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HIL Test Setup with VPC Material (Power Industry)

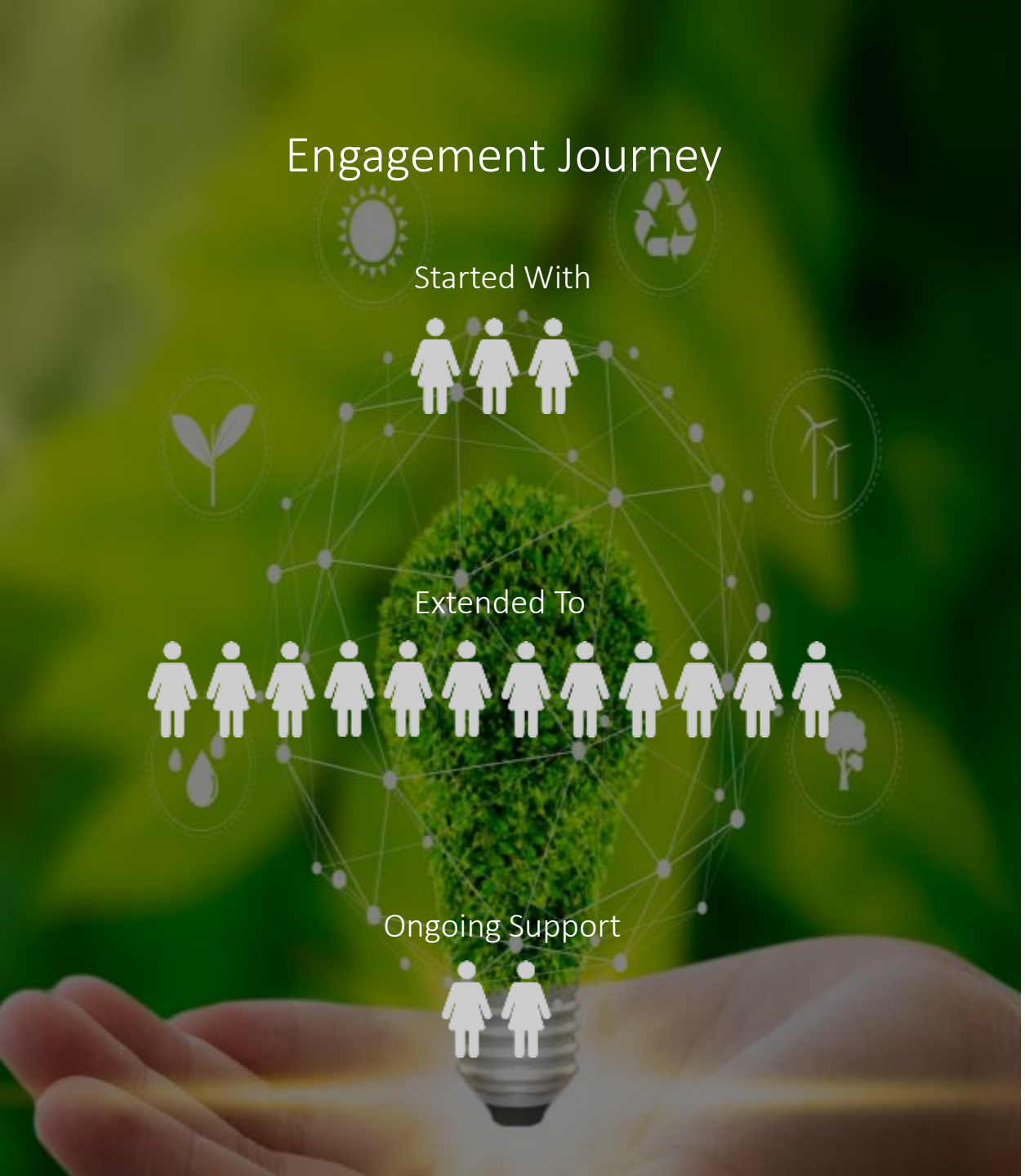
Client Background

Client is an intelligent power management company dedicated to improving the quality of life and protecting the environment for people everywhere. They operate through various segments, including electrical products, electrical systems and services, aerospace, vehicle, and most recently eMobility.

This project involves the engineering, design, manufacturing, and supply of an Automated Test Equipment (ATE) system, incorporating Hardware-in-the-Loop (HIL) testing capabilities using VPC material. The solution leverages the NI PXI platform, a robust system combining high-performance hardware and comprehensive software, to enhance the testing and development processes for industrial and automotive applications. The project scope includes the supply of various modules, controllers, and power supplies, along with installation, commissioning, and training services.

Challenge

The primary challenge was to develop an automated test facility capable of handling the complexities of testing different industrial and automotive components. The client needed a system that could provide precise control, synchronization, and data acquisition capabilities. Additionally, there was a requirement for seamless integration of various modules and controllers, ensuring reliable and efficient testing processes. The solution also needed to support future scalability and adaptability to evolving testing needs.



Solution

To address these challenges, we designed and supplied a comprehensive ATE system based on the NI PXI platform. The solution included key components such as the PXIe-1085 chassis, PXIe-8880 quad-core processor, and various input/output modules. This setup provided the necessary communication buses, synchronization features, and power capabilities to meet the client's requirements.

The system also incorporated advanced modules like the PXIe-6363 for data acquisition, PXIe-8510/6 for vehicle multiprotocol interface, and PXIe-6624 for counter/timer tasks. These modules ensured accurate and high-speed data processing, essential for HIL simulation and other complex testing scenarios. Additionally, programmable power supplies and relay modules were included to handle diverse testing needs.

Solution

Furthermore, the solution featured LabVIEW, a graphical programming platform, to provide an integrated environment for system design and testing. LabVIEW enabled the client to develop and deploy control applications quickly, ensuring efficient operation and future scalability.

Benefits

1. Enhanced Testing Capabilities: The ATE system provided precise control, synchronization, and high-speed data acquisition, improving the overall testing process's accuracy and reliability.

2. Scalability and Flexibility: The modular design of the PXI platform allowed for easy integration of additional modules and future expansions, ensuring long-term adaptability to evolving testing needs.

3. Efficient Operation: The use of LabVIEW streamlined the development and deployment of control applications, reducing setup time and increasing operational efficiency.

4. Comprehensive Support: The project included installation, commissioning, and training services, ensuring smooth implementation and knowledge transfer to the client's team.

Benefits against alternatives

1. Integrated Platform: The NI PXI platform combined multiple functionalities into a single, cohesive system, reducing the need for disparate components and ensuring seamless operation.

2. High Performance: The system's high-speed data processing capabilities and advanced synchronization features outperformed many conventional testing setups, delivering superior accuracy and efficiency.

3. Customizability: The modular nature of the PXI platform allowed for tailored configurations to meet specific testing requirements, unlike rigid, off-the-shelf solutions.

4. Future-Proofing: The ability to easily add or upgrade modules provided a future-proof solution, enabling the client to adapt to new testing challenges without overhauling the entire system.

Value Proposition

Our ATE system, built on the NI PXI platform, offered a cutting-edge solution for the client's automated testing needs. By providing a high-performance, scalable, and integrated testing environment, we enabled the client to achieve precise and efficient testing processes. The comprehensive support services ensured a smooth transition and operational success. This project not only met the immediate requirements but also laid a strong foundation for future advancements, making it a valuable investment for the client's long-term goals.