

## SC-RISE Presentation

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### Solar Research Initiatives at CBU

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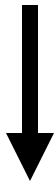
Dr. Anthony Donaldson, Dean, Prof of ECE

- Started classes in 2007
- Undergrad degrees in BSCE, BSECE, BSE and BSME
- 152 students (freshman-junior)
- 8 professors (11 next fall)
- Four focus areas
  - Undergraduate curriculum development
  - Health, Medical and Rehab technologies
  - Sustainable and Green technologies
  - Technologies that have potential for global scope

## Utilizing Solar Power for Air Conditioning



Concentrated Solar Thermal Collector



Heat exchanger



Thermal Energy  
(replacing the  
natural gas furnace)



Absorption Chiller



Cool air



AC electricity usage:

highest annual electricity for any appliance

Prototype:

thermal collector  
working fluid  
evacuated tube  
tracking system  
heat exchanger & pump  
thermal storage  
control and monitor  
absorption chiller

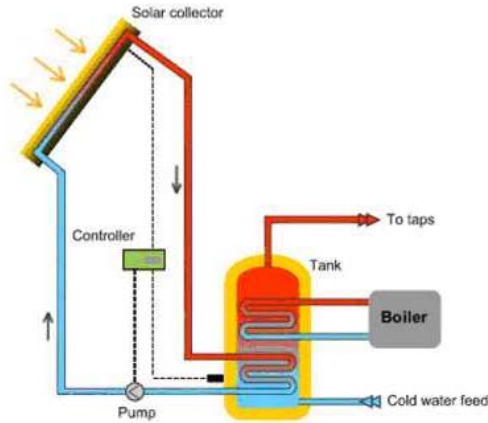
next step:

component improvement

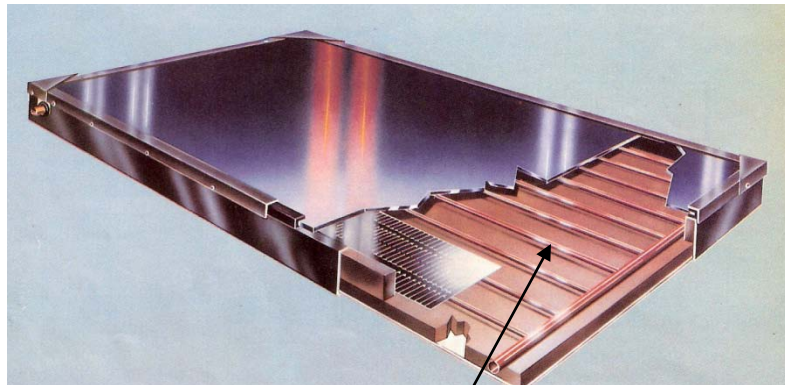
Potential benefit:

reduce peak daytime demand

## Improving the Efficiency of Solar Thermal Collectors



A typical solar hot water system



Line tubes of the collector

**The problem:** inefficient collector heat exchange

**Potential root cause:** uneven flow inside line tubes

**Research project:** measuring flow and pressure modeling flow

**Impact to students:** undergraduate research  
capstone design project  
internship with industry

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