

PMIR

Powdered Metal Reactor

Supervised by Dr. Reza Kholghy

Project Timeline



April 2023
Project Announcement



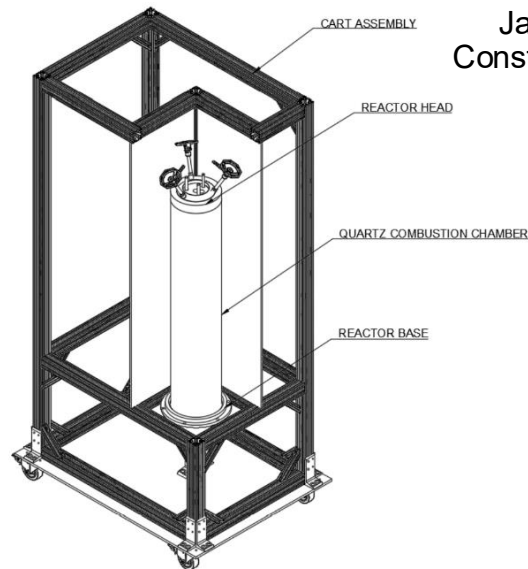
December 2023 Initial
Design Complete



February 2024
Individual Subteam
Testing Begins



September 2023
Project Begins



January 2024
Construction Begins



March 2024 First
Successful Test With
Iron Powder

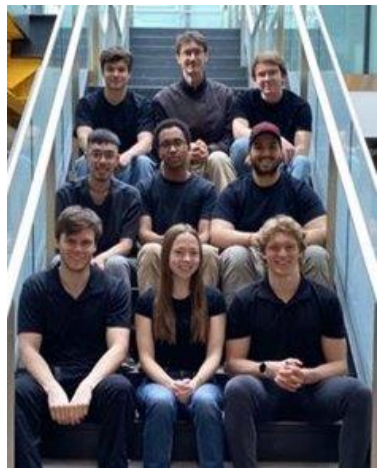
Project Timeline



June 2024
2024-2025 Cohort
Announced

November 2024
Design updates and
changes begin

March 2025
2024-2025 Testing Begins



September
2024
Project year
two begins

January 2025
Sub-team design
completed



Project Timeline



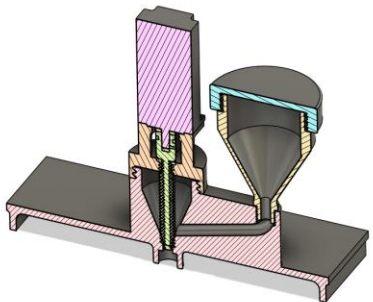
May 2025
Transition Period Begins

July 2025
2025-2026 Testing

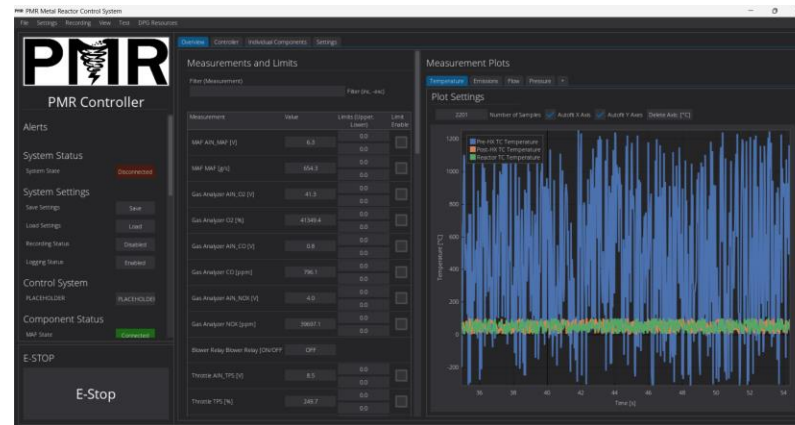
Summer 2026
Preparation for 2026-2027 Cohort



