Siemens Research Laboratory in Berlin,

From pointer telegraph to Siemens Xcelerator: History of research at Siemens

SIEMENS

Siemens places a very high priority on research and development. The technology company increased its research and development (**R&D) spending by around EUR 600 million to approximately EUR 6.2 billion** in the financial year of 2023. These investments are focused on strengthening the company's leading position in its core technologies, such as Simulation & Digital Twin, Data Analytics & Artificial Intelligence, Connectivity & Edge, Future of Automation or Cybersecurity & Trust, which then all come together on the open digital business platform Siemens Xcelerator. These technologies help develop, manufacture and operate industrial products more efficiently and sustainably.

In its R&D activity, Siemens places a strong emphasis on data analytics and artificial intelligence (AI), specifically to facilitate programming, detect production breakdowns at an early stage, and enable natural language communication between humans and machines. With around 3,700 AI patents, Siemens plays a leading role in the field of artificial intelligence. In total, the company filed 5,400 invention notifications in the financial year of 2023, which led to 2,900 patent applications. That corresponds to 13 patent applications per workday. Siemens currently holds around 46,500 patents (end of financial year 2023).

Siemens will bundle its corporate research activities in Germany at the Technology Center in Garching. In the first phase, around 450 Siemens researchers will work on future technologies in collaboration with 150 scientists from the Technical University of Munich. The Technology Center in Garching is just the latest chapter in a long history of research at Siemens. The first Siemens laboratory was established in Berlin in 1905. The first research site in the Munich area opened in 1959, when the Siemens Argonaut Reactor was commissioned in Garching. The first employees began working in the "Research City" in Neuperlach in 1977.

1905: Founding the first independent research laboratory

- The first experimental laboratory for basic research independent of day-to-day production operations was established in Berlin on July 4, 1905. Until then, the Siemens factories and the newly built production facilities in Siemens City had operated their own independent, stand-alone research departments.

1919: Central Research Department established

- In 1919, Siemens established a "Central Office for Scientific and Technical Research" with the goal of intensifying know-how transfer between the company's central and decentral research and development departments and avoiding costly, time-wasting parallel and duplicate experiments.

1924: Central Research Laboratory established for the entire company

- The Research Laboratory of Siemens & Halske AG and Siemens-Schuckertwerke GmbH was conceived as a central experimentation and research facility for the two parent companies. The researchers worked on projects such as refining various kinds of raw materials, investigating the influence of materials processing on the properties of the processed materials, and conducting systematic basic research in those fields that were deemed to be relevant for the development of the products and solutions offered by Siemens companies. This lab was organizationally subordinate to the Central Office for Scientific and Technical Research.

1954: Breakthrough in Pretzfeld

- During the Second World War, Siemens researchers working under the supervision of Walter Schottky and Eberhard Spenke converted an emergency quarter in the Upper Franconian town of Pretzfeld into a laboratory. After the end of the war, this lab became the semiconductor laboratory of Siemens-Schuckertwerke. It was there that Siemens researchers invented a method for producing high-purity monocrystalline silicon. Later, this method was used as the basis of the Siemens process for the production of high-purity silicon.

1959: Commissioning of the Siemens Argonaut Reactor in Garching, near Munich

- Siemens-Schuckertwerke AG began building its own argonaut-class reactor and related laboratories in October 1958. Built alongside the large research reactor of the Technical University in Garching – Germany's first research reactor – it was used to conduct research related to the development of nuclear power reactors.

1965: Official opening of the Erlangen Research Center

- On May 26, 1965, the Erlangen Research Center of Siemens-Schuckertwerke was officially opened in the presence of around 400 guests from all over the world.

1977: Siemens moves into the "Research City" in Neuperlach

- Between 1975 and 1988 the "Research City" of Siemens AG was built in Neuperlach. It housed the company's Data and Information Systems Divisions, as well as the Corporate Departments Technology, Organization, Sales, Personnel, and Corporate Services. The first employees moved from the Munich locations to Neuperlach in August 1977. By 1990, around 10,000 people were working there,

more than half of whom, 6,500, were employed in the area of data and information technology.

1988: Technical University of Munich and Siemens conduct joint research on semiconductor electronics in Garching

- The Walter Schottky Institute, which Siemens planned and built in Garching in 16 months, was inaugurated in 1988.

1994: Siemens receives order for second research reactor in Munich-Garching

- The Energy Generation Division (KWU) of Siemens AG and the Technical University of Munich signed a general contractor agreement for the construction of a new research reactor "FRM II" in September of 1994. The ground-breaking ceremony took place on August 1, 1995. The FRM II replaced the so-called "atomic egg", the first research reactor in Germany, which was commissioned in 1957.

1996: "Inventor of the Year" awarded for the first time

- Siemens presented its first-ever in-house inventor awards on February 29, 1996. Since then the trophy is being awarded every year to out researchers and developers, whose inventions provide an outstanding contribution to ensuring the company's technological future and market success. The award-winning inventors alone submit several hundred individual patent applications every year.

2004: Siemens receives the German Future Award for the first time

- On November 12, 2004, Siemens received the German Future Prize for the first time. German President Horst Köhler presented the award, which came with a prize money of EUR 250,000, to three researchers for their development of an electric biochip which could be used to identify pathogens more quickly, easily, and less expensively, among other applications.

2014: Research alliance for the digital revolution

- As the first commercial enterprise to do so, Siemens formed a research alliance with universities and research institutions to work on the key future topics of automation and digitalization. The research alliance was founded by the Technical University of Munich (TUM), Ludwig Maximilians University Munich (LMU), the German Research Center for Artificial Intelligence (DFKI), and the Fraunhofer AISEC Institute for Applied and Integrated Security.

2024: Siemens opens its largest research center

- With the completion of the first building phase, 450 researchers are moving into the Siemens Technology Center (STC) at the Garching Research Center north of Munich. The second building phase is planned to open in 2027 to host an additional 630 researchers and patent experts. In addition to Siemens, the Garching Research Center is home to the Technical University of Munich (TUM), the Max Planck Institute, SAP, and other institutions and enterprises employing around 28,000 people in total.

Additional information about the history of research at Siemens:

https://www.siemens.com/global/en/company/about/history/specials/175-years.html

Former Siemens CEO Bernhard Plettner (second from right) explores a model of the Siemens Campus in Munich-Neuperlach in 1976

Photo: Siemens Historical Institute

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