

Soda Machine

Activity overview description:

Impress your friends with this crazy simple soda drinks machine. Our design includes the capacity of 3 soft drinks. So follow along the step by step guide to build this drink dispenser in two main parts; the circuit and the enclosure.



Learning outcomes:

Young people will:

- Research the flow of electricity and report findings back to the group
- Create test circuits and learn how to adopt a tinkering mindset
- Create prototype plans and discuss with the group for feedback
- Learn how to solder circuits
- Create the structure of the soda drinks machine and integrate a circuit to make it function
- Learn how to customize the visual design of the machine
- Reflect on design and iterate to improve the design and functionality

Skills & Competencies

Young people will develop:

- Critical thinking and problem-solving skills
- Creativity and innovation skills
- Communication skills
- Collaboration skills

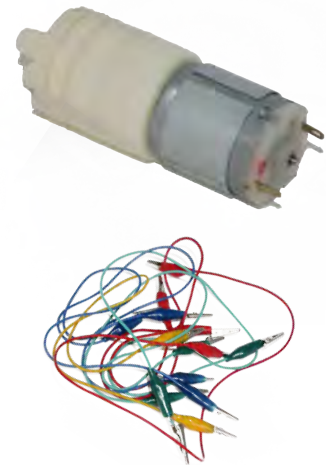
Equipment:

- 9v Battery & 9v Battery Case
- 3x DC 6V Mini Air Pump Motors
- 3x Push Buttons
- 1-Meter tube
- Red and black copper cable
- Cardboard, Paper, Markers
- Markers
- Masking and insulation tape
- Hot Glue Gun & Glue

Step-by-step Instruction

Step 1: Build the Circuit

This circuit isn't so complicated. We have 3 switches, 3 motors and 1 power source to connect. Test run using crocodile clips to make sure all components are working.



Step 2: Solder Circuit

Once you are sure all your components are working correctly replace the crocodile clips with wire and solder.



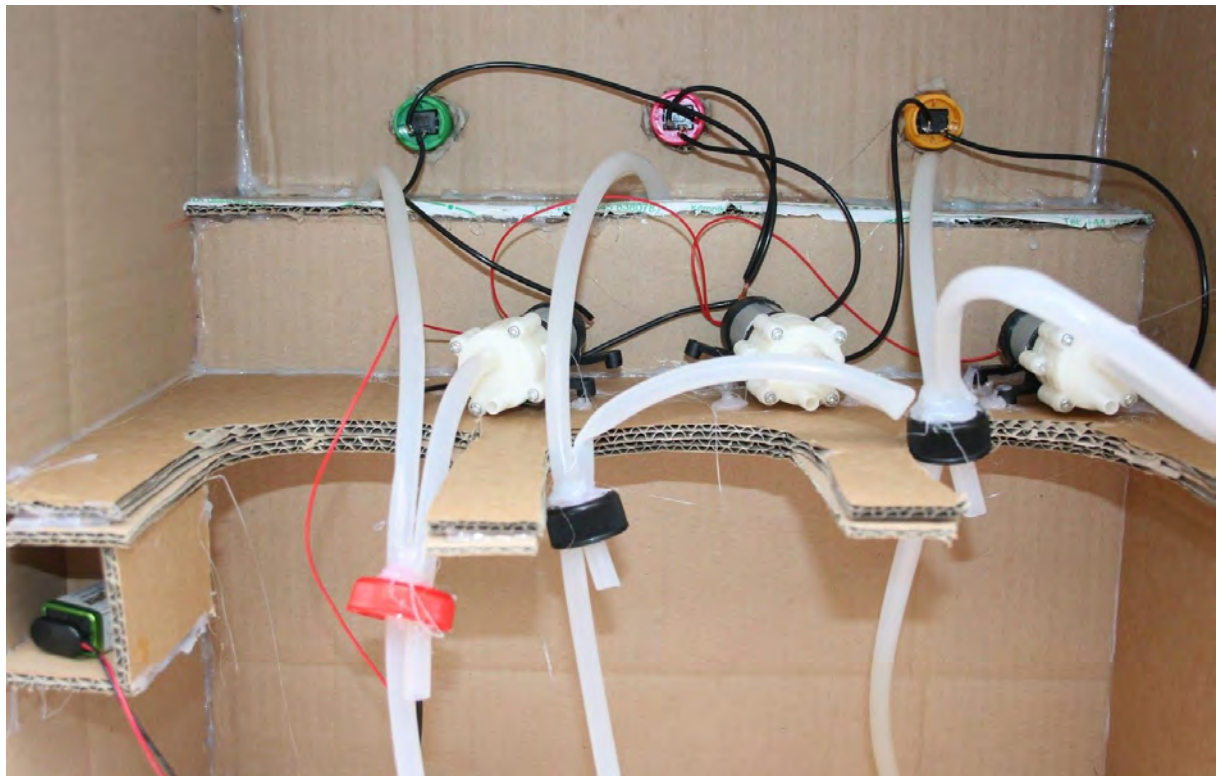
Step 3: Build a Dispenser Enclosure

Grab some old cardboard and cut each panel separately. Using a glue gun combine each piece. Don't rush this it needs to be sturdy.



Step 4: Create a shelf inside to hold the motors

The shelf will sit on the inside of the enclosure and should allow space for the bottles to fit snugly in. Double up on the card if you need to it will need to be strong enough to hold the weight of the motors.



Step 5: Glue motors down

Secure the motors down to the top side of the shelf with some glue just so that they aren't moving about.

Step 6: Run tubes through bottle caps and dispenser

Using a drill or screwdriver, drill a hole in the cap large enough for two tubes to pass through. Glue the tubes on the top side of the bottle cap to make completely airtight. One tube will attach on to the motor, the other will run through the dispenser. In the bottle, one tube should reach the bottom to suck up all liquid and the other should sit closer to the top where it won't be submerged in liquid. This tube will blow out air forcing pressure into the bottle thus forcing the liquid into the longer tube and up and out in the dispensing tube.



Step 7: Screw on your caps

These caps can be reused with fresh bottles when your pop runs out!

Step 8: Glue the top on

Glue the top of the dispenser enclosure on so now it will look more complete.

Step 9: Decorate

You can decorate however you like, put stickers on or fizzy drink labels so that you know which is which. You can also build a drink ledge that catches spillages. This is optional but a nice touch and very easy to do.

Step 9: Build a drink ledge

Build a cardboard box that is the same width as your soda machine. Line it with plastic and run some wooden skewers through it so that the cups can sit on the skewers and drain spillages as needed.