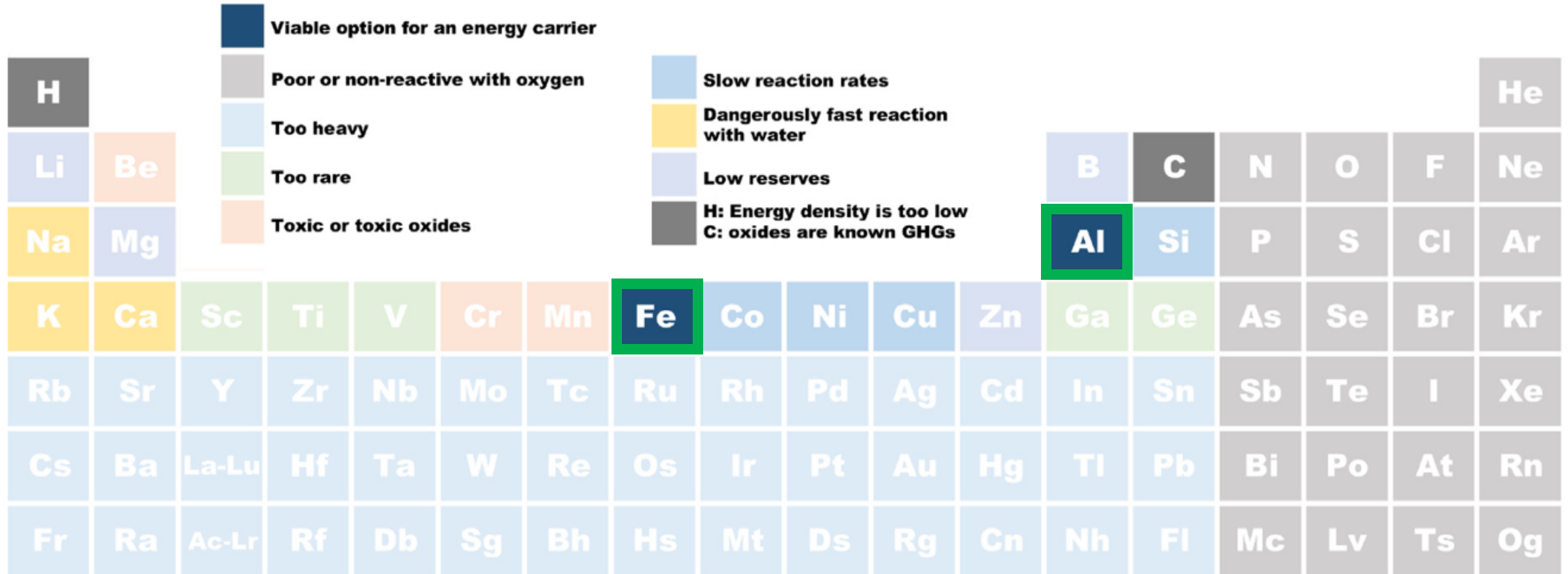
May - September 2025
Re-design of:
- Powder delivery
- Air intake
- Reactor Head



