

Karlsruhe Institute of Technology (KIT)

From 1825 to 2025 – The First 200 Years

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UNDERSTANDING KIT: THE INSTITUTION AND ITS NAME

Karlsruhe Institute of Technology (KIT) is the result of a merger between the former Forschungszentrum Karlsruhe (Karlsruhe Research Center) and the University of Karlsruhe (TH) in 2009. The names of both predecessor institutions of KIT changed in the course of their history. In the following, the University will be referred to by the official designation used during each respective era. For the Research Center, on the other hand, the official name will not be used throughout in the text. For simplification, it is designated by the variants listed below, respectively. To improve the readability of this document, the English names will be used throughout.

Designations of the University:

- Polytechnische Schule / Polytechnikum (Polytechnic School / Polytechnic Institute): 1825 – 1885
- Technische Hochschule (Technical University): 1885 – 1967
- Fridericiana (official epithet from 1902)
- Universität Karlsruhe (TH) (University of Karlsruhe (TH)): 1967 – 2009

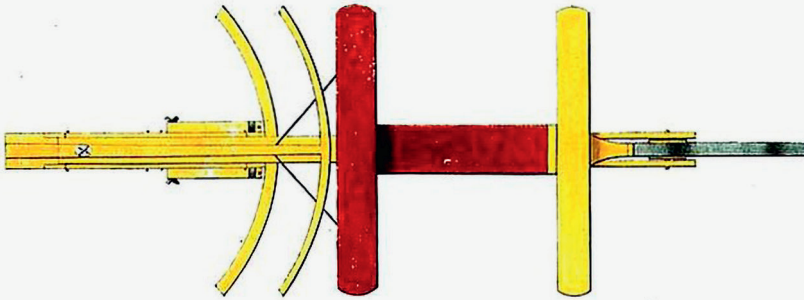
Designations of the Research Center:

- Kernreaktor Bau- und Betriebsgesellschaft mbH (Nuclear Reactor Construction and Operating Company): 1956 – 1963
- Gesellschaft für Kernforschung mbH (Nuclear Research Company): 1963 – 1978
- Kernforschungszentrum Karlsruhe GmbH (Karlsruhe Nuclear Research Center): 1978 – 1995
- Forschungszentrum Karlsruhe – Technik und Umwelt (Karlsruhe Research Center – Technology and Environment): 1995 – 2005
- Forschungszentrum Karlsruhe in der Helmholtz-Gemeinschaft (Karlsruhe Research Center in the Helmholtz Association): 2005 – 2009



Ludwig I, Grand Duke of Baden, signed the founding charter for the Karlsruhe Polytechnic School in 1825. Better education of the population was meant to boost the local economy. [Fig. 2]

A historical turning point was the invention of the steam engine that transformed heat into motion. So far, most machines had been driven by wind, water or the muscle power of humans and animals. The steam engine heralded the age of industrialization, first in England, then also in Germany and the Grand Duchy of Baden. A few weeks before the foundation of the Polytechnic School, the first railroad line built by the British engineer George Stephenson was opened between the English towns of Stockton and Darlington. In Karlsruhe, a society that operated steamboats navigating on the river Rhine, named "Großherzoglich Badische Rheindampfschiffahrtsgesellschaft," was founded on September 22, 1825. Being the first operation that undertook the transport of passengers and cargo between Mannheim and Basel, it was soon taken over by other companies. In 1827, a regular service between Cologne and Mainz using paddle steamers was established – while marine propellers had actually been invented the year before, they were not widespread yet. From 1831 on, the citizens of Karlsruhe could start their steamboat rides from the nearby Schröck Rhine harbor. In 1833, Grand Duke Leopold allowed the citizens of Schröck to rename their community to Leopoldshafen. From 1817 to 1828, Johann Gottfried Tulla, an engineer from Karlsruhe, led the biggest and most difficult hydraulic engineering project in Germany so far: The straightening of the Upper Rhine. The first signs of a systematic scientification of engineering, which would prove to become a pioneering achievement, appeared in hydraulic engineering and road construction. It is therefore not surprising that Tulla played a decisive role in the history of the Polytechnic Institute.



