

Eat Well, Live Well.

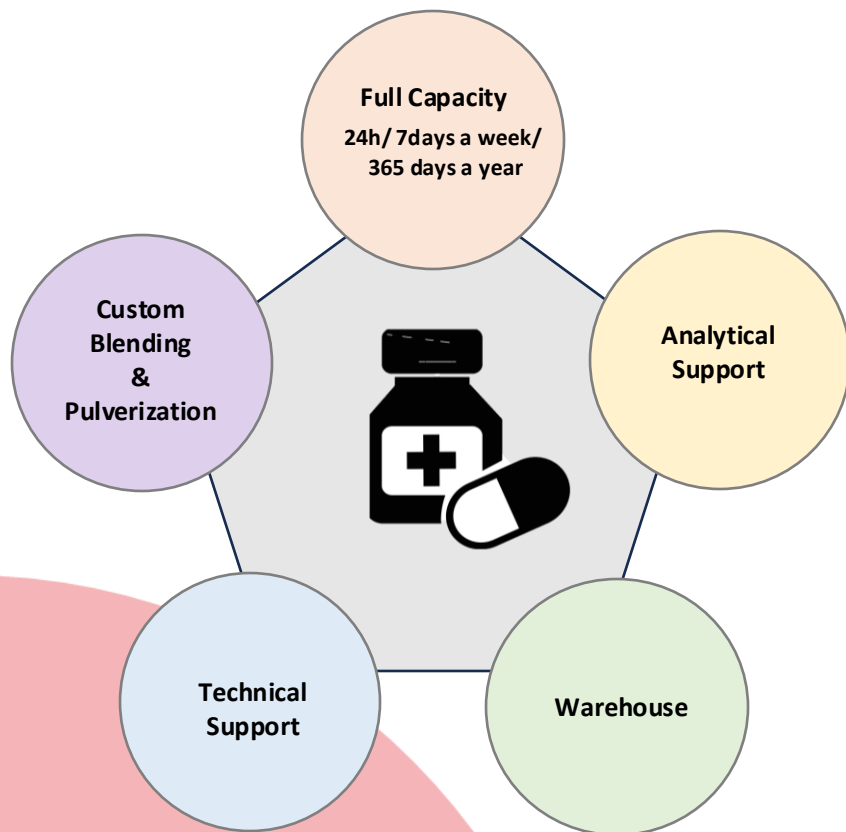


NC ESI Conference
October 28th, 2024



Ajinomoto Health & Nutrition North America, Inc.

Who we are

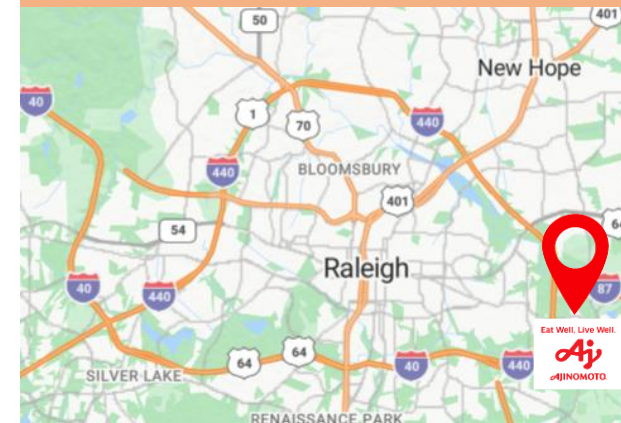


Ajinomoto Health & Nutrition North America, Inc.

- Japanese Active Pharmaceutical Ingredient Amino Acid manufacturer producing 11 different Amino Acids
 - IV (parenteral)
 - Cell culture media
 - Biopharma excipients and processing aides
 - Medical nutrition, etc.

Only pyrogen-free amino acid plant in North America
Solvent capability for high-solubility amino acids and dipeptide crystallization
Specialty Packaging and Proprietary Blend capability
Animal-origin free, Kosher, and Halal certified

We are located the east side of Raleigh!