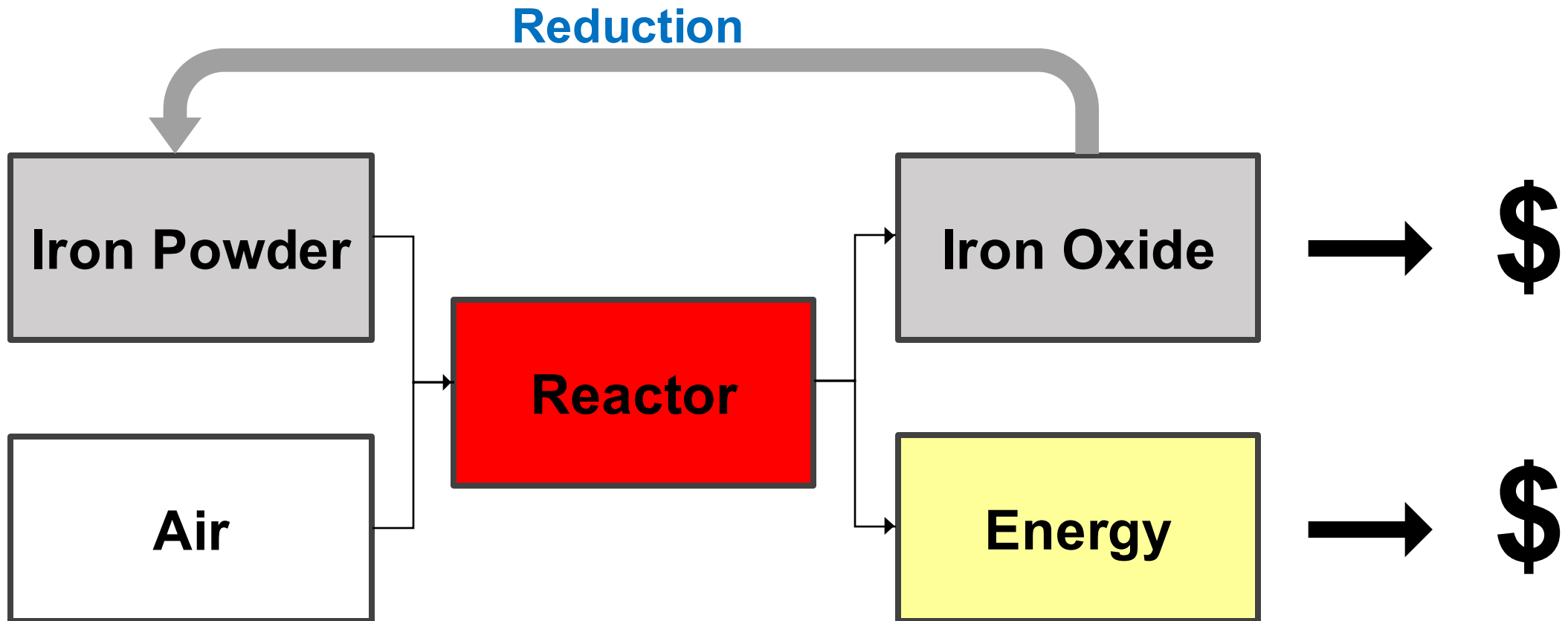
September - April 2025
Development of the PMR GUI



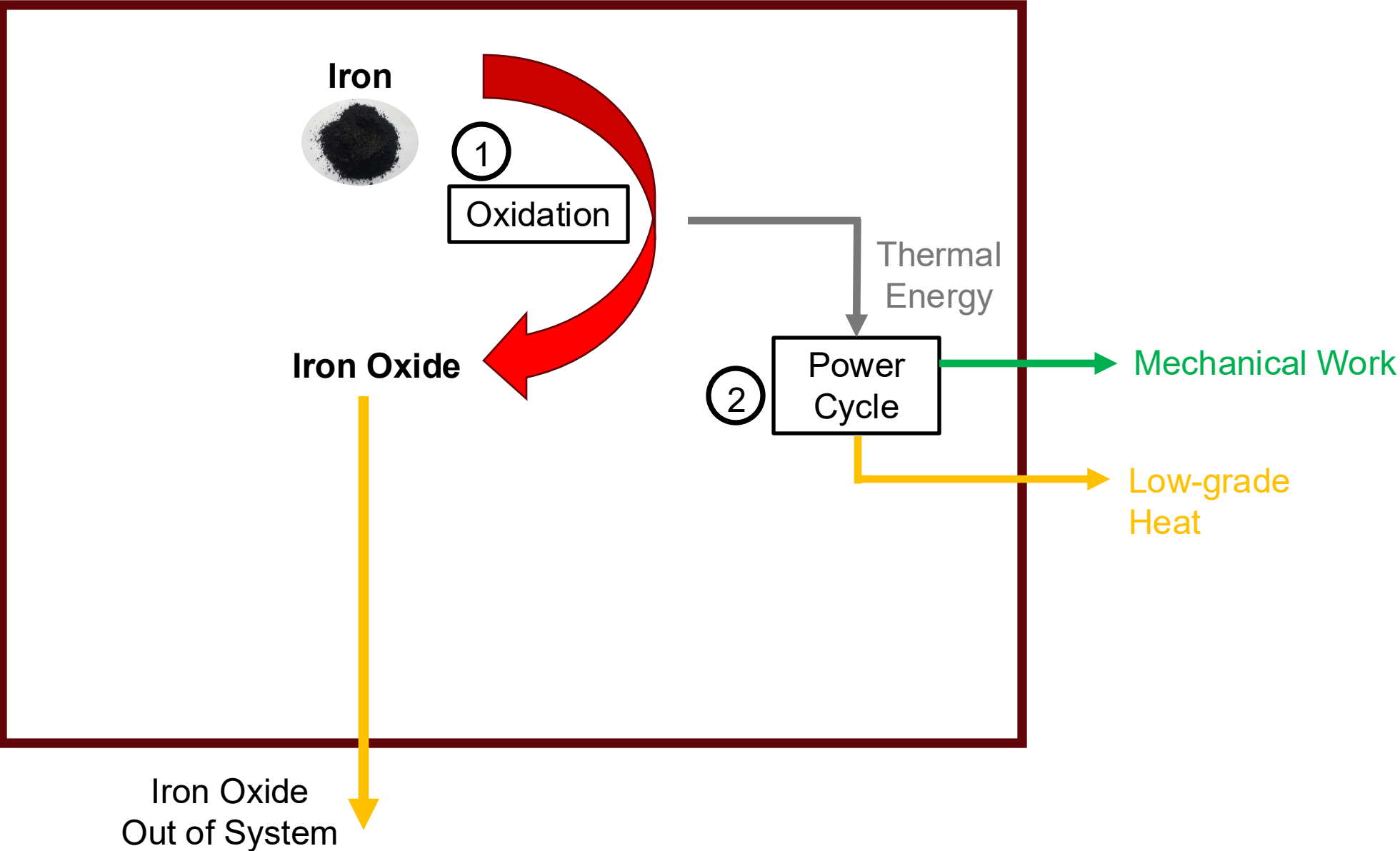
Thermodynamic Calculations: Why Iron?



