

# ELECTRIC FAN PROJECT

ENERGY Challenge Project  
Using the RapMan 3D Printer

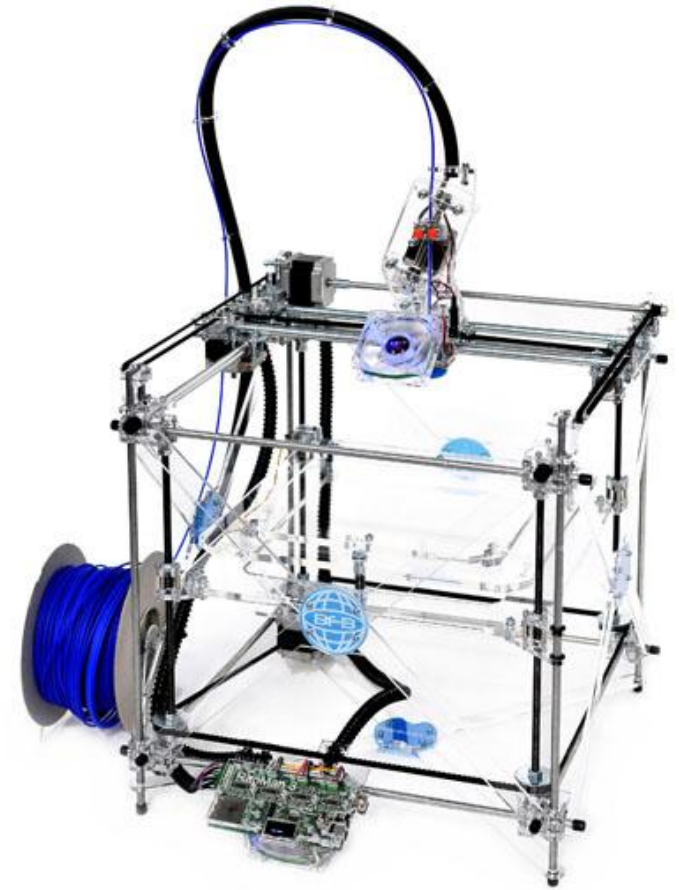
Along With the RapMan you will Need

1 - 3V. DC Motor

1 - Battery Box with Switch

STL File for the Fan Blade

STL File for the Fan Base



**THERE ARE TWO WAYS YOU CAN PRODUCE THE FAN PROJECT**

**FIND THE DISK LABELED *Electric Fan Project* THAT CAME WITH THE MOTORS AND BATTERY BOXES**

**USE THE GCODE FILES NAMED:**

**FANBASE.BFB (This Prints the Base that Holds the Motor)**

**FANBLADE.BFB ( This Prints the Fan Blade)**

**JUST COPY