California Cement Company Reactivates Its Cogeneration Plant

ABSTRACT

California's energy crisis has hit the state's businesses hard, especially those in energy-intensive industries. But Gary Thornberry, environmental/service manager at California Portland Cement Company's (CPCC) Colton Cement Plant, says his company has a plan to combat power interruptions. This plan includes reactivating a mothballed coal-fired cogeneration plant that the company built back in the early 1980s, and reactivating two boilers that use waste heat from cement kilns.

The Colton Cement Plant has an interruptible power contract with its electricity provider, Southern California Edison Company. Thornberry says that power interruptions have caused multiple problems at the Colton plant, including wasted raw materials and unusually low inventories.

The Colton plant normally produces 750,000 tons of cement per year. The company was founded in 1891 and has provided cement for Arizona's State Capitol, the Los Angeles Coliseum, and the new Disney California Adventure theme park, among many others.

The plant, which under ordinary circumstances would run 24 hours per day and 7 days per week, typically requires 14 MW of electrical power, but has peak loads as high as 20 MW per hour. Rotary kilns heat a mixture containing calcium, silica, iron, and aluminum to nearly 2800°F. Heating up the kilns often takes 8 to 12 hours, so when the power is interrupted, the kilns start to cool and a significant amount of energy is wasted. Furthermore, the cooling and heating cycles caused by

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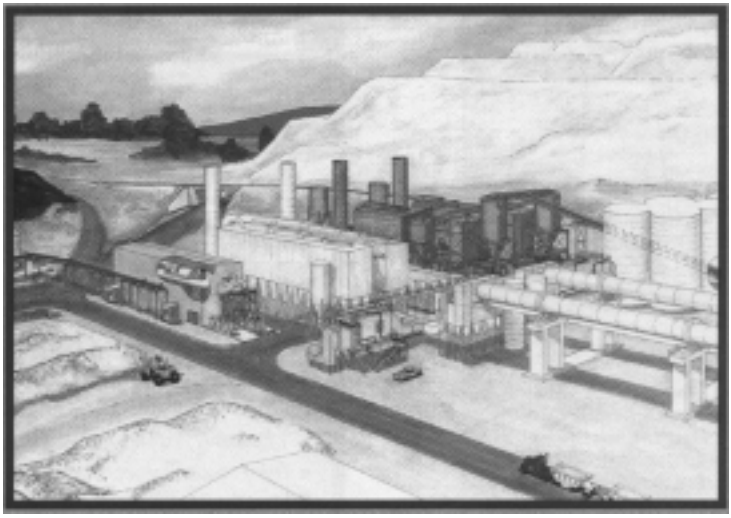
the interruptions can result in expansion and contraction of the kilns and associated equipment, which shortens equipment life.

So CPCC's management has decided to take its cogeneration plant, powered by a fluidized bed coal-fired boiler, out of mothballs. The cogeneration plant exists because, in the early 1980s, electricity costs were projected to rise considerably. At that time, CPCC built the cogeneration plant to combat the higher electricity prices. However, once the plant was built in 1985, Southern California Edison offered electricity at a cost low enough to convince CPCC to deactivate and keep the cogeneration plant in reserve.

CPCC planned to have the coal-fired plant up and running in late June of 2001. At the same time, CPCC hoped to reactivate two waste heat boilers that produce 5 to 6 MW per hour. The boilers use waste heat from the cement kilns.

Burning coal does produce emissions, but, Thornberry says, "The low operating temperature keeps the NO_x down and the limestone injection system controls the SO_x emissions. We are also in the process of installing an ammonia injection system to further reduce NO_x emissions."

The cogeneration plant is expected to provide 20 MW of power—enough to meet the plant's peak loads and more than enough on a daily basis. CPCC plans to sell unused power, though a buyer has not been determined. At this point, Thornberry says, it hasn't been decided if



CPCC will stay on the grid after the cogeneration plant is operating. Regardless, like many industrial sites in the region, CPCC must now seriously consider which power alternatives will ensure smooth and efficient operations.