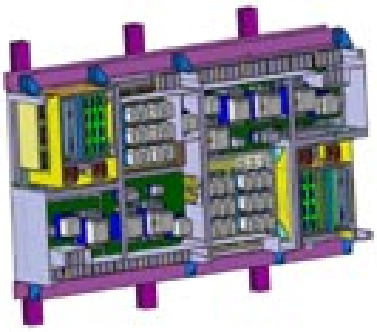

# Advanced Control Systems for Boeing 787 Dreamliner
## **Hamilton Sundstrand's TTP-Based Communication Platform**

TTTech

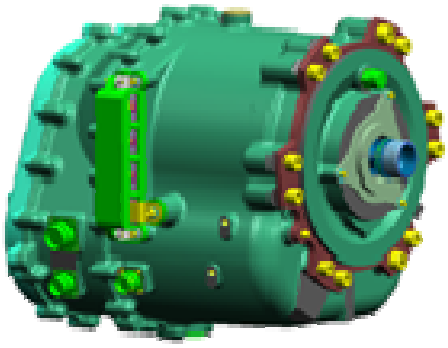
"We are very pleased to work with TTTech. The TTP protocol provides Hamilton Sundstrand flexibility in designing distributed electronic systems. By taking advantage of TTP's modular nature, we can more effectively integrate our systems, improve tolerance to system upgrades, and better manage obsolescence."

Luiz Andrade, Chief Engineer Electronic Products Engineering at Hamilton Sundstrand


Developed by an international team of top aerospace companies, the Boeing 787 Dreamliner is a super-efficient commercial airplane that will be available in three varieties, carrying up to 330 passengers on routes of up to 8,500 nautical miles. In addition to bringing big-jet ranges to mid-size airplanes, the airliner will use 20 percent less fuel for comparable missions than today's similarly sized airplane and will travel at speeds similar to today's fastest wide bodies. Airlines will enjoy more cargo revenue capacity while passengers will see improvements with the new airplane, from an interior environment with higher humidity to increased comfort and convenience.



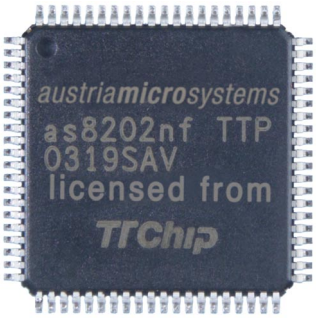
The key to this exceptional performance is a suite of new technologies. As much as 50 percent of the primary structure the 787 will be made of composite materials. An open architecture will be at the heart of the 787's systems, which will offer increased functionality. Health-monitoring systems will allow the airplane to self-monitor and report maintenance requirements to ground-based computer systems. Advances in engine technology will contribute as much as 8 percent of the increased efficiency of the new airplane. New processes are in development to achieve unprecedented levels of performance.



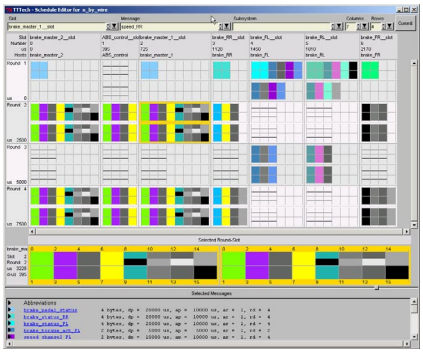
Hamilton Sundstrand, a subsidiary of United Technologies Corporation, is among the largest global suppliers of technologically advanced aerospace products. Headquartered in Windsor Locks, Connecticut, the company designs and manufactures aerospace systems for commercial, regional, corporate and military aircraft. Hamilton Sundstrand delivers electric and environmental control systems on the Boeing 787 Dreamliner. With the aim to reduce the total life cycle cost for its Common Electronic Architecture (CEA), Hamilton Sundstrand selected TTTech to support the development of a TTP-based data communication platform.

“We are proud that Hamilton Sundstrand has selected TTTech to supply the TTP data bus solution for Boeing’s 787 Dreamliner. Hamilton Sundstrand’s decision demonstrates once more our technology’s leading position for safety-critical systems in the aerospace industry.”

Kurt Doppelbauer, Director Sales Aerospace at TTTech




TTTech is the leading supplier of technology and software products in the field of time-triggered systems. This high-tech company located in Vienna, Austria, provides an innovative data communication protocol. The Time-Triggered Protocol (TTP®) is a key technology for tight digital integration of safety-critical systems in more electric aircraft. This open, modular and scalable aerospace control system platform technology is designed for efficient system reconfiguration, upgrades and growth. TTP enables highly reliable distributed computing and networking for modern, more efficient aerospace systems at lower total lifecycle costs within shorter time-to-market.



TTP is a fault-tolerant deterministic protocol that involves continuous communication of all connected nodes via redundant data buses at predefined periods of time. TTP has effective fault handling mechanisms and data consistency services to provide enhanced levels of reliability, availability and safety. A communication network designed with TTP prevents an overload in the bus system even if several important events occur simultaneously. All events are safely processed according to a schedule, eliminating the dangers of data collision.

TTTech’s mature network solution offers a maximum level of fault tolerance, safety and availability. In addition, TTP allows greater modularity and flexibility than conventional communication systems. TTP-based systems require less wiring, and consequently they weigh less, than conventional systems. As the core of the data communication platform for electric and environmental control systems on the Boeing 787 Dreamliner TTP is able to support applications that must effectively monitor operational consistency and detect errors in order to provide the required level of reliability in Hamilton Sundstrand’s CEA.

**About TTTech Computertechnik AG**

TTTech Computertechnik AG is the leading supplier of technology and software products in the field of time-triggered systems and TTP® (Time-Triggered Protocol). TTTech products enable developers of automotive, aerospace, and industrial control equipment to deliver reliable embedded systems quickly and efficiently. TTTech's products comprise a complete software development environment for TTP-based systems, including hardware as well as TTP chip models.

Further information is available at
**www.tttech.com**

**About Hamilton Sundstrand**

Hamilton Sundstrand, a subsidiary of United Technologies Corporation, is among the largest global suppliers of technologically advanced aerospace and industrial products. Headquartered in Windsor Locks, Connecticut, U.S.A., the company designs and manufactures aerospace systems for commercial, regional, corporate and military aircraft, and is a major supplier for international space programs.

Further information is available at
**www.hamiltonsundstrandcorp.com**

**About Boeing**

Boeing is the world's leading aerospace company and the largest manufacturer of commercial jetliners and military aircraft combined. Additionally, Boeing designs and manufactures rotorcraft, electronic and defense systems, missiles, satellites, launch vehicles and advanced information and communication systems. The company also provides numerous military and commercial airline support services.

Further information is available at
**www.boeing.com**

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