



# Case Study:

Develop a custom cooling solution for a leading medical device manufacturer.



## Project Scope





In 1995, engineers from a global medical technology company contacted Kooltronic, Inc. with a unique challenge – design and manufacture a custom-tailored thermal management solution for protecting heat-sensitive test reagents within a blood analyzer machine.

The solution needed to be compact and mobile as it would be required to fit within a small, pre-fabricated compartment of the blood analyzer. Also, the refrigerant-based cooling unit was required to maintain a temperature range of 35°F - 50°F (1.5°C - 10°C). The strict temperature tolerances required for this special project were critical to ensuring the accuracy of test results and extending the lifespan of test reagents.

Additional requirements for the project included:

- Voltage - the AC unit was required to operate on a power supply of between 200-230 Volts and 50-60 Hertz with a 3-prong plug power cord port.
- Low decibel level - it was preferred that the blood analyzer (and integrated cooling unit) function as quietly as possible.

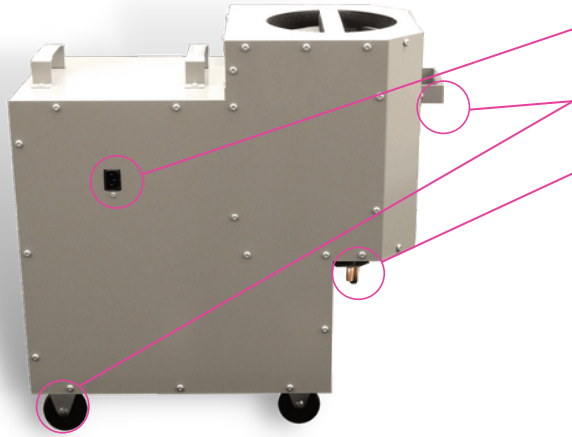
## Product Specs

-  **3,000 BTU Cooling Capacity.**
-  **200-230 Volts / 50-60 Hertz.**
-  **21.5" H x 10.5" W x 21" D.**
-  **UL/CUL Recognized.**



# A Custom-Tailored Solution

Armed with its engineering expertise and experience with custom projects, Kooltronic readily accepted the challenge to meet these unique specifications. Initially, Kooltronic created 3D models of the new air conditioner concept using specialized design software. After the concept model was approved, a prototype was developed and tested under extreme operating and environmental conditions. The prototype was also submitted to Underwriters Laboratories (UL) for further testing and certification. Ultimately, the prototype passed a series of trials and was approved for production. From start to finish, the project was completed on time and within budget requirements.



- Plug power cord receptacle at specified unit placement.
- Caster wheels (x4) and handle for enhanced mobility.
- Copper drain trap to expel and collect condensate.
- Special fan installed to minimize operating noise.

## Creating Lasting Value

This enclosure air conditioner is now in its fifth generation with numerous enhancements made over the years. New and improved capacitors, fans, and other internal components have replaced prior versions to provide even greater efficiency, state-of-the-art line testing methods have been introduced to ensure safety and quality, and advancements in robotic automation system technology have increased production output and turnaround times.

Though methodical in its early stages, this project has become a huge success for both parties involved. The number of custom-built cooling units produced has increased from an initial 200 up to 2,000 per year, with over 25,000 total units manufactured over the life of the project!



“After weeks of mutual collaboration and trust, we were able to proudly deliver a custom cooling solution that supported the customer's specifications. Better yet, is knowing that we can play a small part toward improving patient care.”

— James Disler, Sr. Project Engineer at Kooltronic, Inc.

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