

## Case Study: IEC 60870-5-101 Protocol Slave Driver for PLC 90-30

<b>Provider Name</b>	:	KALKI Communication Technologies (P) Ltd.
<b>Client Name</b>	:	Fortune 100 Automation Major
<b>Project Title</b>	:	IEC 60870-5-101 Slave Driver for GE 90-30 PLC

### The Problem

The client, a Major OEM in the PLC and SCADA space, required to Implement IEC 60870-5-101 Slave capability to GE 90-30 PLC's. This involved the implementation of standards based ANSI C IEC 60870-5-101 Slave Source Code Library on their programmable co-processor module, as well as development of IEC 60870-5-101 Driver configuration utility for the PLC.

### The Solution

The stated driver was developed using the following Resources:

1. PLC Programmable Co-Processor Module for GE 90-30 PLC
2. Documentation of Co-Processor Module and Programming Environment
3. IEC 60870-5-101 specifications and PLC Back-plane communication API's
4. Standard Device profile for the Slave

The said PLC provided a programmable co-processor module. This co-processor module ran a task-switching real-time kernel, as well as API's for back-plane communication with PLC CPU. The IEC 60870-5-101 Slave implementation was carried out using the ANSI C IEC 60870-5-101 Slave Source Code Library from M/S Triangle Microworks Inc., The library and its associated Macro's were compiled onto the target platform. The interface definitions were modified to achieve capability of accessing the Controller data using back-plane communication and time stamping and event detection were carried out at the Co-Processor module. The driver was designed to support multiple driver-redundancy using multiple co-processor modules.

A Configuration Utility was developed, which would enable the end-users and OEM's to configure the IEC 60870-5-101 Driver. This utility is an application software, with GUI's for configuring data types, point ID's, transmission speeds, redundancy options etc., This utility could be used by the users to modify the IEC 60870-5-101 Slave Driver, during Acceptance Testing, for support of different IEC 60870-5-101 Masters as well as for use at site.

The IEC 60870-5-101 Slave Implementation was Validated using IEC 60870-5-101 Test Toolkit from M/S Triangle Microworks Inc., USA. The slave implementation underwent further inter-operability testing and Quality Validation by the Client's quality department.

## Case Study: IEC 60870-5-101 Protocol Slave Driver for PLC 90-30

### Tools Used:

- Microsoft C Compiler
- Proprietary Real Time Task Switching Kernel
- IEC 60870-5-101 ANSI C Source Code Library from M/S Triangle Microworks Inc.
- Embedded Processor Development and Debugging Environment
- Test Harness IEC 60870-5-101 Test Simulator
- VC++ based Configuration Utility