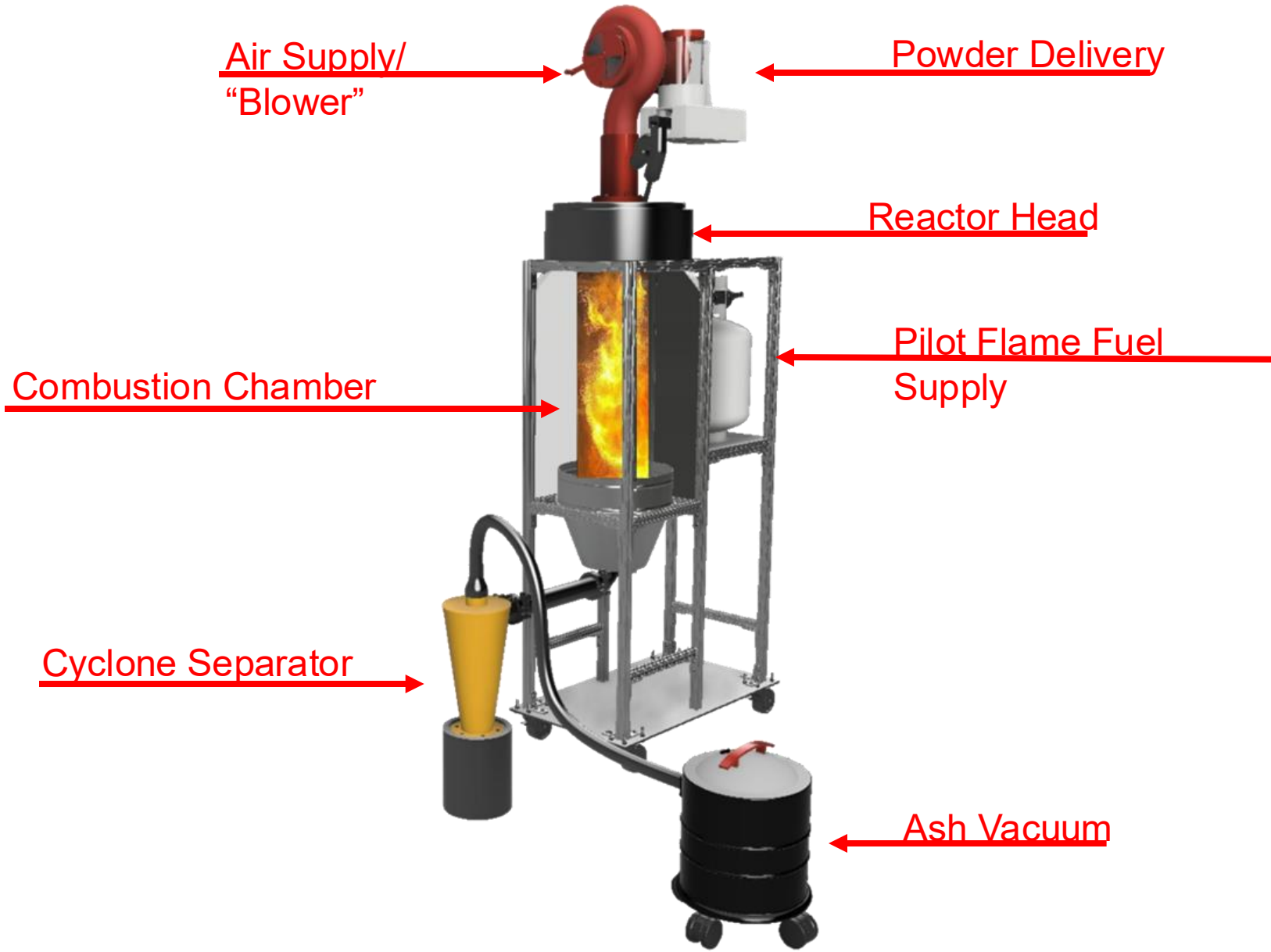
Thermodynamic Calculations



