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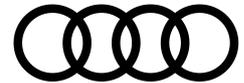
Ingolstadt Site Communications

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IN-Campus – Technology park for future projects of AUDI AG

The abbreviation “IN” denotes innovation: With the IN-Campus, AUDI AG and the city of Ingolstadt have gotten a strategic investment off the ground. Both partners will work together to remediate the site of a former oil refinery and transform this industrial wasteland into a campus. The focus is on the development work for future-oriented projects. The future technology park IN-Campus is designed to be open, sustainable and close to nature. The first construction jobs are well under way.

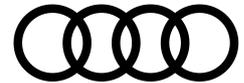
The Buildings in Construction Section 1

The IN-Campus is being built on a former refinery site in Ingolstadt. In 2015, IN-Campus GmbH, a joint venture of AUDI AG and the city of Ingolstadt, acquired the majority of this industrial wasteland. The necessary remediation of the ground and groundwater started in fall 2016 in the north of the site; it is planned largely complete by late 2022. Building work has already started on the remediated and unpolluted sections of the site. The buildings from construction section 1 are due to be ready in 2023. IN-Campus GmbH is investing in a campus—the focus is on the technologies of the future.

A major strength of the IN-Campus site is the continuous area of 75 hectares, the likes of which cannot be found anywhere else in Ingolstadt or the region. It offers an opportunity to create a spacious, flexible and attractive technology park in which high tech and creativity coexist. 60 hectares will form the commercial and industrial area in the future; building work on them is to be completed in three phases. Another advantage is the location of the area: It is located close to the Audi parent plant in the east of Ingolstadt and directly on the A9 highway.

▶ Open and Close to Nature: The Site as a Whole

The IN-Campus has been designed as an open site without a plant fence, i.e. as a genuine campus. At its southern edge can be found the Audi Sportpark (the stadium of FC Ingolstadt 04), while a commercial park lies adjacent to it in the west. In the north and east, sparse woodland stretches along the banks of the Danube. The transition to it takes place in a 15 hectare green corridor; this is where a riverside woodland with nutrient-poor grassland and willow trees is being created to act as a compensation area. In this way, IN-Campus connects the urban world with the quietness of the Danube wetlands; it creates an interface between high tech and nature. From north to south—from the Danube to the stadium—an parkway roughly one kilometer (*0.6 mi*) long with generous green areas runs across IN-Campus. At several points, this “Campus vein,” which is approximately 50 m (*164.04 ft*) wide, expands to create small places, a vital communication and meeting space for the future employees and guests.



▶ **Ideas Factory: The Project House**

Considerable construction work has been underway on the IN-Campus since fall 2018. A distinctive building area in construction section 1 is called the project house. It is being built in the northwest of the site and is a large complex consisting of four buildings. This is where the developers of the technologies of the future will work in the future. This new ideas factory offer space for around 1,400 employees from Audi and selected partner companies—42,000 m² (*452,084.2 sq ft*) of office and workshop space, rounded off by conference rooms and catering facilities. Completion is scheduled for late 2020.

While the project house is being constructed, infrastructure work for construction section 1 is also underway. The IN-Campus will have a direct connection with the A9 highway; expansion of the Ingolstadt-Süd interchange is in full swing. This highway has been acting as a digital test field for the development of automated driving for many years now.

▶ **Ultra-Modern Technology: The Vehicle Safety Center**

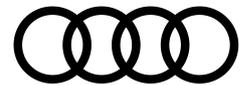
The largest building in construction section 1 will be the vehicle safety center, construction of which will start in spring 2020 and last two years. The main building forms a cube with an edge length of 130 x 110 m (*426.5 x 360.9 ft*) and a height of 20 m (*65.6 ft*).

The heart of the structure is formed by the crash arena, a support-free area 50 x 50 m (*164.04 ft x 164.04 ft*) in size. Two crash tracks run through it, each one 120 m (*393.7 ft*) in length. Audi can drive collisions on them at speeds of up to 120 km/h (*74.6 mph*), including, for the first time, head-on collisions between a car and a barrier that is also moving. Ultra-modern high-speed cameras and energy-efficient LED light systems support the crash team in their work. A third, shorter crash track for side impacts, different individual test benches and offices round off the building's facilities.

