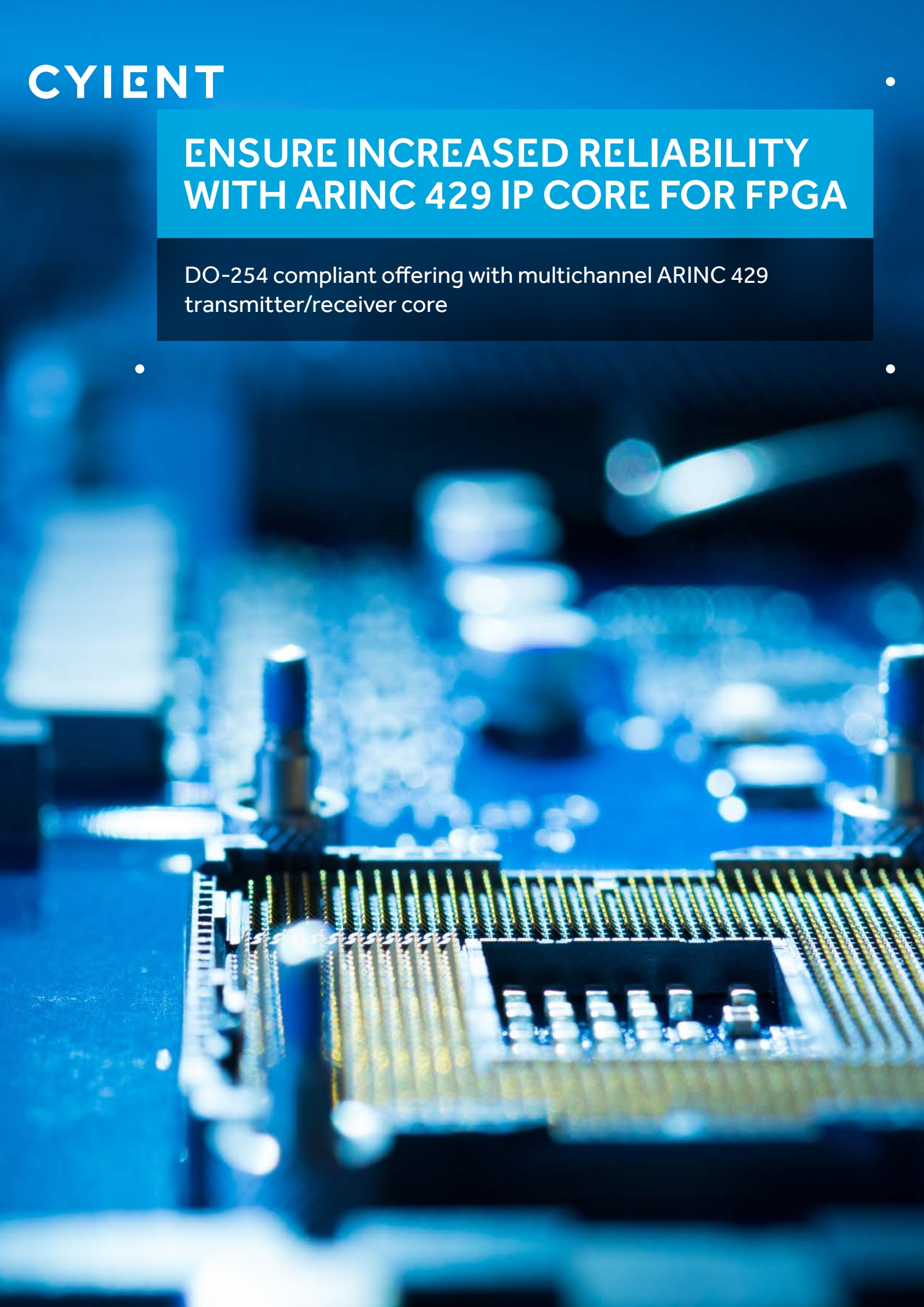
CYIENT

ENSURE INCREASED RELIABILITY WITH ARINC 429 IP CORE FOR FPGA

DO-254 compliant offering with multichannel ARINC 429 transmitter/receiver core



Overview

ARINC 429 specification defines the standard requirements for the transfer of engineering data between avionics systems on commercial aircraft supporting high speeds of up to 100 kHz as well as speeds as low as 12.5 kHz. The ARINC protocol supports more than 46 meters.

The Cyient ARINC 429 IP Core is developed for FPGA with multiple transmitters and receivers and is compliant with Design Assurance Level (DAL) A requirements. It receives data from an external microcontroller through SPI lines and transmits 32-bit data word (encoded serial data) through the ARINC line driver. ARINC429 IP Core receives serial data from the ARINC line receiver and transmits 32-bit decoded data word to an external microcontroller.

