

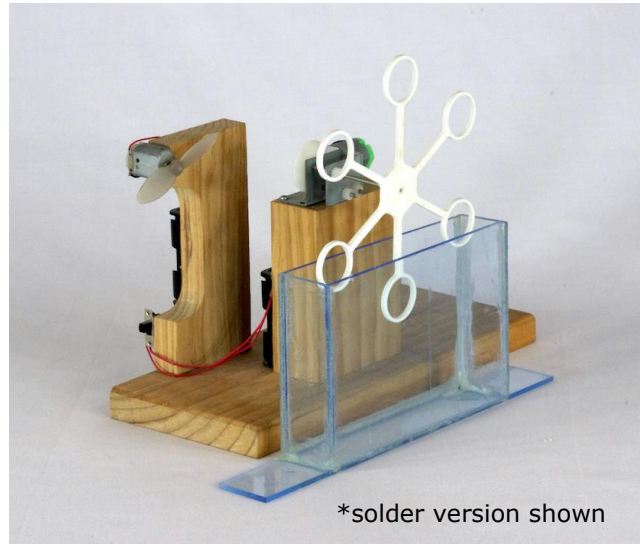


BUBBLE BLOWER - NO SOLDER (Code: BUBBLE-NS)

DESCRIPTION

The *BUBBLE BLOWER - NO SOLDER* is designed to automatically blow bubbles! One motor, driving through a gearbox, constantly rotates 6 wire hoops, which continuously dip into a vessel holding the bubble mixture. The propeller (driven by a second electric motor) blows air into the hoops, producing a constant stream of bubbles.

The motors and switch have wires pre-soldered to them and twist-on connectors are used to join the wires (no soldering required).



LEVEL:

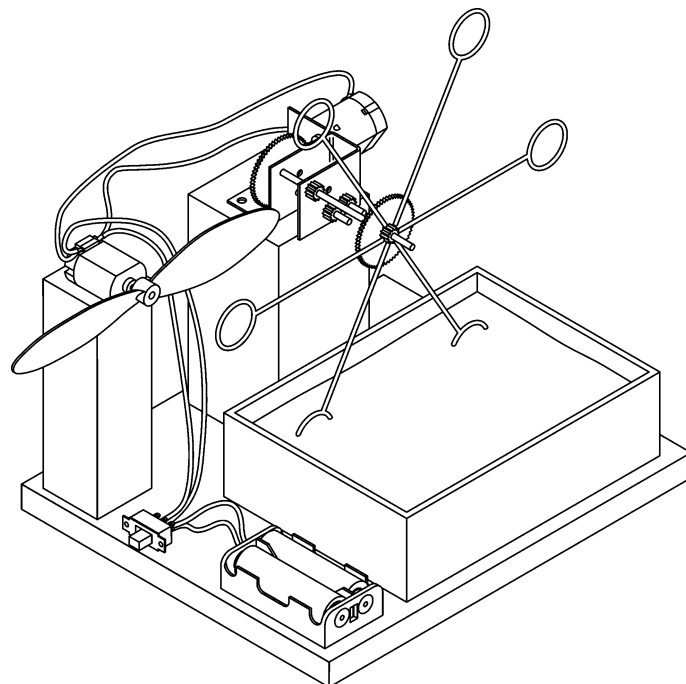
Introductory

HOURS TO CONSTRUCT:

8 - 10 hours

SKILL DEVELOPMENT:

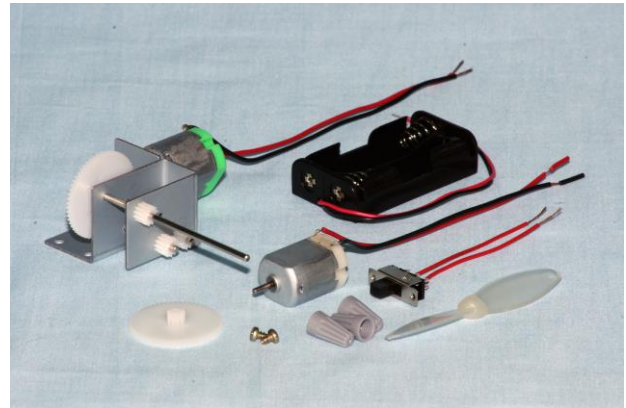
- Planning and Design
- Manufacturing
- Mechanical
- Electrical





WHAT'S IN THE KIT?

- All the mechanical and electronic components required to make the *BUBBLE BLOWER - NO SOLDER* work including the motors, gearbox, gears, propeller, battery holder and switch.
- A detailed teaching unit with a complete parts list, design suggestions, wiring diagram and general construction guidelines.



WHAT ELSE IS NEEDED?

