AUTOMOTIVE

ALL-IN-ONE COMPRESSOR VALIDATION TESTER

ABOUT THE CUSTOMER:

Our customer is a worldwide transportation Tier 1 leader, prioritizing safety & environmental standards. With their developed technologies, they have improved the efficiency, connectivity and reliability of commercial vehicles on a global basis. They nurture a culture of excellence in execution and are committed to delivering only the highest quality to their customers across the globe.

THE CHALLENGE

With all the varying mechanics running from bumper to bumper through any vehicle, car manufacturers rely heavily on their Tier 1 and Tier 2 suppliers to be the best at what they do. Our client is a leading global supplier for brakes, servicing multiple means of transport. They tasked Averna with designing one solution for inline validation of a family of air processing units (APUs). This all-inclusive tester needed to:

- Perform all required tests and validations for 20 different variations through the product family line quickly and efficiently.
- Take up minimal production floor space.
- Provide access to test results using Averna's custom software.
- Provide fast onsite post-delivery support at multiple locations.

Our client was unable to find a provider equipped to deliver a single test station to meet all these requirements.

RESULTS

THIS INITIAL PROJECT BUILT THE FOUNDATION OF A LONG-STANDING RELATIONSHIP WITH OUR CLIENT. IT WAS THEIR PREFERENCE TO BE INVOLVED IN ALL STAGES OF THE TESTER'S DEVELOPMENT AND TO WORK CLOSELY WITH AVERNA'S TEAM. THIS ALLIANCE CONTINUES FOR ONGOING OPTIMIZATION AS THEIR PRODUCT LINE GROWS AND EXPANDS. THE STATION HAS BEEN **ADAPTED FOR DIFFERENT VARIATIONS OF THE UUT** AND HAS BEEN **DEPLOYED ACROSS THE WORLD** AT OUR CUSTOMER'S DIFFERENT SITES. AVERNA'S FLEXIBILITY IN THE MANNER WE ENGAGE AND INCLUDE THE CUSTOMER'S VISION, AND OUR RESPONSIVENESS TO THEIR GROWING NEEDS AND SUPPORT REQUIREMENTS HAS BUILT A SOLID FOUNDATION THAT ALLOWS OUR CLIENT TO DISTRIBUTE THEIR OFFERING TO OEMS WITH CONFIDENCE.

Averna
Powered by SPHEREA

THE REAL INNOVATORS IN THE **AUTOMOTIVE INDUSTRY**

Technology is advancing quickly and cars are becoming more equipped with additional devices. Yet, as technology evolves, the core of every vehicle remains the same. The mechanics of the steering, the power of acceleration and the security of the brakes have the biggest impact on the people surrounding it. It is the suppliers of these parts that are managing the greatest innovations in the automotive field, delivering safety to the original equipment manufacturer's (OEM) customer base and brand.

THE AVERNA SOLUTION

The unit under test (UUT) is a multi-functional air processor. It dries, cleans and distributes compressed air from the compressor to a truck's braking circuits. It combines an air dryer and a multi-circuit protection valve into one integrated unit. This simplifies the overall braking system while supporting safe and reliable operation.

The processor includes a tire inflation connector, a safety valve, and a multi-circuit protection valve with two integrated check valves and either one or two optional pressure limiting valves. Air dryer regeneration varies by model, using either system air or a dedicated purge tank. For enhanced safety, an optional integrated dual-pressure sensor continuously monitors supply pressure in the service brake circuits. Every confiuguration is fully tested and validated prior to delivery to ensure reliable, consistent performance.

Working closely with the product designers, Averna implemented a first line of test stations. This would become a long-standing relationship with many replications and enhancements to follow as the products continued to evolve. The end result of the initial test station consists of a freestanding solution, incorporated into our client's production line.

To begin validation, the operator must define the parameters and expected values. Once complete, **the UUT is placed in the test station and the operator may walk away**. Powered by LabVIEW, the solution uses CAN communication between the engine control unit (ECU) internal sensors to perform all required validations which include:

- Providing measurements of the slopes from a rise or drop in pressure.
- Measuring the ports' pressure and tightening when required.
- Measuring the dynamic differences of distinct ports through varying conditions.
- Ensuring alignment of each valve is correct and adjusting when required.
- Actuating the valves.
- Clearing the Diagnostic Trouble Codes (DTC) from the ECU after the tests are performed to ensure products are released without errors which may develop during tests and adjustments.
- Reading and managing internal pressure sensor results using external reference sensors.
- Initiating internal pressure sensor procedures using the universal data system (UDS) protocol.

A fully completed cycle is **performed in 20 minutes, automatically storing results** in an external Oracle database. The station is equipped with line **traceability to control and validate the product flow.**

Compared to individual valves, the APU offers the benefit of being compact which requires less space and is both more cost effective and easier to install.

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