

THE CUSTOMER

Lear Corporation - A leading supplier of automotive seating and electrical distribution systems, supplying most major car makers in the world



REQUIREMENTS

Design, manufacture and installation of two Force Application Machines (FAM) for calibrating Lear's new seats for the Jaguar XE

RESULTS

- High-precision seat calibration to increase passenger safety and reduce risks of product recalls
- Full traceability of each seat
- Integration with Lear's production software

A Force Application Machine (FAM) performs an end-of-line calibration test on the safety relevant occupant classification system components of a car passenger seat by moving the adjustable elements of the seat and by applying a predetermined load pressure via a Seat Butt-Form.



Force Application Machines at Lear Corporation

THE CHALLENGE

The customer instructed us to design, build and install two Force Application Machines (FAM) for calibrating their new seats for the Jaguar XE model.

The legal requirements of Passive Occupant Detection Systems (PODS) and the complexity of modern seat design requires **manufacturers to carry out individual seat calibrations while ensuring full traceability of each seat.** The PODS weight-sensing system enables vehicle manufacturers to improve the effectiveness of airbag protection and reduce the potential for injury through smart deployment or suppression of the passenger's airbag.

We had to design and build an on-line machine to be integrated into the Lear assembly track, be **compliant with Delphi's PODS system** and meet the North American Seat Specifications.

THE SOLUTION

Working closely with Lear we were able to design a FAM that connected to Lear's production line and which tested a pair of left and right seats simultaneously.

Once the seats are introduced into the FAM via a conveyor, their presence is detected and the FAM operator is instructed to connect the test harnesses to the seat connectors. The FAM then prompts the operator to initiate the calibration test cycle and commences a laser measurement check of the seat position for correctness before running the test.

The test cycle deploys a Seat-Butt-Form under load onto the seat to pre-determined calibrated forces which ensures that the seat can detect whether an adult or child has sat in the seat or whether an object / parcel has been placed onto the seat.

The test cycle also tests that the seat is working correctly by detecting the presence of a seat belt system. This information is sent to the car's restraints ECU to sound an alarm if the occupant hasn't buckled their seatbelt and to know if an airbag is required to be deployed and at what charge in the event of a collision.

The total **calibration cycle takes less than 3 minutes** and it is managed by Sorion' **Sextans test software**. Running on a touchscreen PC, Sextans controls the test and calibration process, data acquisition and result management.

The **results of each test cycle are communicated back to the Sorion Orion™ database**, which via a web browser, allows for bespoke quality assurance and performance reports to be produced.

For traceability purposes, the **Orion™ database is connected with the LEAR production software** and is able to transmit all seat build information along with the test results of each component element of the seat.

Delivery and installation of the two FAMs into the LEAR production facility involved utilising a specialist transport and lifting company and working with several other contractors and departments within LEAR.

Advanced and careful planning ensured the installation ran seamlessly and was completed in under a week and a total 20 weeks to complete from initial discussions to final installation.

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.

Your Partner for:

- Guided Assembly Process Control
- End of Line Test Systems
- Ruggedised Electrical Connectors and Harnesses
- Quality and Traceability Reporting
- Electronic Product Design and Development



Sorion Electronics Ltd
Magreal Industrial Estate
Freeth Street, Ladywood
Birmingham, B16 0QZ

THE SORION SOLUTION



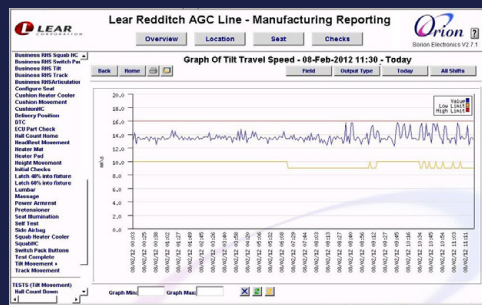
Force Application Machine



FAMs connected to the production line at Lear



Sextans manages the test process



Orion™ Traceability and Reporting

Tel: 0121 454 8966
Email: sales@sorion.co.uk
www.sorion.co.uk