The following items are required and are available from Scorpio Technology, but need to be ordered separately:

- 2 x Battery – AA (BATTAA)

The following material is to be supplied by the student / teacher:

- Material for the components (PVC or acrylic sheet, plywood, etc.)
- Wire or other material for the hoops
- Bubble mixture
- Vessel for the bubble mixture

TOOLS REQUIRED

The following tools are required:

REQUIRED TOOLS	ORDERING CODE
Assorted hand tools – depending on the choice of materials to be used	-
Ruler and pen	-
Small Phillips Screwdriver (1 point)	SCREWDRPH1/80
Hammer - small	HAMMERC
Wire strippers	WIRESTR
Side cutters	SIDECUT or SIDECUTM
Mini Bolt Cutters	BOLTCUTM



ABOUT THE PROJECT

The major features of this project are the planning, design, construction and assembly stages of a simple rotating device.

DESIGN PHASE

- Create your own unique *BUBBLE BLOWER - NO SOLDER* design based on our drawings which focus on component relationships, rather than dimensions. This provides scope for students to individualise their *BUBBLE BLOWER - NO SOLDER* and increase their engagement in the project.

During the **Design phase**, students will need to:

- Evaluate the suitability of various materials, such as PVC, acrylic, plywood or balsa wood for the mounting columns.
- Evaluate different designs, size and shape of the bubble wheel, and the material of the hoops that dip into the bubble mixture.
- Evaluate available technologies that can be used, for example:
 - 3D printer – see examples on the following page
 - laser cutter (which allows more interesting shapes than usual)
 - vacuum former (for the bubble tank)
- Determine how many bubbles they want to blow at any one time which determines the amount of mixture the tank holds.
- Consider the practical aspects of construction and assembly.

MAKING / CONSTRUCTION

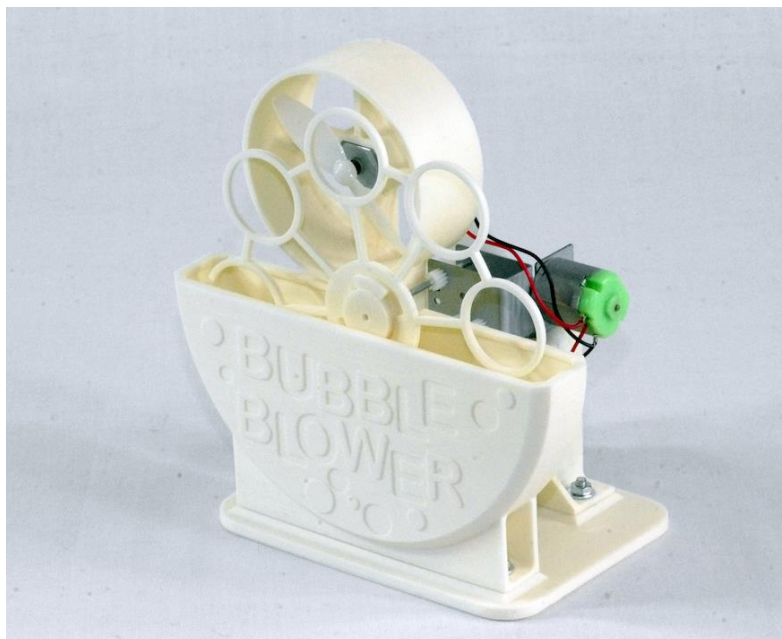
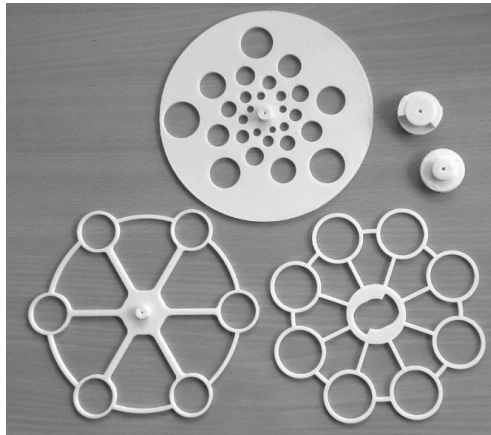
Once the Design process has been completed, the students will be able to start **building their design**. They will:

- Make and assemble the *BUBBLE BLOWER - NO SOLDER* structure they have designed (platform, motor mounts, and bubble tank)
- Mount the gearbox, motors, propeller and bubble wheel on to the structure
- Wire up the battery holder, switch and motors
- Test and adjust the *BUBBLE BLOWER - NO SOLDER*
- Troubleshoot any problems!
- Experiment with different bubble mix formulas



3D PRINTING

The use of a 3D printer allows you to make only one part (e.g. the Bubble wheel) or as much of the *BUBBLE BLOWER – NO SOLDER* as you want. The photo below shows a *BUBBLE BLOWER – NO SOLDER* with all the parts 3D printed before being assembled.



Teachers can obtain the STL files for this design from Scorpio Technology by emailing us and requesting a copy of the files.

- For more information on this 3D printed unit (including links to YouTube videos), and other ideas, go to our website:

<https://www.scorpiotechnology.com.au/kits-in-action>

