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Editorial Message

Dear Readers

Energy is fundamental to our way of life as well as growing any economy. An expanding population, spur in economic activities, technology development, environment changes and newer regulatory mechanism are transforming the energy landscape, leading us to do things that will keep the planet clean and green.

Quite likely to become the world's most populous country post 2030 and with more than a billion population, no single energy resource or technology will address issues related to availability of fuel supplies, environmental impact, particularly the climate change and health externalities. It is, therefore, necessary that all of us contribute towards becoming energy efficient.

On this journey, becoming green for a sustainable tomorrow is the need of time. Industry has today realized that ecological sustainability is important for business because it helps reduce consumption resources like power, gas, steam and air thus making it much more competitive and profitable.

As a good corporate citizen, it is every industry's responsibility to measure the carbon emissions of operations and how efficiently one can optimize the use of available resources. An article on 'Step toward Green Future' highlights this initiative. Of all the natural resources, our country is blessed with abundant sunlight in many parts throughout the year. Solar energy, therefore, has huge potential as a substitute to the conventional energy sources. The Government of India has taken lots of initiatives to promote the generation of solar energy. Our solar product and solution enable you tap this energy for achieving the end result of clean and green power. We have put out a detailed article on this.

With energy taking the major chunk of operating cost of key core industries, the need for an effective Power Management System (PMS) is clearly more than just a buzz word. Monitoring and controlling power has become a necessity for energy-intensive industries that are covered under the PAT scheme of the government. We are featuring a case study on our PMS implementation at the L&T Special Steels and Forging facility at Hazira which is ample evidence of efficient use of technology for optimizing energy consumption.

Finally under 'Customer Speak', we wish to share the experience of a satisfied PMS user that provides good insights. While there is no doubt that all of us agree to conserve resources to save our planet, let us take a pledge to be Smart & Frugal in using these resources which will go a long way in helping this cause of energy conservation and global sustainability.

Happy Reading !



Sandeep Bhat



Step toward green future and sustainable growth..



Depleting natural resources like coal, petroleum and water may not last for a long time until we conserve and use them efficiently for the future, and at the same time, identify alternate, renewable source of energy like solar and wind.

Whether you are setting up a mall, an airport, an SEZ, metro station, educational institution or large corporate campus, one of the key factors that will determine operational costs is resource management. Today, resources like electricity, water and gas contribute significantly not only to the operational costs of a facility but also to its carbon footprint. The need of the hour, therefore, is to balance the eco-system while maintaining a sustainable growth of the country.

Carbon footprint is a measure of the impact human activities have on the environment in terms of the amount of greenhouse gases produced, measured in units of carbon dioxide. In order to calculate our carbon footprint, it is required to monitor and manage data like:

• Electricity Consumption

- Gas Consumption
- Heating Oil Consumption
- Water Usage
- Steam Consumption
- Air Travel
- Car Travel
- Paper Usage
- Waste Production
- Recycling / Reuse

Today, the major challenge for a facility manager is to operate the facility efficiently which means optimizing the electricity, water, gas, air and steam needs and, at the same time, reducing the carbon footprint.

It has become vital for organizations to develop and deploy a

system capable of monitoring the overall support infrastructure to optimize resources use and minimize the environmental impact.

Many limitations exist with the traditional monitoring solutions in use today. What is needed is Resource Management Solutions that go beyond simply alerting management of immediate problems. These solutions should actually enable real-time data to be captured and analyzed for the management to make intelligent decisions regarding the facility infrastructure.

A smart Resource Management Solution can help boost a company's bottom line and reduce its environmental impact. It should help the facility owner to optimize the consumption needs and further add renewable energy source that would enable them to reduce the burden on electricity generation companies and exploitation of natural resources.

Any Resource Management Solution should meet the following:

- The ability to monitor and control various electrical, water, gas, renewable assets (regardless of the vendor or protocols).
- For organizations with multiple facilities, the system should scale to allow analysis, load balancing, and optimization across locations. The information could be rolled up from a single location all the way to a global view.
- The solution should utilize COTS technology throughout in order to benefit from widely accepted industry standards. This will ensure timely migration to the latest technology, while avoiding large expenses towards custom coding and maintenance.
- It should provide a combination of real-time and historic data and trends.

Key features of Resource Management Solutions..

