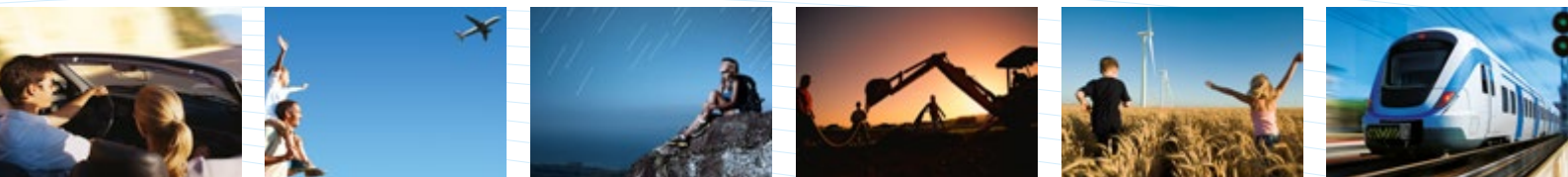


# Providing Electronic Robustness for a More Electric and Connected World

Company Profile TTTech Group



# Reliability, Robustness, Safety

TTTech stands for reliability, robustness and safety: Time-Triggered communication platforms and certifiable electronic modules enable our customers to deploy their solutions more efficiently and profitably

TTTech is the technology leader in robust networked safety controls. Our solutions and best-in-class products improve the safety and reliability of networked computer systems and are used in various industries such as automotive, aerospace, off-highway, energy production, railway and industrial process automation.

## Extensive Benefits, Certified Safety

TTTech customers win as they deploy dependable networks and real-time controls more efficiently and profitably. Benefits include shorter time-to-market due to re-use of proven architecture and ease of system integration with reduced cost. The solutions further support highly scalable and modular open real-time architectures. In addition, our best-in-class certifiable products fulfill all relevant industry standards as well as current safety requirements, hence allowing clients to reduce costs regarding the development, testing and maintenance of new electronic systems. The key offering comprises of electronic control and rugged networking hardware. It further consists of embedded

certifiable run-time software, chip IP as well as development and test equipment such as development and verification tools. The offering generally includes products based on time-triggered technologies and solutions for a modular cross-industry safety platform.

## 15 Years of Excellence, Innovation and Cooperation

TTTech was established in 1998 as a spin-off of the Vienna University of Technology (TU Wien) based on now 35 years of research in Europe and the US. This extensive research and development work provides a mature basis for our core technology to build applications in safety-critical areas. Today our company has offices in ten different countries with more than 500 employees worldwide. Another key element to our success is the close cooperation with customers who are innovation leaders in their fields such as automotive, aerospace, off-highway mobile machines and industrial control. In addition, TTTech is partnering with dynamic international research institutions to bolster its technology leader position.



**Audi A8** Our cooperation with Audi includes the introduction of databuses in the latest generation of the Audi A8 for the optimization of its data communication.



**Boeing 787** TTTech supported UTAS in the development of a TTP-based data communication platform for the Boeing 787 Dreamliner aircraft.



**Prinoth** From the HY-TTC 94 ECU to the robust operator interfaces of the HY-eVision<sup>2</sup> family, a large number of TTControl solutions are onboard of snow groomers from Prinoth.

# Expertise on Various Markets

TTTech Group supports highly reliable and networked electronic systems with solutions based on time-triggered networking technology and modular building blocks for safety controllers

## Automotive

We provide ISO 26262 compliant platform ECUs for safety controls in ADAS, chassis controls, electric power trains and other applications. TTTech develops reliable and robust data logging and testing devices for bus systems. Our AUTOSAR safety software allows to integrate safety critical and regular software functions side by side.

### Projects & Customers

TTTech Group has been cooperating with various partners in the field of automotive electronics and our technology has been used in e.g. Audi A8 to A3, VW Golf and many other models and the Volvo C30. Our latest projects include a cooperation with NXP to deliver an Automotive Ethernet switch chip. For Audi we are working on an Advanced Driver Assistance System Platform for innovative functions such as piloted parking or driving.



