

Data, Water and Gas

Conversation with Hydromax USA CEO
Jon Smith



It was after the Veterans in Energy annual meeting when we met the CEO of the water, wastewater, and natural gas systems data firm Hydromax USA. He heads both organizations. While Hydromax USA is Jon Smith's day job, both positions are passions.

These old and sometimes ancient underground systems that Americans count on, need constant attention and rehabbing to ensure they're safe and reliable. Collecting and assessing data on this critical infrastructure, that's what Hydromax USA does for very many of the country's water and gas utilities. Without much fanfare up to now, but after this interview with Jon in Public Utilities Fortnightly, we suspect they'll need to start up an online fan store for Hydromax USA shirts, caps, and mugs.

PUF's Steve Mitnick: Talk about Hydromax USA and how your company is different.

Jon Smith: Hydromax USA was started in 2003 by Steve Lacy, a brilliant entrepreneur, with the objective of addressing the problems associated with aging infrastructure in the United States. The challenge we face is not only in relation to the condition of the infrastructure, but also in potential damage from horizontal drilling, installation of new taps, all the way over to the physical location. Just understanding where the subsurface infrastructure is, some of which is over eighty years old.

I've been in the conversation with urban utilities, gas distribution companies, municipalities and they'll tell you that location accuracy can sometimes be plus or minus six feet, and you don't know the depth at times either.

I'll give you a good example. I was with my water team recently. We were here in Omaha doing our first job with a new technology we have called p-CAT. It's a pipeline condition assessment technology that uses pressure waves.

This main we were checking for the Omaha city goes back to the 1800s. This water main is indicative of what you see in water, wastewater, and gas. Our partner in this case, Metropolitan Utility District (MUD), knew the location. Using this technology, we can determine the health of this line and partner with this great organization to ensure their customers are taken care of.

But, if you don't know the location as they did and you don't know the condition, how can you start moving energy or resources? How can you ascertain the condition and what the need for replacement of that infrastructure is? Where's your risk? Where do you start infrastructure projects? It will take decades to inspect the entire system, just to ensure safety and eliminate risk, and we have some customers where this could be as long as forty years plus.

To solve the question of where do I start? We have developed risk models that utilizes AI and machine learning. This is a new offering from Hydromax USA as SaaS. We can now say there are two ways to look at it. You can use mechanistic QRA based models, which means I'm going to check a hospital because there is a large consequence, such as financial, loss of life or reputation if there is an incident.

Or you can use a probability based model like ours to

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is where Hydromax USA started in the trenches doing these condition assessments, and now are using technology to enable our services.

From the trenches to the need for digitization, Steve Lacy was a visionary. You're using these robotic cameras that travel through the pipe. He said, I've got to do QA/QC on this work. Am I seeing everything back in the truck? I need somebody in the back room or somebody someplace else to check it.

As he got more crews, he needed a way to be able to verify where his crews had been and to show the customers where crews had been what day, what time for compliance purposes. That's when we started our Louisville Technical Center. Still today, we do one hundred percent QC on our work.

The data and video get uploaded to our technical center where an analyst who is using our proprietary technology, brings all this data together and reviews it for completeness and accuracy, seeing what that operator saw, possibly the night before or day before, and feeding that information back.

What makes Hydromax USA unique is you have a gas market, a wastewater market, a water market, and a software market or SaaS, software as a service.

But here's the thing. Nobody else in the industry today has all four of these together. That knowledge and working among

reduce risk, which says the hospital's pretty safe based on the type of installation and the data we have. You might have more of an issue or higher propensity in this neighborhood over here, so let's prioritize that and start moving through your system in an efficient and risk reducing way.

That's the way we help them. They've got forty-plus-years-worth of infrastructure. We can help them zero in on where to start. Once they start, it gets interesting. This

interconnected infrastructure is unique and a game changer for the industry because we learn from each other.

It's a fragmented market. Hydromax USA is able to use the knowledge gained out of all of these. We're the leader in technology enabled condition assessment and data analysis for the utility and municipal space in these markets.

PUF: Are there two or three parts of the company with different kinds of folks?

Jon Smith: Absolutely. On the gas side, we do both cross bore, and we also do leak survey and leak detection, as well as atmospheric corrosion checks. Those are businesses where the cross bore is more infrastructure underneath, the buried. The leak survey is a lot of committed people walking along gas lines and gas maps up to residences and industrial buildings, checking for atmosphere corrosion as well as for leaks using sniffers, using shoulder mounted leak detection.

Let me start with leak first because that's where the technology gets interesting. With leak survey, first we partner with these utilities and gas distribution companies because we believe this is a lifelong relationship for us. What we do is critical in keeping people safe. We have to work with them to solve tomorrow's challenges. We can't just be thinking about today.

We're partners with Esri, and we use industry leading verification techniques through GPS location. It's down to subfoot accuracy and we're taking what are called breadcrumbs which combine location, gas reading, and other information on a per second basis to verify.

Not only in a positive case where we find the leak, we also capture all the readings, which can be used for digitally highlighting which lines have been completed, regulatory audit, tracking program progress and modelling of potential high risk leak areas.

There are so many utilities still going off paper maps and using highlighters to trace. We take away that. There are two reasons why digital solutions are moving so fast today, especially in the age of COVID-19.

One is compliance. If you have someone who hands in a paper map, you don't know that person was there. Do you have a third-party auditing that says, yes, this person was at that site? You have a map with a highlighted route. No independent record they were there, matched to a reading.

