



Commercial Case Study

The French Laundry Aligns Its Sustainability Mission with High-Efficiency Geothermal Heating and Cooling from ClimateMaster

When Chef Thomas Keller initially came across the century-old 1,600 square-foot stone cottage that was to become his renowned first restaurant in Yountville, Calif., he knew he'd found the place to which his career had been leading him all along. By the time of its discovery by Chef Keller, the rock and timber structure (originally built as a saloon in the late 1800s) had housed several businesses, including the French steam laundry for which it was later named. Chef Keller assumed ownership of the building in 1992, purchasing it from Don and Sally Schmitt who were then operating it as a restaurant.

After the first few years – marked by The French Laundry's surmounting popularity, receipt of numerous esteemed accolades and recognition via international awards for culinary excellence – managing company Thomas Keller Restaurant Group (TKRG) identified need for several renovations to the restaurant itself.

"We constantly strive to improve the quality of our services to both our staff and guests, and certainly providing a work and dining environment with optimal ambient temperatures at all times is paramount," said Keller.

In addition to construction of a new office space, dry goods storage, a wine cellar and additional locker rooms and restrooms, renovation plans included a comprehensive update to the HVAC system for the dining room, as well as a new system for existing areas such as the kitchen. The original split system, which included a series of air-cooled forced-air units, evaporative coolers and fans, could not provide the necessary capacity for the expansion, and adding more units would be visually unappealing and would create an undesirable amount of noise throughout the restaurant.

Engaging mechanical engineering firm MK2 Engineers, TKRG was able to identify a comprehensive HVAC solution that would provide the required additional load capacity while taking into account the limited space available for adding ancillary equipment.



“Working with a century-old structure meant we didn’t have a whole lot of room to work with,” said Mike Kiani, P.E., senior mechanical engineer at MK2 Engineers. “Trying to find room for components of a fan coil unit-based system – even when using exterior roof-mounted units – posed a real challenge for us.”

Based on the space limitations of the project, as well as Chef Keller’s own interest in incorporating renewable and energy-efficient solutions, Kiani and his team recommended a geothermal ground source heat pump system driven by a series of five ClimateMaster Genesis GRH Series water source heat pumps and two makeup air handling units. The system would also incorporate use of a 2,432 square-foot garden area adjacent to the restaurant for the system’s borehole field.

“To generate the 21 tons required by the system, the field was designed to include 14 260-ft. boreholes,” Kiani explained. “Our challenge in originally designing it was due to the fact that the City of Yountville required installation at a minimum 25-foot distance away from the existing sanitary system, which meant we only had 1,600 square feet



to work with. We also had to consider that with such a limited field area, our borehole spacing would need to be less than the typical distance to which we were accustomed.”

MK2 Engineers enlisted the services of Napa-based Bell Products for the installation of the



The French Laundry Yountville, CA

new mechanical system. "It was a rigorous job, particularly with the tight installation time, small spaces and limited borehole field," said Paul Irwin, president of Bell Products. "Despite these challenges, the installation went smoothly and successfully."

Operating for the past eight years and reflecting the improvements of strategic updates, the geothermal system has been a success in the eyes of Chef Keller and his management team.

"We noticed a marked difference in our energy bills once the new system was up and running," said Keller.

Requiring additional load capacity due to further popularity and growth of the restaurant, TKRG reenlisted the services of MK2 Engineering in 2011 to install a 3-ton GRH Series and 4-ton Tranquility®



Compact Belt Drive (TCH) Series unit from ClimateMaster, which would provide increased cooling capacity in the dining area. In addition, MK2 Engineering specified two 5-ton water-to-water domestic hot water generators to address excess energy being expelled into the ground loop from new kitchen equipment.

"With the addition of new water-cooled refrigeration equipment in the kitchen, an increased amount of energy was being transferred to the ground loop system, causing saturation and an overall rise in the system's operating temperature," said Kiani. "Because we were unable to expand the original borehole field due to limited space, we needed to find an alternate way to use the energy in the loop in a way that would also keep the entire system running efficiently. Adding the domestic hot water generators, we were able to get them to work in harmony with the existing HVAC infrastructure by extracting the excess heat and redistributing it for domestic hot water in the kitchen."

"We have a great deal of experience installing ClimateMaster units, and enjoy the consistency and reliability of the company's products," said Irwin. "With The French Laundry, proven performance was obviously a factor in us installing additional units several years later."

Added Keller, "Maintenance on the original system has been pain-free and required nothing out of the ordinary, and we expect the newer units to function similarly."





The French Laundry
Yountville, CA

Mechanical Engineers:
MK2 Engineers

Equipment:
6 Genesis GRH Series Units
1 Tranquility® Compact Belt Drive (TCH) Series Unit

Manufacturer Representative:
Air Treatment Corporation - Sacramento, CA



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An LSB Industries, Inc. company (NYSE: LXU), ClimateMaster has been designing and building equipment that enhances the environments we live and work in every day for more than 50 years. In addition to geothermal heat pumps, ClimateMaster offers the most extensive product line of water-source heat pumps for use in a wide variety of applications. ClimateMaster products are proudly built in the U.S.A.



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