Cedric Ouellet

Director, Energy & Industrial ◤ Gastops

"Not only can we tell you that there's a problem, but we can tell you how long that problem has gone on and what your options are."

◤ What does Gastops do for the wind industry?

Gastops provides products to the wind industry that deliver unique condition-monitoring capability. Our sensors are used to understand the overall health of the drive train in the wind turbine, dispensing advanced indication of degradation of critical components. Beyond simple indication, the value proposition of our technology is that it monitors the progression of the damage, utilizing application specific algorithms, to provide invaluable information about remaining useful life, allowing the operator to optimize equipment operation, maximize life and schedule maintenance when it is required, and when it can be done in the most cost-effective manner.

◤ What went into launching your fifth-generation sensor, the MS3500?

The MS3500 is the fifth generation of our product. We had a very strong pedigree of prior-generation products that were widely accepted by OEMs (the turbine manufacturers that make the turbines) and had been in production since about 2005. Over the years, we have gained tremendous insight from customers, both from retrofit applications and from our OEM partners. We essentially brought in the new features they were asking for. The wind industry has a very high focus on lowering the cost of energy, so the MS3500 is our lowest cost sensor to date, but also introduces Ethernet connectivity to enable fully remote monitoring and maintains the high level of product quality our customers have come to expect. This is the same technology that is used to monitor the health of the engine on the F35 fighter jet ... Gastops understands how to produce a reliable sensor.

◤ What about the sensor has made it a must-have with OEMs?

First and foremost, it provides the earliest indication of damage of any sensor technology used in the wind market. Further, and equally important, it is the only technology that gives you a direct measure of the amount of damage that is occurring. Other technologies can tell you there is a problem but cannot determine how critical or how advanced the failure mode is. MetalSCAN gives you a direct indication of how far along the gearbox is in the failure mode, and how much longer the equipment can operate before reaching a point that could lead to a catastrophic failure or to secondary damage, where other components will start to fail.

For perspective, the gearbox is the most critical and most expensive component of an entire wind turbine. The ability to repair the gearbox and related components up-tower is very limited. If you do not catch a failure early enough, you get into some very heavy equipment costs to do repairs. What differentiates our product from other condition-based maintenance products is the timing and level of information provided, including options as to what actions can be taken to mitigate the problem before that maintenance is undertaken. At a high level, that is the secret sauce for Gastops, the most valuable differentiator we offer. Not only can we tell you that there is a problem, but we tell you how long that problem has been progressing, and we provide expertise on how to optimize your maintenance plan.

◤ You mentioned your enhanced monitoring service. Could you go into more detail about the service and what it will bring to the industry?

Our remote monitoring service is targeted toward the retrofit space, meaning it is for owner-operators of equipment who do not have condition-monitoring services from the OEM. Gastops' core expertise is in providing prognostic health monitoring services.

We understand how equipment fails, how equipment operates, and how maintenance should be done. We have a suite of complementary services, such as oil analysis and other techniques that are used to deep-dive equipment performance issues to further optimize maintenance scheduling and reduce the cost of energy. We are leveraging the new Ethernet connectivity of the MS3500 and packaging all these capabilities together into a remote monitoring service

that our customers can take advantage of. This is our Industrial Internet of Things (IIOT) cloud services offering that enables our customers to be able to go to a mobile device and see the health status of their critical equipment in real-time. This is a big step change in how diagnostic and prognostic information is delivered.

What are some of the other advantages MetalSCAN has over technologies already out there?

The traditional technology used for condition-monitoring in the wind market is vibration. The biggest challenge with vibration monitoring is that you need experts with PhDs to analyze the data to determine whether there is a problem with the equipment. In contrast, our technology (oil-debris monitoring) is simple and intuitive in nature. You do not need expert interpretation, because Gastops has provided the expertise in the product itself, and then offers our remote monitoring services to further enhance the value. The solution is also very scalable in the sense that you can monitor thousands of assets very easily.

Is this service a one-size-fits-all product, or does it need to be custom tailored depending on the size and make of a turbine?

We have a few models of sensors that are designed to fit most OEM platforms, but our approach has always been to co-develop application specific solutions with the OEM to optimize the accuracy of the predictive information provided and ensure they are fully engineered into these platforms. Our products are either a standard product offering from the OEM or selectable as build option, depending on the manufacturer and the model. When MetalSCAN is not purchased with the wind turbine from the OEM, Gastops offers and installs the same engineered solution as a retrofit option.

Do you see your product being a good fit with offshore turbines?

A huge benefit of our product in offshore is that it provides condition indication without needing to actually go inspect the turbine. Without remotely accessible condition-monitoring, physical inspection is the only way to check for gearbox or drivetrain damage. Just the mobilization of the crew to the turbine is a higher cost than the actual cost of our technology, and the mobilization cost for offshore is exponentially higher than for land-based assets. If an operator can avoid one trip to do an inspection, they have already paid for our product. In offshore installations, operators are using information from MetalSCAN to pre-determine what components will require replacement and are able to schedule a single visit to address the required maintenance, avoiding significant downtime and significantly reducing mobilization costs.

Do you find your service, in some respects, superior to actual eyes-on inspection?

Definitely. A thorough visual inspection is a full day of effort, and there are a lot of blind spots. There are areas you simply cannot physically inspect. With MetalSCAN, if the drive train is shedding debris (that will liberate itself in the oil) the sensor will detect it. Regardless of where it is coming from, MetalSCAN will see it.

What has been the market reaction so far to MS3500?

Our fifth-generation product is being widely adopted. We have already transitioned most of our OEM customers to this new platform that launched earlier this year. A key differentiator for Gastops is the reliability and quality of our products, and the new sensor meets the market demand for a lower cost offering, with improved connectivity features, all without compromising on quality or reliability. The bottom line is that sales have been through the roof. We are extremely busy right now. The product has been quickly and widely accepted, endorsed, shipped, and is now in the field. It is exceeding our expectations.

Has the pandemic been a problem with getting this out to OEMs or has it been negligible?

I would say that this is the strongest year for this product line ever, irrespective of the pandemic. It is a testament to the value proposition of the product line itself that it has been so successful even with everything happening in the world.

Anything else about Gastops you'd like to add that we didn't discuss?

The whole value proposition of condition monitoring in general, but specifically the transition to an IIoT approach, with the addition of Ethernet capability, and our cloud-based remote monitoring services, just goes way up as you move from land-based to offshore wind. That is a key driver for the industry, really, in terms of the importance of remote monitoring and condition monitoring, as it is costlier and more difficult to get to the turbines that are out in the ocean.

They are bigger; they are larger; and they are more expensive to protect. That is a real key focal point for where the industry is going and where Gastops is going in terms of advancing our roadmaps with respect to our remote monitoring capabilities.

I would add our focus on reliability and availability of equipment, especially given what happened in Texas recently, as it is critically important that we have the ability to see you through maintenance issues. The support that we offer when an event does happen goes beyond our remote monitoring capability. We will also work with you through any potential outage or loss of power to minimize whatever that downtime is and allow you to meet your availability targets. That sets us apart, and it is a unique offering; you are not just buying a product and then trying to figure it out yourselves. We are in it with you, for the duration.

MORE INFO www.gastops.com