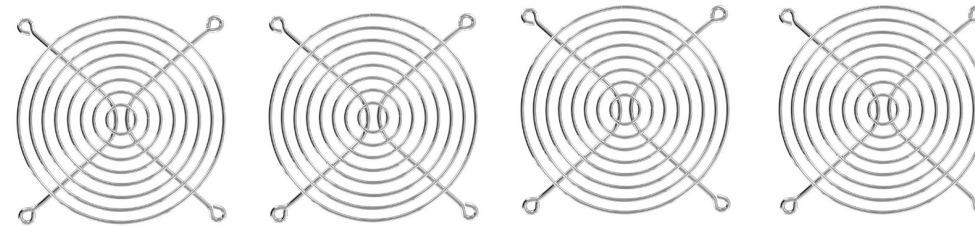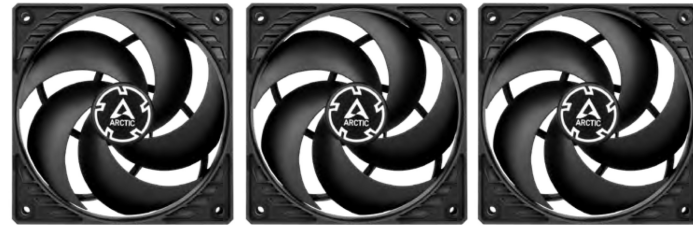# DIY AIR PURIFIER WORKSHOP

Materials

PC Fan DIY Air Purifier

Design Components

- 7-fan configuration with grills (x7) and press-fit fasteners (x28 +1)

- 4 side pieces (3mm thick) with L-connectors

- 2 merv-13 filters

- 1 fan splitter cable

- 1 dual serial to power cable

- 1 12v/5v (2A) power supply

- 4.2 m of foam insulation tape

- 4.2 m of tape

- 2 rubber bottom pads

- 1 motherboard, 2 serial connectors, 1 light switch, fan connector + extension cable

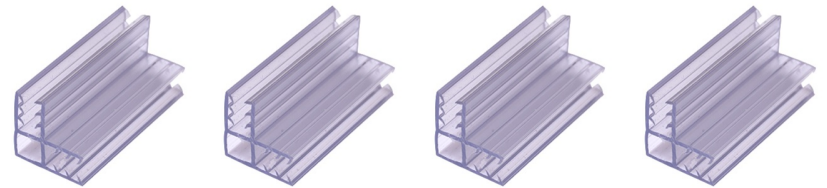# PC Fan DIY Air Purifier
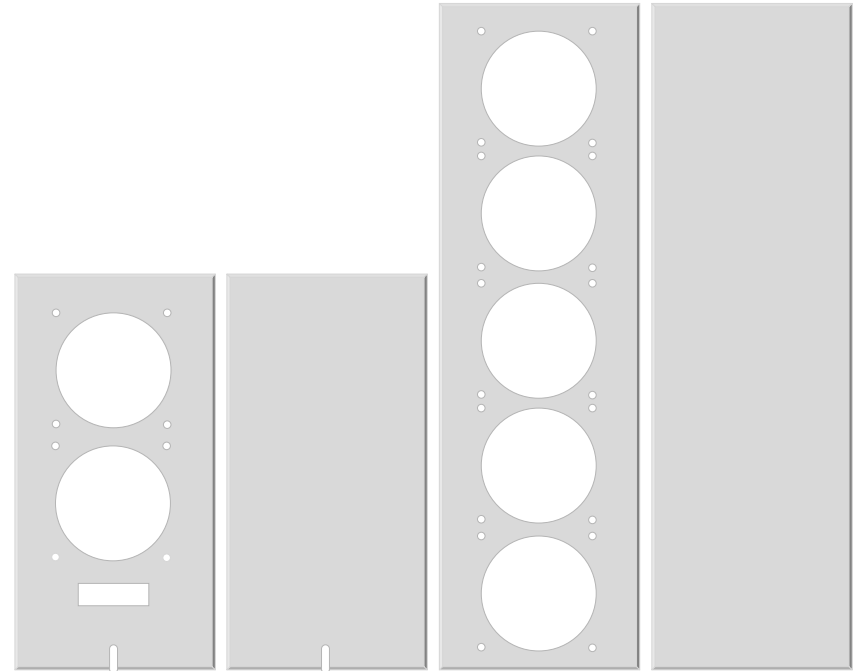
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*The corner pieces are currently a custom request from displayandholders.com

