REFRIGERATOR TRIM KITS

Refrigerator Heat Transfer Analysis

Summary:

For our analysis, we used sophisticated modeling software to compare two scenarios. The first scenario was a refrigerator with generous gaps and no trim kit operating in a 110°F room (most refrigerators are designed to operate in room temperatures of 110 - 120° F). The second was a refrigerator with a flat, flush mount trim kit operating in a 80°F room.

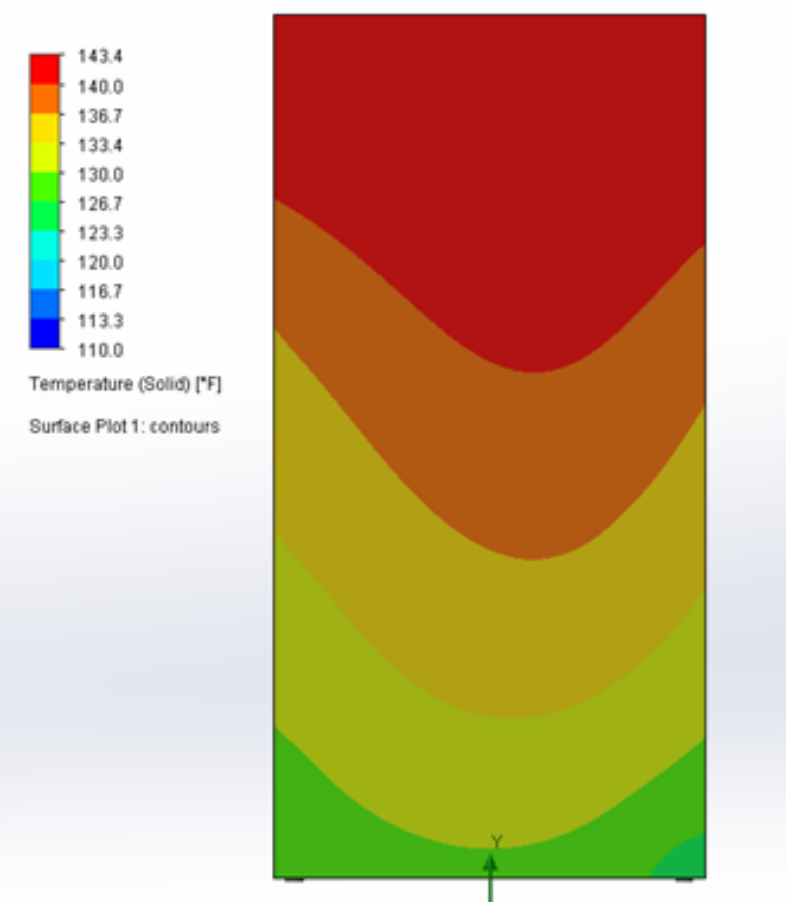
We found that adding a flat, flush mount trim kit (worst case scenario with the least amount of holes) **reduces the max room temperature by 10 degrees**. For example, a Frigidaire FGHG2368TF has max room temperature listed in the manual of 110° F. By adding a flat trim flush mount kit (worst case for ventilation), the max room temperature is reduced to 100° F. Many refrigerators such as Bosch require only 1/8" clearance and will not be impacted by the trim kit.

Assumptions:

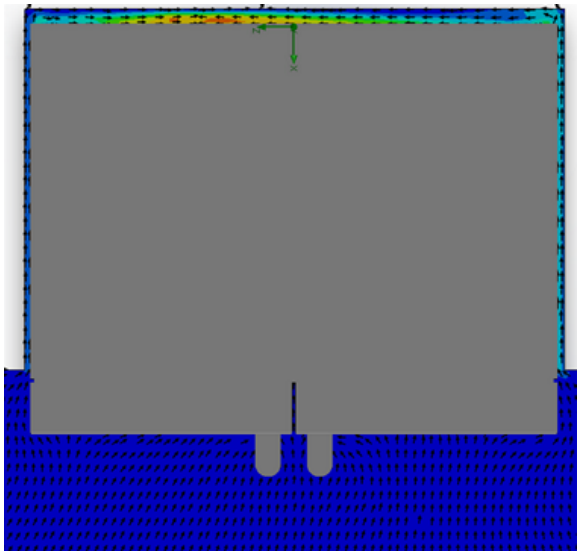
- Power consumption = 65W or 570kWh/year
- Clearances for refrigerator without trim = 3/8" on sides and 1" on top and rear
- Clearances for refrigerator with trim = 1/8" on top and sides, 1" in rear
- Room temp for refrigerator without trim = 110° F
- Room temp for refrigerator with trim installed = 80° F
- Refrigerator cabinet is made of 3/4" plywood
- Cabinets surround refrigerator on right, left, and top
- Air is pulled in at the bottom, rises at the rear of the refrigerator, and exhausts near the top

Results of refrigerator without trim installed:

Average temperature on the back side of the refrigerator is 137° F. See plot below for details.



