

## Q&A with Saar Yoskovitz, CEO and Co-Founder of Augury, Inc. using Advanced Machine Learning Algorithms and Ultrasonic Sensors to Connect and Listen to Machines to provide Predictive Maintenance for Machines in Large Facilities as well as in the Home



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**CEOCFO: Mr. Yoskovitz, what is the idea behind Augury Inc?**

**Mr. Yoskovitz:** The basic notion behind Augury is that by listening to a machine it can tell you exactly what is wrong with it. We can tell you if it is working properly, if it has a malfunction, and even what type of malfunction it may have.

**CEOCFO: How do you listen to a machine? What is involved?**

**Mr. Yoskovitz:** We connect a vibration and ultrasonic sensor to a machine, then send that recorded mechanical data to our secure cloud where we apply advanced machine learning algorithms on the sound. You can think of it as Shazam, but for machines.

**CEOCFO: What kinds of problems are you able to pick up? What is the process?**

**Mr. Yoskovitz:** For roughly ninety percent of the malfunctions, we can tell you exactly what is wrong with the machine without ever seeing it before. This technology can be used across the board, anywhere from industrial facilities where you have large and expensive machines and eventually, all the way to your home, where you have the washing machine, dishwasher, refrigerator. Our goal down the line is for it to be used on anything that has moving parts. Initially, we are focusing on the commercial and industrial sectors - more specifically on the infrastructure - the pumps fans and compressors that keep the facility humming.

**CEOCFO: Why have you chosen to start with there?**

**Mr. Yoskovitz:** When you look at the Internet of Things (IoT), it is kind of a large umbrella that many different segments fall under. There is the consumer IoT and then there is the industrial IoT. We chose to begin with the industrial side, because if we manage to bring machines online and monitor them, then we can help these industries save billions of dollars every year on energy and operations as well as reduce the frequency and quantity of critical malfunctions.

**CEOCFO: Why HVAC?**

**Mr. Yoskovitz:** At hospitals, data centers, buildings and manufacturing plants, the air conditioning, heating and refrigeration is critical to the operation of the facility. If you look at a data center, it is true that the server is the most expensive component in the data center. However, without cooling it cannot do its job. In hospitals, if you look at an emergency room, it is supported by its mechanical infrastructure. The same goes for the industrial side. If we go to a factory, then refrigeration is a big part of it. Even in a power plant there are many pumps and fans that are producing the steam for the turbines.

**CEOCFO: Are you able to pick up an intermittent problem?**

**Mr. Yoskovitz:** That is a very good question. Today we have two products. The first is a portable diagnostic tool, which goes with the technician in their toolbox. The technician can attach the sensor to a machine with a magnet and within seconds will receive an alert explaining what is wrong with it. Our second product is a continuous diagnostic platform. This is where we mount the sensors on the machine, connect them to the internet and then we can provide the technicians and facility managers with ongoing alerts if anything changes. Therefore, we catch almost everything.

**CEOCFO: Would you explain how a company engages with you and the Diagnostics as a Service model, which is something new?**

**Mr. Yoskovitz:** Today we have three different types of customers. When we first started, we went to market through the large service companies with our portable diagnostics tool that is a great fit for technicians. Today we work with the three largest maintenance companies in the US. Johnson Controls, Trane and Carrier are all customers of ours, as well as large facility management companies. Our second type of customer is Fortune 500 companies with critical facilities. We have power plants, such as Brooklyn Navy Yard. We work with factories, such as Mueller Industries, which is a large pipe manufacturer. We work with data centers, food and beverage facilities, pharmaceutical plants and others. The idea there is that in such cases we do not charge for the hardware. We give away the diagnostic tool for free and then we only charge on an ongoing basis for the diagnostics. The third type of customer is the original equipment manufacturers (OEMs). In this case, we partner with the main machine manufacturers, such as Grundfos pumps, to enable the OEMs to provide their customers with mechanical diagnostics technology.

**“If you think about all the machines that affect our lives, from the power we use to the water we drink, we are all dependant on machines working. If we can enable those machines to become more reliable and more efficient, we can make everyone’s lives better, as well as reduce energy consumption, which in turn would be better for the environment.”- Saar Yoskovitz**

**CEOCFO: Are businesses skeptical? What is the response when you are presenting your program?**

**Mr. Yoskovitz:** Until now, the initial cost of predictive maintenance hardware as well as the expertise that is required have been cost prohibitive for most facilities. As a result, it has been almost exclusively used in the very high end markets. Today, we are lowering these two barriers to make it accessible to almost any given facility. The benefits of Predictive Maintenance have been clearly proven over the past three decades and customers are searching for scalable ways to implement it in their facilities.

