

Press release

Smart City Expo: Alpha-Omega Technology presents model project for small villages SMARTinfeld

Successful Smart Village applications based on LoRaWAN technology at the LEG Thüringen joint stand: A model village shows how digitalisation in rural areas can succeed. Hall P2, Stand C 115.

Schimberg and Berlin, 27 October 2022 - Alpha-Omega Technology GmbH & Co. KG, an expert in municipal Internet-of-Things projects, will be present at the Smart City Expo World Congress trade fair in Barcelona from 15 to 17 November. At the joint stand of the State Development Corporation of Thuringia, visitors will gain insights into the SMARTinfeld Smart Village project in the municipality of Martinfeld in the Eichsfeld district of Thuringia. For more than five years, Alpha-Omega Technology has been testing sensor-based LoRaWAN IoT applications here in cooperation with the municipality under realistic conditions and optimising them for rural areas: from intelligent street lighting to measuring the temperature of roadways, soil moisture sensors and traffic counters for traffic control to monitoring transformer stations. In the next step, test projects are planned in the area of environmental sensor technology, for example to detect forest fire hazards at an early stage. The findings and competences are to benefit IoT projects in other municipalities.

It is usually digitalisation projects in cities - keyword smart city - that receive media attention. But the solutions implemented here do not always make sense for rural areas. Small communities have different needs and thus place different requirements on IoT projects than urban areas. Digitalisation can bring great benefits to rural communities in particular: For example, when sensors signal the failure of streetlights in sparsely populated areas. A village with up-to-date infrastructure has a locational advantage: modern citizen services help attract young families and thus urgently needed skilled workers. IoT solutions can also mitigate existing staff shortages. Fill level sensors, for example, optimise the deployment of waste collection staff when they empty the public bottle banks on demand instead of at fixed times.

SMARTinfeld: Joint model project of business and municipality

In the Thuringian municipality of Martinfeld, Jan Bose, managing director of the local IoT company Alpha-Omega Technology, and the then mayor of the district Gerhard Stitz launched SMARTinfeld, a model project for smart village applications, five years ago. Jan Bose says: "Our company is located in Martinfeld. This makes us the driving force behind the project. The expert know-how from our many years of IoT project experience flows directly into the development of the SMARTinfeld model village." The technical basis is a Long Range Wide Area Network, or LoRaWAN for short. This radio technology requires very little energy to transmit measurement and sensor data over long distances. In rural areas, this can be up to ten kilometres. For LoRaWAN, the market also offers a wide range of sensors for applications outside the classic spectrum of heating valves or car park sensors. The necessary infrastructure is provided by Alpha-Omega Technology, which is also entrusted with the project management.

Remotely monitored: street lamps, roadways or bee colonies

As a first step on the way to becoming a Smart Village, the municipality of Martinfeld upgraded its entire street lighting, which is comprised of about 100 luminaires, to modern LED luminaire heads

with control via LoRaWAN in 2017 and 2018. Since then, sensors detect defective LEDs. If necessary, they also control the switching time of each individual lamp, so that the municipality saves energy. The project set the course for today's digital services in Martinfeld: measuring probes are embedded in the asphalt of the streets. They determine the temperature of the road surface. The cable with the radio unit is located next to the road surface. In this way, the municipality can monitor the condition of the road surface or arrange for the winter road clearance service to be deployed as needed. Once the LoRaWAN network is set up, citizens can also use it for their own small projects. Another example: for beekeepers, there are sensor-based IoT solutions with which they can control their bee colonies remotely. This means less stress during inspections - for the bees and for the beekeeper.

Smart Villages have special requirements

Rural municipalities differ from urban areas not only in terms of use cases. If IoT applications in sparsely populated areas are to serve a larger area, several municipalities and thus authorities are often involved - the need for coordination increases. In addition, people in rural areas often identify strongly with their municipality. They watch very closely which innovations are introduced and discuss their benefits. This increases the communication and persuasion effort. Jan Bose explains: "In addition to reliable technology, aspects such as data protection and the opinion of residents are crucial for the successful establishment of an IoT project in rural communities. Small data volumes ensure low power consumption and, at the same time, high data protection because only the data that is necessary is used. With a direct added value visible to the population through improvements in everyday life and comprehensive savings in the public budget, the approval for municipal IoT projects increases significantly."

Environmental sensor technology for agriculture and forestry

In the next step, SMARTinfeld will primarily implement test projects in the field of environmental sensor technology. Weather stations or the monitoring of soil properties are particularly interesting for agriculture and forestry - for example, sensors will measure temperature, soil moisture and precipitation. A LoRaWAN IoT can also help to detect forest fire hazards as early as possible. For this, a multi-sensor is used that records temperature, humidity, air pressure and various gases such as hydrogen, carbon monoxide or carbon dioxide. In rivers and lakes, sensors provide information on water quality and ultrasonic sensors on bridges monitor water levels.

Smart City Expo

Joint stand of the State Development Corporation of Thuringia

Hall P2, Stand C 115

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Image material

