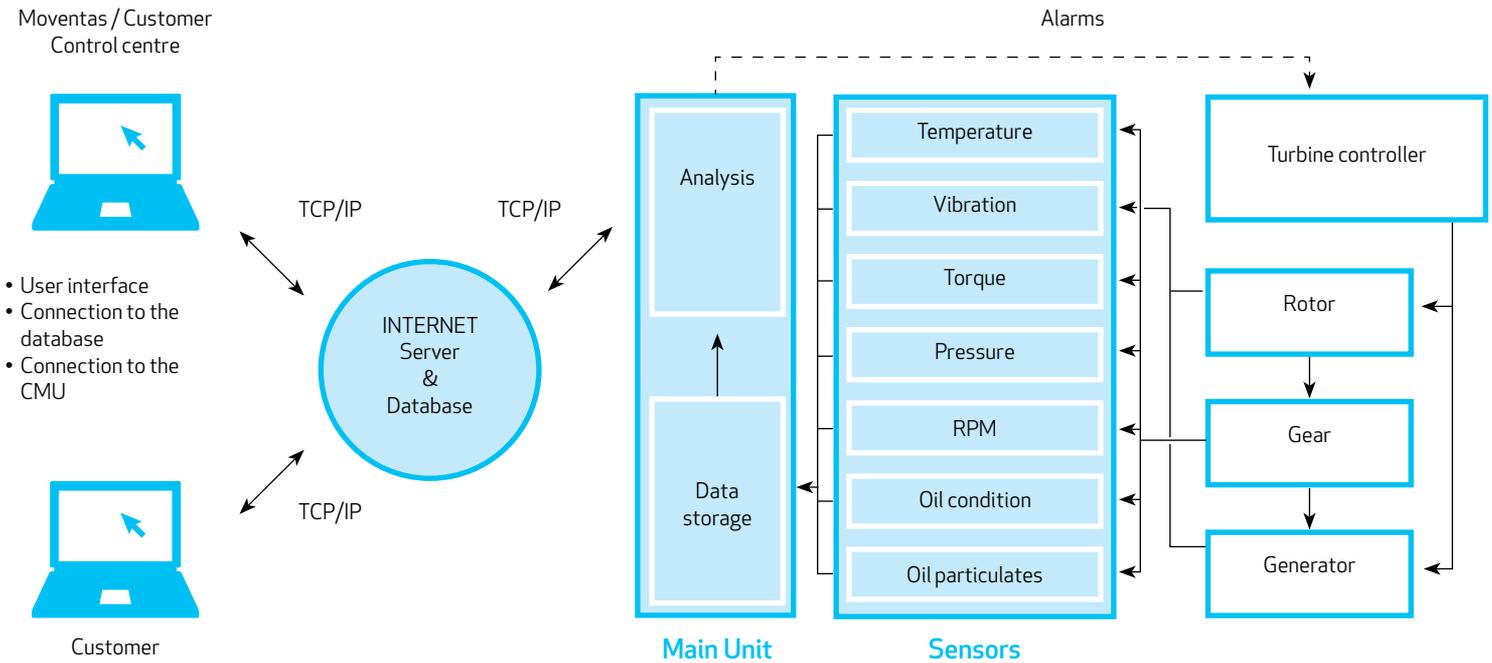
## *Why not think ahead?*

CMaS condition management system has been designed as a smart, compact, value-added package that monitors a range of performance parameters, stores and analyzes this data, and reports it to a remote server over the internet using a standard TCP/IP protocol (Ethernet and/or GPRS).

It is up to you whether you want us to handle the data analysis and provide you with peace-of-mind reporting, or whether you prefer to take care of the analysis yourself, calling on Moventas for expert assistance when required.

The system operates as a fully customizable portal that can handle a very large number of parameters, including those from other systems, providing access to the "one-stop" analytical toolbox needed.

# How does it work?



## CMaS sensors monitor seven key parameters:

- **Temperature**
- **Vibration**
- **Load**
- **Pressure**
- **RPM**
- **Oil condition**
- **Oil particulates**