THESE TWO FILES TO THE SD CARD**

**SIMPLY FOLLOW THE RAPMAN OPERATION MANUAL FOR PRINTING**

**OR**

**USE THE STL FILES NAMED:**

**FANBASE (This is the 3D Model of the Fan Base)**

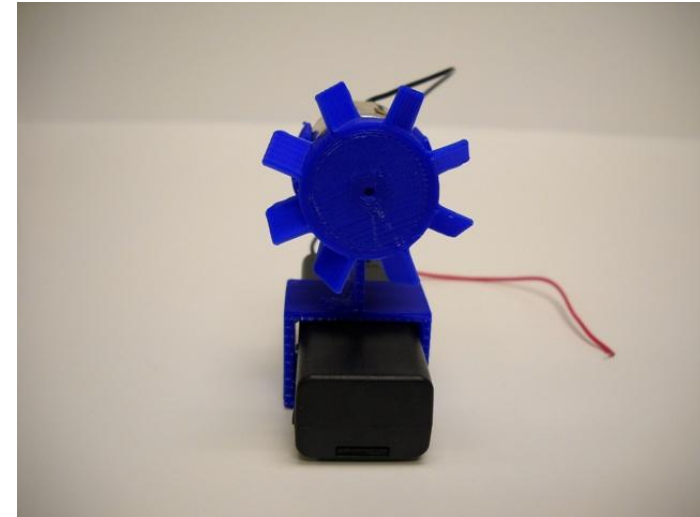
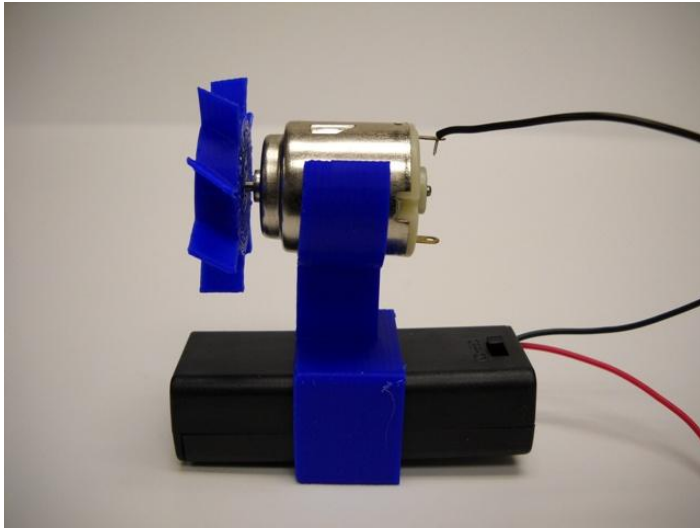
**FANBLADE (This is the 3D Model of the Fan Blade)**

**COPY THE THESE TWO FILES TO A FOLDER (a desktop folder labeled STL FILES works great)**

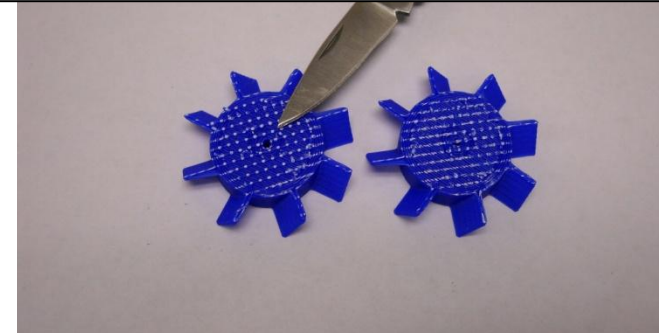
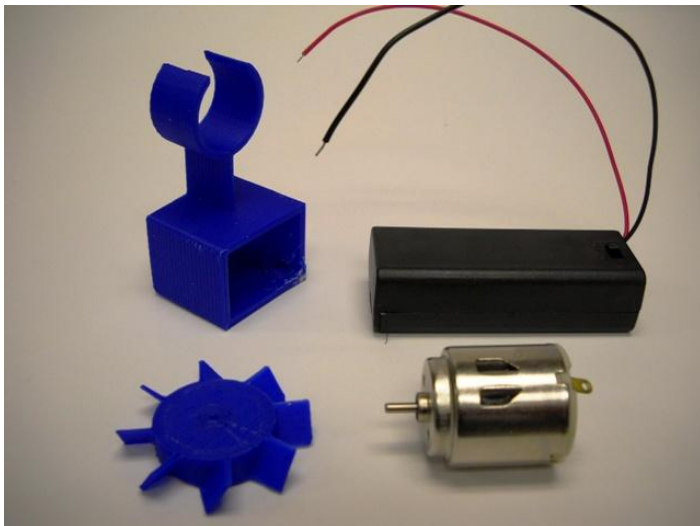
**SIMPLY FOLLOW THE BFB AXON SOFTWARE MANUAL ALONG WITH THE SOFTWARE**