Digitization provides date, time, GPS information, gas readings, inspection information and photos. The second part is COVID-19, which has changed a lot of people's minds. Paper is a transmission point for COVID-19. If you're operating on paper maps, you have a risk to your workforce from a safety standpoint that can be solved through using digital maps.

One of the great things is our technology piece, which again, uses proprietary mapping technology to get accuracy and the repetition rate of the breadcrumbs. Let's say you have a large utility with a workforce internally that's already doing this.



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This is where we get to our software as a solution. With this software, we don't have to perform the service for you. We can provide you with the software backbone and system integration. We'll work as your data analyst while your crews work in the field.

This is where we're unique again, and this is the evolution of Hydromax USA where now we have SaaS as an offering for the industry where we can take our twenty years of data that we've used to develop AI and machine learning algorithms, which we think is unprecedented.

We don't know of anybody who even has a third of that in the industry. We can create accurate digital twins, models, and data streams.

The utility doesn't want all the data you collect. They want the data stream to help keep their customers' heat on and the data that helps keep them in regulatory compliance, and what they need to know. We host that for them. This creates a tremendous opportunity for the industry to accelerate digitization and modernization of the infrastructure as a whole.

PUF: You're the CEO. How do you fit in?

Jon Smith: The best part of Hydromax USA is the team. It's one of the best teams I've had in my career. We started talking about the number of diverse people and skill sets we've got.

We've got everyone from data analysts to program managers, project managers to field technicians, and dedicated staff support teams. When I look at what I do, I've got the pleasure of being around a customer centric, dedicated team. My management team consists of three lines of business leaders, a chief commercial officer, sales, our chief technology officer, human resources, and my CFO.

Seventy-five percent of my job is people related. It's making sure our people are safe, are trained, communicating our vision, and from a strategic standpoint, our company is moving forward to make the industry and environment a better place.

The second part of my job is equally important. That is working with our customers. I take care of the customer, by taking care of my people and listening. My teams are my best face to my customer. They're the people who day in day out make our reputation in the field.

The last part is our shareholders. As CEO, I've got investors and I've got board members. But it's my job to reflect the vision, strategy, and market of where Hydromax USA is going to continue to grow and again, provide a great experience for our customers, helping them with public safety and environmental goals. Our motto of "understand the present and protect the future" rings true in all of these relationships.

A good example is my gas business leader. He started as a technician in our Seattle area and now he's our vice president of gas solutions. He's been with us for thirteen years. That's a success story. We have great people at all levels, and I love seeing every one of them successful.

Having the company achieve its goals and results, whether it be from a human or business or being good members of the communities we are in, that's my goal. That's my job as CEO.

PUF: Where's this company going to be in three to five years?

Jon Smith: My vision for this company is we're going to continue to grow our technology enabled offerings in water, wastewater, and gas, and be a partner to the digitization of the utility and municipality space. In gas, again, I'm talking about cross bore and leak. We're going to grow in the software space. We're going to grow in that platform space where we don't have to perform necessarily the job, but we do have an opportunity to become your host of data and help you achieve your goals faster, if you have, let's say, an internal workforce who's doing it. We want to be the enabler to providing futuristic solutions.

PUF: What do you find most rewarding about doing this?

Jon Smith: Before becoming a CEO, I had to ask myself that

question because it's a big leap. There are going to be time investments. Luckily, I've got an unbelievably supportive family. My wife and children are my partners in this because they sacrifice too, and I'm fortunate and blessed. But what gives me pleasure in this role is that I have a unique opportunity to make people's lives better and help keep people safe with gas and clean water.

PUF: You're doing this nationally and at all sizes?

Jon Smith: We are, and we're growing. Infrastructure isn't a local problem. It's a U.S. problem. In fact, it's a global challenge for all of us.

But the gas infrastructure, to be viable in that, the first question we've got to ask ourselves is can it handle something like hydrogen? Hydrogen is a smaller molecule than natural gas.

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Some questions that are going to be discussed in this industry in the next few years are, if I have a cast iron system, can cast iron with all the seasonal heat provide a steady enough supply of a mix of hydrogen where I don't have issues? Because, you have to make sure hydrogen doesn't leak as well. That's a gas. You

want to make sure people are safe in the future too.

As we go toward electrification and start talking about microgrids and smart grids, where's all that transmission network going to go? It's going to go beneath the ground.

Now you've got another hazard to the infrastructure without accurate mapping and without accurate condition assessment. You think about electrification, fiber optics, and the hydrogen challenge.

There are some aspects that people should be excited about. You're going to see the transformation of the infrastructure in a very short time. I'd love to be a twenty-five year old engineer in the industry today. Those are tomorrow's problem solvers.

But we look forward to this. It's an evolution we can partner with and help create a future for the large and small infrastructure that is relevant and purposeful in delivering water and energy. What gets me excited every day with the team is that we continue ask ourselves, what will I do today to change tomorrow? **PUF**

According to the latest Gross Domestic Product data, which the U.S. Commerce Department published on the twenty-fifth of November, residential electric bills in October were 1.36 percent of all personal consumption expenditures. In other words, the remaining 98.64 percent of expenditures were on other consumer goods and services. In October of 2019, residential electric bills were 1.30 percent, so electricity's share of expenditures has increased a little, probably another result of the pandemic economy.