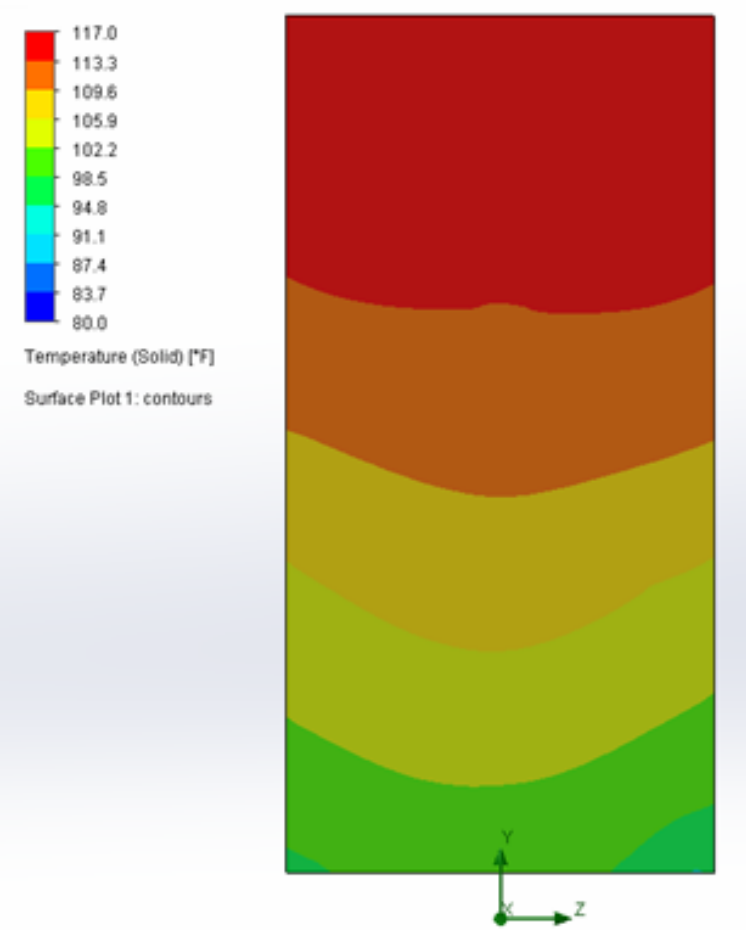
Plot of temperature at back of refrigerator. Temperature is highest near the top of the refrigerator.



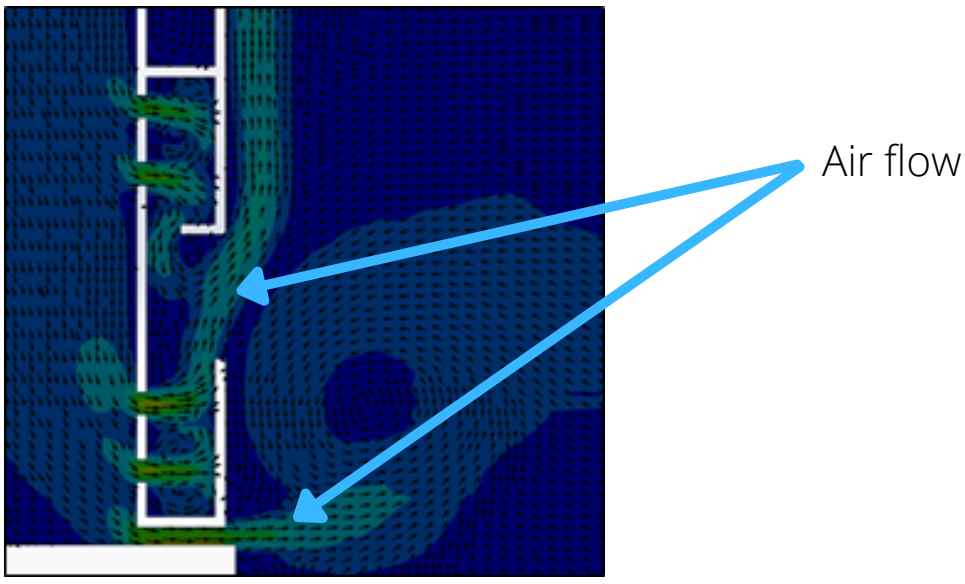
Top view of refrigerator with air flow details. Air flows from the bottom front to rear of the refrigerator.

Results of refrigerator with trim kit installed:

Average surface temperature of backside of refrigerator is 109.5°F. See plot below for details.



Plot of temperature at back of refrigerator with trim kit installed and operating in 80° F room. Temperature is highest near the top of the refrigerator.



Side view of top trim. Air flows through holes in trim from inside refrigerator cabinet into room.