Cyient IP Core Features

- Developed according to DO-254 (DAL-A) guidelines
- Two transmitters and eight receivers with loopback mode for self -testing
- Portable to Microsemi, Intel/Altera, Lattice, or Xilinx FPGA families
- Supports standard line drivers and receivers
- Parity checking for Tx and Rx
- Programmable labels (up to eight different labels)
- Programmable label filtering and SDI check
- SPI interface to the microcontroller
- Programmable data rates for each channel: 12.5 or 100 kbps
- Detection of parity, label, SDI, and data errors

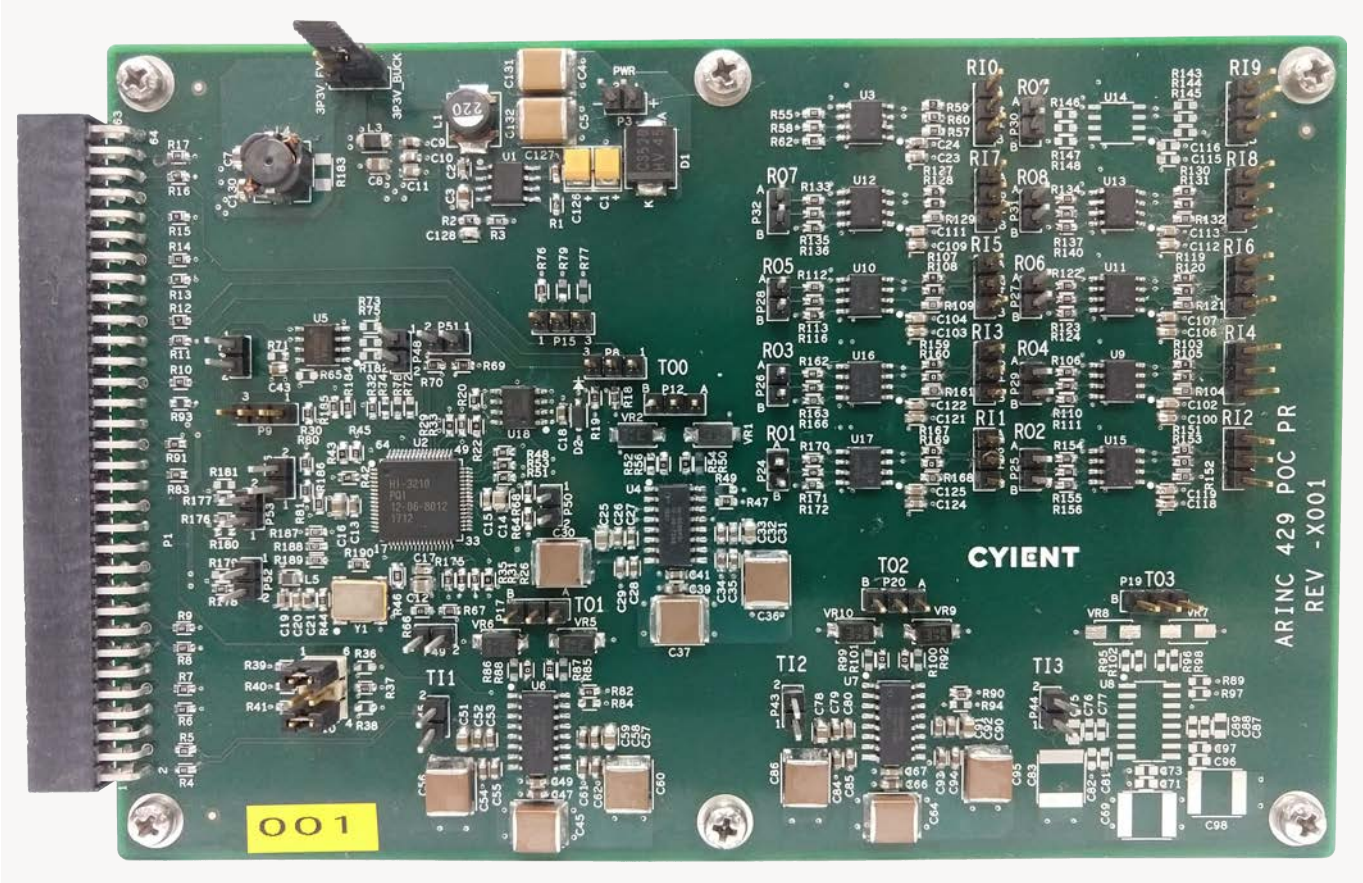


