

Drinking Fountain

ABC Industrial makes a touch-free hand dryer for use in public restrooms. Scientific research has proven that warm air hand dryers are more hygienic for drying hands than drying with a paper towel; however, a dryer with hands-free operation improves sanitation even more by eliminating contaminated buttons. Touch-less hand dryers also have the added benefit of reducing maintenance and utility costs.

ABC Industrial is thinking of expanding its product offerings, hoping to bring the hygienic benefits of their touch-free hand dryer to the ordinary drinking fountain. As an electrical engineer at ABC, your job is to create a prototype of such a touch-free drinking fountain in order to show the viability of such a product.

Your marketing team has conducted focus groups with both business owners who might purchase a drinking fountain and customers who would use one. Results show that business owners are concerned about wasting water. They want the drinking fountain to activate only when someone actually wants a drink of water rather than when they are just passing by. Customers want a fountain that triggers reliably and quickly.

Your job is to create a prototype of a motion-activated drinking fountain using Vernier sensors, Logger *Pro* (or a stand-alone LabQuest 2), and a variety of output devices shown in the Materials list.

MATERIALS

Vernier LabQuest 2 or
LabQuest interface and computer running
Logger *Pro* software
LabQuest power supply

Digital Control Unit (DCU)
Motion Detector

Output Devices
DC water pump (such as KW-PUMP)
DC/120 mA lamp
green LED (with resistor)
red LED (with resistor)

Construction Materials
duct tape
cardboard
felt sheets
colored markers

DESIGN AND CONSTRUCTION TIPS

- Following the Engineering Process will save you time and energy! First, consider the design requirements and constraints, and then start brainstorming ideas. Using an Engineering Design Sheet can guide you through the process.
- In this project, you will reuse water during your designing and testing. Please don't drink the water!