**Thales** TTTech cooperated with Thales Rail Signalling Solutions on the design of interlocking systems, supplying solutions based on TTP.

## Aerospace

We provide airworthy embedded COTS components, design tools and consulting to major OEMs and system integrators, working on next generation integrated modular electronics architectures and distributed control systems. Our solutions reduce size, weight, power as well as system and ownership costs and maximize fuel efficiency.

### Projects & Customers

Our products and avionic networks (AFDX, TTP, TTEthernet) are certified in commercial aircraft programs and at the core of FADECs, environmental control, flight controls, electric power generation and integrated avionics on aircrafts like Airbus A380, Boeing 787, Aermacchi M346, Lockheed Martin F-16, Bombardier CSeries and Global 7000/8000, Embraer's Legacy 450/500, NASA ORION MPCV and MPCV-SM and others.



**Vestas Turbine** We deliver Ethernet solutions, designed to improve reliability and productivity of the next generation of wind turbines, to our partner Vestas.

## Off-Highway

TTControl is a joint-venture of TTTech and HYDAC International, offering electronic control systems and operator interfaces for mobile machinery and off-highway vehicles such as municipal vehicles, construction machinery and aerial platforms – including electronic control, visualization, I/O modules and safety consulting all from one source.

### Projects & Customers

Our recent projects include the implementation of a future-proof direct drive for municipal vehicles as well as electronic control systems and operator interfaces for drilling machines from Casagrande. We offer modularly designed operator terminals used in Prinoth snow groomers alongside a number of other TTControl solutions such as electronic control units.

## Industrial, Energy & Railway

We provide our customers with reliable, safe and real-time network solutions based on Ethernet as well as SIL-certifiable safety controllers. Our products reduce system complexity and cost by simplifying the design of safe, highly available, and fail-operational systems in application domains such as industrial, energy and railway.

### Projects & Customers

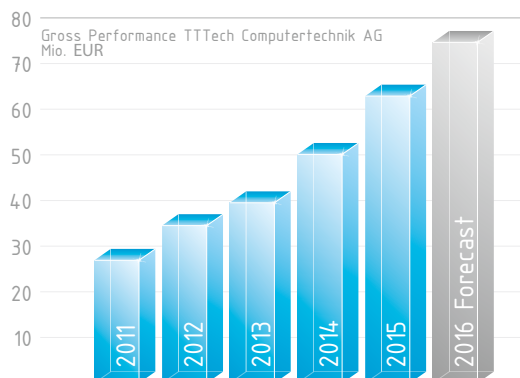
We deliver Ethernet solutions, designed to improve reliability and productivity of the next generation of wind turbines, to our partner Vestas. This architecture draws extensively on our aerospace experience and enables full fail-operational solutions on demand. Further customers are Thales Rail Signalling Solutions, Berlin Heart and Eaton amongst others.



**NASA** TTTech's core technology TTEthernet is applied in NASA's Multi-Purpose Crew Vehicle.

# Key Figures & Worldwide Presence

<b>Number of employees</b>	More than 500 employees, approximately 400 of these are located in Vienna (2016)
<b>Business locations</b>	Headquartered in Vienna/Austria Business locations in Europe, Asia and the United States
<b>Executive Board</b>	Dr. Stefan Poledna, Georg Kopetz
<b>Contact</b>	TTTech Computertechnik AG Schoenbrunner Strasse 7 1040 Vienna Phone: +43 1 5853434-0 E-Mail: <a href="mailto:office@tttech.com">office@tttech.com</a>



## North America

Bay Area, California, USA  
Andover, Massachusetts, USA

## Asia

Shanghai, China  
Beijing, China  
Nagoya, Japan

## Europe

Vienna, Austria (HQ)  
Ingolstadt, Germany  
Brixen, Italy  
Bucharest, Romania  
Brno, Czech Republic  
Budapest, Hungary