KIT. PLACE OF THE FUTURE. SINCE 1825.

KARLSRUHE INSTITUTE OF TECHNOLOGY (KIT)

1825 to 2025 – The First 200 Years

- **1825** On October 7, Grand Duke Ludwig I. of Baden (1763 – 1830) signs a decree establishing the Polytechnic School in Karlsruhe.
- **1832** Karl Friedrich Nebenius, a liberal tax officer and author of the Baden State Constitution of 1818, reforms the Baden education system and reorganizes the Polytechnic School, thus creating a new type of technical college on a level between a grammar school and a university. The school's division into five technical schools will have a big impact on the departmental structure of the later technical colleges in Germany. It is the basis for for the Polytechnic School's later role as an international pioneer. Alumni of the Polytechnic School shape the industrialization of the State of Baden.
- **1836** The Polytechnic School is given its first building. The three-story building constructed by Heinrich Hübsch is still in use today. It is the west wing of KIT's central building on Kaiserstraße, Karlsruhe.
- **1841** A factory established by the graduates of the Polytechnic School Emil Kessler and Theodor Martiensen builds 'Badenia,' the first locomotive made in Baden for the railway company of the Grand Duchy of Baden. By 1847 German locomotives would be technically superior to English ones.
- **1841** Mechanical engineer Ferdinand Redtenbacher and chemist Karl Weltzien are appointed to the Polytechnic School. Redtenbacher establishes scientific mechanical engineering in Germany. Weltzien promotes chemistry in a range of subjects. Their ambitious teaching and their congresses make Karlsruhe and its Polytechnic School known in the world of science and turn it into a hub of industrialization in the State of Baden, in Germany, and beyond. Students from Europe and overseas come to study at the Polytechnic School.
- **1848** During the Baden Revolution, students of the Polytechnic School demand German unity, civil freedoms, and the status of a university for the Polytechnic School.
- **1849** Students of the Polytechnic School take part in armed battle for the Republic.
- **1860** The elite of international chemistry meets at the first worldwide chemical congress in Karlsruhe. Discussions focus on definitions of terms such as atom, molecule, basicity and equivalent.
- **1863** On April, 16, Ferdinand Redtenbacher dies at the age of just 53. He educated some of the most renowned mechanical engineers of the 19th century:
  - August Thyssen builds one of the biggest steel corporations in Europe.
  - Emil Škoda establishes the mechanical engineering corporation named after him.
  - Eugen Langen develops the gasoline engine together with Nikolaus Otto.
  - Heinrich Buz produces the first engine of Rudolf Diesel and co-founds MAN.

Foto: Harry Marx, KIT

- In 1860, Carl Benz, who was born in Karlsruhe, begins study at the Polytechnic School at the age of 16. In 1879, his gas-fueled two-stroke engine runs satisfactorily for the first time. In 1886, Benz Motor Vehicle is granted patent No. 37435 – the certificate of birth of the automobile.