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- 4.2 m of 5 cm gaffing tape

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*Optional, and any tape should work!

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serial connector cable 2

motherboard

serial connector cable 1

light switch

fan connector

extension cable
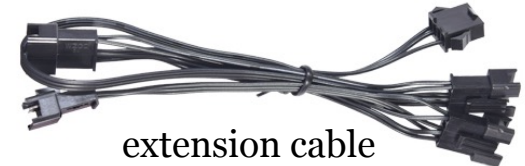
# LET'S BUILD!

Step-By-Step Instructions

Step #1: Foam strips and rubber bottom pads

- **Items**:

  - 4 side pieces

  - foam insulation tape strips

  - 2 rubber bottom pads

- **Instructions**:

  - For each side piece, cut two strips of foam at the length of the piece.

  - Peel off the backing of a foam strip and stick it on one side of the long edge. Repeat for all edges.

  - On the bottom side piece, opposite to the foam, stick one rubber bottom pad in the centre on each edge.*

    - *If you are using corrugated plastic, you'll use the black foam only on the side pieces.
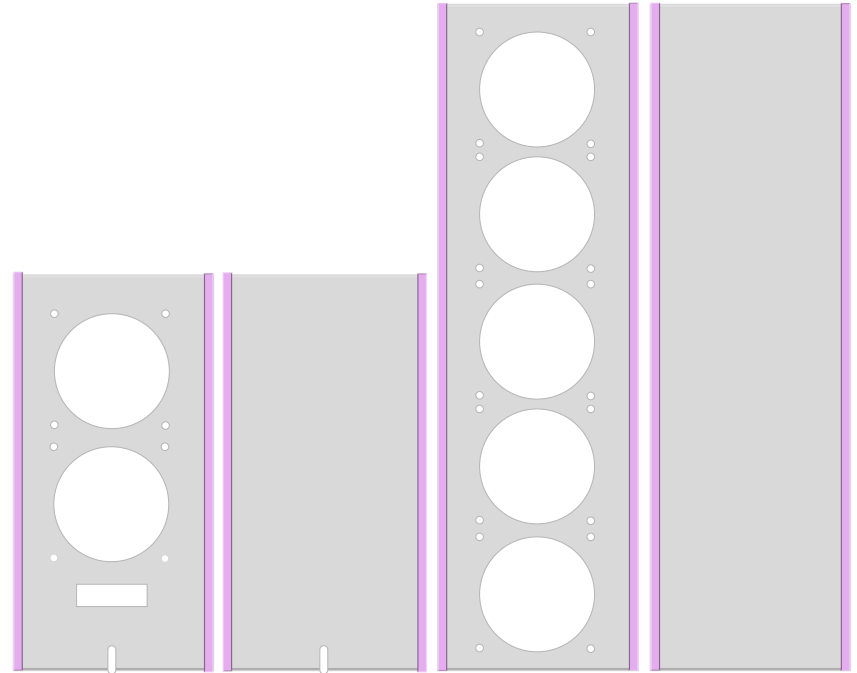
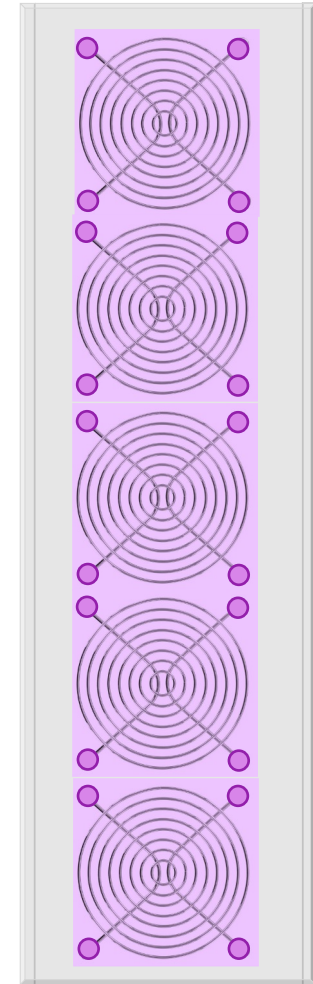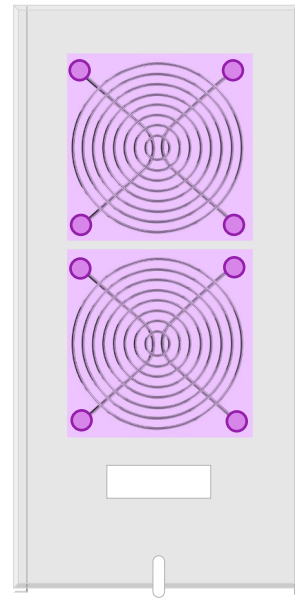# Step #2: Grills and fasteners

