

Endless monitoring applications at Lonza Houston's cell and gene therapy facility

Swiss drug manufacturer Lonza Ltd. is a leading global supplier of contract manufacturing services to pharmaceutical and biotechnology industries. Lonza combines technological innovation with world-class manufacturing and process excellence to provide services in pharma, biotech, nutrition and specialty ingredients. Lonza's 300,000-square-foot plant located outside Houston, Texas is the world's largest cell and gene therapy manufacturing plant. The plant produces therapies that can alleviate underlying causes of genetic diseases and improve patient outcomes for acquired diseases.

With production costs a major hurdle in getting new therapies to market, a state-of-the-art facility is required to ensure cost-efficient manufacturing and high quality products. Lonza's Texas facility houses cutting-edge technologies and in-house expertise to support their extensive offering, which includes tailored processes and analytical development, cost-effective manufacturing, and cGMP-compliant operations.

"We have been using the Vaisala viewLinc Monitoring System for about nine years," says David Teer, Senior Engineering Manager for Viral-based Therapeutics at Lonza Houston. "We used the system in a limited capacity at our previous facility. At that time, we were learning about viewLinc's capabilities. As our operations have grown we've come to use the system in more applications.

"Building GMP environments can be costly and complex. Our facility also has a building automation and control system. The system is dependable, but we are very concerned with monitoring," says Teer.

Dependable wireless, gap-free data

After many years of successfully using Vaisala's wired DL-series data loggers for monitoring, Lonza Houston integrated some of Vaisala's wireless VaiNet data loggers. "We were interested in the signal strength of the wireless data loggers," says Teer.

"Generally speaking, signal interference is a concern with wireless technology. But, we saw that the VaiNet wireless devices could communicate through buildings with significant infrastructure obstacles including concrete and steel.

"Along with that, the ability to have so many measurement points sending data to the software with a single CAT6 Ethernet cable was a real benefit. We were used to running hard-wired twisted pair cables to ensure coverage. That involved a lot of labor and expense. Worse, if a cable was ever cut, you could never get that data back. The Vaisala data loggers have onboard memory that ensures the data is recorded at the point of measurement. That's huge for us."



"The viewLinc system is not only easy to validate to GMP compliance, but it's more efficient than all the hard wiring typically required by automation and control systems."

*David Teer,
Senior Engineering Manager
for Viral-based Therapeutics
at Lonza Houston*



CAB100 Industrial Cabinet with the DL4000 universal logger and PDT101 differential pressure sensors

Cost-effective cleanrooms

The Lonza Houston facility includes research and development laboratories, manufacturing and warehouse areas, as well as cleanrooms. In 2012, Lonza Houston installed their first cleanroom monitoring cabinet from Vaisala, the CAB100.

“The cleanroom cabinets are a convenient solution,” says Teer. “Prior to that, we were building our own panels to monitor the cleanrooms. We would buy the pressure transmitters, the power supply, etc. and wire it all up. Now Vaisala provides cabinets that integrate all the things we need. It’s a great way to reduce labor costs. We specify what we need and Vaisala builds it for us. That reduces the overall construction budget of a cleanroom. Cleanroom construction has to be efficient; often we are racing to market with a product. So the faster we can have the monitoring system set up, the better.”

System interoperability

Along with the VaiNet wireless data loggers and the cleanroom cabinets, Lonza has expanded the use of viewLinc into a wide range of applications. Over the past decade, and as the facility has grown, Lonza has brought viewLinc’s monitoring

capabilities into more applications than any other system user.

“We’ve been really creative with viewLinc and stretched its capabilities to our advantage,” says Lonza Senior Automation Engineer Jine Jine Li. “We have leveraged viewLinc to integrate with systems that do not have monitoring capabilities. We monitor incubators, refrigerators, and cleanrooms, but now we can use viewLinc for other equipment, including pumps, conductivity sensors, centrifuges, and site-wide utilities.”