Our GHG reduction aspirations

50%↓

Reduction in Scope 1 and Scope 2 greenhouse gas emissions by 2030

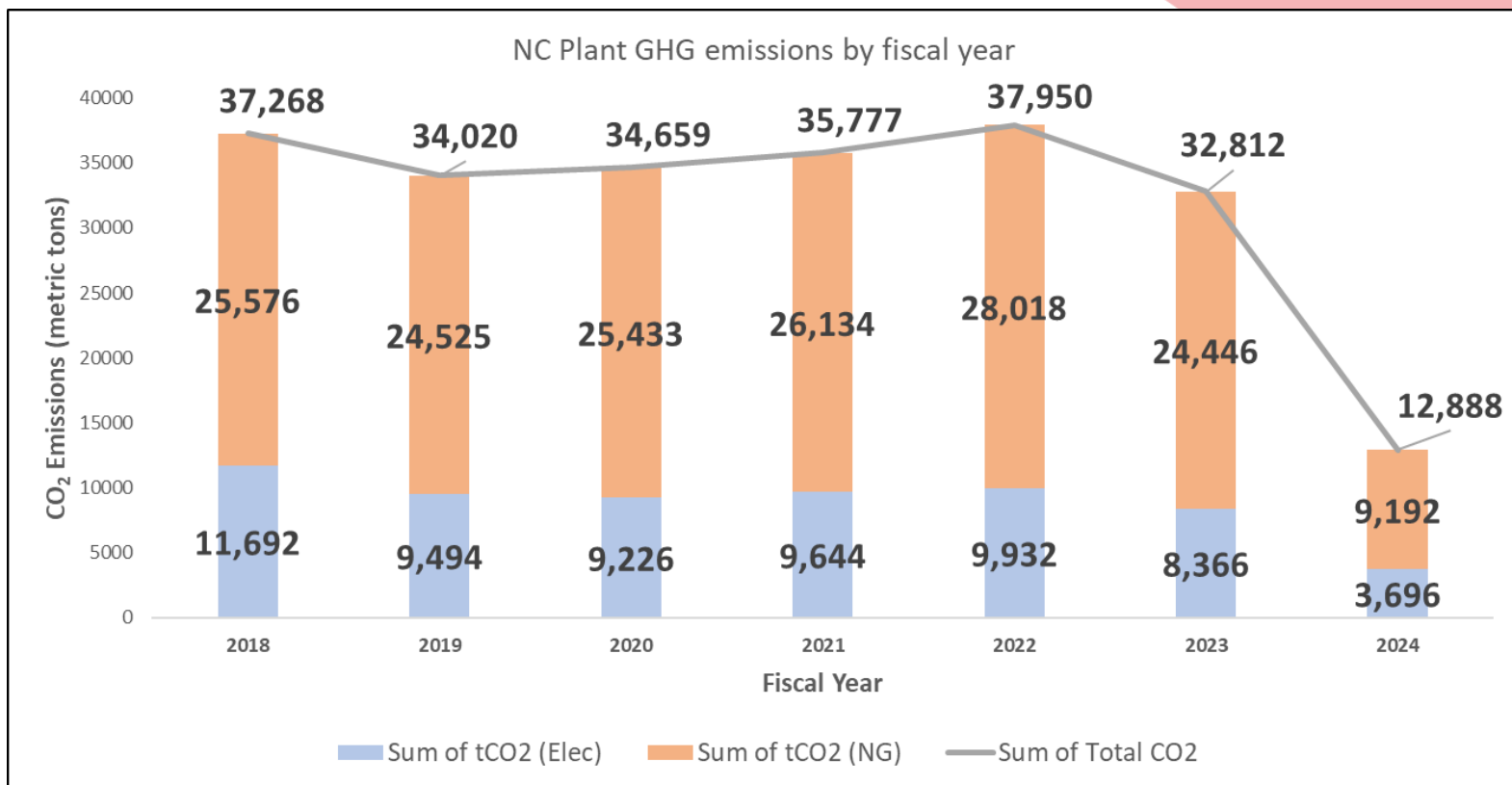
*Focus of the GHG Core Team

Reduction in Scope 3 greenhouse gas emissions by 2030

24%↓

100%

Carbon neutral by 2050





Sustainable Actions in Ajinomoto NC Plant

Current Approach

Improve efficiency

- LED installation
- Utility efficiency improvements
- Process steam usage reductions

Reduce

- Eliminate well water usage for cooling
- Reduce chromatography wash water
- Reduce rinse water for tank cleaning

Partnership

- Composting activated carbon & biosolids
- Donating cell cream as fertilizer to farms
- Repurposing plastics

