



# CALORIS ENGINEERING

Chooses Baldor's RPM® AC Motor

Caloris Engineering, LLC specializes in thermal process engineering, and the design and fabrication of evaporation systems that concentrate both sanitary and nonsanitary liquids. Applications range from the concentration of temperature-sensitive dairy products to the volume reduction of various wastewater streams. By design, the Caloris evaporator is flexible enough to be advantageous in a wide variety of industrial and chemical processes.

Its newest line, Caloris Concentrix™ MVR evaporators, delivers the highest available energy and operational efficiencies in a compact design with a very small footprint. The company's largest model built to date, the Caloris Concentrix 200, is designed to evaporate 20,000 pounds of water per hour, utilizing a method called mechanical vapor recompression (MVR). Essentially, this means that water evaporated in the process is reused for further evaporation. The unit is powered by electrical energy to run a high-speed fan that compresses the water vapor as it is formed. But Danny Buswell, Caloris process engineer, says the challenge the company faced in completing this unit was finding the right motor to power the proprietary turbofan technology.



The Caloris Concentrix™ 200 evaporator utilizes proprietary turbofan technology in a highly efficient system that uses less energy and less water than traditional evaporation methods. Built in a concentric configuration, the Concentrix evaporator uses proprietary Caloris technology with a turbofan designed to efficiently discharge compressed heating vapors 360 degrees outward from the fan into the surrounding heat exchanger tube. This ultra-compact design takes half the space of other technologies to process the same volume, saving space and installation costs.

For help finding the right package, the Caloris team turned to Mac Roberts from Eagle Engineering, who quickly led them to a Baldor solution. Since the application required the motor to spin at 6,930 RPM at 240 horsepower, Roberts believed the Baldor•Reliance® RPM AC motor, with its power-dense, square, laminated steel frame, would offer the performance required.

“Baldor offers an induction version of the RPM AC motor, but also offers a permanent magnet synchronous version,” says Roberts. “The induction version got us up to 200 HP at 6,930, but it was Baldor’s permanent magnet technology that allowed us to increase power density even beyond the induction version to get the additional 40 HP that we needed. Baldor also offered the drive specifically designed for permanent magnet rotor performance.”

While the Caloris team was unfamiliar with Baldor’s permanent magnet technology, Buswell says they understood enough to know that this was the technology that would deliver the performance they needed. In the end, he says, he and the rest of the Caloris team put their trust in the

to Power New High Efficiency Evaporator



“We needed a motor with the unique combination of high speed and high horsepower because of the size and the performance required from the turbofan,” explains Buswell. “This highly efficient system, using turbofan technology for heating by mechanical vapor recompression, means we use much less energy and water versus conventional methods that rely on a steam source.”

Not only was Caloris in search of a manufacturer to provide a custom motor for the application, but Tom Pyper, the company’s packaged systems

manager, says they also wanted to work with a manufacturer that could supply the right drive solution.

“This is a highly integrated package, and it was important that the motor supplier was also capable of supplying a drive that could handle the motor to drive the turbofan,” says Pyper. “It was critical for us to find a single source for our motor and drive needs, not only for this project, but as a long-term solution. Again, because these products are integrated very closely together, it would be difficult to have three players involved and pull this off.”

experts to develop the right solution.

“The more we learned, the more we could really see the advantages and benefits of the motor and the unique features it offered,” says Buswell. “It took awhile for us to wrap our arms around this technology, but once we saw the changes that had been made to this motor, it became obvious the footprint would be smaller, and that it could handle the speed and the torque we needed to drive this fan. We were confident that Baldor’s RPM AC motor with PM technology was the right solution for us.”



A drip-proof, forced-ventilated Baldor•Reliance RPM AC motor with a permanent magnet rotor was selected to power the proprietary turbofan technology on the Caloris Concentrix™ 200 evaporator. RPM AC motors feature a unique laminated steel, square-frame construction and a premium insulation system to provide ultimate torque performance in a compact package. RPM AC motors can be designed for specific horsepowers and speeds to provide the ultimate in system matched performance.

The Caloris Concentrix 200 is now installed and operating at a cheese manufacturing plant in the United States. The Caloris team says the customer is happy with the unit, reporting that it's very easy to operate, and that it's meeting all of their requirements. Pyper says the project's success has led to a newfound partnership among Caloris, Eagle Engineering and Baldor.

"There was a team discussion about whether we should look for alternatives

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Danny Buswell,  
process engineer,  
Caloris Engineering

or continue to build the relationship with Baldor, and it was unanimous to stick with Baldor," says Pyper. "Even though the next unit we're building, the Caloris Concentrix 500, is substantially larger, everyone here is confident Baldor will engineer the right solution. Again, it's another unique application – all our projects have unique requirements – but we are confident that Baldor will put the right motor and drive combination together to make them work."

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