OIL PLANT MONITORING SYSTEM

Manufacturing Industry

LabVIEW BASED SOLUTION

INTRODUCTION

Marico holds a leadership position in the Indian FMCG space. Marico's Products and Services in Hair care, Skin Care and Healthy Foods reach out to more than 20 countries in the Middle East, Asian sub-continent, Australia and USA. The company generated a turnover of about Rs. 19.1 billion (about USD 455 Million) during 2007-08. Marico markets well-known brands such as Parachute, Saffola, Kaya, Sundari and Fiancee to name few, most of which enjoy leadership positions (No. 1 or No. 2), with significant market shares in respective categories. Marico is present in the Skin Care Solutions segment through Kaya Skin Clinics (84 clinics in India and The Middle East) and Weight Management segment through Kaya Life (3 clinics in India).

Marico Ltd (Puducherry) is an oil extraction and processing plant producing 250 tons of oil per day.

ABOUT COCONUT OIL EXTRACTION PROCESS

Copra is the dried kernel of the coconut. It is this copra which is broken and passed into the grinder for finer grinding. Then the Copra is gauged and made to enter into the cooker through conveyor. The baked copra is crushed and squeezed in an expeller. The extracted oil is filtered in three stages. Finally the filtered oil is transferred into a storage tank. The sludge is recovered in a separate silo.

INDUSTRY

Oil and Gas/ Refining/ Chemicals

PRODUCTS USED

NI-PXI
NI-SCXI
NI-LabVIEW

THE CHALLENGE

Developing a rugged data acquisition system capable of withstanding the demanding environmental conditions for oil processing operation.

THE SOLUTION

Using National Instruments LabVIEW and PXI hardware to develop a highly reliable and flexible Data Acquisition and control system resulting in reduced downtime and increased accuracy .

"The new system reduces plant downtimes, increases plant safety, and with the increased accuracy of our hardware, we can deliver a higher-quality rugged system."

PXI Based Automation System

The data from different processes are continuously monitored and controlled through NI PXI based data acquisition and control system. The system monitors different parameters like temperatures, currents , moisture content, oil content, FFA, Tons produced etc. The system updates the monthly plan through the data's taken from the total copra crushed, specific fuel used and total oil produced.

The system generates acoustic alarms and logs the values when any of the parameter exceeds the specified limits.

The PXI based system generates automatic reporting in excel data base. Previously the operator used to log all the parameters for every shift and compares the data to calculate the production and to analyze the deviations encountered. This resulted in tremendous erroneous values due to manual intervention. The automated solution logs all the parameters for every shift and calculates the production data and deviations automatically. The system also alerts the user if the deviation is beyond the limit. There is a PID control loop in the system which controls the proportional valve to maintain the COOKER temperature within +/- 1 degree.

The PXI based system communicates through MODBUS with the NIR analyzer which gives the data about moisture, oil and FFA content. To create an easy view and simultaneous display of all the parameters a 32inch Flat LCD TV is used. A separate scan engine algorithm is developed which scrolls the screen automatically to enhance the life of the crystals in the screen. The data's are graphically presented enabling clear view of the parameters. The logged data's can be selected and graphically viewed to understand the process flow.

CONCLUSION

The PXI-based system provided value to the customer by addressing all the shortcomings of the earlier manual system. With LabVIEW, we integrated all the hardware pieces into the application effortlessly and developed a professional-looking application quickly, delighting our customer in the process.