



Aveda Corporation



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Organization Background

The Aveda Corporation (Aveda), a branch of the Estée Lauder Companies Inc., is a cosmetics company that produces hair and skin care products. The 280,000-square-foot Blaine facility houses a production floor and office spaces, as well as dedicated space for research and development. Aveda is committed to environmental stewardship and is a Certified B Corporation. Aveda has also set goals to reduce their absolute scope 1 and 2 emissions at the Blaine facility by 50% by 2030 using a 2018 baseline.



"The MnTAP program has been an incredible opportunity, and I feel so lucky to have been a part of this year's cohort. Getting to work side by side with company professionals, learn about different industrial processes, and work with an assortment of tools to find reduction solutions have been invaluable experiences that I will use for the rest of my academic and professional career." ~ BD

Project Background

The Blaine facility averages 5.4 gigawatt hours (GWh) of energy per year at a cost of \$627,000. Reducing energy use saves money and helps make progress on their internal scope 1 emission goal and energy reduction goals as a member of the Department of Energy's Better Plants Program.



SOLUTIONS

Reduce Office HVAC Operating Hours

Approximately 120 heat pumps regulate the Aveda office's temperature. The office's HVAC schedules have not been adapted to occupancy changes associated with hybrid work schedules after COVID-19. Updating HVAC schedules based on current occupancy data reduces their operating hours and energy use for running fans and cycling compressors. Using optimized start and stop, an algorithm that automatically adjusts based on a 30-day learning period, helps ensure spaces reach their desired temperatures on time. Implementing this would save 74,800 kWh and \$8,850. This corresponds to a reduction of 30.4 equivalent metric tons of carbon dioxide emissions (MTCO_{2e}) per year.

Reduce Production Heatex, Gowning, and Filling Heat Pump (HP) Operating Hours

Several large roof-top and make-up air units provide outside air and regulate temperature for many spaces on the Aveda production floor. Three of these units (the Heatex unit, gowning unit, and 10 filling heat pumps) are

Solutions

currently running night and day. Since the production floor is empty on weekends, ramping down these units on weekends will save significant energy. Implementing this will save 141,000 kWh, 4,930 therms, and \$20,400. This corresponds to a reduction of 84.2 MTCO_{2e} emissions per year.

Reduce Pre-Weigh Venmar Operating Hours

Ingredients for Aveda products are measured and prepared in the Pre-Weigh department. This area houses a large HVAC unit that supplies clean air to the room and maintains a pressure differential for the fume removal arms. Shutting this unit down over the weekends, when this area is not staffed, would save 47,900 kWh, 2,060 therms, and \$7,200. This corresponds to 30.7 MTCO_{2e} emissions per year.

Redirect Sensor Effluent to Barrel Washer

The 55-gallon barrels, which store ingredients, need to be washed before recycling or reusing for further storage. The barrel washer has three different wash cycles and uses approximately 51,800 gallons of water per year. This project identified a sensor effluent stream coming from Aveda's pharmaceutical-grade water system that could serve as an alternative water source for this washer. Using this alternative source would reduce the city water use by 51,800 gallons and save \$600 per year.

Improve Tank Heating and Cooling Efficiency

Mixing tanks for manufacturing Aveda products are heated by steam and cooled by chilled water. In recent years, staff have noticed it takes longer and there is more variability in heating and cooling times for batches. Analysis of the chiller, steam traps, and vacuum breakers revealed consistent heating trends with noticeably low cooling trends. Additional sensing equipment, like pressure and temperature sensors on the steam boilers and tank outlets, will facilitate data-driven analysis to improve heating times. Replacing the current chiller with a more efficient model will reduce and energy use.

"MnTAP's program helps Aveda take action on projects that reduce energy consumption, conserve water, and enhance efficiency, all while providing their interns with manufacturing and problem-solving experience."

*~ Bethany Barlow, CSP
Associate EHS Manager*

Recommendation	Annual Reduction	Annual Savings	Status
Reduce office HVAC operating hours	74,800 kWh	\$8,850	Planned
Reduce production heatex, gowning, and filling HP operating hours	141,000 kWh 4,930 therms	\$20,400	Planned
Reduce pre-weigh Venmar operating hours	47,900 kWh 2,060 therms	\$7,200	Further Investigation Needed
Redirect sensor effluent to barrel washer	51,800 gal water	\$600	Recommended
Improve tank heating and cooling efficiency	TBD	TBD	Further Investigation Needed

MnTAP Advisor: Laura Sevcik, Engineer