- **Items**:

  - 2 side pieces with fan holes

  - 7 metal grills

  - 28 white fasteners

- **Instructions**:

  - On the opposite side of the foam, secure each grill to the side piece over each circular opening.

Step #3: Fans

- **Items**:
  - 4 Lian Li ST120 fans
  - 3 arctic P12 fans
  - 2 side pieces

- **Instructions**:
  - Secure the fans to the fasteners with the four plastic spokes.
  - Position the fans so that the logo on the case faces inside the box.
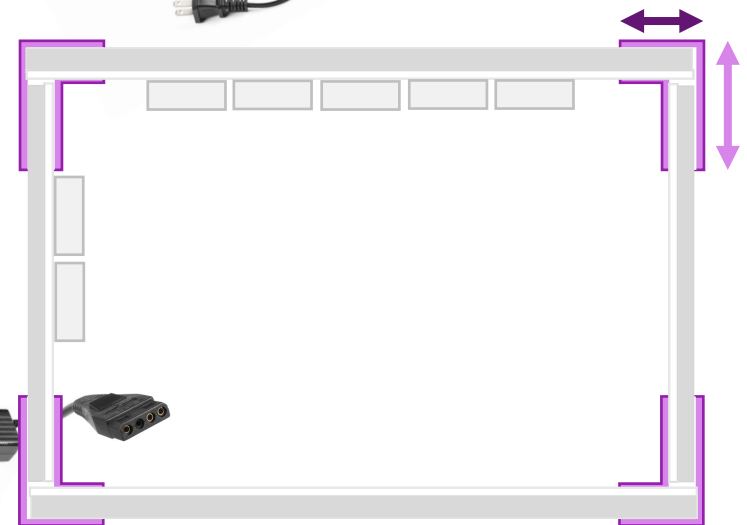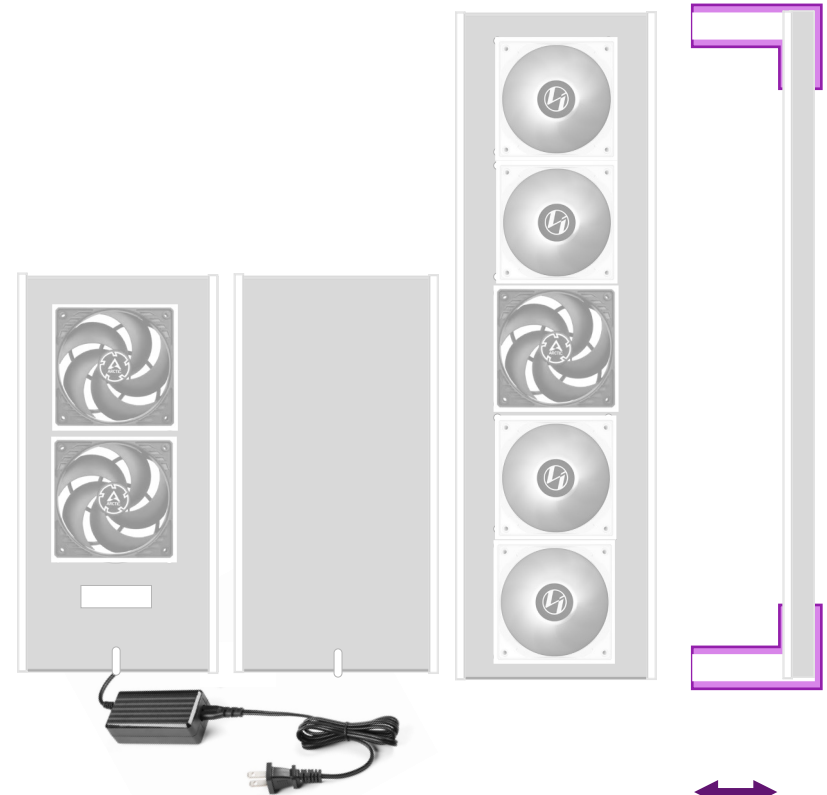   - Arrows on the fan casing also indicate airflow direction.

