

# Feed additive manufacturer finds the energy to improve its bottom line

A global producer of medicated feed additives, and water-soluble therapies that prevent disease in livestock and poultry, wanted to reduce its dependency on a key utility. Each year, its West Virginia site uses approximately 220,000 klbs of steam to sterilize equipment, produce product, and heat the site. The site did not produce the steam but bought it from an industrial neighbor, making it vulnerable to unforeseen events including price increases.

Even though it ran an impressive fermentation, decanting and drying operation, it was apparent that reducing steam usage would have an immediate and positive impact on the site's bottom line. So, with the stated goal of reducing steam usage for batch production and refining, the site selected USC Consulting Group (USCCG), an operations management firm known for its ability to implement world-class operations management practices.

"We had done a traditional steam trap survey several years ago but did nothing with it. USCCG suggested a different approach which seemed to offer more comprehensive insight into our situation. We were particularly impressed with their ability to bring focus to the issues and include everyone in the process," said the Site Manager.

Ultimately, USCCG's assignment went far beyond conducting a steam trap survey. It included the design and implementation of a comprehensive steam management

operating system to enable the site to capture steam performance data weekly, and provide it with tools to actively manage and, if need be, redress any identified operational shortcomings. "We had a very outdated, ineffective system in place," said the Maintenance Manager. "It was easy to get monthly results in a basic report, but we couldn't get the actionable information we really needed, such as analysis that showed us how effectively we were using steam in each production area, and across the total site, during the course of a week."



## Key Metrics

Non-production steam usage dropped over 40%

Production steam usage dropped by more than 25%

Cumulative savings of over \$500,000 annually

Additional \$225,000 savings from steam trap and insulation improvements

Once on board, the consultants performed a detailed review of existing steam piping flows and usage across the site. USCCG team members worked alongside scheduling, maintenance, and production staff to obtain a more in-depth understanding of scheduling methodologies, manufacturing and maintenance processes. They even did daily walking tours of the site to identify steam usage improvement opportunities which were subsequently categorized into three groups: steam traps, insulation, or leaks.

USCCG also looked at the use of steam for sterilizing fermentation reactors. The typical process was to bring the fermentation reactor up to temperature in thirty minutes and then hold that temperature for two hours. The standard procedure was to open all the steam sources, bring the fermentation reactor up to 22 psig, and leave the steam sources open. This, in turn, would open the back pressure valve 30%-50%, releasing the excess steam into the atmosphere. The goal was to eliminate any chances of contamination during the batch fermentation process.

Using a collaborative brainstorming session, the team challenged the sterilization process asking, "Did all the steam sources need to be on throughout the entire process?" "Why for two full hours?" Eventually, through multiple designed experiments, it became apparent that only bottom steam was needed once the reactor came up to pressure. The reduction of steam flow into the vessel would decrease the back pressure valve opening from near 50% to less than 10%. It was also determined that a sterilized vessel could be achieved in less than two hours. Implementing these changes contributed to further reducing steam usage.

As a result of process improvements and the new steam management operating system, steam usage for production dropped over 25% and steam required for non-production activities dropped by more than 40%. This was before accounting for improvements in insulation and steam traps, which at the time were put on hold for budgetary reasons.

Summing up the engagement, the Site Manager, said, "We knew that our opportunity to reduce steam usage was huge. The project's greatest achievement was creating a more timely awareness of just how much steam we were using and where we could improve."

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Site Manager,  
Feed Additive  
Manufacturer



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