



Welcome!

PROF. Z RESEARCH GROUP OVERVIEW

FALL 2024



Ray W. Herrick Laboratories

Davide Ziviani

Purdue University, School of Mechanical Engineering, West Lafayette, IN



Tenure group pic
(May 5th, 2024)

► Fall 2024:

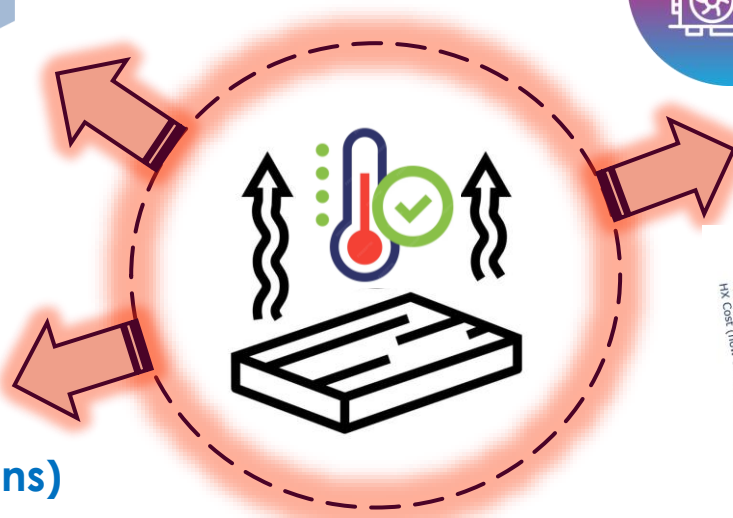
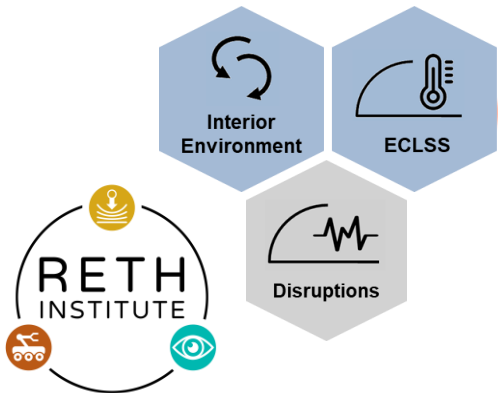
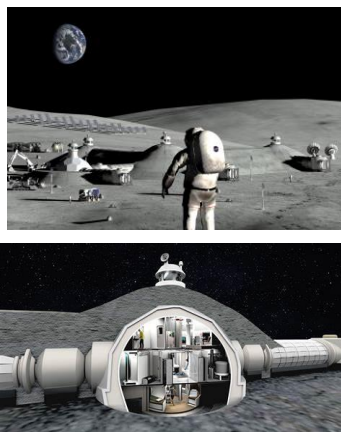
- UG Students (8): **Samuel Aldridge (new)**, **Aksh Iyer (new)**, **Avena Rawal (new)**, Daniel Benadof, Shantanu Sinha, Owen Briggeman, Pablo C. Valcarcel (IAESTE), HeeJun Shin
- MS Students (9): Sarah Alkandari, Steven Montoya, John Hubby, Aaron Hartzell, **Bryant Jepsen (new)**, **Lister Otieno (new)**, Marco Nanni, John Gray (non-thesis), Yisarai Valbuena Sanchez (thesis @Trane)
- PhD Students (20): **Abd Bani Issa (cand.)**, Andreas Hoess, Mohammed Barrubeeah, Sreetam Bhaduri, Mateo Carvajal, Yidan Cui, **Chaoran Dai (new)**, **Xin Ding (cand.)**, **Weigang Hou (cand.)**, **Steven Liang (cand.)**, Rebecca Lu, **Elias Pergantis (cand.)**, **Levi Premer ("new" DPhD)**, Jaewon Park, Junyan Ren, Seung Ho Rhee, **Marie Shelly (cand.)**, Tyler Schostek, Makena Thompson, **Yuangzhi Yang (new)**, Mingjie Zhu