Step #4: L-Connectors

- **Items**:

  - 4 side pieces

  - 4 l-connectors

  - 1 power supply

- **Instructions**:

  - Identify which side you want the power supply cable to face and slot it through the opening.

  - Press the l-connectors into the side pieces to form the box.

    - Align the shorter edge of the connector with the longer side panels.

Step #5: Motherboard to cable splitter

- **Items**:

  - 1 motherboard

  - 1 cable splitter

- **Instructions**:

  - Connect the non-branched end of the cable splitter to one of the "FAN#" slots on the motherboard.
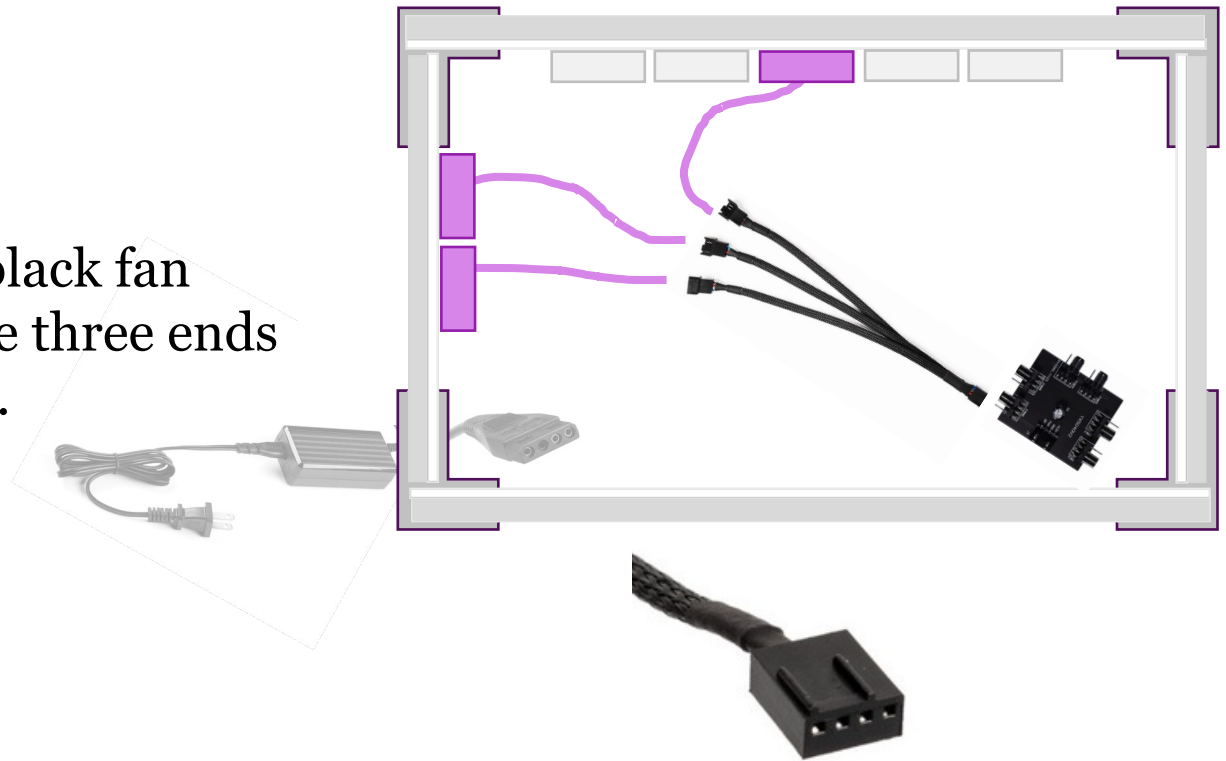
Step #6: Cable splitter to black fans

