

# CWSF 2012 - Charlottetown, Prince Edward Island



## Patrick Sem

### What is the optimal design to harness wind, solar & thermal energy?

**Challenge:** Energy

**Category:** Junior

**Region:** York

**City:** Richmond Hill, ON

**School:** Richmond Hill Montessori and Elementary Private School

**Abstract:** Why is wind, solar, and thermal energy not collected at the same time? A simple electrolysis device was built to find the best circuit design to produce the most hydrogen by electrolysis. After ten tests, two solar panels in a parallel circuit connected to one windmill in a series circuit produced the most hydrogen. Surprisingly, cooling was better than heating the electrolysis device.

### Biography

Patrick Sem is a twelve-year old in Grade 7 attending Richmond Hill Montessori and Elementary Private School. His first science project in Grade 5 "Does changing the amount and length of time a hamster is exposed to light affect it's sleeping pattern?" won him a gold medal. Always curious, he wondered why solar and wind energy were not collected at the same time. He noticed giant windmills under a sunny sky looking out the car window driving to Vermont. He enjoys playing many sports such as: soccer, badminton, basketball, volleyball and ball hockey. He played the French Horn in the band at his school. He competed in both Violin and Chinese-speaking competitions yearly since 5 years of age. He enjoys travelling with his family around the world, to places including: Spain, France, Poland, Brazil, Mexico, China and Italy. He plans to become a cardiac stress lab doctor. Thanks and have a nice day!

### Awards

### Value

Excellence Award - Junior - Bronze Medal Sponsor: Nuclear Waste Management Organization	\$300
Western University Scholarship Bronze Medallist - \$1000 Entrance Scholarship Sponsor: Western University	\$1 000
<b>Total</b>	<b>\$1 300</b>