

# CWSF 2017 - Regina, Saskatchewan



## Benjamin Waldie

### Capturing Waste Energy from a Home Furnace using a Thermoelectric Generator

**Challenge:** Energy

**Category:** Intermediate

**Region:** Bay Area

**City:** Mississauga, ON

**School:** King's Christian Collegiate

**Abstract:** Thermoelectric generators (TEG), which work on a principal known as the Seebeck effect, can be used to capture waste heat energy from a variety of sources. This project investigated the use of TEGs in capturing waste energy from the exhaust of home furnaces. The device designed and created in this project takes the waste heat from a furnace and uses it to create electricity.

#### Biography

Benjamin Waldie is currently a grade 9 student attending Kings Christian Collegiate. He is passionate about all things mechanical and electrical. This love for mechanics has inspired him to join his high school robotics team as both a fabricator of the robot and as its driver. Benjamin also has a love for aircraft and flight and enjoys visiting a local antique flying club where he has had the opportunity to pilot a vintage Tiger Moth aircraft. The inspiration for this project came from a hot laptop charger, where it was noticed that there was a significant amount of energy being lost in the form of heat. This motivated him to find other places in the home where energy was being wasted as heat and to capture this heat energy with thermoelectric generators (TEGs). Benjamin hopes to continue his research on TEGs in future years as well as continue to pursue his passion in mechanics and aviation. His advice to anyone who is thinking about doing a science fair project is to take the leap, as he believes it is a great way to learn about our world and about yourself.

#### Awards

#### Value

Excellence Award - Intermediate - Silver Medal Sponsor: Youth Science Canada	
Western University Scholarship Silver Medallist - \$2000 Entrance Scholarship Sponsor: Western University	\$2 000
Total	\$2 000