- **Items**:

  - 1 cable splitter

  - 3 black fans

- **Instructions**:

  - Connect the three black fan cables to each of the three ends of the cable splitter.
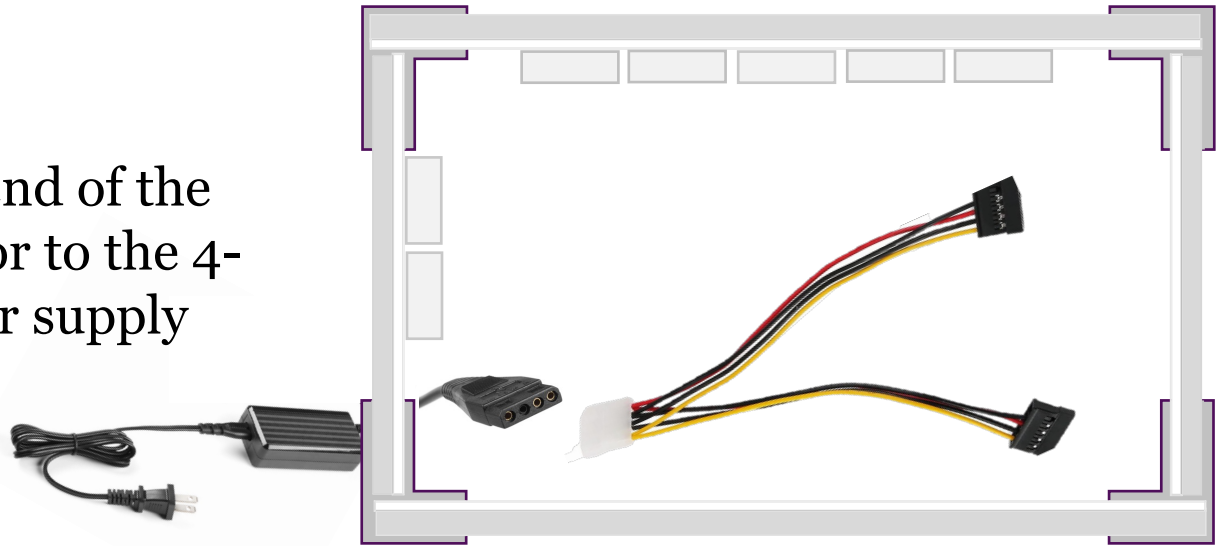
Step #7: Dual serial to power cable

- **Items**:

  - 1 dual serial to power

  - 1 power supply

- **Instructions**:

  - Connect the white end of the dual serial connector to the 4-pin slot of the power supply cable.

