

# SCADA SOLUTIONS

## Supervisory Control And Data Acquisition



& Data Management



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# SCADA SOLUTIONS

Close association with different kind of enterprises, exposed Indus to the needs for communicating with different kinds of instruments/machines/controllers like Distributed Control Systems (DCS), Programmable Logical Controllers (PLC), Weighing Systems, Smart Card Readers, Proximity Readers, Biometric Readers, Hand Held Devices etc., that are deployed at their plants. Further there found many needs for extraction, storage and analysis of the data from these devices. However, the objectives of these need based projects varied quite substantially from customer to customer and so was the project scope. But the basic functionalities in all these projects can be summarized as: data extraction from the devices, store the data, generate process alerts, provide on line analysis, provide historic analysis and some times provide data back to the devices. Indus has served around 20 clients in this area in the Indian market and is equipped with considerable knowledge to partner with clients around the globe to give a shape to the objectives of the SCADA projects of its customers.

Indus has worked with customers in varied business segments like: Cement, Metals, Fiber, Plastics, Ports, Pharmaceuticals etc., This document captures one example application for each of these business segments along with the benefits to the customer from those applications. However, there can be the need for entirely different applications in a business segment from the one listed in this document. As such, these applications can only be taken as reference points to understand how useful the instrument data extraction and its management can be for an industry can be.

## Case Study for Cement Industry

The customer, a large scale cement manufacturer wanted to keep track on the movement of the trucks coming in with raw materials and the trucks going out with cement, even while automating the extraction of weight particulars of these trucks at different stations within the plant. For this Indus developed an application to read the data from magnetic swap card readers, provide the data to signaling devices and extract the weight from the weighing systems and to pass on the data to SAP ERP in CSV format.



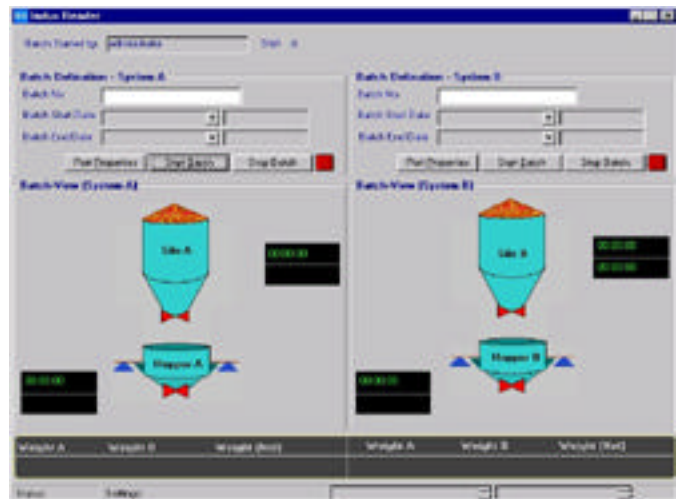
### Benefits to Customer

- Could track the time taken by each truck to move from one station to another station within the plant and hence could develop the statistics for optimum levels for the truck drivers.
- Could automate and unman the weighing stations.
- Could eliminate the chances of vehicles leaving the plant without weighing.
- Could eliminate the chances of pilferage in material weighing through automation.
- Increased load movement due to decreased wait time for vehicles at weigh stations.
- Data from weighing system could be stored and analyzed.
- Data could be integrated with SAP ERP.

## Case Study for Fiber Industry

The customer, one of the worlds largest and most cost efficient VSF producers, believes in quality and the best practices to adhere to achieve the quality. As part of this objective, the client needed a tool to monitor the readings of different parameters from the plant reactor through the DCS.

Indus developed system has to capture the data of 300 tags/parameters from the DCS and further the alarms generated, if any for those tags. Subsequently the system also has to capture the action taken report for the respective alarms. The system has to send email and SMS message instantly to the concerned staff at the instance of the occurrence of the alarms. The system has to generate statistical analysis on the type, frequency of alerts and the lead-time taken in taking the corrective or preventive actions. System has to give different kinds of analysis for the trends in those 300 tags at a given time.



### Benefits to Customer

- Data of 300 tags/parameters and alarms could be retained for historic analysis, which proved to be of great value for future operations.
- Cause of alarms could be analyzed, by looking at the values of different parameters/tags just before the generation of an alarm and also by looking at the past data of the alarms.
- Instant and recorded communication of the alarm to the concerned staff increased the accountability in attending the alarms, even while bringing down the time taken for taking the required actions.
- Could develop knowledgebase on the occurrence of alarms, resolutions and prevention.
- Reduced the re-occurrence of the similar alarms.
- Prevention processes was complemented and prevention costs were reduced.
- Complemented the decision making process of plant maintenance.

## Case Study for Plastics

Customer is one of the world's leading integrated Chemical, Pharmaceutical and Plastics companies with more than 230 companies in nearly all the countries of the world. For one of their plants in India, they were facing problems in the areas of:

- A. Collecting the required data from DCS.
- B. Monitoring the batch progress online from charging to completion of reaction.
- C. Monitoring the behavior of important 120 parameters/tags online through out the recipe duration in the batch process.



- D. Maintaining historical data of the selected parameters from different batches of production.
- E. Accountability in the concerned staff to charging the materials at right times during the reaction.

Thus the customer wanted a dynamic process plant with anytime information, analysis and accountability.

Indus developed an application in line with those objectives to capture the online data from DCS machines, lab analysis data and compressor readings and store them in popular RDBMS. Using this integrated data, batch progress was given from the start of batch to the completion of the reaction for all the stages of recipe management. The application provides online information and trends for the current batch and for the historic ones. The application also helps the concerned staff to take appropriate actions at appropriate times by providing clear visibility on the reaching of milestones during the batch progress. The application also generates varied and very important analytical reports from the database.