Fig. 1 | ARINC 429 Board

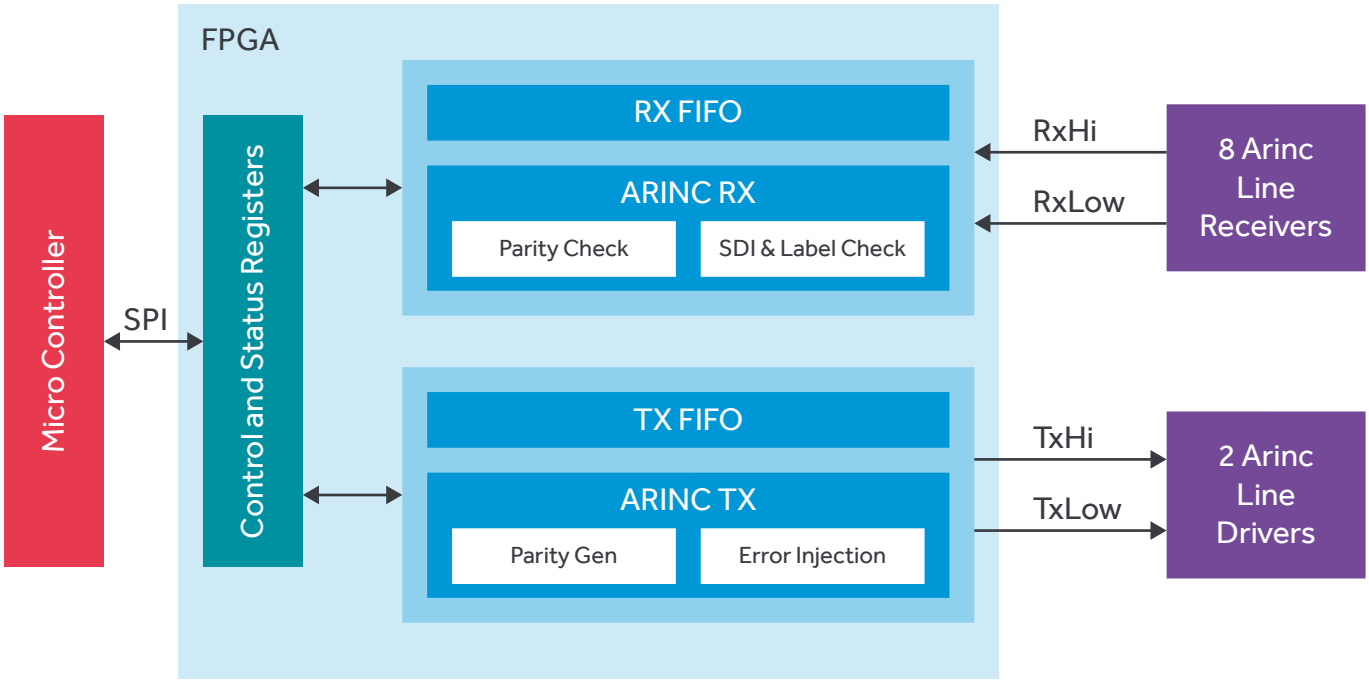


Fig. 2 | ARINC 429 block diagram

The IP core is delivered with the following:

- Requirements
- Bidirectional traceability both in design and verification
- Source Code VHDL RTL
- Test bench and test cases
- Functional and gate level simulation with respect to requirements
- DO-254 compliant documentation
- DO-254 certification data packages on request

IP Core is designed and developed with industry-leading tools including:

- Microsemi Libero SOC
- HDL designer tool
- ModelSim for verification
- Hardware evaluation board