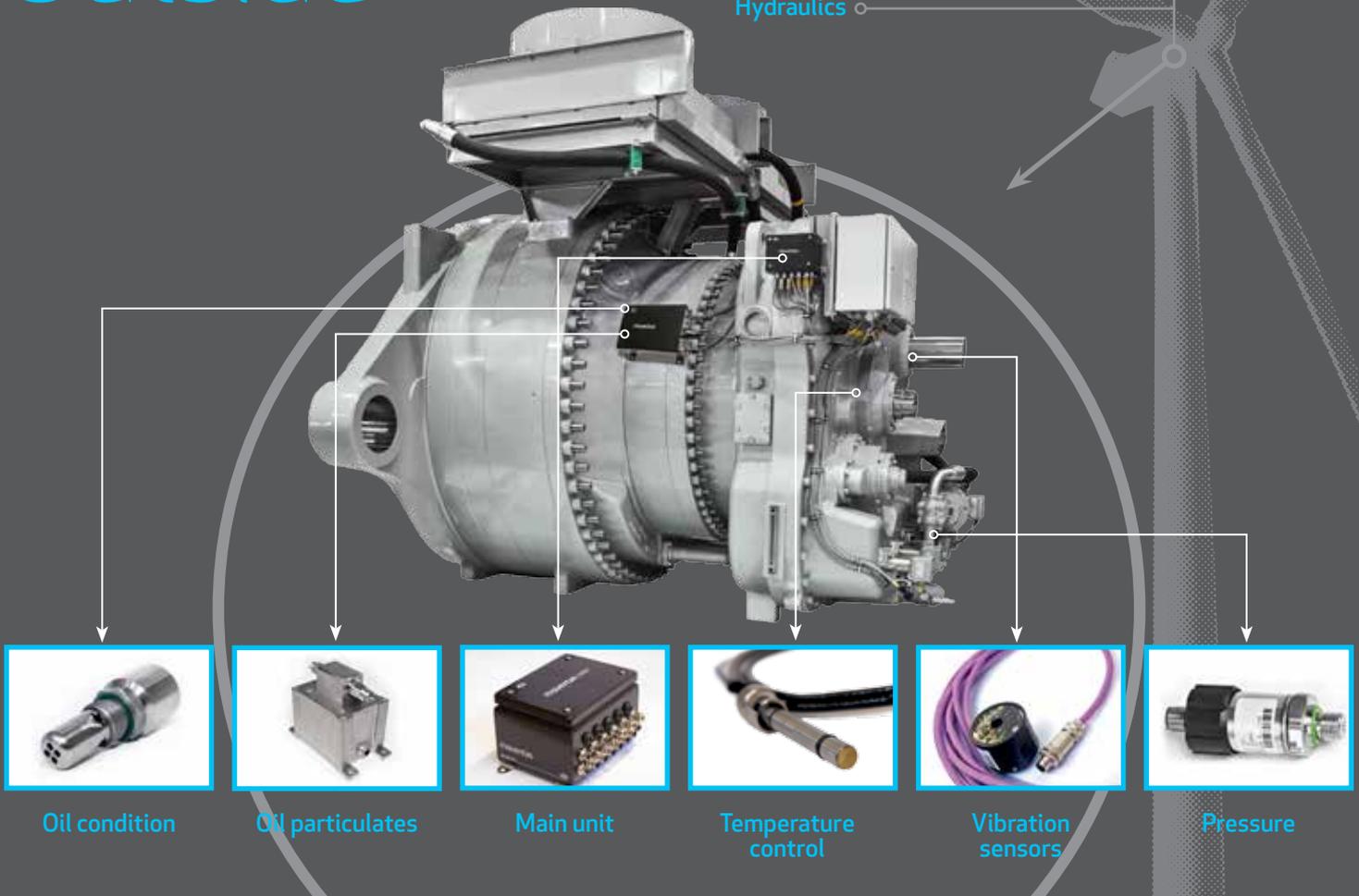
In addition to these parameters, others can be added in line with your needs, covering even phenomena such as wind speed. The more data that can be analyzed, the more valuable the results will be. This kind of flexibility comes as standard with Moventas solutions.