*Das VELIPEDON des
Freiherrn Carl von Drais.*

W. August del. et sculp. München 1817

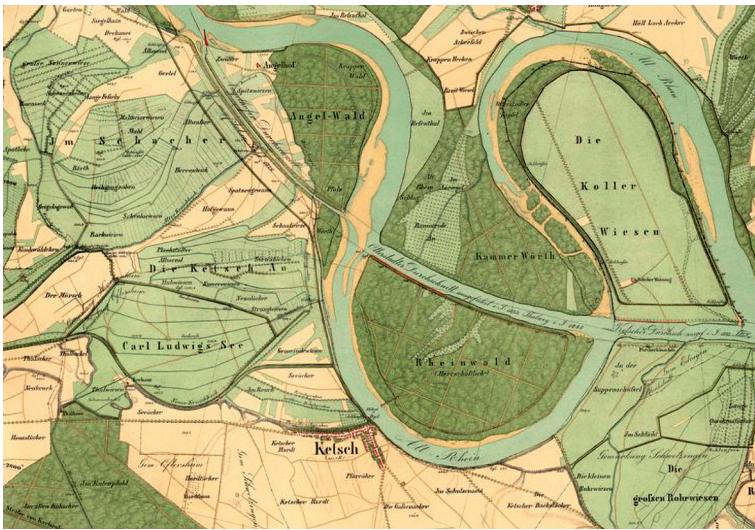
The revolutionary dandy horse from 1817: The precursor of the modern bicycle invented by Freiherr Karl Drais von Sauerbronn redefined individual mobility. [Fig. 3]

Other groundbreaking innovations during that period were the mechanical printing press, photography, the breech-loading rifle, the sewing machine, or the dandy horse invented by forestry officer Karl Freiherr Drais von Sauerbronn from Baden. Compared to these, the innovations in road construction may appear unspectacular, but they are equally important: The macadam construction technique, named after its Scottish inventor John L. McAdam, which uses three layers of gravel, made the construction of solid and dry roads possible. Thanks to the more stable road surfaces, the conventional two-wheeled carts could be replaced by big multi-axle horse-drawn vehicles that were able to carry heavy cargo. These more robust roads also meant a significant progress for stagecoach service, as the coaches could travel at higher speed.

The population, however, generally mistrusted the technical innovations. For many people, the railroad was devil's work. They feared that the high speeds of up to 40 km/h would be detrimental to their health, that the clouds from the locomotives would kill the birds, and that cows grazing nearby railroad stations would give no more milk. The fact that this negative attitude towards modern technology significantly changed within one generation and that the acceptance continued to grow can also be attributed to the education based on natural science and engineering, which was provided by higher educational institutions and polytechnic institutes.

Role Models for the Training of Technicians: England and France

The Karlsruhe Polytechnic Institute, however, was not so much meant to serve the education of the people, but rather to produce well-trained experts for the Baden economy and administration. In the Germany of that time, a relatively small number of scientifically trained technicians were available and most of them had been educated abroad. Even the German word for technical matters, i.e. "Technik," had a French origin. Derived from it was the German word for technician ("Techniker"). It first referred indiscriminately to academically educated engineers, to manufacturers, factory workers, and even craftsmen. Machines had to be imported from England, the technologically leading country at that time, and English mechanical engineers and mechanics had to be hired at high expense to keep them up and running.



Engineering prowess in the 19th century: This map from 1833 shows the huge dimension of the ambitious project to straighten the river Rhine near Ketsch – an undertaking that not only tamed the meandering river, but also developed valuable new agricultural land and improved flood control. The first Rhine meanders were cut off in 1818 near Knielingen and at Eggenstein near Karlsruhe. [Fig. 4]

Departure of a train from Heidelberg railroad station, 1840: The railroad revolutionized transportation – it shortened travel times considerably, boosted trade and mobility, and significantly pushed the industrialization in Baden. [Fig. 5]



[All components for the first railroad line in Germany that ran between Nuremberg and Fürth were imported from the United Kingdom in 1835. Moreover, “all components” not only included the rails, the wagons, and the locomotive, but also the engine driver, the stoker, and the coals!]

