Hanover, February 19, 2025

How industrial Artificial Intelligence is accelerating pharmaceutical manufacturing

- **Hannover Messe 2025: Siemens booth demonstrates how digital technologies accelerate all steps of pharmaceutical production**
- **AI-powered solutions across the entire pharmaceutical manufacturing value chain**
- **Medicines and therapeutics reach patients faster than ever before**

At Hannover Messe 2025, Siemens is presenting pioneering solutions for the pharmaceutical industry. The focus is on integrating industrial Artificial Intelligence (AI) into pharmaceutical manufacturing, significantly reducing the time from laboratory to patient. Through an intelligent laboratory environment, Siemens' end-to-end showcase demonstrates how Digital Twin technology accelerates formulation development processes, reduces operational costs, and optimizes resource utilization

Another highlight shows how Siemens technology bridges the critical gap between laboratory formulation development and subsequent mass production. Artificial Intelligence plays a key role in Siemens' showcase: it streamlines processes and optimizes resource utilization across all production steps – from recipe design through production operations to active ingredient quality control.

Global Challenges
Demographic changes, increasing chronic diseases, and potential pandemic risks are driving up the global demand for innovative pharmaceuticals. Pharmaceutical companies face the challenge of developing medications even faster, more cost-effectively, and with greater personalization, without compromising quality. As a strategic partner to the pharmaceutical and life science industry, Siemens offers comprehensive digitalization solutions across the entire value chain. These enable not only faster development cycles but also more efficient and sustainable operation of laboratories and production facilities - supported by intelligent infrastructure and energy

solutions. Siemens' end-to-end showcase at Hannover Messe 2025 includes the following AI technologies that support and optimize the entire lifecycle of pharmaceutical production:

Engineering

- Creation of digital twins for existing plants using AI. COMOS engineering software efficiently digitizes existing documentation (2D drawings and diagrams like P&IDs) using artificial intelligencefor modifications or modernization. This establishes the foundation for efficiently building a digital twin of the plant and a knowledge base about a pharmaceutical plant to guide future planning and activities. It also addresses skilled labor shortages by eliminating step-by-step planning.
- The Siemens Industrial Copilot for Engineering is a generative AI-powered assistant. It helps engineers create SCL code faster, answers engineering-related questions, and assists in creating HMI visualizations.

Operations

- With the AI-based chatbot Simatic eaSIe, technicians and maintenance personnel can communicate with the system via chat or voice interaction and access relevant pharmaceutical plant data. This simplifies maintenance, making it more reliable and safer. Additionally, documentation is always kept current. In the control room, Simatic eaSIe helps operators navigate process screens. In the field, maintenance teams can retrieve information via QR code scanning and generate plant information (e.g., device on/off status, temperature, pressure, etc.) through chat or voice control and document activities.

Predictive Maintenance

- Senseye Predictive Maintenance automatically analyzes plant data and increases productivity through AI-powered recommendations in natural language.
- Siemens Predictive Analytics (SiePA) integrates human expertise and machine learning to extract relevant information from plant and process status. SiePA monitors not only the plant's operational data but also analyzes the surrounding process, enabling early detection of plant behavior changes and better operational and maintenance decisions.

Paperless Manufacturing

- Generative AI in Siemens' Manufacturing Execution System (MES) Opcenter Execution Pharma simplifies recipe engineering and provides chatbot access to:

  o Engineering data

  o Real-time production data

  o Audit documentation

At Hannover Messe 2025, Siemens is presenting pioneering solutions for the pharmaceutical industry.

For more information about Siemens Industrial AI solutions:
https://www.siemens.com/global/en/products/automation/topic-areas/artificial-intelligence-in-industry.html

Contact for journalists:

Christoph Krösmann

Phone: +49 162 7436402; E-mail: christoph.kroesmann@siemens.com

Follow us in **social media**:

Blog: blog.siemens.com

LinkedIn: linkedin.com/siemens-industry

X: x.com/SiemensIndustry

Siemens Digital Industries (DI) empowers companies of all sizes within the process and discrete manufacturing industries to accelerate their digital and sustainability transformation across the entire value chain. Siemens' cutting-edge automation and software portfolio revolutionizes the design, realization and optimization of products and production. And with Siemens Xcelerator – the open digital business platform – this process is made even easier, faster, and scalable. Together with our partners and ecosystem, Siemens Digital Industries enables customers to become a sustainable Digital Enterprise. Siemens Digital Industries has a workforce of around 70,000 people worldwide.

Siemens AG (Berlin and Munich) is a leading technology company focused on industry, infrastructure, mobility, and healthcare. The company's purpose is to create technology to transform the everyday, for everyone. By combining the real and the digital worlds, Siemens empowers customers to accelerate their digital and sustainability transformations, making factories more efficient, cities more livable, and transportation more sustainable. Siemens also owns a majority stake in the publicly listed company Siemens Healthineers, a leading global medical technology provider pioneering breakthroughs in healthcare. For everyone. Everywhere. Sustainably.

In fiscal 2024, which ended on September 30, 2024, the Siemens Group generated revenue of €75.9 billion and net income of €9.0 billion. As of September 30, 2024, the company employed around 312,000 people worldwide on the basis of continuing operations. Further information is available on the Internet at www.siemens.com.