The new vehicle safety center will take over the tasks currently performed by the existing system on the technical development site. It will be able to handle many more complete vehicle crashes per year than in the past. The concept, technology and adjacent expansion areas ensure that it will meet the requirements for many years to come. This is important in light of the increasingly strict standards and regulations on the global markets and the challenges posed by electric mobility. Despite the rapid progress made in simulation technology, real crashes in hardware remain unavoidable.

▶ **Smart Energy: The Energy Control Center**

The energy control center will be built to the north east of the project house; construction is set to start in 2019. Not only does it provide water and electricity, it is also the heart and brain of the energy system concept for the IN-Campus.



The LowEx network is a major element in the innovative energy system. This water-based piping network acts as a heat source and a heat sink for all the buildings on the IN-Campus. Plastic lines with a pipe diameter of around 60–80 cm (*23.6–31.5 in*) are already being laid in the ground of construction section 1. Buildings with a high cooling load release waste heat that accrues (e.g. IT center) into the network, while buildings with a high heating load take the necessary energy from the LowEx network. In this way, consumers become generators. The network's temperature deliberately moves between 5°C and 30°C by using the seasonal fluctuation—this is ideal, e.g. in order to feed environmental heat or waste heat into the network. The necessary system temperatures are guaranteed by means of reversible heat pumps in the buildings in question.

Thermal energy storage systems in the energy control center make a major contribution to load management and to increasing the energy efficiency of the overall system. With a volume capacity of around 3,000 cubic meters, they save both heat and cold.

The CEC system (cross energy concept) acts as the central intelligence for the energy supply. It manages the interaction of all technical components for the purpose of maximum efficiency.

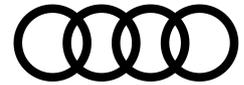
The energy concept is modular and highly flexible. In construction section 1, the IN-Campus will continue to procure electricity and district heat from outside. The medium-term vision is a zero-energy campus, one which uses self-generated and regenerative energies to a considerable extent and integrates new innovation components for this purpose again and again. This can be a photovoltaic system with a high efficiency level or an industrial fuel cell—or even technologies that are not even on the market yet.

▶ **Digital Nerve Node: The IT Center**

A new IT center will be built between the project house and the vehicle safety center on a floor space of almost 10,000 m² (*107,639.1 sq ft*). Construction is set to start in 2019. This will then be home to around 8,000 servers and storage and network components on an area of 2,000 m² (*21,527.8 sq ft*) for IT. The IT center will support AUDI AG's future-oriented projects with ultra-modern hardware and software; in its technical concept, maximum availability and the highest level of failure safety are given utmost importance.

▶ **Safety in the Spotlight: The Functional Building**

A two-story functional building will be located in the north east of the IN-Campus. Property protection facilities, training rooms, a dedicated fire station for the IN-Campus and an emergency medical center will be based here. Construction is likely to start in 2020.



Remediation of the Former Refinery Site

IN-Campus is being built on a former refinery site, which was in operation for 43 years. Various petroleum products were made here from 1965 to 2008. When operation stopped here, the systems were dismantled by 2013. In fall 2015, IN-Campus GmbH, a joint venture of AUDI AG and the city of Ingolstadt, acquired the site and signed a public-law remediation contract a few months later.

The 1,200 or so exploratory drilling operations and 50,000 laboratory analyses conducted over a number of years had revealed that 22 hectares were polluted and in need of remediation. The soil contained 900 metric tons of fuel oil, 200 metric tons of light gasoline and 100 kilograms (*220.5 lb*) of perfluorinated and polyfluorinated chemicals (PFCs). The necessary remediation of the ground and groundwater started in fall 2016—carried out by ARGE IN-Campus GbR, a working group made up of three specialist companies that uses ultra-modern methods. Most of the remediation work is set to have been completed by late 2022. Groundwater remediation is likely to continue until 2028.

The project incorporates four particular methods: groundwater treatment, air sparging, honeycomb excavation and downstream soil washing.

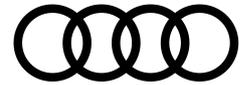
Groundwater treatment involves ten wells at the edge of the site that are equipped with electric pumps to draw polluted groundwater out of the soil. A treatment system removes up to over 99.9% of pollutants.

