Reverse Engineering VEX IQ

Online Elementary Challenge 2022-2023

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Reverse Engineering- Revlon 1500watt Hairdryer

Reverse engineering means taking an object apart to see how it works and when you do this you learn about the device (techtarget.com). We selected a hair dryer because everyone has a hair dryer in their house. It is good to learn about things you use every day to take one apart and research.

We had no idea how much stuff was in the hairdryer! We now know what is inside a hair dryer and how it's powered. We took the fan part out and the whole casing out then we took a look at the motor which was connected to a fan and then we took the fan off the motor to see how the motor works. We looked at the coils on the fan because they were how it generates heat. We tried to look at the power source of the cord and finally got it open and we saw the panels and the wires in the cords. We learned that air comes in through the back of the hairdryer because it is sucked in by the motor, goes over the heated coils and out an open end to the outside to dry your hair!

Reverse Engineering Process and Research of Parts

We took the four screws out from the back of the hair dryer and took the plastic back part off to see what was inside. We had to use some of our tools to try and unscrew it. We finally got it open with a sledgehammer and a screwdriver.

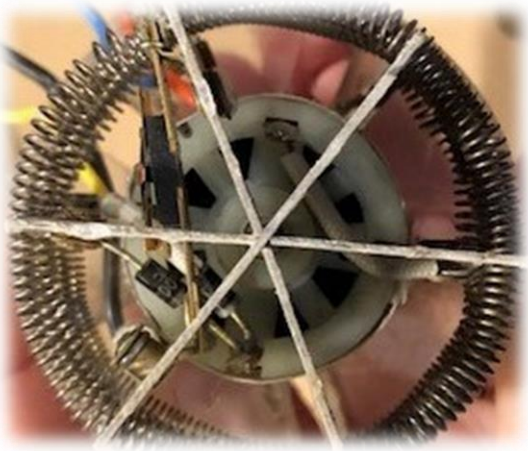
1. The plastic front for the hair dryer.
    a. 3 red buttons for low, medium and high heat

2. The plastic back
    a. Metal mesh
        i. Mesh is metal r/t heat and it keeps the dirty air particles and hair from getting into the fan or motor

Looking at the Inside

The heating elements are parts to heat the air that blows out of the hair dryer.

1. Mica paper



   a. Mica paper contains the heat from the coils to keep the outside plastic from melting from the coils.

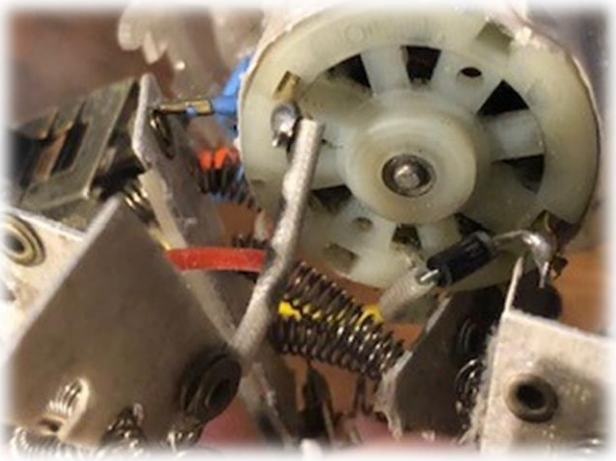
2. Heat coils

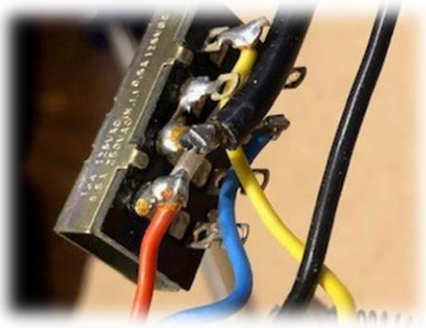
   a. The heating coil is a bare, coiled nichrome wire made of nickel and chromium. The coil is wound around mica boards and produces heat when electricity passes through it. (home.howstuffworks.com

3. Mica board frame had the wires attached

i. Black wire ground wire prevents electric shock, it shuts off the electricity

b. The three wires (red, yellow, blue) were attached at the top, middle and bottom of the coil. Only the bottom heats up for low setting heat, the bottom, middle an top heat up for high heat!





We could not take the motor all the way apart but this is a picture of it, it powers 1500 Watts. A Watt is the amount of energy an item needs to function. One watt is the same as saying (one joule) unit of energy per second.