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Microbiology Laboratories

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# Serene Al-Momen, Ph.D.

CEO of Senseware

## Sensors, IoT and IAQ: Putting the Pieces Together

This week we welcome Dr. Serene Al-Momen CEO of Senseware to discuss Sensors, IoT and IAQ: Putting the Pieces Together, a joint focus on IAQ, energy and HVAC. We have recently had several shows about sensors and IAQ and we saw the Denver Public Schools Superintendent discussing his dashboard during the White House Summit on IAQ. This week we tie it all together with an IT specialist that has figured out a way to let any building take advantage of the sensor revolution.

Dr. Serene Al-Momen holds a Ph.D. degree in IT and is a certified PMP, SCM, ITIL, and SCJP. In building Senseware from the ground up, Dr. Al-Momen found a niche group of building owners, engineers, GC's and energy consultants that were all at a disadvantage by not having wireless, instant access to real-time facility and site data. As co-founder and CEO of the high-growth technology company, Dr. Al-Momen worked to provide a modern IoT-enabled technological solution to an age-old issue in an industry that was previously ignored by the IoT sector—the commercial and industrial real estate industry.

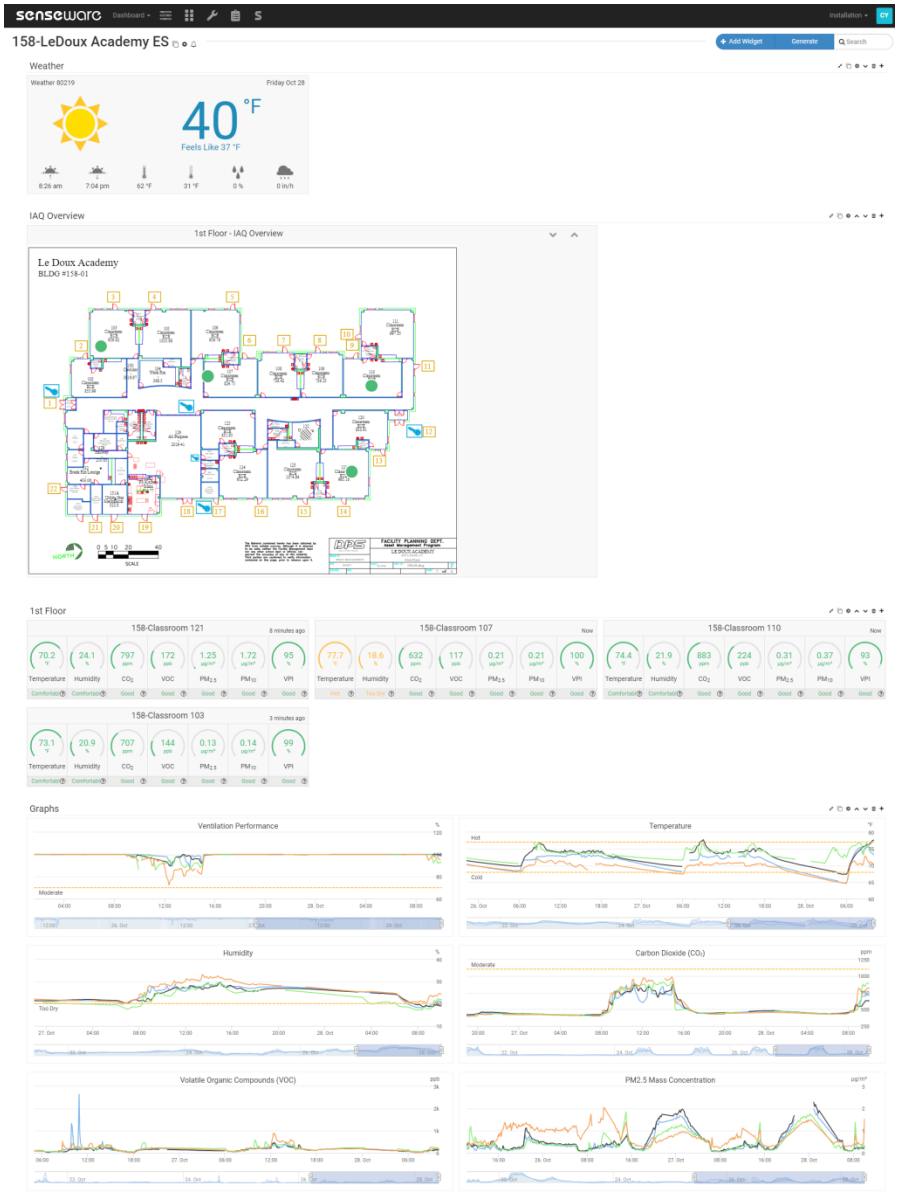
Today, she continues to monitor the IoT landscape for opportunities and is known for pushing her team to stay one step ahead of the competition. During COVID-19, Senseware's real-time indoor air quality solution grew in popularity across industries including schools, commercial offices, medical, and entertainment venues. Dr. Al-Momen has helped over 200 spaces reopen safely after COVID-19. She has filed and received 45 patents for her work and has been named one of Forbes top 50 women-led startups who crush tech.

