

# FACING PLANT SHUTDOWN, CHEMICAL PRODUCER MEETS COMPLIANCE REQUIREMENTS WITH FLOMAX® NOZZLES



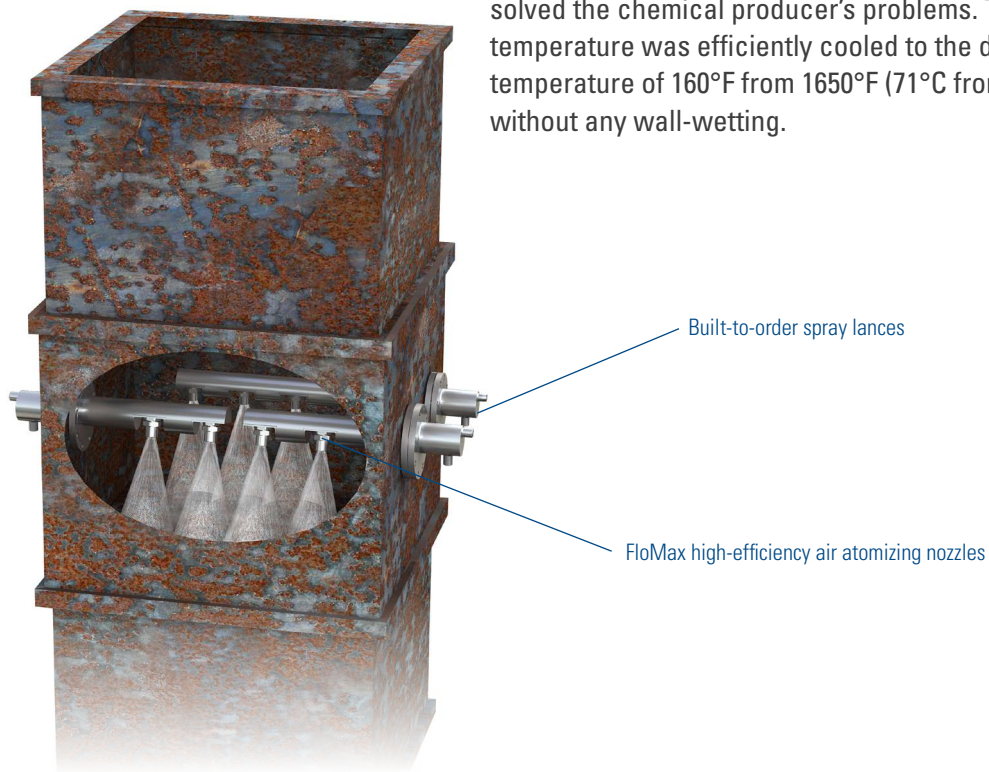
## PROBLEM:

A chemical producer in the United States was facing substantial fines or complete shutdown after its Vertical Gas Thermal Oxidizer (VGTO) failed to comply with government regulations for emission control. The cooling nozzles were not reducing the gas temperature enough to limit dioxin formation. In addition, the walls inside of the tower were eroding due to excess wall-wetting. The refractory needed to be replaced just four months after the cooling nozzles were installed. The chemical producer came to Spraying Systems Co. for immediate help. The issue needed a quick resolution – the plant faced imminent shutdown.

## SOLUTION:

In order to recommend the correct cooling nozzles, we used Computational Fluid Dynamics (CFD) modeling to evaluate the process stream and conditions in the tower. Achieving proper cooling without wetting not only required the use of different nozzles, but the nozzles had to be precisely positioned in the tower. CFD helped validate the drop size required for effective cooling and complete evaporation and confirmed the ideal placement for the nozzles in the tower.

Built-to-order spray lances, equipped with FloMax high-efficiency air atomizing nozzles in HASTELLOY®, solved the chemical producer's problems. The gas temperature was efficiently cooled to the desired temperature of 160°F from 1650°F (71°C from 899°C) without any wall-wetting.



# FACING PLANT SHUTDOWN, CHEMICAL PRODUCER MEETS COMPLIANCE REQUIREMENTS WITH FLOMAX® NOZZLES – *Continued*

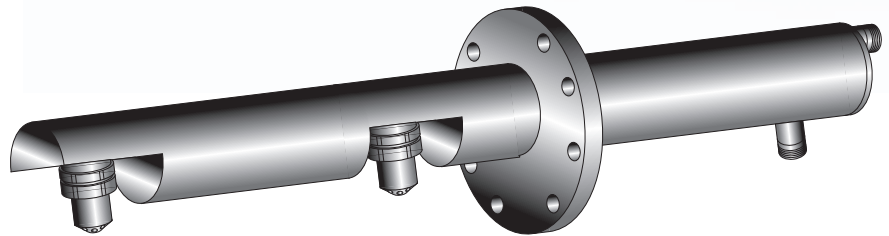
## RESULTS:

The chemical producer has been in compliance with environmental regulations since the FloMax lances were installed. Inspections of the refractory lining show no signs of erosion. The tower walls and bottom are dry now that 100% evaporation is occurring. The producer plans to replace the refractory with less

costly brick now that wetting is no longer an issue. Since the plant could have been shutdown without the FloMax lances, the chemical producer recouped its investment in the project as soon as the lances were installed.

## A CLOSER LOOK AT THE SYSTEM

FloMax nozzles are available in a wide range of sizes, capacities and wear-resistant materials.



FloMax multi-nozzle lances produce very small drop sizes to reduce dwell time required for complete evaporation and reduce the risk of wetting.



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