Unlike the United Kingdom, where private entrepreneurship drove industrialization, technical innovations in Germany frequently resulted from governmental initiatives. Government tasks such as the development of the traffic infrastructure compelled civil servants to acquire technical-scientific knowledge. In their attempts to boost the economy, the European sovereigns and their advisors realized that modern production required education: Scholars were called on to develop new technical methods and help make work more productive.

The École Polytechnique in Paris as a Blueprint for Schools of Engineering

The recently formed circle of technically educated people gradually spawned a new professional group that worked in the broad field between craft and science. It took quite a while before the educational and work profiles of these specialists took shape. An institutionalized engineering education already existed in France at the turn from the 17th to the 18th century. Experts for military and civil service were trained there. In 1794, the École Polytechnique opened its gates in Paris. It was the first institution to impart firmly established theoretical qualifications and thus became an international role model for engineering education in the early 19th century. Nevertheless, engineers were not yet perceived as an independent professional group. While the École Polytechnique conferred the title of “ingénieur” on their graduates, this first only referred to military master-builders with knowledge in earth-work, heavy gun design, and mechanical engineering.

Also in Karlsruhe, the Paris model was taken as the standard to follow, but with a civil orientation. Due to the delicate situation of the public finances, strengthening the domestic economy was vital for Baden. This could only be achieved with well-trained experts in business and administration.

Baden’s Territorial Gain as a Driver of Industrialization

How had this come about? In the midst of the First Coalition War that Prussia, Austria, and smaller German states waged against revolutionary France since 1792, Baden had switched sides. Karl Friedrich,

Margrave of Baden (1728–1811), the father of university founder Ludwig, had turned his back on the Holy Roman Empire of the German Nation under Emperor Franz II and joined Napoleon. He was rewarded with the tenfold enlargement of his dominion within a few years, which sextupled the number of his subjects to 900,000. On top of everything, Napoleon had made him Prince-Elector and finally Grand Duke.

This was the background: After the Coalition forces, which fought for preservation of the monarchy and the traditional societal order, had enjoyed initial success, the French Revolutionary Army rushed from victory to victory. French troops advanced to the river Rhine – also thanks to their technical superiority. In September 1795, they conquered Mannheim; in June 1796, they crossed the river near Kehl, south of Karlsruhe, the Baden seat of government. Being a small, peripheral territory, Baden risked to be eradicated from the map of Europe. Hence, the envoy of Baden, Sigismund von Reitzenstein, negotiated a separate peace with France in Paris.

This change of mind paid off: In the course of the Imperial Recess of 1803, German sovereigns, who had come to terms with Napoleon, were compensated for the loss of left bank territories along the river Rhine to France. In return, territories formerly owned by the imperial church, imperial knighthoods, and free imperial cities on the right bank of the Rhine were ceded to them. For the loss of eight square miles counting 25,000 inhabitants, Baden received – until 1806 – a multiple with regard to territory and population. What is more, Napoleon made a solemn entry into Karlsruhe on January 20, 1806, on his journey back from defeated Austria. Seven months later, Baden joined the Confederation of the Rhine, a military alliance dominated by the French Emperor, which marked the end of the Holy Roman Empire of the German Nation. This was preceded by the pompous wedding of Hereditary Prince Karl with Stéphanie de Beauharnais, a relative of Empress Joséphine.

[At the court of the Grand Duchy in Karlsruhe, Napoleon's wedding plans for Karl, the heir to the throne of Baden, had a horrifying effect. The heir of the age-old House of Baden should marry an unknown French woman? Amalie, the status-conscious Margravine, was raging. What on earth did that "ludicrous Corsican," an upstart who had crowned himself, fancy at all? Her son had to be given a spouse of princely rank, the Margravine insisted when she met the Emperor. The "little rogue," as Amalie dubbed him, bypassed the argument by promising: "Well, I will adopt the child." Amalie had lost the game, but at least earned the Emperor's respect: The "only man at the Court of Baden is a woman," he stated appreciatively.]