GHG
Reduction

Water
Usage

Reduce
Waste

Next Steps

New Technology

- Steam Condensate Recovery
- Evaporator Heat Recovery
- Variable Speed Drives

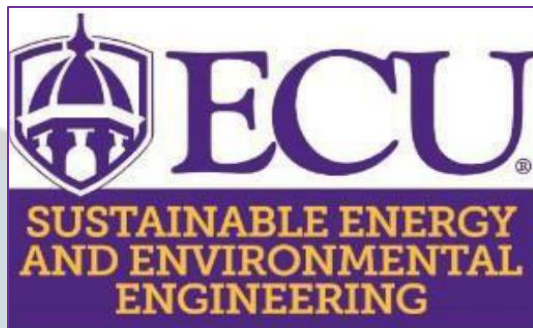
Reuse

- Recover the water from evaporation
- Recycle chromatography wash water
- Seal water recycle

Circular Economy

- Raw Material reduction
- Eliminating plastics or returning them

ECU Internship in Aji



Target facilities within EPA interest sectors:

- Manufacturing
- Food & Beverage
- Chemical
- Automotive
- Aerospace
- Metal



Collective Goals

- Conserving water
- Reducing GHG and usage of the energy.

Successful Internship Planning

Company Competency

- Accountability
- Empathy & Resonance
- Execution
- Growth Mindset
- Leadership

Grow with Community

- Experienced engineers on staff to coach and supervise.
- Learning about mentorship.

ESI Steward Ceremony

Jacob Zino reached out

Contracted TenX Energy Assessment

Mr. Imamura Utility Diagnosis

Approached for 2nd year

Feb-22

Nov-22

Dec-22

Jan-23

Mar-23

Apr-23

May-23

Jun-23

Jul-23

Aug-23

Apr-24

May-24

Aug-24

CUCA utilities assessment

Agreed to host and assigned mentor

Student selected for internship

1st Internship

2nd Internship

How we make a difference together

Benefit to Intern

- Experience in an industrial setting
- Demonstrates independent work
- Shows project management ability
- Solve real problems by gathering data and identifying and evaluating options



Benefit to Organization

- New insight
- Water reduction Assessment
- Lean assessment
- Energy audit
- NDA from the student



MATCHING CANDIDATE

PRIOR ASSESSMENT OF OUR GOALS.

EASIER TRANSITION FOR THE PERSON TO JOIN THE TEAM.



MEET & CONNECT

GHG REDUCTION TEAM IN THE PLANT AND RECEIVE THE TRAINING TO CREATE SUCCESSFUL PLAN FOR THE INTERNSHIP.



