


**TECHNOLOGY FEATURE: AVIONICS**

# CONNECTED AS ONE

In a Q&A session, *Aerospace Manufacturing* hears the views of Smiths Interconnect's vice-president marketing & communications, **Roberta Reborá** following on from the company's recent strategic re-organisation.



**ABOVE:** Roberta Reborá, marketing & communications vice-president, Smiths Interconnect

**S**miths Interconnect, a division of Smiths Group plc, recently unified its technology brands (EMC

Technology, Hypertac, IDI, Lorch, Millitech, RF Labs, Sabritec, TECOM and TRAK) under the single brand identity of 'Smiths Interconnect'. This brand transition supports a recent strategic re-organisation focused on creating a more agile structure that can better anticipate and respond to customers' evolving needs.

Individually, the technology brands represent state-of-the-art solutions across the connectors, microwave components and microwave subsystems markets. Providing a strong brand that supports the breadth of these products and technologies will make Smiths Interconnect a more comprehensive solutions provider, improving the customer experience by streamlining access and interactions across multiple applications. The individual technology brands will continue to be visible in association with the Smiths Interconnect brand during the transition period.

**Typically, what Smiths Interconnect products target the aerospace & defence industry?**

Smiths Interconnect has a broad

and defence markets. The technology embedded into the solutions is well-suited to addressing the reliability required for flight-critical systems, as well as environmental concerns such as shock, vibration, and extreme temperature ranges. Furthermore, the company addresses technical issues of EMI/RFI and provides solutions relating to the growing use of composites in these sectors.

Now, with the strategic reorganisation customers are provided with a single point of supply, for not only application-specific high-reliability connector solutions and rugged cable assemblies, but also integrated microwave and millimetre-wave components, integrated microwave assemblies and systems, high performance ferrites, RF devices and time and frequency systems. High performance ground and airborne antenna systems for SATCOM, radio link, radar, telemetry, and high bandwidth connectivity are also available for the commercial aviation market.

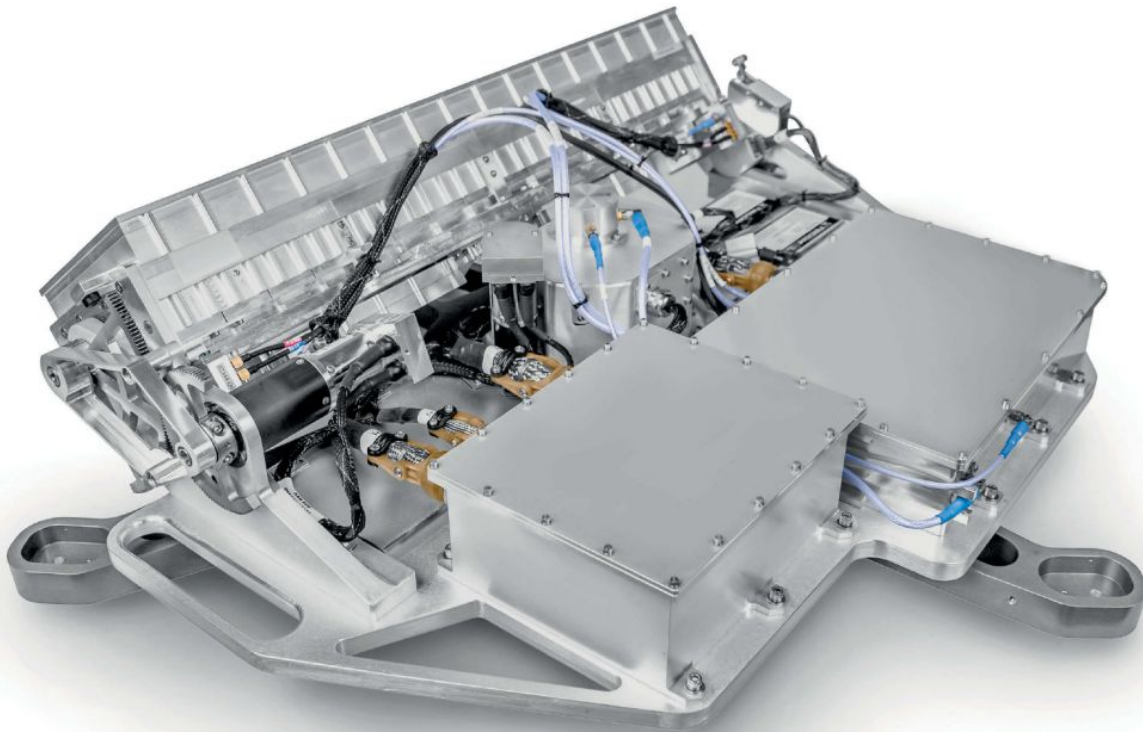
**What kinds of interconnect performance demands are placed on you by aerospace designers?**