The **air sparging method** is designed to combat volatile hydrocarbons, which are components of gasoline fuels. Air is blown into the ground through hundreds of pipelines and picks up dissolved pollutants in the soil and groundwater. Just beneath the surface of the site, the air is extracted through drainage pipes and cleaned.

The polluted soil is excavated so that the PFC residues from firefighting foams and total petroleum hydrocarbons—left by the fuel oil—can be eliminated. This takes place by means of an innovative and high-precision technique in which hydraulic rams drive **steel hexagons** into the earth using vibration. In total, they are excavating 600,000 metric tons of material from the soil, mostly involving the sand and gravel typical of the site.

A **soil washing facility** uses water to clean pollutants from the soil grains. The water circulates via a treatment system, while another system cleans the resultant exhaust air. More than 90% of the material delivered to the facility is returned to the hexagonal “honeycomb” holes; the rest is disposed of.

The remediation of the IN-Campus site is one of the largest ongoing ground remediation projects in Germany and the first complete remediation of a refinery site ever to take place in Bavaria. A team of independent experts monitors all the processes and documents them in a geospatial information system. The IN-Campus project has already aroused considerably interest among the professional public; guests frequently inquire about the cleaning measures on the site.



Statements on the IN-Campus

Dr. Markus Söder, Bavarian Minister President: “Here in Ingolstadt, we see that protecting nature and using cutting-edge technology go hand-in-hand in Bavaria. The IN-Campus will transform an old refinery into an innovation center of the automobile industry on remediated Bavarian soil. The dedication of AUDI AG and the city of Ingolstadt will protect nature and the landscape while also creating many new jobs. This represents a clear commitment to the Ingolstadt site. Future-oriented projects such as these are characteristic of Bavaria and its companies.”

Dr. Christian Lösel, Mayor of the city of Ingolstadt “IN-Campus is the emblem of technological change in our city: What was once a refinery is now becoming an innovation campus. But we are doing more than just constructing new buildings here. We are creating the jobs of the future here, for the technologies of the future! This exemplary innovation campus is a sign of Audi’s generous commitment to the Ingolstadt site. Today’s foundation stone is therefore an important symbol on two fronts: the starting shot for the IN-Campus as well as the foundation stone for the continued positive development of Ingolstadt.”

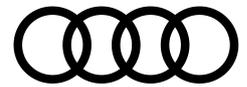
Peter Kössler, Audi AG Board Member for Production and Logistics “With the IN-Campus, we are implementing an environmentally friendly remediation project that is without equal in Bavaria. We are completely remediating a former oil refinery site instead of using unbuilt areas, as was the case in the past. At the same time, we are creating the future, because this is where Ingolstadt’s new thought factory, populated with clever people from Audi, scientists, start-ups and partner companies, will arise. It makes me proud to lay the foundation stone for this today.”

Peter Mosch, Chairman of the General Works Council of AUDI AG: “With the IN-Campus, Audi is investing in its future viability and the Ingolstadt site. The new technology center will help to equip the employees for the major digitalization challenges and to safeguard jobs in the region.”

Thomas Vogel, Managing Director of IN-Campus GmbH (AUDI AG): “I view the project as a tremendous opportunity as we are making a hugely important contribution in developing this area. The IN-Campus stands for cooperation and allows specialist and high-tech partners to work together in one place. Everyone is pulling together here—Audi, the city of Ingolstadt and all project partners.”

Norbert Forster, Managing Director of IN-Campus GmbH (IFG Ingolstadt): “The transformation of the IN-Campus site from what used to be industrial wasteland into a high-tech area with a top-class technology center is a groundbreaking prestigious project with which an important contribution to the future viability of our site is being made. I am very proud that IFG is taking on a central role here in collaboration with AUDI AG.”

Dr. Rüdiger Recknagel, Head of Environmental Protection at AUDI AG: We are making a commitment to Ingolstadt as a location and writing city history at the same time. We are proud to be conducting the first comprehensive remediation of a refinery site in Bavaria with this eco-friendly remediation project. In so doing, we are giving something back to both society and



nature. Remediation of the former refinery site is a gigantic and unique environmental project that is without equal.”