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## 10 minutes with...Annarita Baldan

By Stephen B. Harrison | 1 June 2020

**Take 10 minutes out with Annarita Baldan, Principal Scientist Gas Analysis at VSL, as she discusses home working, gas analysis, NO<sub>2</sub> mixtures and international collaboration, ahead of the upcoming Gas Analysis & Control themed edition of gasworld magazine.**

VSL is the National Metrology Institute of the Netherlands and Baldan herself is also the Chair of the European Metrology Network for Energy Gases. Here she talks about all things environmental gas analysis with Stephen B. Harrison.

**Annarita, thanks for joining gasworld for a video-interview. That looks like a home-office. Do you work from home a lot?**

Not normally. But with the Covid-19 situation some of our team are working from home and others are at VSL to keep the labs running.

**And what is your work area?**

VSL is the National Metrology Institute of the Netherlands and we make measurement results directly traceable to international standards. An important work area at VSL is, among others, that we focus on metrology related to gas analysis. We cover things such as energy gas standards and environmental pollutants.



Source: VSL

**When you say standards, do you mean documents like ISO standards?**

We refer to physical standards, which are certified, traceable mixtures used for calibration of measurement instruments. VSL experts, however, also contribute to the development of normative standards, the written standards that harmonise a method or process.

**gasworld spent 10 minutes with Dr. Arul Murugan at NPL recently. Is your team connected to his?**

Yes, all the leading National metrology institutes in Europe work together. In fact, Arul also works on energy gases such as natural gas, biomethane and hydrogen, so our teams collaborate frequently.

**How does this international collaboration work in practice?**

Well, I am the chair of the European Metrology Network for Energy Gases, operating under the European Association of

National Metrology Institutes (EURAMET, [www.euramet.org](http://www.euramet.org)). In this network we collaborate internationally in an interdisciplinary way.

**International is clear. But what do you mean with 'interdisciplinary'?**

That's quite new. In the past each metrological parameter, such as pressure or gas composition, was handled in its own group internationally.

What we are doing now is mixing the teams up. For example, a specialist in gas analysis at VSL might be partnering with a specialist in pressure measurement in Germany and a flow expert in France to address a challenge of the energy transition or to develop an integrated solution for highly accurate gas metering.



Biomethane storage.

**Can you tell us more about the environmental work you do?**

Yes, among others we are making good progress with nitrogen dioxide (NO<sub>2</sub>) physical standards.

**Why is it important that we can measure NO<sub>2</sub> accurately?**

NO<sub>2</sub> is a harmful pollutant which is emitted by vehicles and other combustion processes. It causes respiratory health problems for many people. So, it is one of the regulated measurement parameters for ambient air quality monitoring schemes in EU member states.

**And what's new there, Annarita?**

Filling NO<sub>2</sub> gas mixtures in cylinders is easy. But, ensuring that the tiny concentration of a few parts per million of NO<sub>2</sub> remains stable in the cylinder over a period of years is challenging. We are working to understand how impurities such as water influence the gas mixture stability, so that we can produce stable gas mixtures with lower concentrations of NO<sub>2</sub>.

### **So how will that help?**

In the field, scientists must calibrate the gas analysers which measure and report ambient air quality with gas cylinders. At present, the best physical standards that we can prepare contain NO<sub>2</sub> at a concentration much higher than the level found in ambient air. That means an expensive gas diluter must be used during the calibration.

With better technology, we will be able to produce physical standards with the right concentration to calibrate the instrument at the required level. So, no more gas diluter, less cost and a more reliable calibration. That adds up to better metrology and better public health.