Step #8: Dual serial to cable 1 + microcontroller

- **Items**:
  - 1 serial port connector
  - 1 serial connector cable 1
  - 1 microcontroller
- **Instructions**:
  - Connect either of the dual serial ports to the connector cable 1.
  - Connect the shorter plastic end of connector cable 1 to the microcontroller slot that says "+12V, GND, PWM, SP."

Step #9: Dual serial to cable 2 + light switch

- **Items**:
  - 1 serial port connector
  - 1 serial connector cable 2
  - 1 light switch

- **Instructions**:
  - Connect the other serial port to the connector cable 2.
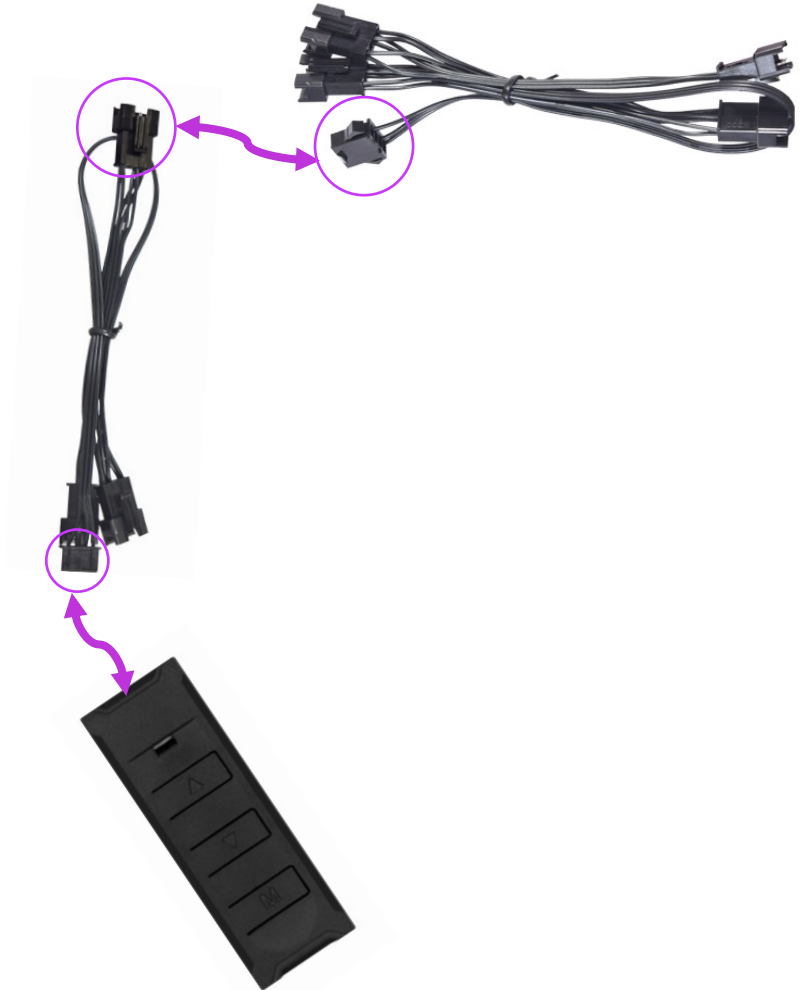 - Connect the smaller plastic end of cable 2 to the light switch.

Step #10: Fan connector to light switch + extension

- **Items**:

  - 1 fan connector

  - 1 light switch

  - 1 extension cable

- **Instructions**:

  - Connect the fan connector to the other light switch slot.

    - Press the light switch into the rectangular hole.

