

Hydraulic/Pneumatic Device Design Challenge

The Challenge:

Design and build a mechanical model or device that uses the properties of fluids.

Your task is to design and build a mechanical model or device that uses the properties of fluids and has a useful application in the real world.

Suggested Ideas:

- Transportation needs (i.e. a boat navigation lock)
- Ergonomic needs (i.e. a device that raises and lowers a computer monitor, an artificial arm)
- Household needs (i.e. a can crusher, a safety hinge)
- Power needs (i.e. a windmill that can raise water to the surface of a well)
- Entertainment (i.e. a remote control puppet operated and controlled with fluids)
- Other – check with me before you start

Suggested Materials:

You may use but are not limited to:

bristol board, balloons, duct tape, glue gun, corner reinforcements, toys, figures etc. motors, switches, clamps, syringes, cardboard, nails, screws etc. lego or blocks, hand drill with bits, tubing, hinges, fishing line, wood, valves, pulleys, gears, wheels, straws etc. elastic bands, modeling clay, dowels, plastic, bottles, art supplies, rubber stoppers, wood glue, T and one way connectors, bicycle pump, foam trays + other

Assessment Criteria:

The following is to be included in the written report along with your model:

Description of the Device or Model: Describe the application, set specific performance criteria for your model

Design Plan: Develop a safe plan, include an) accurate technical drawing

Materials: Choose and safely use appropriate material, tools, and equipment

First Evaluation: How well does your model meet the criteria?

Revised Plan: Note any modifications you make, include these in a new technical drawing

Final Evaluation/Analysis: Evaluate your model, including suggestions for improvement; and explain how you applied scientific concepts the real world