



## Deciding What To Work On

by Sheila Julien, Senior Associate, Conway Management Company

The project had great chemistry from start to finish. Mixing together sound data, great teamwork, and strong leadership using the **Right Way To Manage**® (RWTM) methodology produced excellent results for this manufacturer of specialty chemicals.

The RWTM committee at the company's largest chemical manufacturing plant had read the books and gone through training, but now it was time to put the ideas into action to get some results. Their first challenge was to decide what to work on to achieve tangible results. Inspired by *The Goal* by Eliyahu Goldratt and Jeff Cox, the committee adopted as their guiding principle: to increase throughput while reducing operating costs and inventory. But that was just a starting point, and a pretty broad starting point at that. Where do they go from there? How do they increase throughput, or reduce inventory or operating expense? First, of course, they identified and quantified the waste.

The committee examined all the facts and data they could think of to identify waste that reduces throughput or increases operating costs or inventory. They looked at cancelled orders, downtime, excess inventory, quality issues, customer returns, and other indicators of waste and identified a number of problems they could address using the RWTM methodology.

When they looked at all the waste, they identified many projects they could start. But they knew that if they tried to tackle too much they might not be able to achieve any real results quickly. They narrowed the list with the following criteria:

- Could they make available at this time the people who would be needed to do the analytical and problem solving work? If not, the project would fail.
- Could the project be completed within 12 weeks? Companies get further, faster, by breaking big problems into small manageable chunks that can be completed in approximately 12 weeks. Scoping the problem into small manageable pieces is essential to achieving timely, successful results.
- Would the results be measurable in a relatively short timeframe? It is very difficult to successfully complete a project if you cannot gather timely feedback measure-

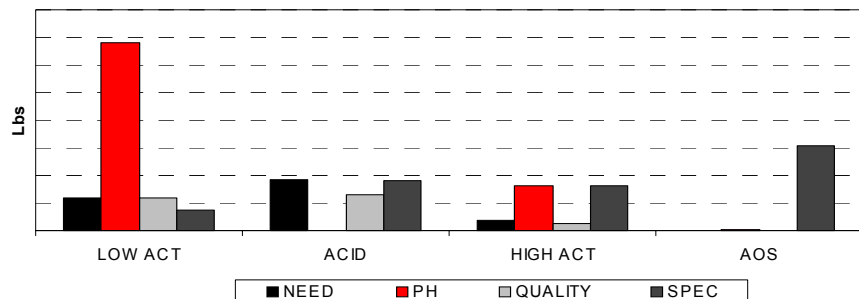
ments when testing improvement ideas.

- Would the improvements help reduce the stress level at the plant?

One of the problems that appeared to cause waste in throughput and operating costs was out-of-specification (OOS) pH — a property of many of the chemical products they make. During the production process the pH would be tested several times and adjusted by adding materials to raise or lower the pH. These adjustments not only increased the material costs of the product, they added to the amount of required time in the mix tank. Because the mix tank was a chronic constraint on throughput, the need for pH adjustments reduced productive capacity, affected ability to respond quickly to customer orders, and consumed more of the operator's time. The uncertainty about how many adjustments would be required increased the variability in production time, reducing the ability to flow product smoothly through the Plant.

Furthermore, the data they studied indicated that out of specification pH was the most significant cause of pounds of

**Major Reasons for Product Return by Product Type**



both low and high active products returned.

Customer returns at the Plant not only adversely affected sales and customer satisfaction, they greatly increased the stress at the Plant. The Plant was set up for material to flow through production to the loading docks. Returned materials reversed the flow disrupting the entire process, jamming the docks and adversely impacting ability to meet scheduled orders. A return shipment always resulted in a stressful day.

Furthermore, the RWTM Committee believed that they could make the people available to address and make improvements to this problem within a three month time frame. A team was launched to address this.

The team, led by Steve Penrod and joined by Arlen Bowman, Carla Baker, Ken Gregor, Steve Groh, Carol Inskeep, and Greg Stowe, set as its objective to find the causes of out-of-spec pH and implement solutions to address these causes and reduce the need for adjustments. They selected three products that represented a high portion of the Plant volume and were produced frequently enough to enable the team to quickly measure the effectiveness of any process changes they implemented. For their results measurement, they selected the number of pH adjustments required for these three products in the low active mix tanks.

They began by flowcharting the process, identifying each point

in production where pH is affected. They also collected baseline data, recording all low active pH adjustments. They then thoroughly studied the problem, developing and testing several ideas about the causes and potential solutions.

Within 8 weeks of collecting baseline data, the team was able to implement improvements that reduced the number of adjustments required by over 50%. Furthermore the amount of citric acid added per batch of low active declined by approximately 90%, reducing the materials cost by almost \$300 per batch.

Once the project team had implemented and tested the results for the limited scope, the time came to roll out the new way of working to the operators for use in other products as well. The team recognized that the broader implementation of the new techniques could run into some snags, so they continued to carefully monitor their results. Wherever the results began to slip, the team quickly identified and addressed the problem. The team will continue to monitor the results to ensure they retain the gains.

The Plant intends to follow-up this success with a number of other projects to eliminate waste in order to increase throughput while reducing costs and inventory. They intend to continue projects with manageable scopes that can quickly produce results and learnings for the teams, as they continue their journey of excellence.