

SUSTAINABILITY INITIATIVES BY STUDENT ORGANIZATIONS FUNDING PROPOSAL

Part I - General Information

Name of Student Organization	Graduate Women in Chemistry
Contact/Responsible Person	Ashley Gates
Contact Office Held/Title	President of Graduate Women in Chemistry
Contact Email Address	Agates15@vt.edu
Contact Telephone Number	814-574-2499

Part II - Project Cost Information

Estimate Cost of this Proposal	\$8,646	See Part III.C
Estimated Savings –	\$26,925 /year	See Part III.D
Net Cost of this Proposal	-\$18,279	

Part III - Supporting Information

A. Please describe your sustainability initiative and attach supporting documentation.

Synthetic chemistry labs at Virginia Tech currently employ water-cooled condensers in refluxed reactions. At an estimated 0.5 gal/min flow rate, one water condenser will use 720 gallons of water over a 24-hour period. Our sustainability initiative is to replace existing water condensers with findensers. Findensers are air condensers comprised of an internal glass condenser covered by a finned aluminum heat sink jacket. The findensers use the air flow from the chemical fume hoods for cooling and do not require an additional cooling source. By replacing current water condensers, the need for constant water flow through the condensers will be greatly reduced. This will result in cost savings from conserving water and a reduction in laboratory repair costs from flooding. Accidental flooding can occur in the laboratory because hoses can disconnect from the condensers while labs are unattended at night, causing water-damage to the laboratory and the building infrastructure.

B. How does this initiative help to achieve the goals of the Virginia Tech Climate Action Committee Resolution and Sustainability Plan?

Policy point #1. Virginia Tech will be a leader in campus Sustainability.

Some universities (for example, UC-San Diego) have taken steps to cut water usage through using findensers. As a large research university, this is an important next step for Virginia Tech as well. Accessible fresh water comprises only 1% of all water on Earth. We must do our part to reduce/eliminate wasteful habits and conserve our natural resources.

Policy point #10. Virginia Tech will engage students, faculty and staff through education and involvement to reduce consumption of energy, water, and materials in facilities.

In the most recent report from 2017, Virginia Tech received 0.85/4 STAR credits for water usage. Drastic improvement is needed in this area, and this initiative will help reduce water waste and save money.

C. What is the cost of your proposal? Please describe in adequate detail the basis for your cost estimate.

Each findenser costs approximately \$346 (a sales quote is attached). We are requesting funds for 25 findensers (1-2 per lab conducting organic syntheses).

D. Will your proposal produce cost savings for the University? If so, how much? Please describe in adequate detail the basis for your savings estimate.

The facilities energy management group reported the FY19 water usage for Davidson Hall was \$4.10 per 1,000 gallons. With an estimated flow rate of 0.5 gal/min, the cost to the university is estimated at \$2.95/day per reaction (\$1,077/year per reaction). The cost of each findenser is \$346. This would result in a cost savings of \$731 per findenser for the first year. We are requesting funds to purchase 25 findensers at a total cost of \$8,646 and an estimated **annual water savings of \$26,925** for the university.

E. Is this funding request an Ongoing or One-Time change **(please check one)**?

One-time **Ongoing**

F. Is funding available for this request from another source? If yes, describe the funding (source, amount, etc.)

There are currently no additional sources of funding for this request.

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<u>Part IV- Requestors/Reviewers</u>	
Prepared By (Name of Contact for Student Organization): Ashley Gates	Date: 11/8/19
Lowell Jessee 1/6/20 Kim Briele 1/8/20	
Reviewed By (Name of Appropriate University Official):	Date:
Denny Cochrane 1/8/20	
Reviewed By (Name of Office of Energy and Sustainability Representative):	Date: