



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

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| Name(s) Mihir S. Sirdesai | Project Number S0918 |
| Project Title Sustainable Household Appliance: Magnetic Induction Clothes Dryer | |
| Abstract Objectives/Goals The objective is to determine if magnetic induction dryer will dry clothes more efficiently than conventional gas or electric dryers. Methods/Materials Experiment 1: The control experiment was carried out as follows: A piece of cloth (to simulate light load) was weighed. It was wetted with water and weight was noted. To simulate conventional dryer, bubble wrap covered the inside of the drum roller. The hair dryer was placed in the holder directing hot air inside the drum roller. The cloth was the placed inside this drum roller, and heater and gear motor were turned on simultaneously. The weight of cloth was determined at specified intervals by removing the cloth and placing it on a balance. When the weight reached the original weight (the weight of cloth before it was wetted), I surmised that cloth was fully dry. In the test experiment a similar procedure was carried out. The same cloth was weighed, wetted with exact amount of water and placed in drum roller. This time the bubble wrap covered the outside of the roller instead of inside. Magnetic Induction Cooktop with magnetic coils was turned on along with gear motor. The cloth was weighed at regular intervals mentioned in the control experiment and its weight recorded till it achieved its original weight. Experiment 2: The exact procedure mentioned in Experiment 1 was followed except the cloth was folded to resemble a heavy load. Results The following parameters were used for calculating the energy used. Control Experiments used Hair Dryer which was 1875 watts/sec Test Experiments used Magnetic Induction Cooktop + Fan = 1200 + 10 = 1210 watts/sec Total Energy Used (watts) = Power (watts/sec) x Time (seconds) In Experiment 1 for light loads, the control experiment used 618750 watts while the test experiment used 435600 watts which was 29.6% more efficient. In Experiment 2 for heavy loads, the control experiment used 3,600,000 watts while the test experiment used 2,904,000 watts which was 19.3% more efficient Conclusions/Discussion Test results show that clothes dryer with magnetic induction principles will dry clothes efficiently. The reduced power will account for roughly 25% reduction in carbon dioxide emissions. Or U.S. households will be emitting 14.4 million tons annually less carbon dioxide. Moreover, U.S. consumers will encounter 25% savings of cost for drying clothes. | |
| Summary Statement The project is about drying clothes more efficiently through magnetic induction and reduce carbon footprint. | |
| Help Received Friend helped to build apparatus. | |