Dynea Benelux’s automation of its operations has led to improved product quality and reliability.

Challenges

Throughout implementation of the automation system, the biggest challenge was getting the operators to adjust to the changes. Mindless fearing losing their jobs if efficiency was improved, Dynea, however, retrained the operators for expanded responsibilities so that they now do multiple tasks in addition to performing their original duties. Commitment by management helped overcome this problem.

The openness of the DeltaV’s software, while a great benefit, also presented a challenge as well. People unfamiliar with the system risked not taking full advantage of its potential. Fortunately, some people volunteered and were thus able to learn this skill and expand further their responsibilities. Unfortunately, some people volunteered and have been retrained.

Conclusions

The results of Dynea Benelux demonstrate that it is not necessary to be big to benefit from being lean and automated. When making such significant operational changes, however, it is very important to proceed at the right speed and consider employee concerns. People still have to operate the automated systems and must accept the changes, or the investment will not bring the proper return.

Finally, the introduction of automated systems also created complications and we are thus considering other opportunities including more automated production scheduling, integration of the DeltaV’s and Oracle ERP systems, and plant maintenance operations and more integration on the Dyna Europe level for activities such as supply chain planning.

Converting PLA waste to valuable product

Dynea’s Benelux division has been working to use a waste material from a different production process and make it into a valuable product.

Breaking down the DeltaV system

The challenge for the automation project at Dynea Benelux was to modify and integrate the existing system with the DeltaV programming system so that it would work properly.

Goals and Objectives

At the start of the effort, production processes were semi-automated, with the operator controlling the batch from the DCS but unable to complete some activities manually. Administrative systems were stand-alone. The objective of the program was to simplify and increase the level of automation of all business processes, including manufacturing, administration and business control and reporting. By doing so, safety and product quality consistency would be improved, raw material consumption reduced and data capturing, handling and reporting would be faster and more accurate.

It was determined initially to select open, standard software packages from leading suppliers that were designed to meet the specific demands of a small and not too complex process industry site employing both batch and continuous processes. System planning started with a strong focus on process and cost efficiency according to the ISA 88 industry standard. Furthermore, standard tools and set-ups from other Dyna sites and suppliers would be adopted where feasible and interconnection of systems would be included in order to eliminate double input and work.

Project Initiation

The project was initiated from the bottom to the top, keeping later phases and the totality of the systems in mind from the start. Increasing process efficiency and automa- tion was followed by increasing the level of automation and integration of manufacturing support systems and ultimately business systems.

To get the most value out of the project, the processes themselves were evaluated to identify opportunities for improvement of efficiency and productivity to make the operations leaner as well as more competitive.

The Emerson DeltaV system was chosen because it offers an integrated solution that follows the ISA-88 Batch standard. It is a DCS with multi-unit recipe control and in-line batch automation capability. In addition, all of its components are designed to use a single configuration database, and the DeltaV Batch History module is included. Furthermore, using the standard modules and tools available from the Emerson Project Builder Library, design and implementation time were significantly reduced.

Implementation

At the time of project implementation, the existing system was not designed for recipe handling and batch automation, was not easy to configure, including better automated equipment (e.g. valves and monitoring systems), and was very slow. Most importantly, controls were installed for different batch sequences.

The DeltaV’s software also includes the ability to control specific actions at various levels, build recipes and manage campaigns, and provides one interface operator, making it easy to monitor the system. Batch-based analysis tools have helped dramatically with early identification and resolution of operational problems. Web-based access enables easy interaction with the program and provides flexibility in scheduling batch runs. Dynea’s intranet is protected with a firewall and a gateway to the Internet.

Integration at the time of project implementation was not complete until Dynea adopted a corporate-wide ERP system in 2008. Until then, different sites, which historically came from different sites (Asano Chemicals, Dyna), utilized different systems. With adoption of the company-wide ERP system, data from the DeltaV at Dynea Benelux (raw material consumption, production figures, analytical data and shipment numbers) are expected to be integrated into the ERP system, and the Benelux business has rapid access to necessary administrative data.

New Solutions

As a manufacturer of particle board resins, Dynea Benelux participates in a competitive commodity market and thus establishing a cost-leadership position was crucial. In 2006, although its cost structure was competitive, the business was finding it increasingly more difficult to meet customer needs and fast-track product quality and business planning and controlling and reporting. In order to meet these requirements, management elected to implement state-of-the-art automation solutions.

Stand out from the crowd

Production

Current efforts to convert PLA to valuable products will require a complex process and the use of expensive equipment.

