

# Solar Window Blind Thermal and Electrical Energy Collector

## First Source Trading

### Team Members

Brynn Kasper, John Umarov, Elvis Popov,  
Abdullah Alkalthami, Faisal Alfayez

### Clinic Advisor

Chris Haas

### Design Sponsor

Gary Gustafson, John Wentz



(From L to R: Alfayez, Popov, Alkalthami, Kasper, Umarov)

### Project Summary

Motivated by the increasing pressure to reduce green house gas emissions, First Source Trading is an entrepreneurial company targeting the development of solar energy applications. First Source Trading has detailed a window blind design concept that, while maintaining window functionality, also captures solar thermal and electrical energy. An analytical model and single louvre test bed were built to demonstrate heating capacity for a single pass of fluid in a louvre with exposure to solar radiation. This seven-month project included the design and build of a full-scale proof-of-concept incorporating thermal and electrical power generation into a window-sized unit.



(Single louvre test bed used to validate theoretical models by UST student researcher, Elvis Popov.)

### Design Goal

Design and build a proof-of-concept window blind that produces thermal and electrical power output by use of an array of fluid transferring blinds.

### Design Requirements

- System shall generate power from solar radiation and incorporate a fluid that absorbs heat
- Blind louvres must open and close
- System shall be safe enough to be used in home applications



(SolidWorks model of final design concept including test bed.)