- The ability to monitor and control energy consumption, load management, load profiling of various feeders, Time of Day (TOD) calculation for various feeders
- The ability to monitor water consumption, pressure, consumption pattern of various levels. Water discharge information. Water level information of tanks for hydrant and facility supply, Rain water collection details
- Leak detection, Remote operation of MOVs
- A module for integration with renewable system like Solar PV and Wind to enable facility owner to obtain Renewable Energy Certificates which can be traded at Power Trading Exchange, monitor real time power generation

- Health monitoring of strings in case of Solar PV, Renewable forecasting for power planning, Payback calculation
- Accounting module to assess facility owner to set saving targets and measure the results against targets.
- A solution should facilitate reports for Management Review, BEE Star rating preparation and audit. LEED certificate preparation and audit, GRI certificate preparation and audit

"ISO 50001 certificate preparation and audit, Maintenance Report

Benefits

- Energy(Electricity, Water & Gas) savings
- Identify and reduce unnecessary capacity
- Capacity Planning:
- Reduced maintenance costs:
- Public perception and corporate image: Carbon Footprint Reduction





Integrated E&A Solutions for Solar Power

Today renewable energy is no longer an alternate source of energy but is increasingly becoming a key part of the solution to the nation's energy needs.

At Larsen & Toubro (L&T), we realize the tremendous potential of solar energy and are committed to harness this non-conventional resource to promote green energy for creating a low carbon future and accelerating economic growth. Towards this, the Control & Automation (C&A) business unit of L&T strives to create and participate in new, low carbon solutions by incubating technological shifts and developing new product solutions for Solar Photovoltaic (PV) and Thermal Power Plants.

C&A provides comprehensive, fully integrated modular solutions. These are designed for optimizing project cost and maximizing plant performance. The modular concept ensures cost effectiveness and facilitates ease of integration and installation that can be effortlessly replicated on any site. The scope encompasses the entire project - plant design, engineering, supply, installation & commissioning services to plant maintenance, and includes all plant electrical, control and instrumentation systems, which comply with prevalent application standards.

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The solution portfolio includes

• **G-Vertor RECon** Line Inverter range of central inverters is a vital link between the solar panels and the grid incorporating the multi-master technology for increased efficiency, reliability and functionality at large scale applications. It covers all the needs of the commercial, industrial and Utility sectors. Our products have been designed with a perspective that they are easy to install, use and maintain.



- G-RayBox range of String Monitoring cum Combiner Box provides continual assessment of the solar electric system's robustness by keeping a tab on its performance and detecting problems at the individual string combiner box level.
- *iVision_{max}-SOLAR[™]* package is a cost effective and efficient tool which continuously controls and monitors the plant, thereby resulting in lower downtime and enhanced improvement of the plant's overall profitability.
- Integrated automation solutions for Solar Thermal plants which includes the station control DCS (Distributed Control System),

Turbine Control System, Sun Tracking System, Heat transfer Fluid Control System and balance of systems covering Field instruments, Analyzers, SWAS, CEMS & VMS, Variable Frequency Drives & LT motors. Control valves, flow nozzles, orifice plates, Jbs, LIEs, LIRs, etc.

Service and Maintenance

• We offer a comprehensive range of service and lifecycle support options spanning preventive maintenance, 24/7 support, remote monitoring and plant optimization.



iVision_{max}-PMS[™]Contributes to Profitabilty at LTSHF-Hazira

The conventional objective of implementing Power Management System (PMS) is monitoring of power system, remote operation, event and alarm logging, trending, synchronisation, load sharing and load shedding. While it is important to operate power system of the plant in the efficient manner, it only serves limited purpose.

At L&T-NPCIL Special Steel & Heavy Forging Plant at Hazira (LTSHF), a JV between L&T and NPCIL, the aspirations were much more than the above stated traditional objectives. They questioned limits of conventional PMS

- Can we optimize the cost of Electricity?
- Can we bring in awareness of Energy consumption and possibilities of savings amongst the users?
- Can we increase the profitability of the business?

And we helped them to find answers to these questions

Control & Automation Business Unit of EAIC deployed their indegenously developed state of the art Power Management System,, at "LTSHF" to specifically meet these innovative objectives.

