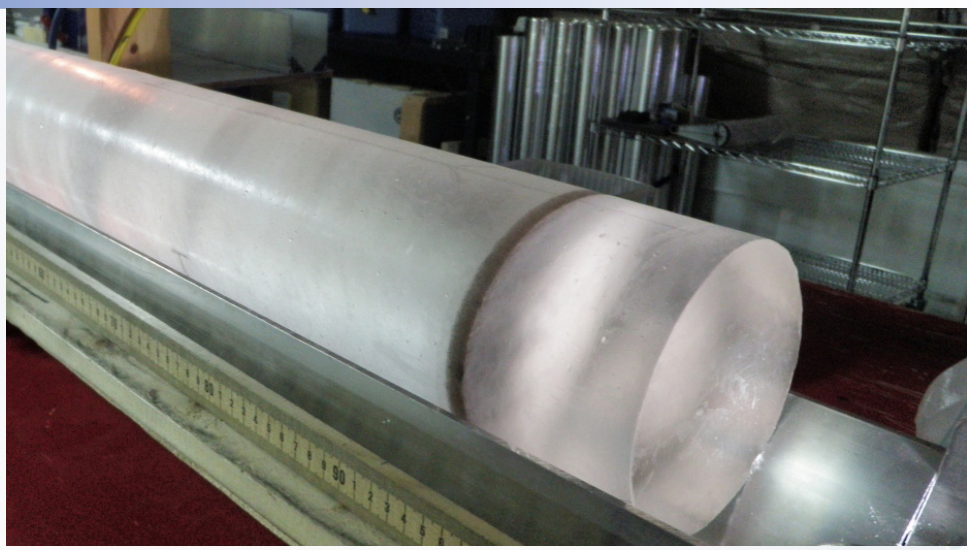
BOILER CASE STUDY

UPGRADES TO BOILER SUPERHEATER SYSTEM ENSURES NO DOWNSTREAM LIQUID OR CONDENSATION IN ICE MAKING PROCESS



Power Plant
Sacramento County
Superheater Upgrade

Customer Application

One Sacramento County utility power plant that provides over 1.5 million customers with electricity also provides a small portion of dry steam, through a steam turbine, to a neighboring ice manufacturing facility. The industrial ice plant purchases the dry steam to make ice, which is distributed worldwide.

Key Challenges

The utility power plant operates a combined cycle power plant with low or no load when electrical demand is low. To keep consistent steam temperature year-round, the power plant needed to upgrade the external superheater with an additional 40 degrees Fahrenheit on their existing Cleaver-Brooks watertube boiler.

To achieve the additional 40 degrees Fahrenheit needed, R.F. MacDonald Co. added a custom-engineered superheater to increase steam output and satisfy all load requirements.

These system upgrades helped fulfill the power plant's contractual requirements for hot/dry steam.

The R.F. MacDonald Co. Analysis & Solution

While working on a utility power plant auxiliary boiler controls, R.F. MacDonald Co. (RFMCO) was asked to propose a system that could provide 40 degrees Fahrenheit of superheat when its 85,000pph boiler was only firing at 40,000pph. If achieved, the plant would meet the steam requirements for the neighboring ice manufacturing facility.

Ice manufacturing plant

RFMCO and Cleaver-Brooks pioneered a novel solution, endeavoring to calculate the exact location of a second flue-gas opening to provide sufficient flue-gas temperature for the 40 degrees Fahrenheit of superheat required by the 40,000pph external superheater. To fulfill this long-term need, the ice manufacturing plant received a cost-effective solution of custom-engineering the pre-existing boiler with superheater to increase steam output.

Retrofitted superheater at ice plant

Superheater Upgrade Results

- Consistent steam temperature year-round.
- Additional 40 degrees Fahrenheit superheat.
- Additional steam from 30 percent existing flue gas.
- Effective use of the slip stream of gas.

Cleaver-Brooks with superheater

RFMCO's industry expertise to creatively solve and perform the equipment installation and programming benefited the ice manufacturing plant by increasing the steam quality of their existing equipment. As a result, production levels are expected to improve.

R.F. MacDonald Co.
your boiler & pump solutions team
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