Which country is shaping up for bio-based packaging?

Production

The trend of bio-based packaging is on the rise, with China increasing its production of polyethylene terephthalate glycol (PET) and polylactide (PLA) resins.

UNDER CONSTRUCTION

Lanxess Expands Capacities for Baypren

Specialty chemicals company Lanxess is increasing its capacity at its site in Shanghai, China. With an investment volume in the upper hundred million euros, the new production plant will produce the substrates for industrial production and thus enable Lanxess to expand its production of polychloroprene solid rubber. The expansion at the Dormagen site is scheduled for completion by the end of 2012 and will increase production by 10 percent to 63,000 metric tons per year. Lanxess produces and markets polychloroprene solid rubber under the brand name Baypren. Uses for this production will include the production of cable sheathing hoses, hoses, seals, and air springs. The expansion work will also see the implementation of a new technology that allows the company says will enable it to operate more energy and resource efficiently and thus more ecologically.

Linde Builds Large Hydrogen and Synthetic Gas Plant in China

The Linde Group has announced it will build and operate a large hydrogen and synthetic gas plant for JXTG Nippon Oil & Energy Corporation (JXTG), a joint enterprise with Chongqing Chemical & Pharmaceutical Holding Company (CCPC). The project has a total investment volume of around €200 million. Linde builds 60% of the shares in the joint enterprise with CCPC. In future, the new on-site plant will provide the production facilities of BAFF and CQBB in Chongqing with carbon monoxide, hydrogen and synthesis gas. The new plant, which will be supplied by Linde’s Engineering Division, is expected to come on stream in the third quarter of 2014.

SABIC in JV with Japan’s Asahi, Mitsui

SABIC will launch a joint venture firm with Japan’s Asahi Kasei Chemicals and Mitsui. The new company, Saudi Japanese Acrylonitrile (Shrouq), will build a plant to produce acrylonitrile and sodium cyanide at one of the SABIC affiliates’ sites in Jizan. The site was not identified. The facility will have capacity of 200,000 tons annually of the former and 400,000 metric tons annually of the latter, SABIC said. It announced plans to build an acrylonitrile butadiene styrene (ABS) plant at the fully-owned affiliate Petrokemya. The three companies will start conducting basic engineering design and will take a final investment decision in 2012.

CJ Cheiljedang and Arkema to Build Bio-Methionine Plant

CJ Chemicals and Arkema plan to build a bio-methionine plant with a capacity of 80,000 tons per year at a site in Jiangsu province, China. The project is expected to come on stream in the third quarter of 2014 and, according to Arkema, will enable CJ to respond to strong demand for methionine, a sulfur amino acid, that the company’s animal feed business generates. In addition, the project entails the construction of the world’s first world-scale methyl mercaptan integrated bio-methionine plant, which will be unique in the world, and the thiochemicals platform would come on stream at its site in Shanghai, China. With an investment volume in the upper hundred million euros, the new production plant will produce the substrates for industrial production and thus enable Lanxess to expand its production of polychloroprene solid rubber. The expansion at the Dormagen site is scheduled for completion by the end of 2012 and will increase production by 10 percent to 63,000 metric tons per year. Lanxess produces and markets polychloroprene solid rubber under the brand name Baypren. Uses for this production will include the production of cable sheathing hoses, hoses, seals, and air springs. The expansion work will also see the implementation of a new technology that allows the company says will enable it to operate more energy and resource efficiently and thus more ecologically.

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Evonik to Build Organic Specialty Surfactants Plant in China

Evonik said it is building an integrated production plant for organic specialty surfactants at its site in Shanghai, China. With an investment volume in the upper double-digit million range, the production network is scheduled to begin operation in mid-2013. The various specialty surfactants based on renewable raw materials will be used primarily for cosmetics and laundry care-products, as well as for industrial applications. The new integrated production plant will produce ingredients for cosmetics and laundry care products and for all specialty surfactants for industrial applications. The Chinese cosmetics industry accounts for the lion’s share of production. Care products, as well as for industrial applications. The Chinese cosmetics industry accounts for the lion’s share of production.

LDK Solar Makes $40 Million Entry into LED Business

Solar wafer producer LDK Solar will invest about $40 million to enter into the business of manufacturing LED substrates used primarily for cosmetics and laundry care-products, as well as for industrial applications. The new integrated production plant will produce ingredients for cosmetics and laundry care products and for all specialty surfactants for industrial applications. The Chinese cosmetics industry accounts for the lion’s share of production.

Chemicals

Converting PLA waste into virgin material

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