**TO PRODUCE THE GCODE**

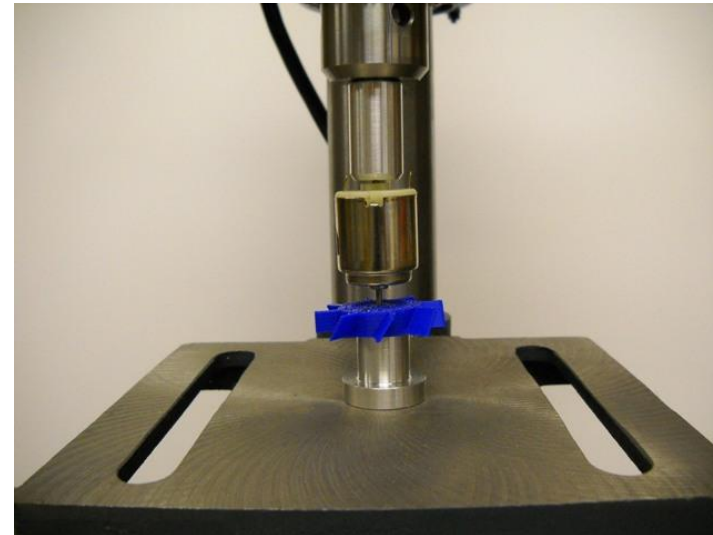
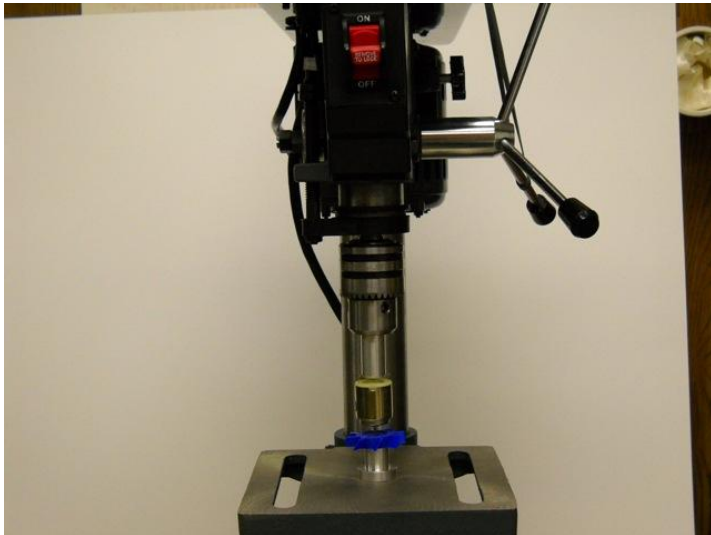
A completed Electric Fan Using Components that We now Supply with the Kit: 10 Each Motor and Battery Box  
Could We Replace the Battery With A Solar Cell?



**YOU MUST WEAR SAFETY GLASSES AT ALL TIMES WITH THIS PROJECT**



**After you remove the Blade from the Raft use a Knife to Gently clear the ABS to reveal the Hole  
This Side is where the Motor Shaft will press in**



Using a Drill Press to PRESS the Motor SHAFT into the Fan Blade, You could use a Vise as well: NEVER PRESS ON THE MOTOR HOUSING

- A 3Volt DC MOTOR HAS PERMANENT MAGNETS, If you Rotate the Shaft The Motor Will Produce DC Current ( voltage )
- SO IF YOU WERE TO DIRECT AIR TO THE SIDE OF THE FAN BLADE
- THE MOTOR WOULD SPIN AND BECOME A GENERATOR
- THE SAME WOULD APPLY IF YOU WERE TO USE WATER