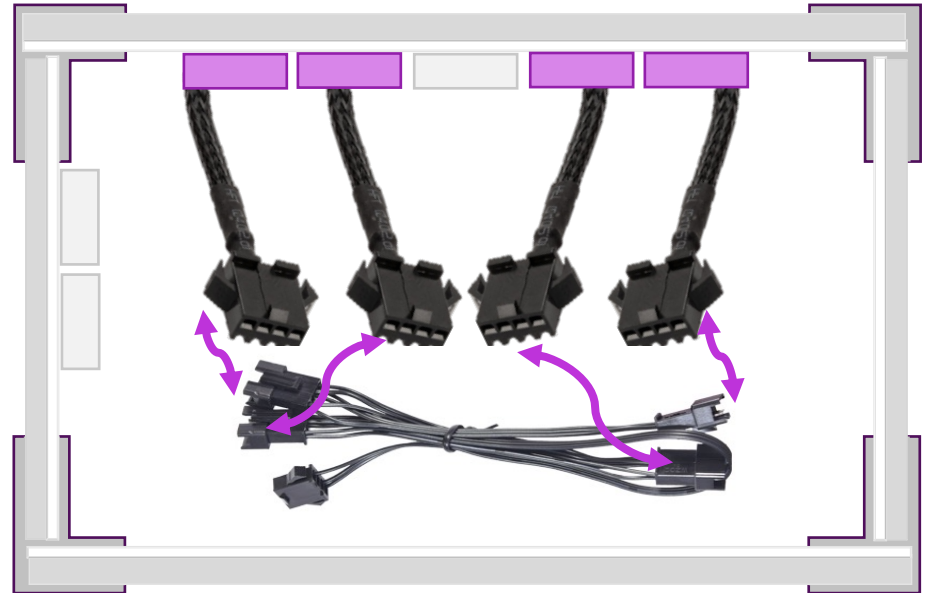 - Connect the fan connector to the extension cable.

Step #11: Extension cable to white fans + twist tie

- **Items**:

    - 4 white/Lian Li fans

    - 1 extension cable

- **Instructions**:

    - Connect each of the white fans to one of the slots on the extension cable using the "**winged**" connections.

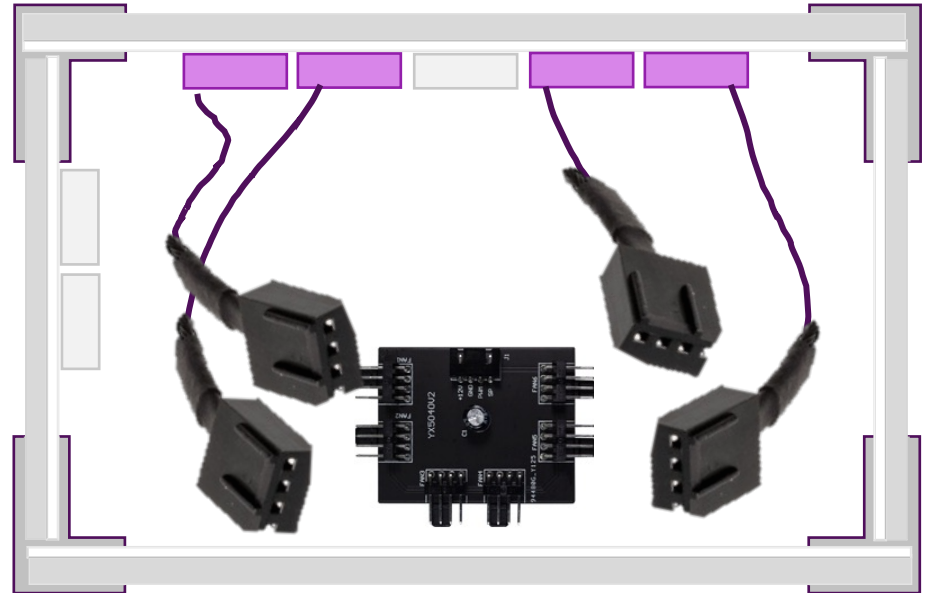   - Twist tie the cables together neatly.

Step #12: Extension cable to white fans + twist tie

- **Items**:
  - 4 white/Lian Li fans
  - 1 motherboard

- **Instructions**:
  - Connect each of the white fans with the **non-winged** piece to one of the slots on the motherboard.
  - Twist tie the cables together neatly.

