Emerging Technologies

CALIBRATION PROGRAMMING AND TEST SYSTEM

Brief Description:

Emerging Technologies, LLC. was called upon to develop a system to automatically, gather a subset of data, mathematically determine the remaining set of data, generate microcontroller source code based on the data, assemble the code, program the microcontroller, and test the programmed device.

Each device under test is a populated PCB with unique characteristics. Variations in specification of a specific combination of components on the PCB need to be accounted for in calibration to obtain the desired overall accuracy of the final product.

Emerging Technologies brought together custom designed equipment and software to complete the solution in an unusually short period of time.

Custom communications interfaces (both software and hardware) were required to bring this system together. The system also required the development of a custom microcontroller based interface.

Software and software communication utilized MS Excel 2000 with VBA, MS Visual Basic 6.0, NI LabView 6I, Microchip MPASM & PROCMD. These applications communicate via DDE, Windows Sockets, and custom disk file sharing. API calls were instrumental in timing and handling of the microcontroller hex file assembly and programming process.

Hardware communication utilized GPIB, asynchronous serial RS232, synchronous proprietary comm., and discrete I/O.

This is a complex process made simple for the user through creative design.

Customer Benefit:

The customer used this programming and test system to complete the design of the product in a shorter period of time. This system became the basis for multiple production programming and test systems for the product line.

Unique PCBs could be efficiently calibrated, programmed, and tested by a single operator in a short period of time.

Flexibility in design of the system proved to be its greatest asset. Many user configurable parameters allowed the user of the system to aid in troubleshooting and development of the product.

ET Responsibilities:
- ✓ Functional Specification Generation
- ✓ Design / Engineering
- ✓ Fabrication
- ✓ Programming – Software
- ✓ Programming – Firmware
- ✓ Field Installation
- ✓ On-Site Commissioning
- ✓ Post Commissioning Support
- ✓ Other – Concept development

Technologies:
- Embedded Computers
- ✓ Microcontrollers
- ✓ Visual Software
- ✓ Control Software
- ✓ Data Acquisition
- ✓ Computer Based Control
- ✓ Communications
- ✓ System Integration
- ✓ Other – Hard-wired Logic

Customer Category:
- OEM
- ✓ Industrial Manufacturer
- Custom Equipment
- Utility
- R&D