## CMaS gives you a heads up

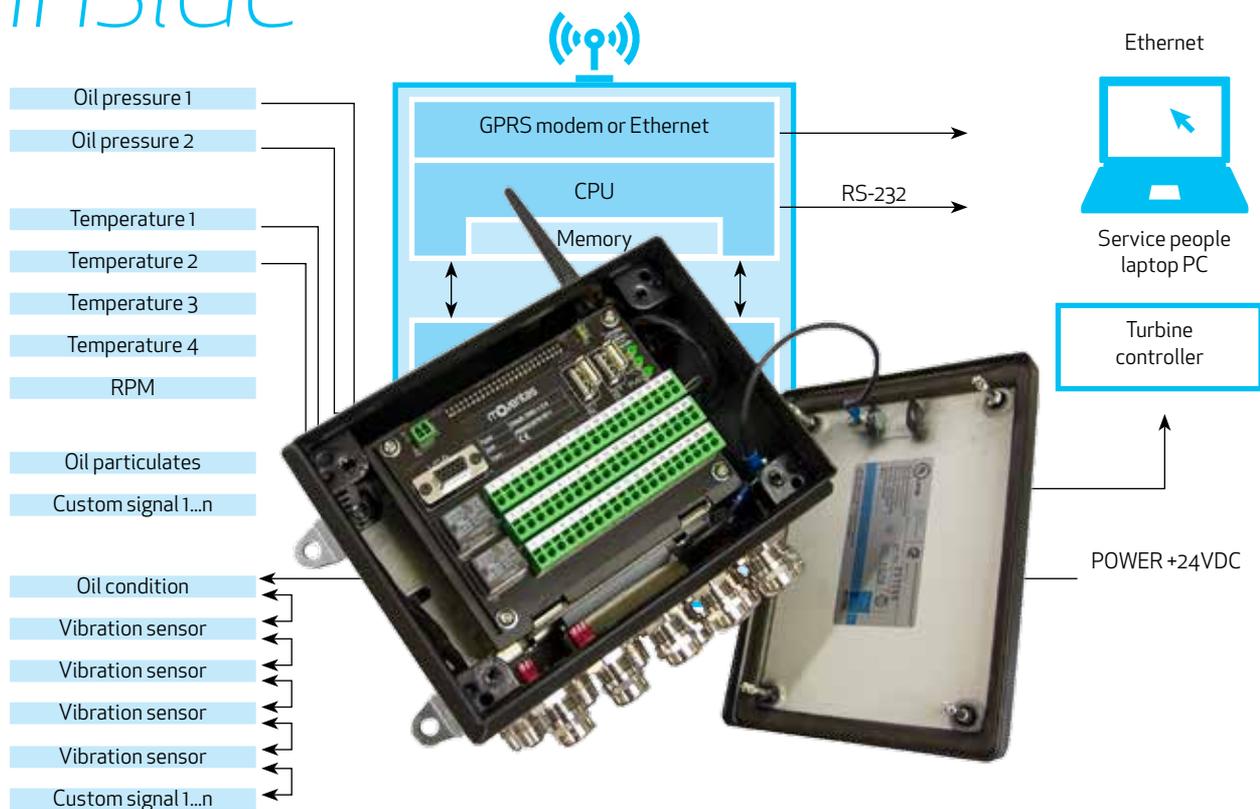
- **Measuring a turbine's bearing and oil temperature profiles provides excellent advance indication of possible malfunctions in cooling systems or problems with a turbine's lubrication.**
- **Excessive vibration is an early signal of bearing misalignment and friction issues.**
- **Torque and RPM data gives you up-to-the-minute information on actual load conditions and prior warning of out-of-spec operations.**
- **Oil condition and particulates content provide advance warning of wear-related problems - everyone knows that the cleaner your lubricant, the better it performs to maximize the lifetime of bearings and gears.**

# Outside

Generator bearings  
Main bearing(s)  
Hydraulics



# Inside



Wide range of digital and analog sensors can be connected to the system's central processor.

# We help you to succeed

CMaS condition management system forms an integral part of Moventas' commitment to proactive lifecycle drive services, aimed at increasing operational reliability and reducing unscheduled shutdowns and delivering best-in-class performance with maximized profit.

As a specialist in wind power technology, Moventas has tailor-made CMaS for the specific needs of wind turbines and the tough conditions that they operate in.

The system's smart software and analysis algorithms are designed for monitoring the performance of all types of gearboxes, both Moventas units and those supplied by other manufacturers. Its sensor technology is the latest available and all key electronics and mechanical components have been developed by Moventas.

## Easy access

Thanks to its use of the CMaS MySQL based server, the system can be easily integrated into corporate intranets or extranets, matching other web-based solutions and minimizing people's learning curve.

It also means that you can log on via your mobile phone. The mobile interface is as flexible as the PC one, so you have a mobile access to even the most detailed information, such as data from individual sensors.

## Scalability built in

CMaS is highly scalable and can handle up to 200+ analog and digital sensors. As a result, it even has the potential to monitor much more than just your gearbox.

- **Measure both oil condition and vibration parameters**
- **Provide comprehensive 24/7 remote diagnostics services**
- **Prevents gearbox and drive train failures**
- **Reduce unplanned shutdowns and minimize turbine downtime**

With such a flexible interface and in-built scalability, CMaS is ideal for a wide range of installations, ranging from a couple of units to a major offshore wind park featuring tens or hundreds of units, or installations across an entire region. Plus, CMaS can grow with you as your needs change.

## You reap the benefits

The system provides round-the-clock monitoring to provide you with early warning of potential problems. Using this data, you can limit loads, for example, giving you time to fix a minor problem before a major failure occurs.

The combination of CMaS and Moventas remote diagnostics services provides you with quick response time on field service repairs and the shortest lead-time of factory services. This will also optimize your spare part inventories to minimum.

The system also provides crucial input for designing your maintenance program to prevent failure situations developing in the first place, and eliminate the costs these involve. This translates into higher availability, lower overall costs as well as longer unit lifetimes.

The condition analysis data provided by the system gives you the potential to develop and adopt optimum operating models for your installations.



# moventas

GEARED FOR  
NEW ENERGY

Moventas is one of the world's leading gear manufacturers. Moventas offers power transmission solutions to, for example, wind energy, pulp and paper as well as the mining industry, and comprehensive services for the overhaul, maintenance and remote management of power transmission machinery. Globally operating Moventas is part of the global engineering group Clyde Blowers.

[www.moventas.com](http://www.moventas.com)

*All the people in the pictures of this brochure are authentic Moventas employees.*

