

## Case Study: Toshiba DCS Integration

**Provider Name** : KALKI Communication Technologies (P) Ltd.

**Client Name** : Indian Steel Major

**Project Title** : Toshiba DCS and AB PLC Integration

### The Problem

The client, a major steel producer in India, has 5 blast furnaces controlled by Toshiba DCS system, and Rockwell Allen Bradley PLC System. The project required the integration of the Toshiba DCS data as well as the AB PLC Data onto the VAX VMS System for data analysis and performance calculation.

### The Solution

The stated solution was developed using the following resources:

1. C Based Protocol Stack to implement bi-directional data transfer between the VAX VMS System and the DCS and PLC's.
2. VMS MAILBOX System Services to integrate the data with the Analysis software on VAX VMS System.

The Customers Blast Furnace Analysis and Optimization software, supplied by Rauuturki Finland, runs on VAX VMS 5.5. This software need to communicate with the DCS and PLC systems controlling the Blast Furnace, to get the dynamic process values, run the analysis and download the best fit operating parameters for the next blast furnace charge cycle.

To achieve this Kalki, implemented a serial protocol, and interface service routine that would communicate with the DCS as well as the PLC systems, and retrieve the necessary process parameters required by the software. This data retrieval is carried out using the specific serial half-duplex protocol, based on HDLC standards. The protocol master implemented on the VMS system, shall schedule data reads on the DCS and the PLC's cyclically as well as support event data. These data is then formatted, properly scaled and written to the Analysis software using the VAX VMS MAILBOX system services.

### Tools Used:

1. Toshiba DCS Computer Adapter Unit Protocol Details (CAU)
2. Allen Bradley 1771 KF Module RS-232 Protocol Specifications
3. VAX VMS System Interface and C Programming Information