

LivingLab Process Industries: Testing visionary ideas in real life.

- **At the LivingLab Process Industries in Vienna, Siemens is running the only Industry 4.0 pilot facility for digitalizing bioprocesses of its kind anywhere in Europe.**
- **The Siemens LivingLab Process Industries is researching the digitalization of production processes.**

Digitalization is a crucial productivity lever in the process industry and strengthens companies' competitiveness. The laboratory at the Siemens headquarters in Vienna houses an Industry 4.0 pilot facility that is one of a kind in Europe and in which visionary ideas can be tested and refined under realistic conditions. The LivingLab Vienna also showcases Austria's strong industry and research expertise in the field of bioprocesses.

„The focus is on all industries that manufacture entire batches rather than individual components, in particular the pharmaceutical industry, the food & beverage industry, and the chemical industry,” Wolfgang Hesoun on the LivingLab Vienna

The bioprocessing laboratory – as a workshop

The bioprocessing laboratory is our workshop where research and application converge to create tangible competitive advantages for our customers. But the result of the work in the LivingLab is not a product: We cook up algorithms and formulas.

At a glance: digital solutions for the pharmaceutical industry

The LivingLab at the Siemens City in Vienna is the place where visionary ideas are tested under realistic conditions and developed further for your production.

Testing visionary ideas under realistic conditions

The LivingLab Process Industries enables a real demonstration of biotechnological production processes. The LivingLab focuses on three areas.

First, the digitalization of systems engineering in the process industry. How do you plan a system and how do you use products from the digitalization industry to digitally support the engineering process from planning to commissioning, for instance by using a digital twin? **Second**, how can a system be optimized during operation and can digitalization be used for further improvements? And how can the workflow be steered and controlled electronically? And **third**, Siemens researches trends, innovations, and future issues from various areas within the process industry, including cloud-based operations. In this context, the employees of the LivingLab are investigating factors such as the possibilities that the Siemens MindSphere platform offers for the process industry like the simple integration of sensors (IoT devices) and uploading data into the cloud. The data generated in the process can be stored in the cloud and used for optimization with the help of the tools available there.

In summary, the LivingLab Vienna focuses on the following three topics:

integrated engineering, integrated operation, and innovations.

„At the LivingLab, we develop innovations and new technologies in a real environment using real systems,” Barbara Kavsek, Head of Process Analytics & Sensing Siemens CEE.

Siemens technology at the LivingLab Process Industries: The SIMATIC PCS 7 process control system for automation takes center stage

Siemens has several different products in use at the LivingLab. At the center of these is the SIMATIC PCS 7 process control system for automation. This system controls the pumps, regulates the temperature and pH level, and collects measurement data. The COMOS software solution is used throughout the entire process, from engineering and simulation to maintenance and repair. SIMATIC SIPAT consolidates the accumulated data and is responsible for process analysis and feedback to the process control system. SIMIT software plays the main role in simulation and finally, SIMATIC IT eBR is used for MES applications. These technologies monitor quality specifications and critical parameters in real time. If a deviation occurs, the process can be readjusted without interrupting operation. As a result, quality control doesn't just take place on the final product, but is already applied at multiple points throughout the process. Errors can therefore be detected or avoided at an early stage and the batches can be released more quickly. With the SIMATIC Energy Manager PRO energy management system, Siemens also demonstrates how energy consumption in the process technology industry can be made transparent so that it can subsequently be optimized. The Siemens products from

the SCALANCE industrial communication network show how stable and secure communication networks can be set up in industrial environments.

“It is very important for us to be able to test the prototypical research and developments in a real environment. We want to get customer feedback very quickly to see what the benefits of our prototypical research and development are,” Harald Loos, Head of Corporate Technology Siemens CEE.

Trends and the future of the process industry: Flexibility through digitalization

The digitalization of the process industry: the pharmaceutical industry is a good example of where digitalization will lead the process industry in the future. Integrated engineering requires consistent data management and documentation, and results in continuity from the design to operation (digital twin). The increased electronic workflow in production will progressively eliminate the need for paper. But even more profound changes will take place: Digitalization means that process technology systems can be set up faster and more flexibly, making it easier to convert to other products.

An important trend in this context is what is known as personalized medicine, where customized small series medications are perfectly tailored to the individual and his or her needs. This poses great challenges to production and the associated processes and ultimately necessitates an intricate dovetailing of the technical and economic aspects of a company’s structure down to logistics and interaction with each individual. Since this requires the meticulous yet flexible coordination of the individual production processes, topics such as cloud-based applications and scheduling come to the fore. This, in turn, means that the production processes must become significantly more flexible and modular through the automation and digitalization of the systems to enable a rapid changeover of recipes and process sequences.

The trend from batch-oriented to continuous production of drug products in compact units with a high degree of automation can lead to higher productivity. This can increase capacity utilization while reducing the footprint of the facility.

„The LivingLab is the ideal environment for us to demonstrate our portfolio with regard to digitalization in the process industry on site in real time on the basis of a real system. In the future, process data can be uploaded to the cloud via MindSphere applications,” Martin Ramharter, Head of Vertical Pharma Siemens CEE.

LivingLab Virtual Tour



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Siemens AG (Berlin and Munich) is a technology company focused on industry, infrastructure, transport, and healthcare. From more resource-efficient factories, resilient supply chains, and smarter buildings and grids, to cleaner and more comfortable transportation as well as advanced healthcare, the company creates technology with purpose adding real value for customers. By combining the real and the digital worlds, Siemens empowers its customers to transform their industries and markets, helping them to transform the everyday for billions of people. Siemens also owns a majority stake in the publicly listed company Siemens Healthineers, a globally leading medical technology provider shaping the future of healthcare. In addition, Siemens holds a minority stake in Siemens Energy, a global leader in the transmission and generation of electrical power. In fiscal 2021, which ended on September 30, 2021, the Siemens Group generated revenue of €62.3 billion and net income of €6.7 billion. As of September 30, 2021, the company had around 303,000 employees worldwide. Further information is available on the www.siemens.com.

Siemens Digital Industries (DI) is an innovation leader in automation and digitalization. Closely collaborating with partners and customers, DI drives the digital transformation in the process and discrete industries. With its Digital Enterprise portfolio, DI provides companies of all sizes with an end-to-end set of products, solutions and services to integrate and digitalize the entire value chain. Optimized for the specific needs of each industry, DI's unique portfolio supports customers to achieve greater productivity and flexibility. DI is constantly adding innovations to its portfolio to integrate cutting-edge future technologies. Siemens Digital Industries has its global headquarters in Nuremberg, Germany, and has around 76,000 employees internationally.