**CEOCFO: Are facilities looking for a better way or is it more when you approach them they recognize the value?**

**Mr. Yoskovitz:** It is a little of both. We have both inbound and outbound. In general, everyone is always looking for a better way to optimize; to optimize their operations, to lower the overhead of maintenance and to reduce the critical malfunctions. Every operations team wants to have a predictable maintenance program.

**CEOCFO: What is your strategy for reaching out?**

**Mr. Yoskovitz:** We have teams dedicated to generating both inbound and outbound interest. We attend and speak at many events and conferences and have an inside sales team that reaches out directly to potential customers. We typically work with enterprise companies, such as Fortune 500 and Fortune 1000 companies that are a very good fit for us.

**CEOCFO: What is involved in implementation?**

**Mr. Yoskovitz:** For the portable tool we will ship it to you and provide online training videos. Within ten minutes you are good to go. For the continuous diagnostics platform, we have an installation team that gets the facility up and running in less than one day.

**CEOCFO: How is business?**

**Mr. Yoskovitz:** Business is great! Having a hardware product, it took development time to get to where we are now where we have two functioning products. We are engaging with dozens of Fortune 500 companies in the different stages of the sales-funnel. We track our sales funnel very closely and we have very good conversion rates across the funnel. We expect 2018 to be a real breakout year for us on the revenue side.

**CEOCFO: What is the competitive landscape?**

**Mr. Yoskovitz:** When you look at the competition there are two different worlds that we track. The first, as I mentioned earlier, predictive maintenance has been done for thirty years now. Therefore, we track the traditional predictive

maintenance market. There are large corporations, like GE, Emerson and others that still develop and sell very expensive solutions for the high end market, so we do not compete with them as we go after the lower-end market. Then the second market is cloud-based diagnostic companies like Augury. Here we see more and more, earlier stage startups come up. In the past few years we have seen multiple companies appear in the landscape. Some of the larger companies, such as GE and IBM, are also moving into the mechanical diagnostics market. However again, they target the higher end machinery like gas turbines and jet engines.

**CEOCFO: *What has changed in your approach over time? What have you learned as people have been using your products?***

**Mr. Yoskovitz:** One thing that we are very proud of is that we are always learning. We use a framework that is called Lean Startup. The idea behind it is to constantly work through cycles of “learn-build-measure.” Before we develop anything we ask customers about their needs, how they might use a new feature or product, what value would they get out of it; and only then do we go back and build it and track its usage. Therefore, we are always learning. When we started Augury, almost six years ago, we said, “Great, we know how to diagnose machines; what type of machines do we want to diagnose.” We had this notion of where we thought the most valuable place to begin would be, and through this process we found ourselves going to the commercial HVAC market, which is where we are today. Therefore, we are really big believers in listening to the market and trying to understand what the right solution is before we go and develop it.

**CEOCFO: *Are you seeking funding, partnerships or investments?***

**Mr. Yoskovitz:** We just raised a Series B funding in June of 2017. We are always looking for partnerships on the commercial side and the strategic side. For example, one of our investors that has led this round is Munich-Re / Hartford Steam Boiler, which is a re-insurance company. When we look into the future and ask ourselves what is going to happen when everything is connected and monitored, the insurance companies play a huge role. Therefore, it was important that we form a partnership with them at an early stage.

**CEOCFO: *How will you be using the funds? Do you have a particular strategy in mind?***

**Mr. Yoskovitz:** Mostly for increasing our sales and marketing efforts. We currently have over 75 people in the team in Augury, 50 of them are in Israel, and 25 are here in New York. The New York office is where I am located and where we have the sales, marketing, customer support and customer success office. We want to grow the sales and marketing team and effort. In addition, we want to expand our relationships with the OEMs to eventually embed our technology into the machine. Then when you purchase a new pump it will come with the diagnostics technology built-in. That will require more engineering, so part of the funds will be to build that capability in house, so that we can support these manufacturers.

**CEOCFO: *Why pay attention to Augury today? Why is the company important?***

**Mr. Yoskovitz:** The next time you go outside and are walking the streets try to open your ears and listen to all the mechanical systems that are around you. If you think about all the machines that affect our lives, from the power we use to the water we drink, we are all dependant on machines working. If we can enable those machines to become more reliable and more efficient, we can make everyone’s lives better, as well as reduce energy consumption, which in turn would be better for the environment.