“Manufacturing cell and gene therapies involves many discrete systems,” says Teer. “A large automation and control system doesn’t easily give you a lot of interoperability with all the different equipment—pumps, balances, all sorts of sensors. It’s more cost-effective to use a simple universal logger to monitor all that data in one system.”

Two unique uses of viewLinc that Lonza has implemented are monitoring centrifuges and balances. “To monitor a centrifuge, we had to convert hertz to a milliamp signal,” says Li. “And we monitor balances so that when a weight is placed on a balance, the data is accessible in viewLinc. We have calibrated our balances so we know what their operating parameters are. For instance, a balance could go from zero to ten thousand grams, but we want to calibrate it more accurately, within ± 2 to ± 5 percent. We take the critical process parameters of an application and we calibrate according to tight specifications.

“Now, with viewLinc’s new Modbus capabilities, we can measure any parameter with a Modbus device and get trend data in viewLinc. That’s very useful,” says Li.

“Using viewLinc creatively has made us operationally nimble,” says Teer. “We can respond quickly

to changes. We have viewLinc’s validated server already in place; we can easily add equipment without having to re-invent the wheel each time. That’s another benefit of using the viewLinc system, rather than relying solely on a large automation and control system.”

Teer and Li also appreciate viewLinc’s backfill capabilities. “Let’s say we temporarily lose communication with a monitored location; when we reconnect we find that viewLinc has retained all the data and backfills any missing information automatically,” says Teer. “This data integrity gives a lot of confidence to our quality assurance team.” A significant benefit of the viewLinc system is the data loggers’ redundant memory.

Simplified automation

Currently Lonza is starting to use viewLinc as an intermediate system to communicate with their data management system to build data analytics.

“The release of the latest version of viewLinc was great timing for us because it included the Vaisala OPC-UA server,” says Li. “We have worked closely with the Vaisala team to achieve the integration of viewLinc data to our other systems. We are now able to work in our data management system, bringing in validated data from viewLinc. This enables our process development MSAT (Manufacturing Science & Technology) team to perform analyses in one data historian system.

“The viewLinc system’s adaptability to migrate from location to location has greatly increased productivity and efficiency for room setup and customer interactions,” says Li.

“Other applications we have on site do not have this feature. This forces us to design around that constraint. With viewLinc it’s seamless.”

“With viewLinc we can implement the equipment ourselves. With a large automation and control system, you often need a service technician on-site for assistance. If we run into issues or have any questions about viewLinc, we get on the phone and work with Vaisala for a solution. This way we get solutions, rather than problems that turn into a new project.”

*David Teer,
Senior Engineering Manager
for Viral-based Therapeutics
at Lonza Houston*



Lonza Houston is now planning to implement signal towers for alarming so that viewLinc can send out alarms for all the main utilities of the plant. The plant’s door interlock system can also be integrated with viewLinc for trend data and alarming.

Supported & compliant

“Over the years, for complex system integrations, Vaisala’s field support has come out to assist, supporting all our needs effectively,” says Teer. “Vaisala has enabled us to reduce the time it takes to create a fully GMP monitored environment. That provides us with a competitive edge.

“We are audited by our clients and the FDA. We have confidence and proven results during audits because the viewLinc system ensures that we are in compliance with GMP regulations. But we can also use viewLinc in non-GMP applications, such as standardized quality control laboratories, process development laboratories, research and development laboratories, and non-GMP cold rooms.”

“The design capabilities of viewLinc allow for forward-thinking applications and creativity, delivering state-of-the-art monitoring for intricate processes.”

*Jine Jine Li,
Senior Automation Engineer
at Lonza Houston*

VAISALA

Please contact us at
www.vaisala.com/contactus



Scan the code for
more information

Ref. B212270EN-A ©Vaisala 2021

This material is subject to copyright protection, with all copyrights retained by Vaisala and its individual partners. All rights reserved. Any logos and/or product names are trademarks of Vaisala or its individual partners. The reproduction, transfer, distribution or storage of information contained in this brochure in any form without the prior written consent of Vaisala is strictly prohibited. All specifications — technical included — are subject to change without notice.

www.vaisala.com