

THE CUSTOMER

Denso Europe is a leading supplier of advanced technology, systems and components to major European automotive manufacturers.



REQUIREMENTS

To design, manufacture and supply a bespoke test unit capable of testing an air distribution unit (ADU) for the Porsche Cayenne.

RESULTS

- Reliable test equipment based on established Sorion technologies
- Optimised, fully automated test process to ensure the shortest cycle time
- Bespoke quality assurance and performance reports produced



THE CHALLENGE

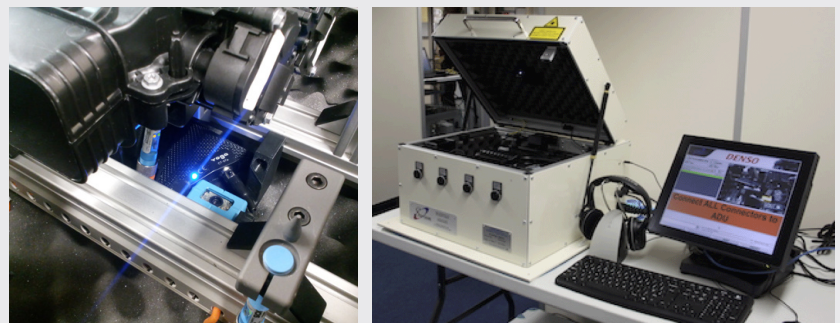
Sorion were tasked to design, build and supply **equipment capable of testing four variants of an air distribution unit (ADU)** for the Porsche Cayenne: left and right hand versions of two-zone and four-zone air distribution.

The equipment was to configure, measure and verify:

- The movement of flaps to control how the air is distributed
- Sound levels and abnormal sound
- Possible defects in the unit's physical shape

The system had to be rugged enough to test hundreds of units a day and outlast the unit's estimated 5 year production lifecycle.

Overall traceability of the each part was also part of the brief as well as statistical data analysis based upon specific manufacturing requirements.



Self contained test equipment built for Denso Europe

THE APPROACH

Sorion's experience in the Automotive Industry ensured that we were able to ask the right questions and design a system to achieve the best performance in terms of reliability, small space requirements and speed, giving the shortest cycle time possible.

Utilising our latest in-house 3D Printer and CAD software allowed us to quickly produce development and trial parts before taking the finalised component designs to machined parts.

We had to ensure the test equipment **recognised which variant of the unit** was being tested in order to run the correct test and that the automated test did not commence until the unit was correctly seated. We also had to ensure that the unit was securely enclosed during the test to prevent the test cycle being mistakenly interrupted.

The customer's component changed during the project, but we had the flexibility and the expertise to be able to quickly and efficiently adapt.

THE SOLUTION

The DENSO project was completed within four months and was made up of a standard **Sorion Electrical Test System connected to a bespoke fixture in a soundproof enclosure** that incorporated:

- Two barcode readers
- Two triangulation distance measurement lasers
- Two microphones
- Five capacitive sensors
- Three rugged connectors with switch probes

Each **test cycle lasts between two and three** minutes depending on which variant is being tested and the system both controls and communicates to the ADU using the LIN protocol, issuing movement requests and measuring flap positions.

The tester is configured from a central editing system, using test scripts to interpret data recipes from configuration tables. All scripts were developed in English before being translated to the end user language.

Once the test is complete the operator is informed whether the unit has 'passed' or 'failed', and in case of a failure the reasons are also displayed on the screen. The system manages local re-work storage and interfaces to the DENSO production line.

Sorion' **Sextans test software manages the test process** and records the results in **Orion™**, our powerful web based database, allowing for bespoke **quality assurance and performance reports** to be produced.

The combination of rapid prototyping, standard test racks and our flexible Sextans test software allowed us to have a functional test prototype within weeks for customer review and managed to stay ahead of the changing requirements throughout the project.

ABOUT SORION

Founded in 1990 and with equipment installed and operated by major OEMs and Tier 1 suppliers around the globe, Sorion Electronics has an established reputation for innovation, quality and reliability.

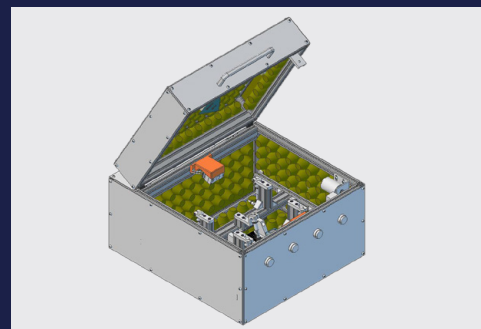
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- End of Line Test Systems
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- Electronic Product Design and Development

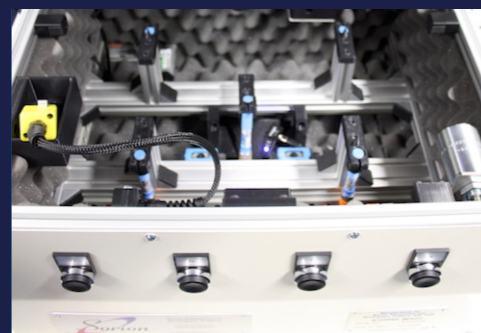


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THE SORION SOLUTION



3D CAD design



Fixture built to test the ADU



Sextans controls the test process



Orion™ Traceability and Reporting

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