

MORPHEE and ASAM ACI: the right team for calibration tests

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I Summary

Challenge: In a test facility where an automated calibration system (ACS) is already installed, one would like the freedom to choose the automation system (Ausy) one prefers without using a new ACS.

Solution: The ASAM ACI standard, implemented in the new automation system MORPHEE 2 from D2T is the right solution, already used in many test beds.

Key Benefits: Communication with ASAM ACI V1.2 is robust and reliable. It is a time saving solution, as the commissioning time is reduced.

II Situation

It is often considered that when you use an ACS, you need an automation system from the same brand. However, there are many different suppliers for both systems. In 1997, the ASAM organisation decided to propose a standard which permits easy communication between the Ausy and the ACS called ASAM ACI. This was a key period, as ECU calibration became a very important topic in the testing facilities at that time. Several companies worked on this project and D2T was a member of this group, as a main contributor for the automation system.

III Challenges

The challenge to be faced was to define the role that each system will play and how they will interact together. While the calibration system needs to apply complex calibration methodologies such as DOE, the automation system is the central point of control of the test bed, where all information is exchanged. Should the ACS be integrated in the Automation System? How do they have to communicate? The main goals were first to be reliable and robust, but also to keep the ability for an OEM to choose the best solution both for the Ausy and for the ACS. In case of failure, it was necessary to find as fast as possible where the problem came from.

IV Success strategy

The best solution defined in the working group was to have a clear role for each system: the ACS will be the master and the Ausy, the slave. The communication protocol between ACS and Ausy was defined in a clear way (Figure 1). MORPHEE, the D2T automation system, received the instructions from the ACS and kept the responsibility of the management of the test bench and the securities methodologies. A test was implemented in 1999 between MORPHEE and some ACS of the markets, and it was proven fully successful. Several prestigious customers, such as BMW and SIEMENS decided to implement this solution with MORPHEE and another ACS, as the best one chosen for their testing facility. From this time, D2T continues to keep its automation system compliant with ASAM ACI. Now, its new automation system MORPHEE 2 is compliant with the new ASAM ACI V1.2.

V Business benefits

ASAM ACI is a real benefit for OEMs, as it warrants the compatibility of their automation system and calibration system. They remain free to choose the solution they consider as the best. In case of failure, the reason is determined easily, and the solution is found faster. After 5 years, it has been proven as a reliable solution.