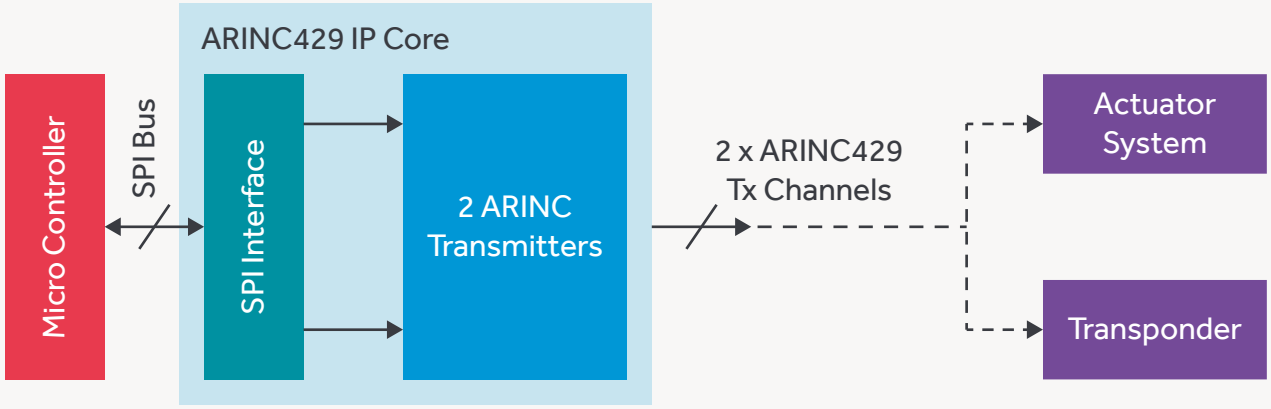
BENEFITS OF ARINC 429 FPGA IP CORE

- **Reliability:** Tested and proven on smart fusion 2 evaluation board with standard ARINC line drivers and receivers
- **Portability:** Portable to Microsemi, Intel/Altera, Lattice, or Xilinx FPGA families
- **Configurability:** Transmitters and receivers are configurable
- **Self-Checking:** Each transmitter and receiver can be looped back to self-check
- **Reusability:** RTL can be mapped to any of the FPGA technology

THE CORE IS SUITABLE FOR ANY DEVICE WITH AN ARINC 429 INTERFACE AND IS DESIGNED FOR AVIATION APPLICATIONS SUCH AS FLIGHT GUIDANCE AND NAVIGATION OR FLIGHT DATA COMMUNICATION AND RECORDING.

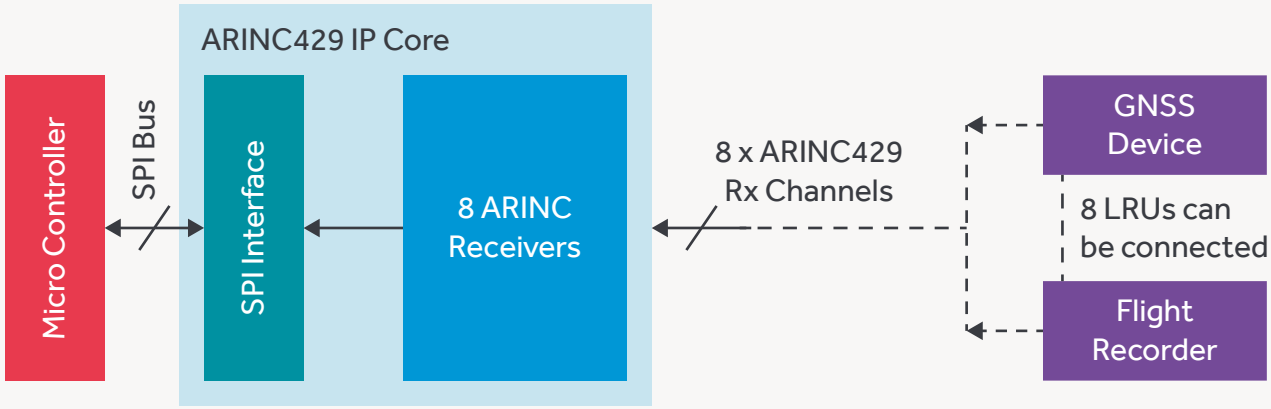
Use Case 1:

The following figure shows how the ARINC 429 IP Core is configured for transmitting ARINC data from the microcontroller to actuator and transponder system applications.



Use Case 2:

The following figure shows how the ARINC 429 IP Core is configured to receive ARINC 429 data from different LRUs such as GNSS device and flight recorder system applications.



WHY CYIENT ARINC429 IP CORE?

Cyient IP core comes with built-in Wrong Parity Injection to ensure accurate and efficient error detection. This provides increased confidence when engineers are tasked with debugging a system. Cyient IP Core is designed and developed with industry best practices and also tested and proven on standard Line Drivers and Receivers in the Market.

About Cyient

Cyient (Estd: 1991, NSE: CYIENT) provides engineering, manufacturing, geospatial, networks, digital, and operations management solutions and services to global industry leaders. We leverage the power of digital technology and advanced analytics capabilities, along with domain knowledge and technical expertise, to solve complex business problems. As a Design, Build, and Maintain partner, we take solution ownership across the value chain to help our clients focus on their core, innovate, and stay ahead of the curve.

Relationships lie at the heart of how we work. With more than 15,000 employees in 20 countries, we partner with clients to operate as part of their extended team, in ways that best suit their organization's culture and requirements. Our industry focus spans aerospace and defense, medical, telecommunications, rail transportation, semiconductor, utilities, industrial, energy, and natural resources.

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