- **1863** Franz Grashof is appointed successor to Redtenbacher. Ten years earlier, Grashof had been one of the founders of the Association of German Engineers (VDI), of which he is chair.
- **1864** In his programmatic speech a the VDI General Assembly in Heidelberg, Grashof demands that polytechnic schools be equal to universities in terms of organization and status.
- **1864** Lothar Meyer, Professor for Chemistry in Karlsruhe, presents his first version of the Periodic Table of Elements.
- **1865** On January 20, Grand Duke Friedrich I. approves a new organizational statute. Article 1 reads: "The Polytechnic School is a Technical College […]."
- **1867** According to new diploma examination regulations, it is possible to complete engineering studies with a state examination, which is required for work in the public service sector, as well as with an academic examination.
- **1871** 20 percent of students now come from abroad.
- **1883** Ferdinand Braun comes to Karlsruhe and teaches here until 1885. He is known for the invention of the electron tube named after him. This tube will enable the development of television and scanning electron microscopy. For his pioneer work in radio communication, Braun in 1908 is awarded the Nobel Prize along with Guglielmo Marconi of Italy.
- **1885** The Polytechnic School is permitted to officially use the designation of 'Technical College.' The golden letters of 'Technische Hochschule' are fixed above the main entrance on Kaiserstraße.
- **1885 to 1889** Heinrich Hertz teaches at the Technical College. In late 1886, the physicist discovers electromagnetic waves and creates the basis of radiotechnology. His work enables radio, television, and mobile communication.
- **1886** Carl Engler is appointed Director of the Chemical Institute and makes it one of the best equipped research facilities in Germany. Engler is deemed the founder of German mineral oil sciences.
- **1887** The Council of the City of Karlsruhe decides to admit women as guest students to lectures on literature and the history of art.
- **1887** Hans Bunte is appointed to the Chair of Chemical Technology. He is deemed the pioneer of technical chemistry, develops processes for coal liquefaction, and makes Karlsruhe a center of education for the German energy sector.
- **1888** Marie Gernet is granted a special permit by the Ministry to undertake studies of mathematics and physics. She is the first female student in Karlsruhe.
- **1889** Otto Lehmann succeeds Hertz. He develops a new type of microscope with a light source of its own and a gas supply unit to heat the sample table. In this way, he can study the melting and crystallization behavior of chemical substances. He observes phases with properties of both liquids and crystals. Lehmann calls these substances liquid crystals. In the second half of the 20th century, liquid crystal displays are developed based on Lehmann's research activities. Today, Lehmann is deemed the founder of the technology that is omnipresent in flat screens, tablets, and smart phones.
- **1899** The right to award doctorates is the last step in giving Technical Colleges a status equal to that of universities.
- **1900** The degree of 'Diplomingenieur' (graduate engineer) is legally established b.
- **1900** In February, the Baden government retroactively admits women to the 1899/1900 winter semester – on a trial basis. Baden is the first state of the German Empire to take this step.
- **1902** In honor of Grand Duke Friedrich I., the Technical College is given the epithet 'Fridericiana.'
- **1903** By ministerial decree, the last barriers to studies of women at the Technical College are removed. Magdalena Meub is the first properly enrolled female student among 1500 men to start her studies in the 1904/05 winter semester. Later, she will be Germany's first registered and licensed pharmacist.
- **1906 to 1911** The proportion of international students ranges between 35 and 40 percent.
- **1909** Fritz Haber achieves a breakthrough for the technically usable synthesis of ammonia. The corresponding process is named after him and Carl Bosch from BASF. As a result of this process and the development of facilities for economically efficient large-scale production, ammonia is available in unlimited amounts and at low cost for the production of artificial fertilizers.
- **1913** Thekla Schild, who studied with the well-known architect Hermann Billing, graduates and is the first woman in Baden and the third in Germany to earn the degree of a graduate engineer (Diplomingenieurin).
- **1915** In the summer during World War I, Irene Rosenberg is the first woman to earn a doctorate with Carl Engler at the Chemical Institute. After the National Socialists assume power, this daughter of a Jewish physician will have to emigrate to the USA.
- **1918** The November Revolution marks the end of the monarchy of the German Empire. The era from 1871 to 1918 was a time of flowering science and, hence, of a flourishing technical college in Karlsruhe that was the

most appealing in the Empire and beyond. At that time, Karlsruhe was a station in the careers of seven Nobel Prize winners: Ferdinand Braun had previously received the Nobel Prize in Physics. In 1918, Fritz Haber was awarded the Nobel Prize for Chemistry. In 1931, Friedrich Bergius and Carl Bosch were granted the Nobel Prize for their contribution to the development of high-pressure chemical synthesis. In 1939, the Nobel Prize was awarded to Leopold Ruzicka, who had studied with Carl Engler and Otto Lehmann and worked as their assistant from 1906 to 1911. In 1943, Georg von Hevesy, who studied with Haber from 1909 to 1910, won the Nobel Prize. In 1953, the Nobel Prize was granted to Hermann Staudinger for his work in polymer chemistry.