Step #13: Slot in one filter + test fans

- **Items**:

  - 1 filter

  - 1 box frame with fans

- **Instructions**:

  - With the arrows on the filter pointing inwards, slot in the filter between the foam insulation tape.

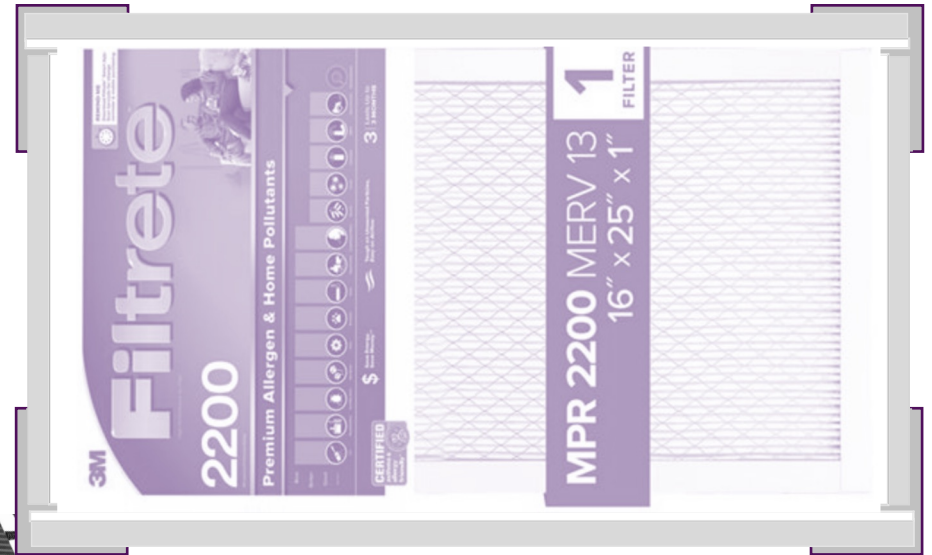 - Prop up the box frame and plug it into an outlet to test whether the fans work!

Step #14: Slot in the second filter

- **Items**:
  - 1 filter
  - 1 box frame with fans
- **Instructions**:
  - With the arrows on the filter pointing inwards, slot in the second filter between the foam insulation tape.

Step #15: Tape up the sides (optional)
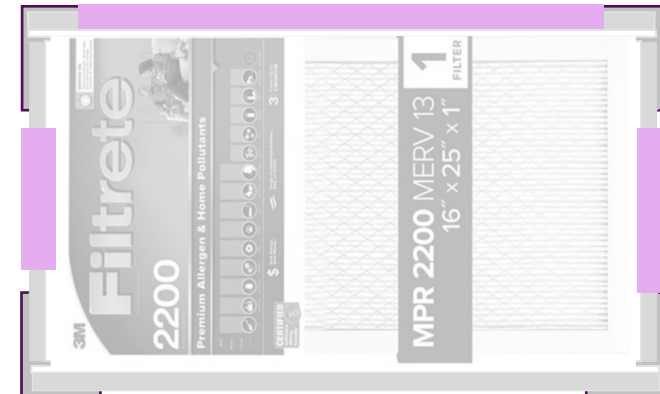
- **Items**:

  - 1 roll of tape

  - 1 box frame with fans and filters assembled

- **Instructions**:

  - If you notice any large gaps between the frame and the filters, use tape to close those gaps.

or

Step #15: Plug in your box and test the lights!

- **Items**:

  - 1 assembled PC fan air purifier

- **Instructions**:

  - Press the up and down arrows on the light switch to change the colours.

  - Press the 'M' button to change the mode:

    - Green: change colours

    - Blue: change frequency

  - Hold the 'M' button to turn off the lights. Press once to turn back on.

Light effect (purple, blue, rainbow, etc.)

Light speed