



Zollner services in the areas of:  
Development. Preparing the product  
for industrial production. Production.

## Success Story: KONUX

„Zollner takes part in an AI-based system for the maintenance of rail infrastructure“

### Customer and product:

KONUX is a startup founded in Munich in 2014. It utilizes automated learning and the Industrial Internet of Things (IIoT) to transform rail operations for a sustainable future. The company offers 'software-as-a-service' solutions for the operation, monitoring and automation of maintenance and service processes. By increasing capacity, reliability and cost-efficiency, KONUX is making train travel the mobility choice of tomorrow. KONUX was also voted one of the 30 most innovative startups by the World Economic Forum (WEF).

Upon a train passing, an IIoT sensor developed by KONUX collects the vibration profile and temperature conditions, for example, which are then fed into the KONUX AI to gain insight into the condition of the rail network. This predictive maintenance has the potential of saving operators of the railroad infrastructure several millions. It also improves the availability of rail networks, extends the service life of systems and makes rail service more reliable and safer.

By order of KONUX, Zollner Elektronik AG developed an installation kit with which the IIoT device can be securely installed on the cross-tie in less than 10 minutes, thus avoiding interruption of regular rail traffic.

### What was the big challenge of the project?

As the software specialist developed the prototype for their system, the protective housing for the sensor caused them quite a headache. An adhesive for cementing the apparatus to the cross-tie could not withstand the high level of acceleration. The time it took to attach and its stability were not ideal for installation on a heavily traveled railroad line.

The second challenge in housing design was resistance against environmental influences. The IIoT device must always be reliably protected. The rail customer also needs assurance that nothing splinters away from the housing and lies loosely in the track - even then, for

example, when chunks of ice are flying around in the track. On the search for a development and manufacturing partner for the IIoT device housing, KONUX came into contact with Zollner Elektronik AG at the Mechatronic & Automation Cluster in 2016.

## What solution did Zollner find?

The Research & Development division at Zollner (R&D) reconceived the device installation set for KONUX. One significant change: the housing with the yellow cover is anchored to the crosstie with a dowel. This solution significantly reduced the effort of installation and shortened the time expenditure from about 45 minutes to about a mere ten minutes. Speed counts, and installation can now also be completed during regular rail traffic, if there is enough of a gap between trains.

In order to guarantee resistance to environmental influences, the housing defined by the rail customer for KONUX needed to be suitably reinforced. Zollner developed three housing variations, which were tested by the German Center for Aerospace. They were shot at with a four kilogram block of ice, which slammed into them at 275 km/h. Zollner Elektronik AG performed additional environmental simulations alone; comprehensive testing followed for the installation set with regard to electromagnetic compatibility and adherence to radio regulations.

Afterwards Zollner Elektronik AG drove the readying of the quick installation kit for serial production and started to produce. Thus Zollner is a full service partner in the hardware area who covers the entire product lifecycle.

## This is what our customer says about our collaboration:



photo: Benjamin Olszewski

*„For KONUX, it was very important to obtain the necessary certifications for our Industrial Internet of Things systems as well as the production process. For that we needed a renowned and reliable EMS service provider as our partner. Our selection went to Zollner – mainly because the company is known for creating reliable solutions for the rail industry, but also due to its location and the extremely helpful team and entire organization. We are thankful to have a great partner in Zollner on our side to obtain the necessary releases in a sector that is extremely safety conscious.”*

Sébastien Schikora, Chief Technology Officer at KONUX

Zollner is certified according to the international Rail Industry standard, ISO-TS22163.

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