



Innovative BTE solution optimizes testing for train car data relay systems

Industry: Transport

Products Used

NI PCI hardware, NI LabVIEW, NI TestStand

Rheinmetall, a technology group for the automotive and defense industries, is a leading manufacturer of communication systems for rail passenger vehicles in mass transit. The company's train cars use MDL (monitoring and diagnostic) systems to collect, process, and report subsystem data to crew and maintenance personnel. The unimpeded flow of information between MDLs in different cars is essential, as is data relay with the TOD (train operator display) and PEI (passenger emergency intercom) systems.

The Challenge:

The client won a contract to provide key components for a subway car project. They needed a solution to perform functional testing and real-time monitoring of MDL subsystems through the different stages of engineering and production, prior to customer delivery. This required a mission-critical, compact BTE (bench test equipment) solution that could run on multiple UUTs (units under test) in parallel, testing the programming shelf as a whole or the individual circuit cards composing the shelf.

The solution had to be flexible, easy to use for all crew and maintenance personnel, and fully integrated with the Proligent™ test engineering platform by Averna. The client required a solution that was high-performing, mobile, and offered superior capabilities at a low cost. They were looking for a test engineering provider that could ensure full integration with existing systems and that could guarantee consistently shortened time-to-quality.

The solution:

Averna delivered a turnkey MDS (monitoring and diagnostic system) BTE solution based on NI PCI hardware, one that conforms meticulously to design criteria. The MDS BTE solution empowers Rheinmetall's engineering and production departments to perform low-maintenance, functional system tests and qualification on all data relay and display systems.

The MDS BTE solution includes hardware and software tools for programming firmware, for conducting performances tests on subsystems and boards, and for system monitoring during environmental cycling tests and qualification. A salient feature is the solution's portability as a single, wheel-mounted cabinet with full mobility, which allows the client

to maximize its use. The solution also provides basic manual functionalities for test engineering validation and debugging.

Superior features:

Averna's MDS BTE solution has full interface and is configurable to a wide range of other hardware and software. The small footprint of the single nineteen-inch rack and embedded cable harnesses ensures easy transport to various environments, such as the engineering lab, the environmental cycling room, and customer sites for on-site qualification.

The core of this architecture is built on PCI, a rugged PC-based platform with specialized synchronization buses and key software features. Communication ports such as GPIB, USB, Serial, and Ethernet control other

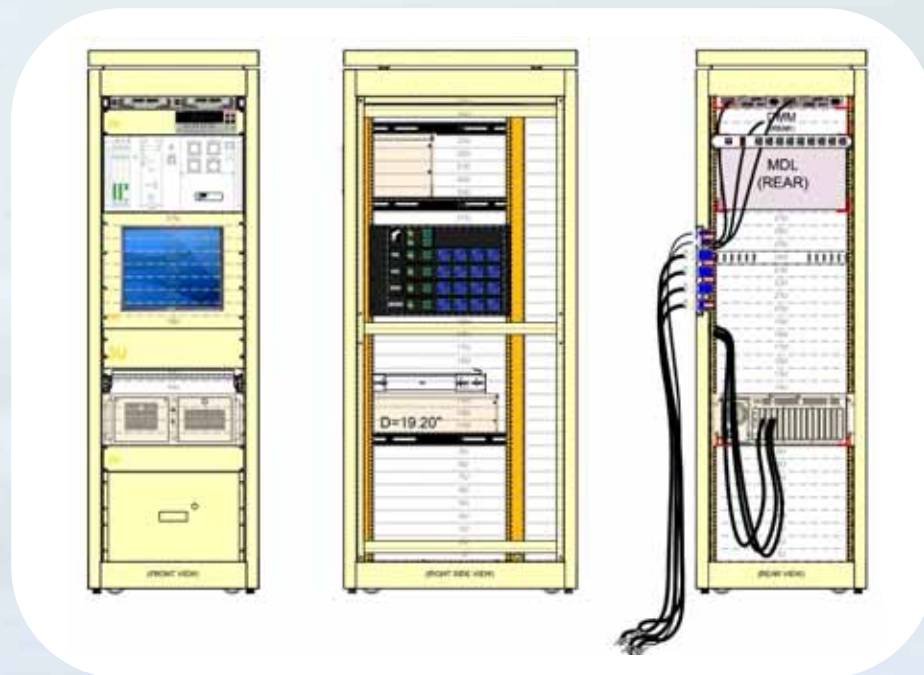


Figure 1 | MDS BTE Architecture



period. The MDS BTE solution can run monitoring tests on multiple UUTs simultaneously in order to manage environmental, cycling, and burn-in data. Manual tests consist of simplified software utilities that assist engineering departments in validation and debugging. The solution includes an easily accessible front panel for controlling various stimuli and internal UUT read-back values.

Conclusion:

Averna created and delivered a mission-critical, compact MDS BTE solution that empowers an industry-leading manufacturer to run functional testing on its data relay and display systems. The solution was delivered on time and within budget, and has been proven to be robust and dynamic, meeting and exceeding system requirements. Courtesy of Averna's engineering innovation, the customer has maximized their test investment and has accelerated product time-to-quality.

About Averna

The Test Engineering Company

Averna is uniquely structured to give high-tech electronics OEMs full product lifecycle support, from design to manufacturing. Averna provides solutions that accelerate time-to-quality by boosting engineer and test system efficiency and the impact they have on new product design and introduction into production. Averna also supplies on-demand services for designing, building, deploying, and maintaining test systems worldwide. Averna is one of the top four test engineering providers in North America and a Select Alliance Partner of National Instruments.

About the Proligent™ test engineering platform

For engineers designing test systems for communications and high-tech equipment, and who lack the time, budget, or training to develop an in-house platform, Proligent™ is a test management solution that delivers best practices in one ready-to-use platform. Unlike test executives and data management tools, Proligent™ incorporates everything you need short of your own measurement software.

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