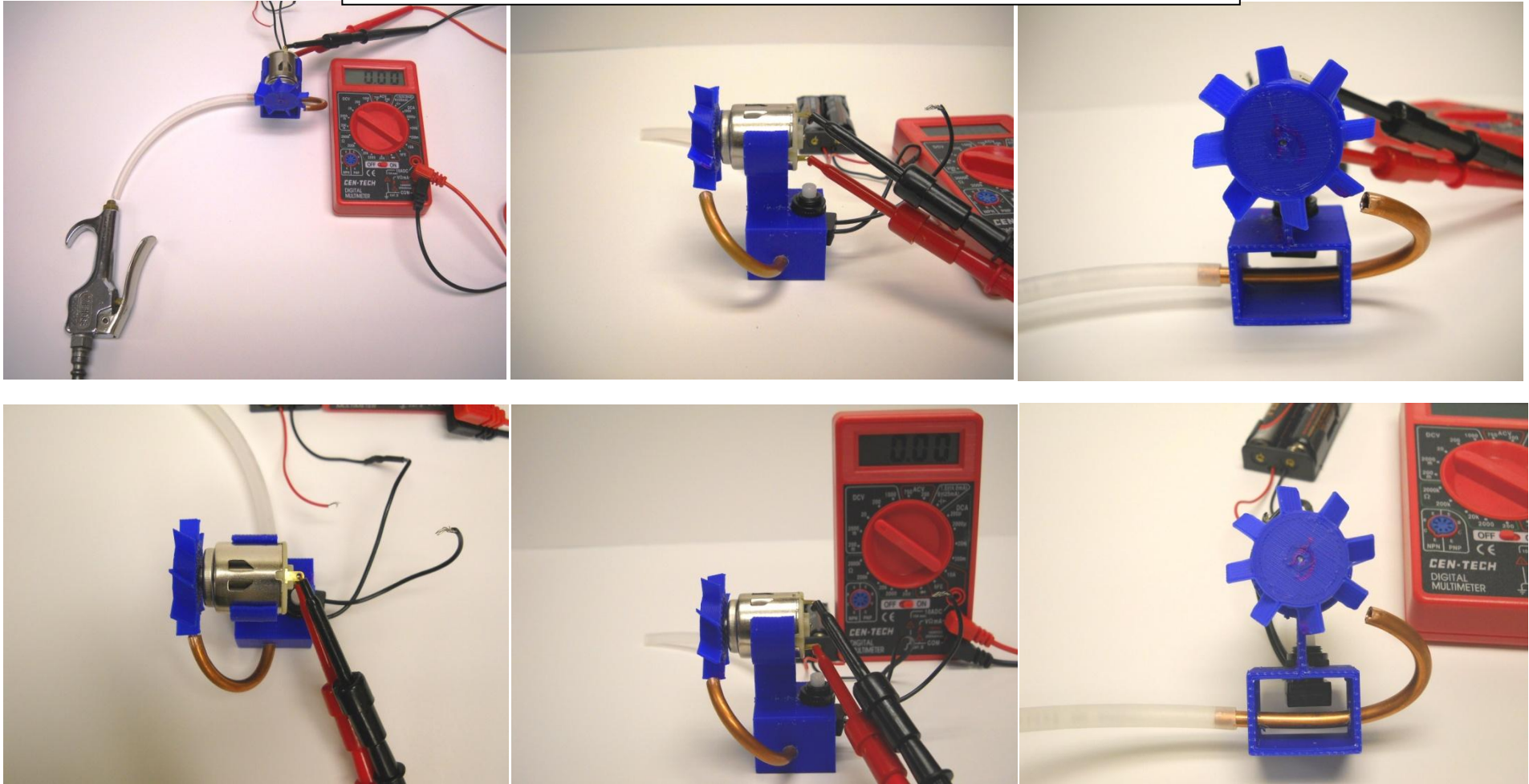
STEAM (air under pressure) GENERATED ELECTRICITY ( Coal or Nuclear )

WIND GENERATED ELECTRICITY ( Wind Farms )

HYDRO (water) GENERATED ELECTRICITY ( Man Made Dams )

Although on A Smaller Scale You Will Encounter The Same Efficacy Problems As Scientists Around the World

## PUT ON YOUR THINKING CAP



## YOU MUST WEAR SAFETY GLASSES AT ALL TIMES WITH THIS PROJECT

The Above Project Was Built With 1/4" Copper Tubing And 1/4" Plastic Tubing. The ABS Is Very Easy to Drill. Drill under size to press fit. We Used An Air Compressor To Power The Turbine. You Could Use Water As Well But Design Some Type Of Splash Shield. Attach a Volt Meter To the Motor. You Should Read About 2.8 Volts DC Output. Think About What you Would Need to Store The Energy this Will Produce.

## **Removing the Raft**

**Place your Hand on and Under the Edge of the Print Board**

**Using the Putty knife , Slide it under the Raft Rocking Left and Right Pushing Parallel with the Print Bed**

**DO NOT PUSH DOWN**

