

Pennakem: Innovations in Sustainable Bio-based Chemistry

Pennakem, an affiliate of MINAFIN Group, is a high-tech Specialty Chemical Company with over 70 years of Specialty and Fine Chemicals development and manufacturing experience. Experitec supports their largest manufacturing and R&D facility, located in Memphis, where reliable, dependable heating is crucial to the fine control of its chemical formulation batches. The goals of this modernization project were to improve the performance of its utilities while also bolstering the plant's sustainability footprint.

“If you can design a system where you can identify problems before they happen and not have to wait for a crisis—that’s a game changer.”

Andrew Wiley, Director of Engineering



Modernizing for All the Right Reasons

The critical nature of this specific boiler modernization project was triggered by a state mandated annual inspection requiring the site to take its primary boiler offline. The boiler had several notable limitations including it struggling in cold weather due to its outside location, inefficiencies related to its overly large size, and the fact that there was no working backup ready to go on-line! There had been a desire to get the secondary boiler to a more reliable and efficient state for some time; however the annual inspection ended up dictating everyone's timeline, turning this into a very fast track project. While this project fits perfectly into the plant's overall modernization agenda, Experitec was additionally challenged with the modernization of the secondary boiler controls and enabling that boiler to run more efficiently and reliably...in record time.

“My role is to assist in leading the digital transformation of our facility by defining and running projects for the upgrade of control systems around the site. This particular project involved the upgrade of our secondary boiler, which is a crucial utility asset in running our plant.”

Irénée Strack, Process Control Project Manager



Modernization Project Benefits Operators

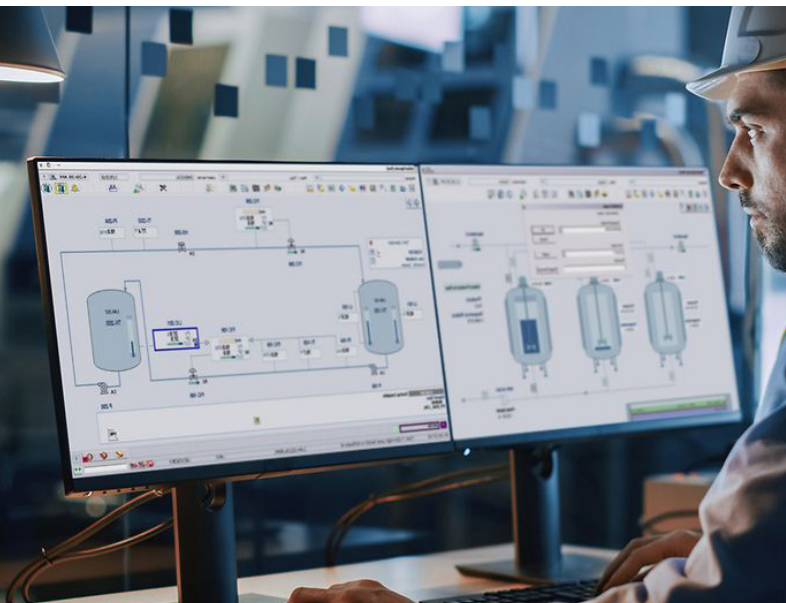
Experitec, Emerson and Pennakem partnered to get the secondary boiler on-line ‘the first time’. Pennakem was ecstatic that the boiler lit reliably, and that Emerson’s control logic would allow it to run through its paces. Experitec exceeded all goals! Before they left the first startup, it was running up and down its entire load pattern. This gave Pennakem the confidence that they would be able to run on only the secondary boiler with the assurance that they were not going to trip the plant due to unreliable steam. The fact that it ran so well offered them a level of confidence that they would not need to overstaff the control room, and immediately won the overwhelming approval of their previously skeptical operators.

Irénée Strack, Pennakem’s Process Control Project Manager comments, “The main benefit of any DeltaV™ modernization initiative is the ability to operate on a common platform across the facility, making everything smoother. Training technicians is easier because the hardware is the same and you don’t need specialized programming, making it easier to troubleshoot any issue.”

An added benefit is how Emerson manages combustion to optimize performance. Traditionally, boiler control uses fixed “curves” for fuel and air. To deliver improvement, Emerson deployed real-time stoichiometric calculations that continually adjust for fuel and ambient variations.

Andrew Wiley, Director of Engineering comments, “Our overall strategy is to standardize with Emerson, allowing us to adopt a unified ‘look and feel’ for process controls across our site. Regarding the boiler project, we embraced the Emerson algorithm to gain more fuel efficiencies, but also needed the capabilities to tie into the historian, connect with the chart builder/troubleshooting tool, and gain visibly into any problems, mechanical or otherwise. The ‘faster speed to troubleshooting’ that we now enjoy allows us to move into a predictive maintenance mode and improve reliability for our entire operations. With Experitec and Emerson as our partners, we together have a perspective that anticipates issues and sustains the operation.”

Andrew continues, “As we compete in global markets, we have to work smarter and do more to upscale our operations, giving personnel the tools to operate more equipment, efficiently and safely. With a modernized control system at our fingertips, we can troubleshoot it in five minutes. That’s the biggest immediate impact—better, faster, more accurate troubleshooting.”



“With less than six months of runtime on the new boiler logic and operator interface, we are already experiencing close to a 50% reduction in excess O₂, which can be attributed to our operators trusting the improved controls scheme and letting the DeltaV system do its job. This confidence translates into less human intervention, less room for error, and ultimately safer and cleaner operations that add to our company’s overall goals.”

Andrew Wiley, Director of Engineering