### Benefits to Customer

- Completely eliminated the manual logbooks for production to enhance the speed and accuracy of operations.
- Brought in accountability in the staff to charge right materials at right time through online batch progress.
- Increased the monitoring scope and performance index of the staff resulting in higher production.
- Uncertainty in production results has gone down and predictability has gone up.
- Achieved a dynamic process plant with online and anytime information about very important production parameters of the plant.

### Case Study for Pharmaceutical Industry

The customer, a major player in Pharma industry wanted to bring good manufacturing practices in the areas of raw material dispensing at the time of production. Understanding the customer objectives, Indus developed an application with the following functionalities:

- A. Ability to define the formula / bill of material for the material to manufacture per unit weight. This formula definition will be complete with the sequence of dispensing of the materials.
- B. At the production time, the application gives the raw material to be added for the planned production as per the formula defined.
- C. Captures the weight of the material added and compares that with the definition and validates if both these values do not match. Application shows the material by material in the sequence with the quantity to be added.
- D. Provides pre and post dispensing instructions to operators like 'wear hand gloves', 'clean the container' etc.,



- E. Takes the input of batch numbers of the raw materials and the produce.
- F. Maintains the inventory levels of the raw materials.

## Benefits to Customer

- Operator level people are guided well in good GUI on dispensing, things to do and things not to do before, during and post dispensing.
- CGMP Practices are met in the areas of dispensing.
- Traceability is achieved between the batch numbers of the products and the batch numbers of the raw materials.
- Inventory status of raw materials is readily available at any given time.

## Case Study for Metals

The end customer is one of the largest producers of Zinc in India. The customer wanted to monitor and control the movement of finish goods from production to weighing to labeling to strapping to storage to delivery for two of their production lines. To enable the movement control, the customer has provided PLCs at different stations. Customer also wanted inventory management with integration capabilities to SAP ERP. The system had to interface with different PLCs, weighing stations, label applicators, bar code readers and SAP to achieve this objective.

Indus developed an application to read and write the data to PLCs at different stages and to manage the flow of inventory with the following functionality:



- A. Take the instruction from PLC to collect the weight.
- B. Collect the weight from the weighing station and convey the required inputs to PLC. Also generate the unique identifiers for the produce and update the inventory, even while providing the data for SAP inventory update.
- C. Take the inputs from PLC and generate the label with the available data for the produce in the database. The label will have a barcode along with other readable appropriate data.
- D. Receive the Delivery Orders from SAP and prepare appropriate produce selection notes.
- E. Read the data from barcode scanner and enable order fulfillment process.
- F. Interact with PLC to enable the loading process to complete the order deliveries from the plant. At this stage, the system also updates the inventory even while providing the data for SAP inventory.
- G. During all this activity, the application provides the data required for PLC to move the produce from one stage to another stage, there by controlling the entire movement of the production.

## Benefits to Customer

- The movement of production in both the lines of production could be completely automated. This automation resulted in increased speed in operations and in reduced number of errors.
- The production data, orders data and delivery data could be integrated with SAP ERP.
- Appropriate products for fulfilling an order could easily be identified and tracked till loading.
- Accuracy increased almost to 100% in identification of products and in updating and making out inventory status.

## Some of the Customers / End-users

- A. Rajashree Cements, Aditya Birla Group
- B. WinMedicare
- C. Lupin pharma
- D. Godrej Industries limited
- E. Mother dairy
- F. Birla Cellulosic
- G. Indian Rayam Ltd
- H. Bayer ABS India Ltd
- I. Birla Copper
- J. Hidustan Zinc limited
- K. VVF Ltd
- L. Amul India Ltd
- M. Metter Toledo
- N. ITW India Ltd
- O. Saint Gobian
- P. RMC Ready mix
- Q. Port of Pipavav

## Technologies Used

Indus used different technologies for different projects and some of them are listed below by technology category:

Category	Details
Technologies Used	Microsoft Windows
Programming Languages	VB.Net, VB 6.0, ASP, C, JOG BASIC, YOKAGAWA BASIC, Portable Terminal Program (PTP)
Databases	SQL Server, Oracle, MY SQL
Communication Standards	RS 232, RS 485, ETHERNET
Communication Protocols	HTTP, TCP/IP, MTSICS, MT STANDARD, MITSUBHISHI MELSEC, YOKAGAWA, TATA HONEYWELL 3000, DDE and few CUSTOM PROTOCOLS

## How to team with Indus?

- The customer prospect can team up with Indus for SCADA kind of solutions as given below:
- Customer prospect can send their enquiry through email with the high-level requirements and objectives along with the technical specifications of the instruments/machines to talk to.
- Indus will ask for certain clarifications specific to the work and interact with the customer side contact person to get clarity on the requirements.
- Indus will send the techno-commercial proposal for the desired solution and will start acting on the project, once the proposal is accepted.
- Indus develops the detailed project plan for delivering the SRS Document and the Solution.
- Indus delivers the SRS document and 'look and feel software' and gets them signed by the customer before starting the coding.
- Indus does the coding and testing work and delivers the solution.
- Indus will participate in training and trial run of the application for 7 to 10 days.
- Customer will go live and Indus extends free off site support for three months. For extended support, Indus takes AMC orders.

## **Enquiries**

Enquiries can be sent to: [sravan@indussoftware.com](mailto:sravan@indussoftware.com).

## **Conclusion**

Indus with considerable experience in the subject field can be a reliable partner for designing and developing the solution and supporting it to meet the objectives of the customers.