RESEARCH & DISCUSSION

FACILITATED IDEA GENERATION AND FEASIBILITY CALCULATION



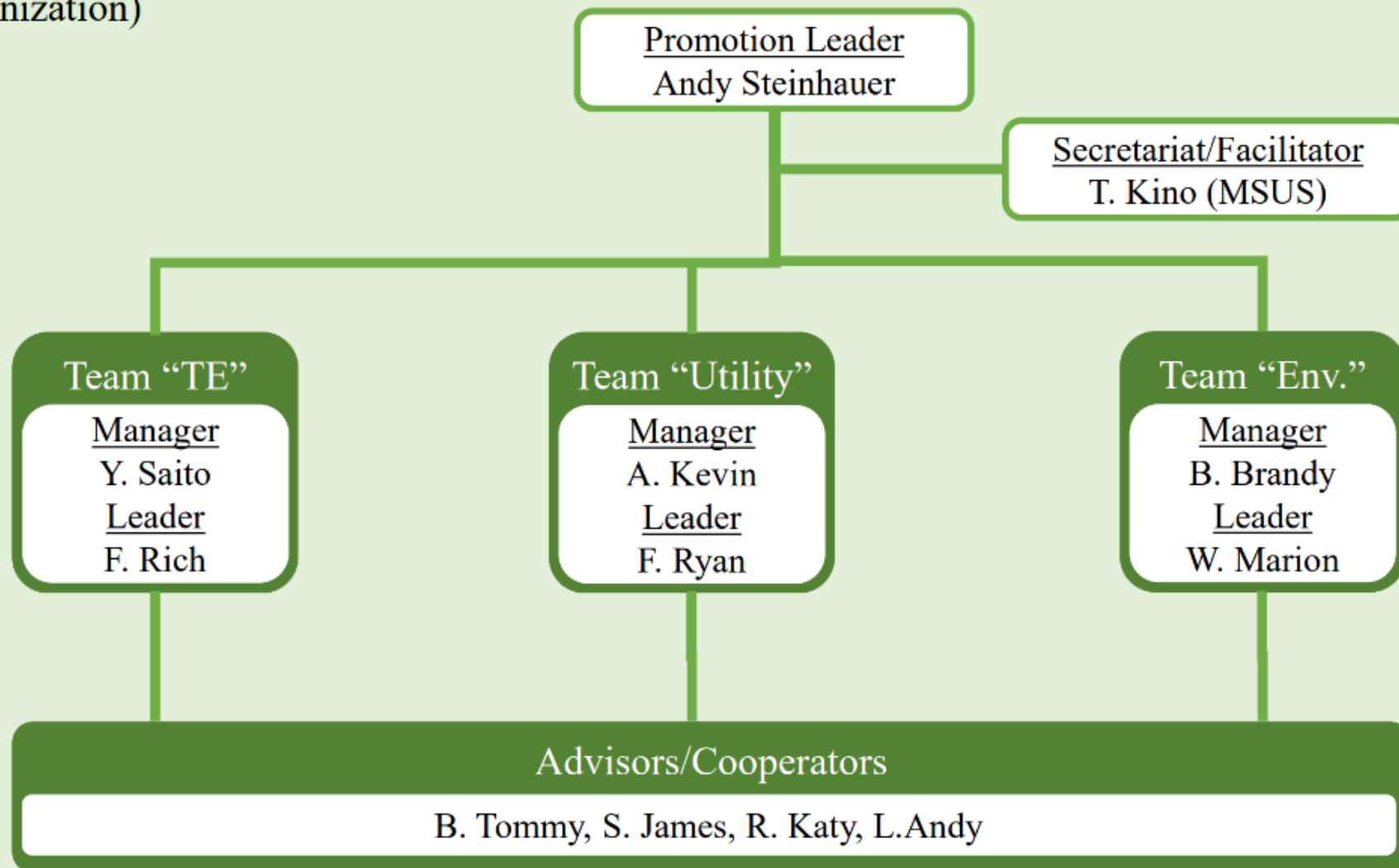
SUPPORT

OUR INTERNAL UTILITIES EXPERT FROM GLOBAL ENGINEERING ADVISE AND DIAGNOSE

How to fit an intern within the team?