- **1921** Due to the precarious situation of many students in post-war Germany, a canteen is built in the cellar of the auditorium building (Aula-Gebäude). It will be destroyed in the Second World War.
- **1923 to 1925** Martha Schneider-Bürger completes her graduate studies in civil engineering. After her first diploma, she moves to the Technical University of Munich and becomes Germany's first female civil engineer.
- **1925** On the occasion of the 100th anniversary of Fridericiana, the Pallas Athene bronze statue is set up on Ehrenhof to commemorate the fallen comrades of the Technical College.
- **1931** In the elections for the General Students Committee (AStA), the National Socialist Association of German Students (NSDStB) wins nearly half of all votes.
- **1933** The elections for the German Reichstag on March 5 result in the National Socialists coming to power. In August, Minister of Education Otto Wacker enacts laws to establish the totalitarian leadership principle at the universities in Baden. This puts an end to freedom of science and to academic self-administration. On April 7, as a result of the Act on the Restoration of Civil Service, Jews and political opponents are dismissed from civil service. By 1937, about a fourth of all ordinary professors are dismissed from the faculty, including renowned scholars such as chemists Paul Askenasy and Georg Bredig, physicist Wolfgang Gaede, and historian Franz Schnabel. The internationality of the faculty drops from ten percent during the Weimar Republic to seven percent, its lowest level in the 20th century.
- **1936** Admission restrictions, bad job prospects for engineers, and compulsory military service reduce the number of enrolled students. The work of the university is threatened to end, as institutions with less than 700 students have to be closed. It is its location near the border that finally prevents the Fridericiana from being shut down. In subsequent years, Hermann Göring, the Reich Minister of Economics and authorized commissioner for the four-year plan to prepare for war, anticipates an additional need for engineers. The number of students increases again. A large proportion of academic work at the Technical College serves armament purposes.
- **1945** On April 4, Karlsruhe is occupied by the French 1st Army. On May 8, the German armed forces surrender. German universities are closed.
- **1946** On January 21, the American Military Government approves resumption of studies. The campus is covered by debris and ashes. Rubble has to be removed and buildings must be restored. Those, who wish to study, have to do labor service: 1000 hours are mandatory. This corresponds to six months according to today's work week. By 1949, the Student Labor Service totaled 900,000 hours.
- **1950** In spite of immense difficulties, the Technical College already has 4000 students at the start of the first post-war decade.
- **1955** Germany's occupation status is lifted, as is the Allies' prohibition of nuclear research. A search begins for a location suitable for the corresponding research infrastructure.
- **1956** In July, the Federal Minister for Atomic Affairs, Franz Josef Strauß, declares in a press conference: "Karlsruhe will become the German atomic center." The Karlsruhe Nuclear Research Center starts with the establishment of the Nuclear Reactor Construction and Operation Company (Kernreaktor-Bau- und Betriebsgesellschaft mbH).
- **1957** Under the direction of physicist Karl Wirtz, researchers and engineers start to construct the first German-developed nuclear reactor.
- **1958** Karl Nickel, mathematician at the Technical College, holds the first programming training course at the Nuclear Reactor Construction and Operation Company. Physicist Karl Steinbuch leaves industry and comes to teach at the Technical College. The data processing system developed by Steinbuch for the mail-order company Quelle electronically executes orders and is named "Informatik-System." This is the first ever use of the term of "Informatik" (informatics).
- **1961** Germany's first self-developed reactor, the Research Reactor 2 (FR 2), starts operation.
- **1968** Karl Nickel founds the Institute for Informatics.
- **1969** The "Fast Breeder" project starts, with the objective to revolutionize reactor construction. The fuel used in breeder reactors is plutonium recovered from the reprocessing of spent fuel elements. As a result of the recycling process, natural uranium can be used more efficiently by several factors.
- **1972** The first Department of Informatics in Germany is established at Universität Karlsruhe (TH).
- **1979** The severe accident at the Three Mile Island power plant in the US state of Pennsylvania and the catastrophe of Chernobyl seven years later sours public opinion on nuclear power.