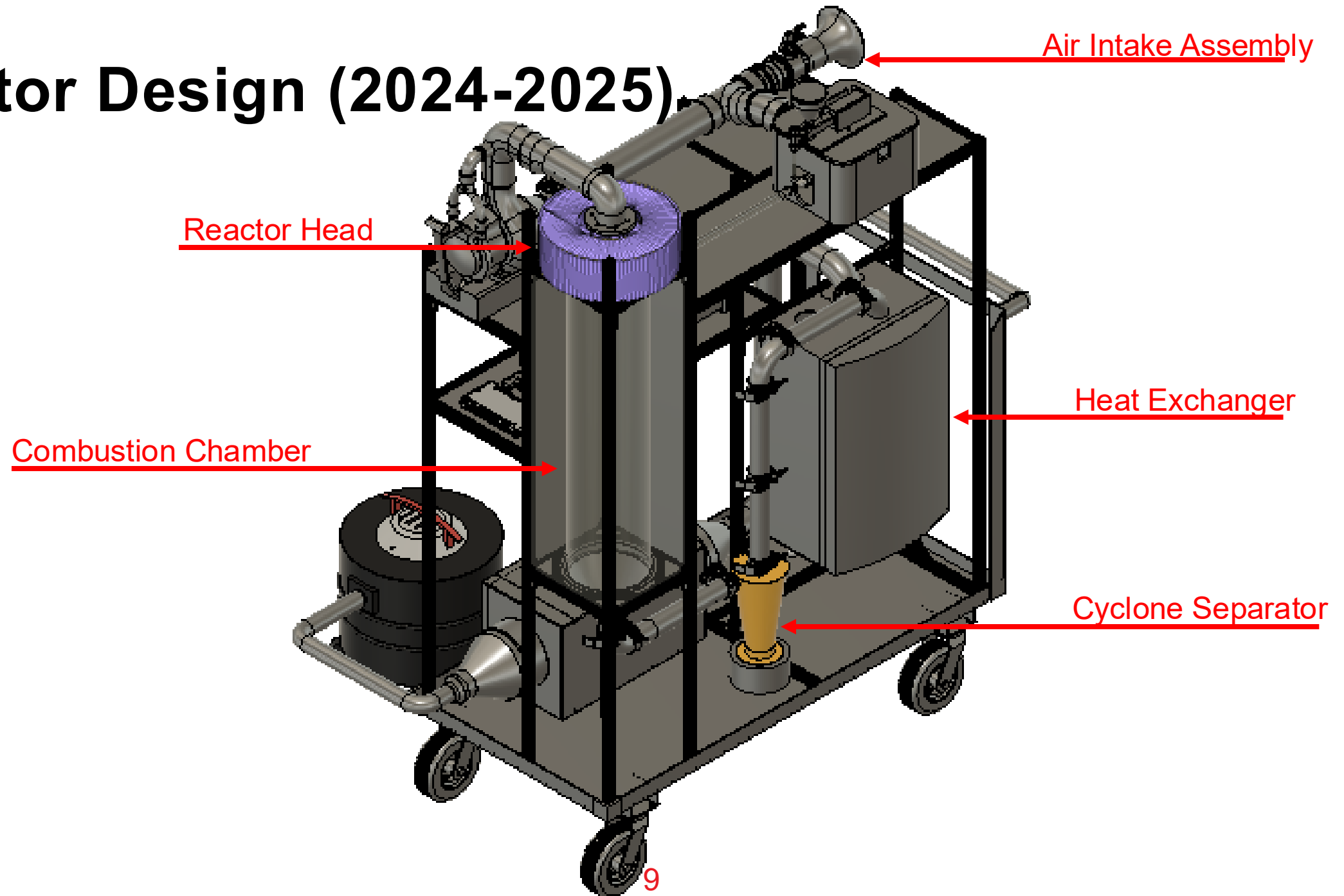
Cogeneration Process: Iron Oxide + Electricity



