

Valves Positioned As Energy Solution

Model-free adaptive control technology allows valves to operate more efficiently, thereby granting more efficient coal-fired plant control.

CyboSoft recently announced that it has been awarded a U.S. Department of Energy (DOE) grant entitled “Intelligent Actuation Control Using Model-Free Adaptive Control Technology.” The research and development work can result in an intelligent actuation control solution critical for controlling future energy plants capable of delivering maximum energy efficiency, near-zero emissions, fuel flexibility and multiple products. This solution can help the U.S. strengthen its energy independence and move towards a cleaner environment.

CyboSoft CEO Dr. George Cheng says, “CyboSoft is honored to receive this new grant from the DOE and looks forward to working on this exciting project. Since all three key components—sensor, actuator and controller—have to function properly in order for an automatic control system to work, the importance of improving the stability, robustness and performance of the actuation system cannot be overstated.”

For the U.S. to reach its future energy objectives, visions to build the ultra-clean and highly efficient energy plants of the future must be realized. The control and optimization of coal-fired power plants are highly dependent on coordinated and integrated sensing, control and actuation technologies, plus the products used.

Prior efforts to develop novel sensing and control technologies have been successful, but little work and analysis have been devoted to the coordinated control and actuation of processes within a coal-fired power plant. Studies show that as many as two-thirds of control loop oscillations are caused by control valve problems. Therefore, more effective and robust valve positioning control is highly desirable.

As new power plants are required to achieve maximum energy efficiency, near-zero emissions, fuel flexibility and multi-product capabilities, major advancements in sensor, control and actuation are necessary. Maintaining the tight tolerances that new energy plants are required to achieve depends on intelligent and robust actuation control. Better actuation also leads to major improvements in existing coal-fired power plants and all other process plants.

The overall objective of this multi-phase project is to research, design, develop, test, evaluate, benchmark and produce an intelligent valve positioning control solution that can provide much more robust and precise control for large-scale coal-fired power plants using CyboSoft’s innovative yet industry-proven model-free adaptive control technology.

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