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Natural Gas Conversions at US Plants



BUZZI UNICEM USA IS ADVANCING ITS COMMITMENT TO REDUCING CO₂ EMISSIONS BY CONVERTING ITS U.S. CEMENT PLANTS FROM COAL AND PETCOKE TO NATURAL GAS AND LOWER-EMISSION FUELS. THIS COMPLEX INITIATIVE INVOLVES MULTI-REGIONAL COLLABORATION, SPECIALIZED BURNER DESIGN, AND INFRASTRUCTURE UPGRADES TO ENSURE SAFE AND EFFICIENT OPERATIONS ACROSS ALL PLANTS. ONCE COMPLETE, U.S. PLANTS WILL HAVE THE CAPABILITY TO OPERATE ON NATURAL GAS, SUPPORTING THE GROUP'S NET ZERO CARBON GOALS.

As part of Buzzi's commitment to reducing Carbon dioxide (CO₂) emissions, Buzzi Unicem USA is actively aligning its U.S. operations with the Science Based Targets initiative (SBTi), a global organization that helps companies establish greenhouse gas emission reduction targets, to limit global temperature rise to 1.5°C. A key part of this effort involves switching from fossil fuels to lower CO₂-emission fuels. The U.S. Plants (excluding the Alamo plant, which was already ready in 2002) have been implementing capital expenditure projects to transition our major fuel sources from coal and coke to natural gas.

Along with alternative fuels, natural gas plays a pivotal role in the Buzzi Group's Journey to Net Zero.

Combustion of natural gas emits half of the CO₂ compared to petcoke and coal, while still supplying similar heat energy. It produces more combustion gases due to water vapor, generates no ash, and slightly increases heat consumption. Kiln capacity might also be slightly affected, but only if there is not enough draft from the ID-Fan. Using natural gas also requires modifications to the kiln and calciner burners, along with the associated firing system controls.



1. BURNER INSTALLED AT THE PRYOR PLANT KILN 1



Over the last few years, new projects have been initiated to convert all U.S. plants to burn natural gas. The Buzzi Unicem USA team has worked closely with Silvio Ikeda, Senior Process and Combustion Manager of Buzzi SpA, to plan the execution of the natural gas burner at each plant. The burner systems, as supplied by Ari8, are custom-designed to utilize natural gas along with coal/petcoke, liquid, and solid alternative fuels. All final mechanical designs, procurement, and installations have been performed by the Buzzi Unicem USA Engineering and Project Management Department. Each of the new natural gas burner systems is equipped with gas ignitors inserted into the burners, as well as flame monitors in each burner and mounted on the kiln hood for alternate detection. Natural gas safety systems are integrated into each burner, compliant with NFPA 86 (National Fire Protection Association) standards for ovens and furnaces, to prevent unplanned combustion of natural gas

with the use of monitoring devices and shutdown interlocks. Safety is a priority in the design, installation, and operation of all natural gas systems. The current progress on fuel conversion is as follows:

1. The Alamo, Festus, Maryneal, and Pryor plants have all previously been converted to 100% natural gas capability.
2. The Cape Girardeau and Greencastle plants are nearing completion of the infrastructure installation. Commissioning of the new burners and natural gas systems is scheduled for the winter outages in 2026, which would then allow them to substitute 100% natural gas for the present fossil fuels.
3. The Chattanooga plant conversion to natural gas is at the design stage with expected completion in 2027.
4. Upon completion of these projects, all plants in the U.S., excluding Stockertown, will have the ability to burn natural gas.

Through the expertise, meticulous

planning, and seamless collaboration of teams across the U.S. and Italy, several plants are online with natural gas systems. Work continues on infrastructure, piping, and equipment installation at the remaining plants. This multi-region effort highlights the technical skills and coordinated teamwork required to modernize our operations and move forward to a Net Zero future.

2. KILN BURNER INSTALLED AT THE GREENCASTLE PLANT