NC GHG Reduction Project ~Road to be Environmentally Friendly Plant~

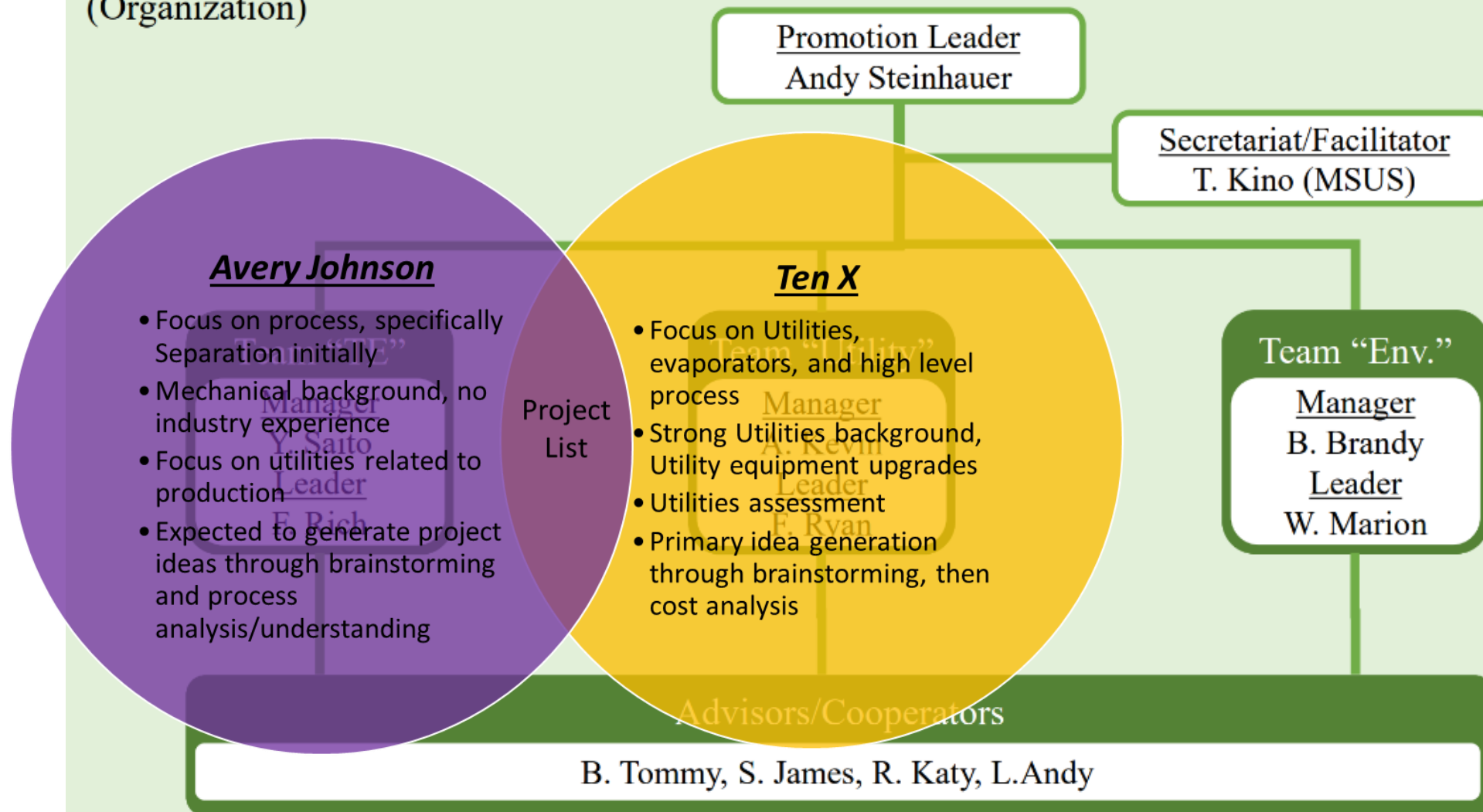
(Organization)



How to fit an intern within the team?

NC GHG Reduction Project ~Road to be Environmentally Friendly Plant~

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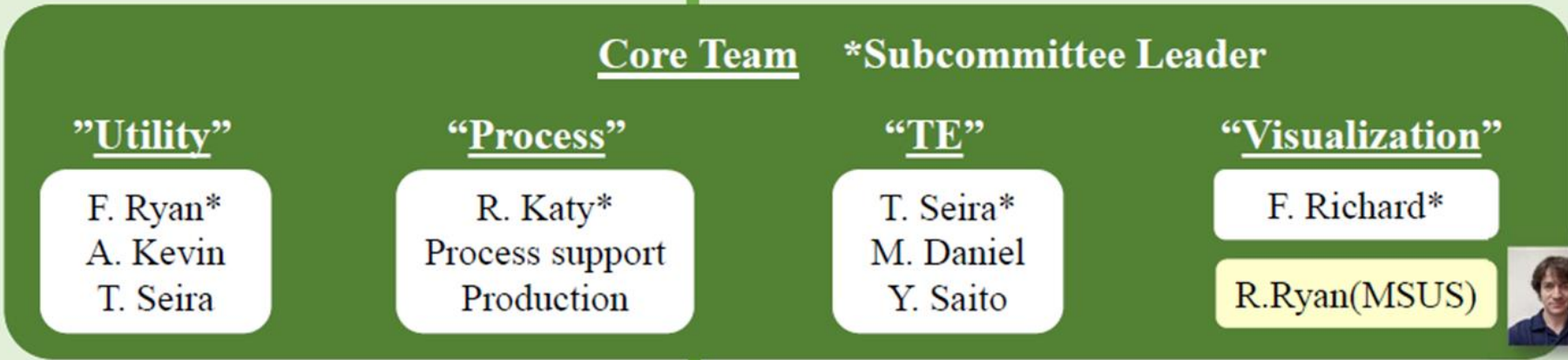
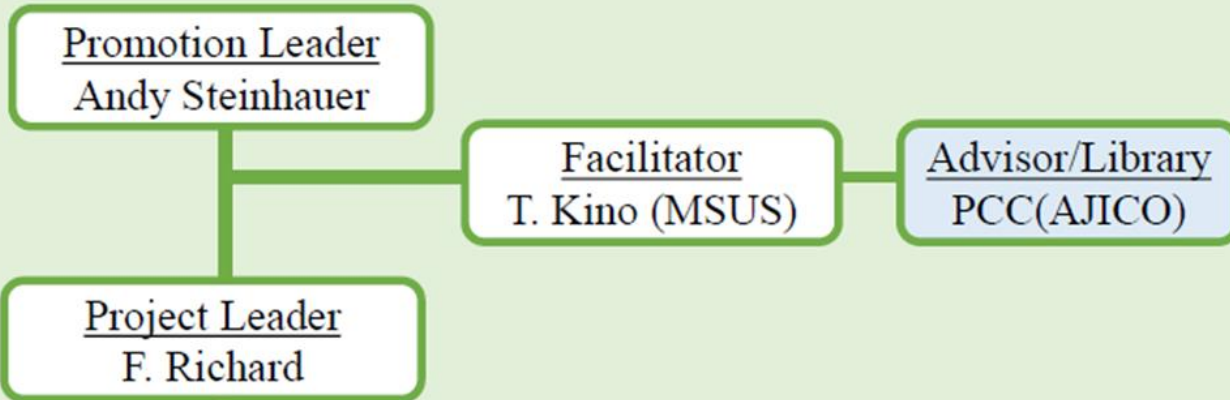
How to fit an intern within the team?