All the above requirements are a must - to be sure. First and foremost, the connectivity solution must manage increasing data and power requirements, and, by necessity, must maintain high-reliability in harsh

The increasing complexity of avionics and electrically-actuated aircraft systems are driving increases in power density requirements. We see examples manifest in a number of ways including: Miniaturisation of interconnection so overall current and voltage density increases; Increasing voltages without miniaturisation, so more power must pass through the same envelope; Increasing power demand to meet increasing data demands of aircraft; more power is required to push higher frequency RF signals through the air with greater signal integrity and reliability in adverse weather conditions.

Increases in population are also affecting performance demand. As both the number of aircraft and the number of passengers per aircraft rises, the data requirements increase as well. As a result, we see development of connectivity products with higher frequency and wider bandwidth, high density with increased shielding effectiveness and improved signal integrity > 10 GPS.

In addition, the higher competition among airlines moves the efficiency of in-flight entertainment into the spotlight, as a differentiator. The airline industry has reached an inflection point in which connectivity is becoming a commodity, rather than just a luxury. Customer expectations have surpassed what many airlines currently



**ABOVE:** KuStreamR 1000 Series within the Ku Band Antenna System from Smiths Interconnect

relevant will have to quickly improve the ways they utilise bandwidth. Data system reliability has become increasingly important driven by the increase in revenue generation from data to passengers, meaning downtime costs airlines more.

Furthermore, regulations influence the demand for increased engine efficiency. For example, CO<sub>2</sub> emissions regulations are driving research efforts towards hybrid electric aircraft that mix traditional systems with electrical assistance (i.e. hybrid engines, EHA actuators as developed onto A380, and electrical equipment such as e-taxiing, de-icing, etc.) This development will result in an increase of the electrical power by using high voltage and high gap components. The need to increase engine efficiency will also drive the use of sensors and the need for the equipment to withstand higher temperature and vibration requirements for engine contacts. Regulation impacts do not end there; flying hours over cities to curtail noise pollution and increasing electro-magnetic pulse (EMP) requirements (for both total waveform

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#### the amounts of copper wire in the average aircraft avionics system?

Smiths Interconnect is working on the development of solutions that will assist customers wanting to dramatically reduce the overall mass and complexity of an aerospace interconnect network.

We are working on highly flexible and modular high-speed interconnect solutions combining controlled impedance differential signal pairs, power pins, and discrete pins into a single connector housing to offer next generation data on demand, meeting both point to point and backplane connector requirements.

#### What experience have you had with the organisations/ clusters and continuous improvement initiatives like SC21?

In the current economic climate, companies and their customers across many segments of each industry are looking for ways to optimise the efficiency of their supply chains. Through Supply Chain 21 workshops

#### Is your company onboard with the latest More Electric Aircraft (MEA) philosophies?

Yes, we are working with the More Electric Aircraft committee in France and have recently participated in the latest More Electrical Aircraft event, where aerospace leaders are presenting their work and views regarding the next More Electrical Aircraft (2030/2040 - then 2050+). MEA is a great opportunity for us to understand the technical challenges for our customers in commercial aviation and then deploy the right strategy to support them in the mid- and long-term.

#### Finally, where do you see the biggest interconnect business challenge coming from in 2017?

Funding availability is certainly one of the big business challenges throughout 2017. In terms of MEA trends, most of the major changes with electric aircraft will take place once battery technology has evolved in the next 10 years. Today, a 90 passenger aircraft requires a 1-ton battery to operate in hybrid mode. Due to the heavy weight of the battery, the benefit in fuel savings is only applicable



requirements for low total mission energy and rise time) can be linked to the development and application of composite aircraft technology.

**Has Smiths Interconnect any thoughts on how it can reduce**

through supply chain management. Smiths Interconnect worked on the Eurofighter programme to bring innovative new approaches to the supply chain and improve the competitiveness of the avionic system supply.

Current aircraft weights only applicable to very short take-off and landings of less than 300 miles. In 10 years or more, batteries will be a third of this weight, which will make the benefit much greater to start the 'revolution'.  
**[www.smithsinterconnect.com](http://www.smithsinterconnect.com)**