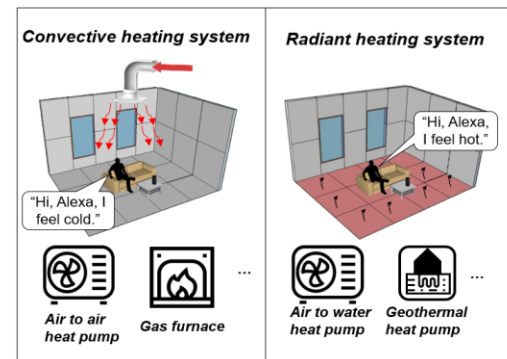
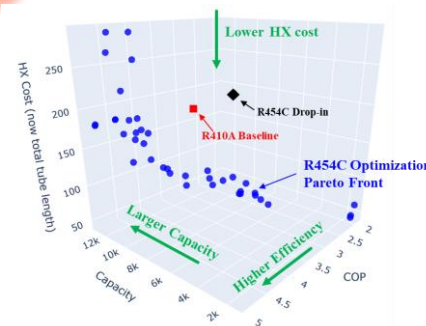
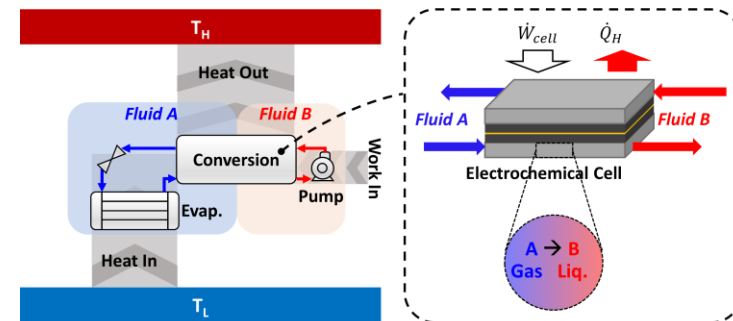
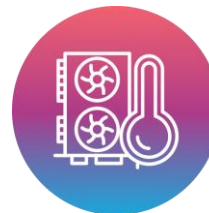
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Research on Thermal Management Systems

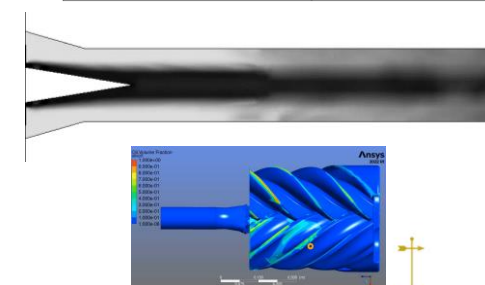
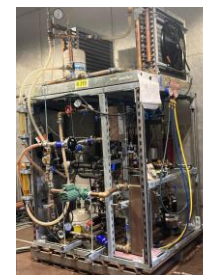
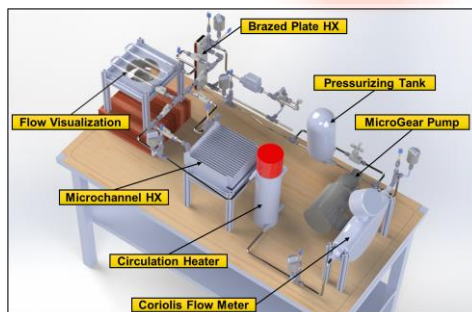
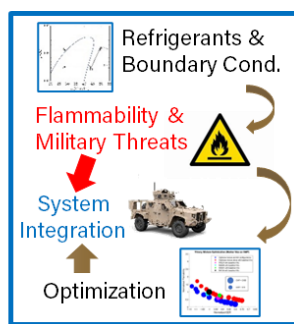
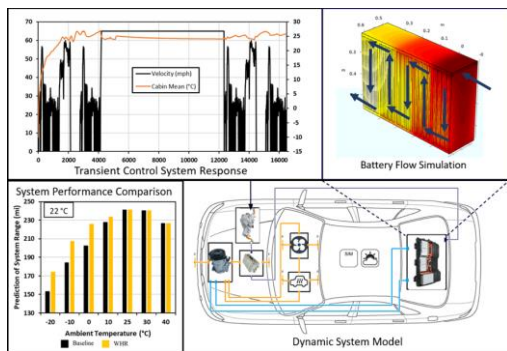
Deep Space Habitats & Resilient Thermal Systems



Emerging Heat Pumping Technologies & Components



Multi-Scale Analyses of TMS (e.g., EV, Data Centers, Military Applications)



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Some Stats ...