(Organization)

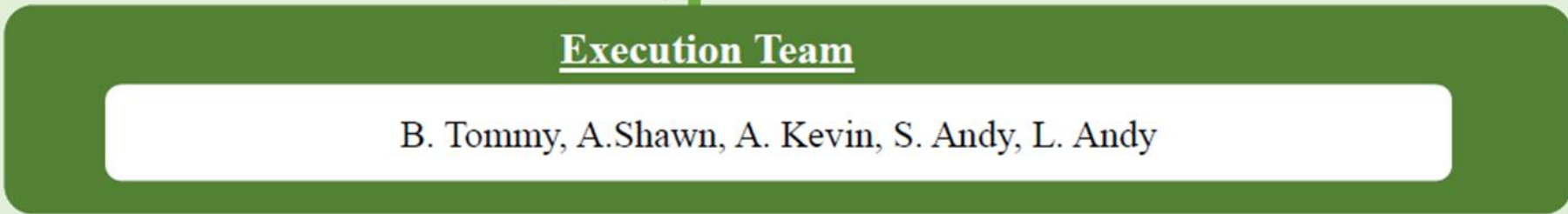
- See below

(Period)

- Oct.2023 to Mar.2024 (6M)



Katie Sperry



Rough outline of the internship

Internship



- 40 hours/ week working together with engineers
- Conduct cost benefit analysis: calculating the payback period, return on investment, and costs of implementation
- Progress reports of the student - Work with engineers and CSE3 mentors to assist in your report.

Requirements from organization



- Complete 3-day training course
- Creating an assessment report.
- Receive training on how to conduct meetings, assessments
- Cost analysis of recommendations
- Write final report for plant as a resource

Outcome



- Think outside of the box – Finding solutions by ECU Interns.
- Implementing cost reduction and energy saving projects in the plant
- Giving interns confidence in field work and imagining their future career plan

