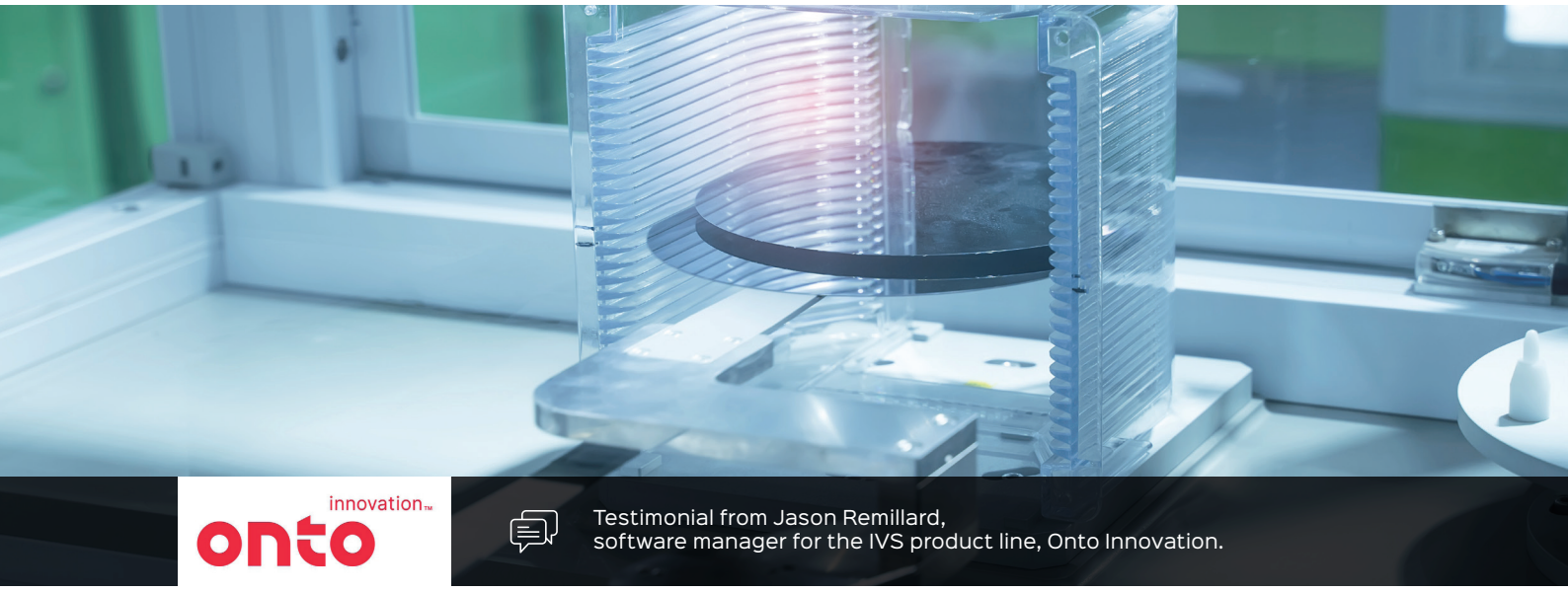
BUSINESS CASE

Onto Innovation

• AUTOMATION • SEMICONDUCTORS • METROLOGY



Testimonial from Jason Remillard,
software manager for the IVS product line, Onto Innovation.

"A tool prepared in record time for integration into an automated production line built to GEM300 standards"

A metrology tool for a **new automated production line**

Simulation tests on digital twins to work to a tight schedule

GEM300 integration expertise, on-hand remotely straight away

The company: Onto Innovation

Onto Innovation is a leading American designer of **industrial solutions for semiconductor manufacturers**. Its product ranges cover the entire semiconductor value chain, including process control, fabrication, packaging, testing and metrology. The Boston-based company has **a workforce of about 1200** and distributes its solutions worldwide.

In 2020, while developing a new metrology tool (the IVS 280), Onto Innovation called on Agileo to help **it integrate the tool into an automated production** line built to GEM300 standards. **The project was implemented remotely** on account of the health crisis, and within extremely tight deadlines.

“A whole new level of automation on our tools”

In mid-2020, Onto Innovation was commissioned by one of its major clients to develop the IVS 280, a new tool in its IVS **optical overlay and critical dimension metrology** range.

Aside from the technical performance aspects, the IVS 280 has to meet some highly specific industrial requirements. The tool has to fit seamlessly into a **fully automated production line built to GEM300 standards**, which are now the benchmark communication standards - including for machines working on 150 mm or 200 mm wafers.

*“Up to now, our IVS models have always been deployed on existing lines and loaded manually. The challenge with the IVS 280 was **to transform it into an automated tool** designed for a new robotized production line”*, IVS software manager Jason Remillard explains.

“GEM300 expertise available straight away”

On the operational front, the project schedule was very tight. *“Our client gave us six months to develop the machine. **We had to find GEM300 expertise quickly**. We didn’t have time to learn,”* the manager adds.

*“Agileo Automation was recommended to us. We soon realised that **Agileo’s engineers were familiar with this standard** and understood the specific context our tools would be operating in. In such a specific setting, where each tool is extremely complex, **there is no getting around a lack of expertise**”.*

Benefits

- Metrology equipment shipped **ready for integration, right on schedule**
- **Agility in setting up remote tests** using digital twins
- Guarantees of **software compliance prior to final installation**

About Agileo Automation

A long-standing specialist in the semiconductors sector, Agileo Automation enables **connectivity between the operating parts and IT systems** of production plants. Its Industry 4.0-focused A²ECF framework coordinates between the products to be manufactured, the work orders from the MES and the operating parts of the machines. **Agileo provides technical assistance or contractual development services** to major European and international OEMs.

The project also had to adapt to the constraints of the Covid pandemic. *“We are based near Boston. Agileo is in France. **Under normal circumstances, they would have been on-site**. We had to set up and implement the project remotely, making sure from the outset that we had all fully understood the specifications for the new tool and were on the same page”.*

“Digital twins, simulations and tests on a real tool”

In view of the demanding schedule, GEM300 integration on the IVS 280 had to be **tested while the tool was still under development**. *“In October 2020, once the tool specifications had been approved, we started preparing a virtual commissioning environment based on digital twins. Agileo’s teams worked on a software program and set of scenarios to reproduce MES management of the production line. In parallel, they gave us advice on how to improve the IVS 280 simulator”.*

A series of tests performed using these simulators in January 2021 validated **the compliance of the IVS 280 integration software layer**. *“The software was ready before the machine!”* Jason Remillard recalls.

Once the IVS 280 was available, it underwent a **final two-week series of tests** - again, managed remotely. “We worked in two 8-hour shifts to take advantage of the time difference. The Agileo teams in France ran their different scenarios and supervised the IVS 280 in operation - for real, this time - via video link.“

*“**The logs and videos were sent to our client**. The client then issued factory acceptance. Thanks to Agileo’s expertise, we were able to deliver the machine on time with all the expected functions”.*