"LTSHF" needs about 60 MW of power when all production units are functional at their respective rated capacities. Any consumer need to pay Maximum Demand (MD) charges to Utility company, in case they draw power from them. MD charges are typically, Rs. 270/- per KVA per month. Which works out to be Rs. 32 L per MVA per year. 60 MW power is needed only for few days in a month owing to the nature of production process. Hence, the prudent approach is to not have contract of 60 MW MD with the utility company. One can have agreement of only 30 MW of MD with the utility company and thus save about Rs. 10 Cr per year towards MD charges. Balance power as per production schedule could be sourced from power trading exchange.

- a) The "Production based Load Forecasting" module of estimates the power requirement for next 24 hours based on production plan and the historical data. User can easily identify the time of the day where the required power is above the contracted MD. User can either reschedule the production plan to maintain the power requirement with in the contracted MD or purchase power from the power trading exchange at competitive rates when ever required power is exceeding the contracted MD. This directly results in to substantial saving of electricity cost.
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- b) The "Economic Sourcing" module of takes in to account the operational cost of the Captive Generation, TOD of Utility Company and desired rates of traded power to arrive at minimum cost of energy. Based on the information, User can decide the appropriate mix of Power Sources and save the cost.
- c) The "Energy Accounting" module allows creation of various groups (Operational areas such as Arc Furnace, Machine Workshop, Forging Area etc) within the plant. To bring in Energy Accountability, each group can be given yearly Energy Budget and saving target, which is then automatically tracked on a daily basis with appropriate alarms if the target is not achieved. This is aimed at creating awareness amongst various users about energy consumption and saving.

At "LTSHF", the contracted demand was kept at 30 MVA. The balance 30 MVA power was purchased through the power trading exchange based on the the projection given by the iVisionmax-PMSTM system. During the 5 months period May 2012 to September 2012, "LTSHF" saved Rs. 4.52 Cr by virtue of reduced contracted demand and Rs. 0.45 Cr through procuring cheaper electricity through power trading exchange. enabled the management to have regular review meetings on Energy Consumption Performance and helped bringing in much needed Energy Saving awareness amongst various users.

L&T provides integrated Electrical & Automation solutions and associated services for Industry, Energy & Infrastructure segment based on vast experience in the field of AC/DC Drives, Automation, SCADA, IT & Telecom competencies.

Our fully integrated, comprehensive, real-time solutions are based on hardware and software platforms using contemporary technologies. The value addition includes system design, application engineering, application software, documentation, commissioning and after sales services. The solutions are optimized to deliver maximum efficiency and economy at all stages to ensure high performance, productivity and profitability.



Solution overview & System configuration

The system comprised of 8 RTUs, Integration of Relays on IEC 61850, Redundant F/O Ring network, iDataMan DCUs, MFM's, Redundant Servers and Work Stations (count) as illustrated in digram given





C&A was selected by L&T Special Steels & Heavy Forgings (LTSHF) to provide Power Management Solution (PMS) for its Hazira facility. We spoke to Mr. M. A. Topiwala, (Asst General Manager) to capture his experience of efficiency of PMS as well as working with the C&A team.

Tell us something about your association/experience with C&A on PMS implementation?

Mr. Topiwala - When it comes to Power Management System, everybody thinks that it is all about the collecting the energy data and having energy reports. During the evaluation process, we came across many solutions based on tailor-made products as we had always desired a unique, intelligent system that met our requirements. C&A helped us to conceive and evolve specific solutions. It was a complete concept-to-commissioning association which has delivered immense value to our operations. It was an enriching and excellent experience.

What is your experience of PMS features/advantages and the results it has achieved?

Mr. Topiwala - The PMS solution is quite robust and user friendly. It helps in load forecasting which calculates demand based on production plan and historical consumption pattern to accommodate any future requirement. It also guides us on economic power sourcing by calculating operational cost, TOD of Utility and the desired rate of traded power to arrive at the minimum cost.

In what ways has C&A contributed to improving the bottem line of your operation?

Mr. Topiwala - In five months' time, we have saved around Rs. 4.5 Cr which is a significant contribution towards the bottom-line and most desirable ROI for any organization.

Going forward what do you see as future needs (additional features) for such a solution in the area of power monitoring, control and trade?

Mr. Topiwala - With Open Access Policy in power trading, users now have the option to trade power - buy or sell. This has opened up a huge scope for i Vision max PMS software and C&A must exploit the same. With enthusiastic support from C&A, we are keen to enhance the features of this PMS further and I am convinced that the solution provided by C&A has inherent flexibility, scalability and robustness to include any future improvements.

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