Useful tools provided through the internship

Engineering Software

Software to quickly calculate cost and savings

TANK INSULATION

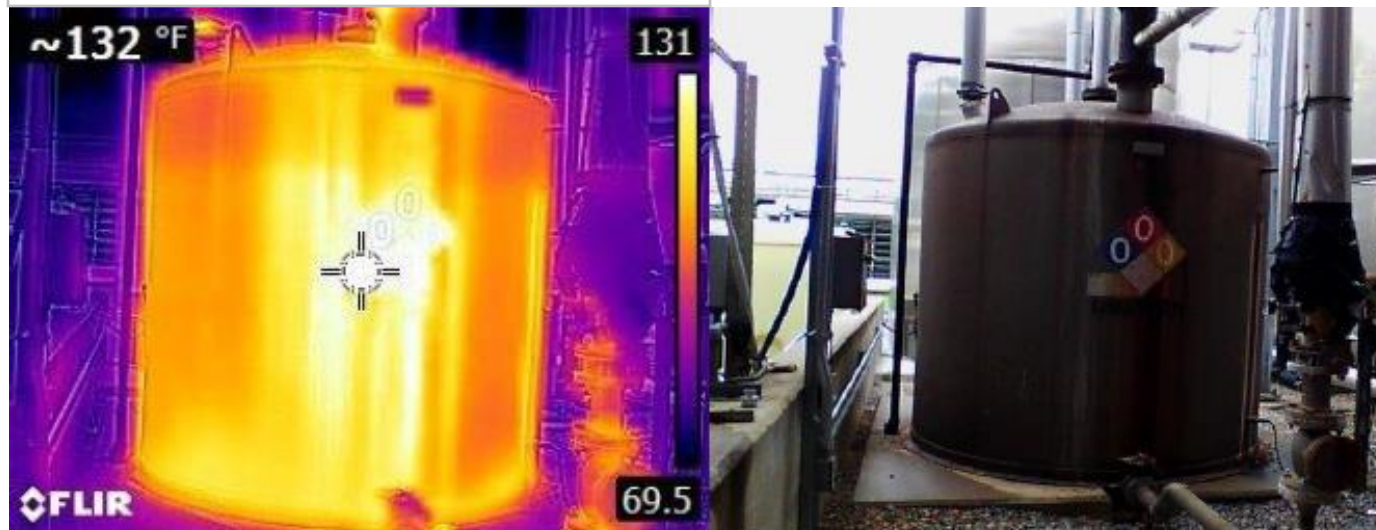
BASELINE

Annual Operating Hours	7008	hrs/yr
Energy Source Type	Electricity	
Heated or Chilled	Chilled	
Utility Cost	0.064	\$/kWh
System Efficiency	80	%
Tank Height	27	ft
Tank Diameter	13	ft
Tank Thickness	0.02083333	ft
Internal Tank Temperature	50	°F
Average Ambient Temperature	60	°F
Tank Base Material	Stainless Steel	
Emissivity	0.3	
Conductivity	9.2464 Btu/(hr * ft * °F)	
Insulation Material	None	
Conductivity	0 Btu/(hr * ft * °F)	
Tank Jacket Material	None	
Emissivity	0	

Generate Example Reset Data

Thermal Imaging

Thermal Imaging to identify heat loss, air leaks, and moisture intrusion. Visualized image has helped to find problem and lead to the best solutions.



Result of Hosting Interns

Summary of Energy Assessment recommendations by ECU student at Ajinomoto

EAR No.	Description	Implementation Cost	Annual Savings	Simple Payback Period
1	Insulate Exposed Piping	\$13,912	\$30,556	0.5 Years
2	Insulate and Cover Tanks	\$40,669	\$47,457	0.9 Years
3	Insulate Heat Exchangers With Removable Insulation	\$1,320	\$1,014	1.3 Years
4	Close Steam Heaters When Not in Use	\$0	\$3,674	0 Years
5	Recover Condensate	N/A	\$173,434	N/A
6	Warehouse Automated Night Lights	\$1,000	\$2,063	0.5 Years

Continuous improvements to interns and organization

Expectation to Intern

Cost Estimations refinement

Mentoring & Project Review

- Divide scopes if you are planning to have more than one intern.
- Having ideas for the interns to work on specific project.

Helpful Resources for GHG Reduction Planning

Industrial Assessment Centers (ITAC) Implementation Grants



MESC

OFFICE OF MANUFACTURING AND ENERGY SUPPLY CHAINS

Intention

Saving Energy and Reducing Costs at Small & Medium-sized US Manufacturers

- Improve site energy and/or material efficiency
- Improve site cybersecurity infrastructure
- Improve site productivity
- Reduce site waste production
- Reduce site greenhouse gas emissions and/or no greenhouse gas pollution

Grant Awards Snapshot



115 awards across 34 states to date



~\$17 million in grant funding for projects valuing ~\$55 million



Average grant of \$150,000



Project examples include:

- Installing onsite power
- HVAC/boiler upgrades
- Combined heat and power
- VFDs installation
- Power factor upgrades
- LED upgrades



*Please review Grant Eligibility Requirements on the website:

[Industrial Assessment Centers \(ITAC\) Implementation Grants \(energywerx.org\)](https://energywerx.org)