- **1981** After 18 years of operation, FR 2 is shut down. Reduced demand and negative public opinion eventually brings an end to breeder technology. The SNR 300 prototype built in Kalkar in Lower Saxony will never be switched on. In the ensuing years, the vast expertise established in the areas of nanotechnology, materials science, environmental and energy research serves as a solid basis for the development of research activities at what would become KIT.
- **1982** Researchers originally developed the LIGA process to produce microscopically small components for nuclear technology. It can produce plastic, metal, or ceramic structures of up to 0.2 micrometers in size. New methods enter atomic dimensions, establishing KIT's ongoing leadership in nano research. Activities in material science and nanotechnology are the roots of KIT's strengths today in the area of battery research. KIT's micro process engineering is also based on the tradition of microsystems and the chemistry of radioactive materials. Its research focuses on hydrogen. Following its production with the help of renewable energy sources, hydrogen can replace fossil fuels, be used to store power from renewable sources, and make the transport sector more environmentally compatible. Micro process technologies are applied to produce regenerative fuels. In the 2000s, the bioliq process is developed to produce fuel from straw. Today, KIT researchers produce gasoline, diesel and kerosene by electrolysis of water and the greenhouse gas CO2.
- **1983** The first supercomputer is installed at the university's computing center. Cyber 205 has a computing capacity of up to 800 MegaFLOPs. For comparison: An average PC today have capacities in the GigaFLOP range, i.e. a thousand times more. HoreKa, the present supercomputer of KIT, reaches 17 PetaFLOPs. This corresponds to the capacity of more than 150,000 laptops or around 21 million Cyber 205 systems.
- **1984** The email era starts in Germany. On August 03 at 10.14 hrs., Werner Zorn, Head of the Informatics Department, and his colleague Michael Rotert receive the first email in Germany on a civil server. It is a simple confirmation of registration by CSNET, a computer network established by US universities for better communication and networking in science.
- **1985** Universität Karlsruhe (TH) and Karlsruhe Research Center pool their research activities in the areas of meteorology and climate research. At the Karlsruhe Nuclear Research Center, meteorologists collected weather data to develop models for assessing potential accidents at nuclear power plants. Studies focused in particular on how radioactive particles spread in the atmosphere.
- **1993** About 170 years after the establishment of the institution, physicist Dagmar Gerthsen is the first female professor. Numerous efforts and initiatives are started to enhance equal opportunities and diversity, such that the share of female professors up to 49 years of age reaches 27 percent in 2024.
- **2006** KATRIN is coming! Arrival of the giant main spectrometer of the KArlsruhe TRItium Neutrino Experiment KATRIN is spectacular. The experiment underscores the long tradition of KIT in fundamental research. International teams use KATRIN to study one of the major mysteries in natural science: The mass of a neutrino, the most abundant and most lightweight particle in the universe. Using KATRIN, the most precise scale in the world, KIT researchers succeed in reducing the upper limit of the neutrino mass to 0.8 electron volts by 2024.
- **2006** The planned merger with Forschungszentrum Karlsruhe makes Universität Karlsruhe (TH) a winner of the Excellence Competition in Germany. The idea is to combine non-university and university research in KIT.
- **2009** Karlsruhe Institute of Technology (KIT) is established.
- **2012** KIT loses its excellence status.
- **2014** KIT's Energy Lab is established. Energy Lab 2.0 reflects KIT's long tradition of enabling secure, affordable, and environmentally friendly energy supplies by innovative research. It is Europe's biggest research infrastructure for renewable energies. Activities focus on the smart combination of environmentally friendly energy producers, storage methods, and secure and stable grid operation.
- **2014** KIT's flag is in space: In May 2014, a silk flag of KIT weighing about 100 g is taken to the International Space Station (ISS) by Alexander Gerst, alumnus of KIT and astronaut of the European Space Agency.
- **2017** 26,000 students on campus marks an all-time high.
- **2019** KIT is University of Excellence again.
- **2025** Karlsruhe Institute of Technology (KIT), the oldest technical university in Germany, celebrates its 200th anniversary.
- **To be continued...**