

## NO ROOM FOR ERROR: ZERO DEFECT THROUGH FULLY AUTOMATED PRODUCTION

**There is no tolerance for production defects in the manufacturing of safety-critical components. Voltaira demonstrates its ability to comply with the most demanding quality standards by setting up a completely automated production line for a key vehicle component. Additionally, our extensive co-development capabilities supported the development of the product in accordance with the customer's requirements.**

Measuring the force applied to the steering wheel, the steering torque sensor is a critical part of the power steering system and is indispensable for ensuring vehicle safety. In 2021, Voltaira was approached by a leading Tier 1 automotive supplier, who is one of its strategic development partners and long-term customers. The supplier requested to co-develop a steering torque sensor harness for its electric power steering system. In fact, the product was more than just a harness: it had to integrate the sensor, a connector, and a printed circuit board assembly (PCBA)—all according to the customer's specifications.

Being a safety-critical product, absolute reliability, thus outstanding quality during production were base requirements. The project also demanded expertise in electronics and electromechanical components, with strict customer requirements for the plastic parts. All the above coupled with the strict time and budget limitations made the project a true challenge that Voltaira nevertheless took on with success.

### COLLABORATIVE EFFORT AND IN-HOUSE AUTOMATION

Our engineers leveraged their long experience in collaborative development to work together with the customer's project team, and to seamlessly integrate the sensor and the PCBA into the wiring harness.

To meet the stringent quality requirements, Voltaira's in-house automation experts, together with a devoted partner developed a dedicated, fully automated production line, leaving no room for manual error. The line, which also encompasses the Hall sensor



### CHALLENGES

- Need for a tailored, integrated solution
- Adherence to strict quality standards
- Tight time constraints



### SOLUTIONS

- Fully customized automated assembly line
- Custom integrated solution fully aligned with customer's needs
- End-to-end project management services



### RESULTS

- Timely project delivery, overcoming tight deadlines
- High quality ensured maximum reliability and safety



calibration during the final test, operates in a clean room environment with strict controls for Electromagnetic Compatibility (EMC) and Electrostatic Discharge (ESD). The assembly process employs advanced technologies such as laser soldering with 3D optical inspection and vacuum potting. These precise techniques are integral to meet the high-quality standards required for the product's reliable performance, while they also underscore Voltaira's deep expertise in automation and production.

#### HIGH-VOLUME AUTOMATED PRODUCTION EXPERTISE

Voltaira successfully co-developed an integrated safety-critical component. This achievement is the result of our deep understanding of customer requirements and our joint-development competencies, which compelled more than 60 companies to choose Voltaira as their preferred strategic development partner.

Our in-house automation team had a vital role in delivering the optimized manufacturing line with an annual capacity of 1 million highest-quality parts. Voltaira places a strong emphasis on production automation and production process development, ensuring both cost optimization and exceptional quality. Additionally, our ability to design and produce manufacturing equipment in-house further improves the

Voltaira established the state-of-the-art, custom manufacturing line within just 18 months, maintaining all deadlines. The quick delivery of this cost-optimized industrialization solution was achieved by leveraging our expertise in managing complex, cross-departmental projects.

flexibility and efficiency of our industrialization system.

With global operations spanning 40+ locations across 17 countries and strong local expertise, Voltaira remains a trusted partner for leading automotive suppliers. We consistently deliver safety-critical components at scale while maintaining the most demanding quality standards.

## SUCCESS STORY

1M

### ANNUAL CAPACITY

With the highest-quality manufacturing line



\*Illustrative (top) and Voltaira product images