Let's start with how you got started in the industry. Senseware started in 2014. Why did you start this company?

- Serene is a Software Engineer that started working as a government contractor developing software solutions and then moved into focusing on healthcare software. She always wanted to start her own company.
- She met her partner at a conference in Portugal and a light bulb moment occurred when they started thinking about connecting the physical world to the data world.
- They created a multi-sensor technology that was able to add new sensors on the fly and also exchange existing sensors with new improved, next-generation sensors.

I was fascinated to hear that your group has been working in the Denver Public Schools and that during the White House Summit the DPS Superintendent talked about how they have used sensors and IoT to help them put together a dashboard for their IAQ issues. When I saw that I did not realize it was your program they were talking about. Please tell our audience more about how your company is working with DPS?

- We worked with the DPS and Dr. Mark Hernandez to develop their IAQ dashboard, which includes 24-7 monitoring of chosen parameters in the schools.
- Showed us the dashboard which included data on Temp. Relative Humidity, CO2, PM 2.5 and PM 10, VOC's and a new metric they call VPI which stands for ventilation performance index.



Serene's outsider impression on the existing IAQ industry.

- Big issue around knowing what's happening in real time. That was the big eye opener for her group. Building managers did not have the data to know what was happening and if improvements were working.
- You can't manage what you don't measure.

What is the sensitivity of your particle sensors? (Serene sent more details after the show on this question.)

- It is a > 50% detection efficacy for 0.3 micron particles and 100% for 0.5 micron particles and higher.

How do you help with integrating the data you collect with the BMS in buildings?

- It's estimated 80% of buildings do not have a BMS (Building Management System)
- A first integration with a BMS is getting the data out of BMS, and ingesting it into a cloud platform. BMS acts as another data source, and the cloud acts as a virtual BMS.
- A second integration is to take the new data points that a BMS did not have access to before and deliver the real-time data from the cloud into the on-site BMS (e.g., CO2, PM, etc.)

You come from an IT background in our conversation last week. I was impressed with your knowledge on HVAC systems. How did you learn so quickly about HVAC?

- Talking to their customers and the people in the field is how she learned what they need and what information would make their lives easier.
- Customers were asked if you are monitoring energy data what other data would you want in real time? They showed her chillers, RTUs and cooling tower units and what data they wanted from it.

So you saw an issue with schools and commercial buildings not having the IT infrastructure to take full advantage of the recent breakthroughs in sensor technology. Please tell our audience more about what has surprised you to learn about our nation's schools and commercial buildings?

- Most people are blind to what is going on in schools with respect to data. We are dealing with a big invisible type of threat with lots of blind spots.

Does Senseware do any predictive analysis?

- Predictive analysis using AI/ML is the next big thing they are working on. They process over 300 million points of data every day. Customers want to know, can you tell us about things before they happen?

Tell us more about Senseware's ability to detect water leaks.

- Sensors are used to give real time data by connecting to the water meter to see spikes, monitoring water pipes with ultrasonic sensors and putting sensors in vulnerable areas such as restrooms.

What is the future?

- The industry is becoming conditioned to learning what is happening in real time. There will be more real-time visibility around IAQ.

Closing Thoughts

- It's hard to manage what you don't measure.
- If you're measuring make sure the data is reliable.
- Look at IAQ and Energy together.
- Working with schools to implement an IAQ curriculum.

Trivia Question: How many connected IoT devices are estimated to exist today?

Answer: 13 to 18 billion

Answered By: Doug Kohnen