- ▶ Students graduated and advised since Fall 2019:
 - ▶ Graduate 2 PhD students (now Post-Docs at NREL), 10 MS students w/ thesis, 8 MS students w/out thesis
 - ▶ Hosted 12 visiting scholars and 1 Fulbright Scholar
 - ▶ Mentored 2 Post-Docs (Dr. Oh starts as faculty 09/2024)
- ▶ UG Researchers:
 - ▶ Average of 5/6 UG Researchers per semester
 - ▶ Mentored 60+ UG students (ME297/ME498/ME499)
- ▶ Funding Expenditures & Fellowships :
 - Projected \$15M+ by end of Fall 2024
 - 2 FYE Fellowships; 2 FYE Fellowships through Indiana Space Program; 3 Bottomley Scholarships; 1 ASHRAE Freshmen Engineering Scholarship; 2020 ASHRAE UG Research Funds
 - 4 ASHRAE GIA (Abd, Yidan, Elias, Levi); 1 NSF GRFP (Levi); 1 Onassis Foundation (Elias)



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Other Info ...

▶ Centers:

- ▶ CHPB, CTCR, RETHi

▶ Conferences:

- ▶ Herrick Conferences (next 2026)
- ▶ Herrick IAC



▶ ASHRAE

- ▶ ASHRAE Student Branch
- ▶ ASHRAE Distinguished Lecturer

▶ Tailgating instructions



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What “Research Group” Means?

CLEAR OBJECTIVES

Defined Goals:

- Everyone understands the target(s)
- Maintains focus and direction

Role Clarity:

- Each team member knows their duties
- Prevents overlap and confusion

EFFECTIVE MEETINGS

Time Valued:

- Team members bond both professionally and socially
- Strengthens teamwork

Genuine Interactions:

- Conflicts are addressed quickly and fairly
- Everyone feels safe to be their best self

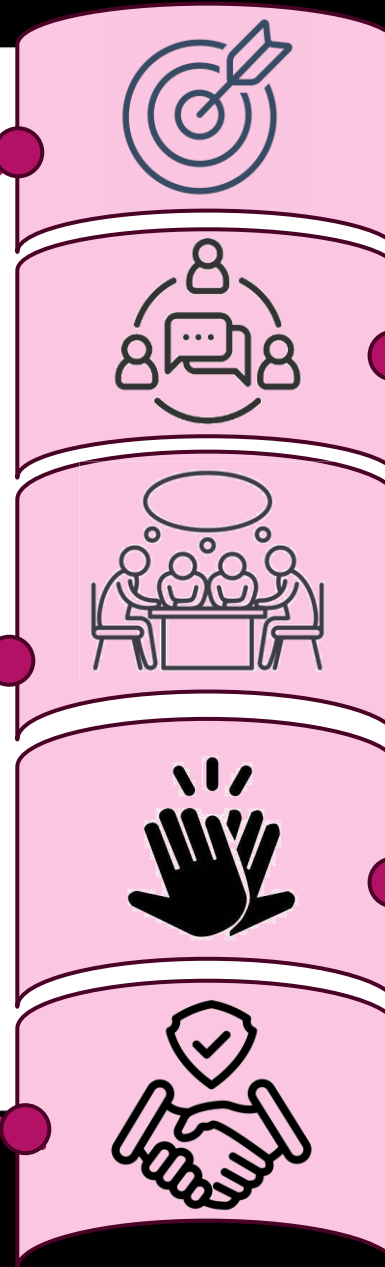
TRUST, TEAMWORK & CONNECTION

Meaningful Connections:

- Team members bond both professionally and socially
- Strengthens teamwork

Respectful Environment:

- Conflicts are addressed quickly and fairly
- Everyone feels safe to be their best self



OPEN COMMUNICATION

Culture of Safety:

- Ideas are freely shared among the group
- Builds trust and openness

Transparent Updates:

- Progress and challenges are consistently communicated
- Keeps the team aligned

RECOGNITIONS

Frequent Appreciation:

- Efforts are regularly acknowledged among the group
- Improved morale and motivation

Celebration of Success:

- Team and individual accomplishments are recognized
- Creates a positive and supportive culture