Reactor Design (2023-2024)



Reactor Design (2024-2025)



Flame Progression (2023-2024)

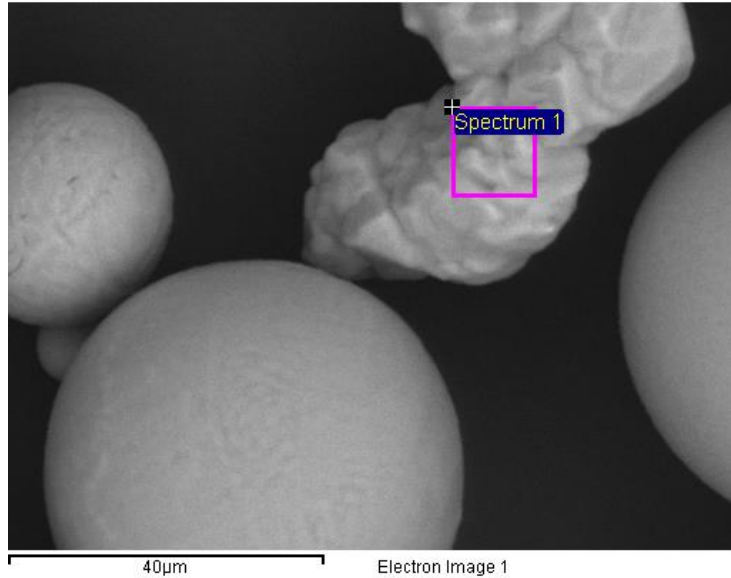


Flame Progression (2025-2026)



Testing and Results (2023-2024)

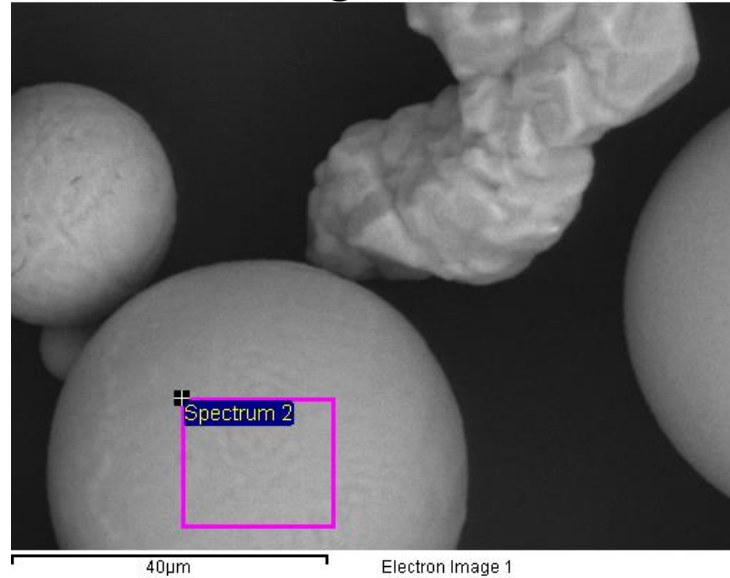
Hematite



Spectrum processing :

Element	Weight%	Atomic%
O K	29.72	59.61
Fe K	70.28	40.39
Totals	100.00	

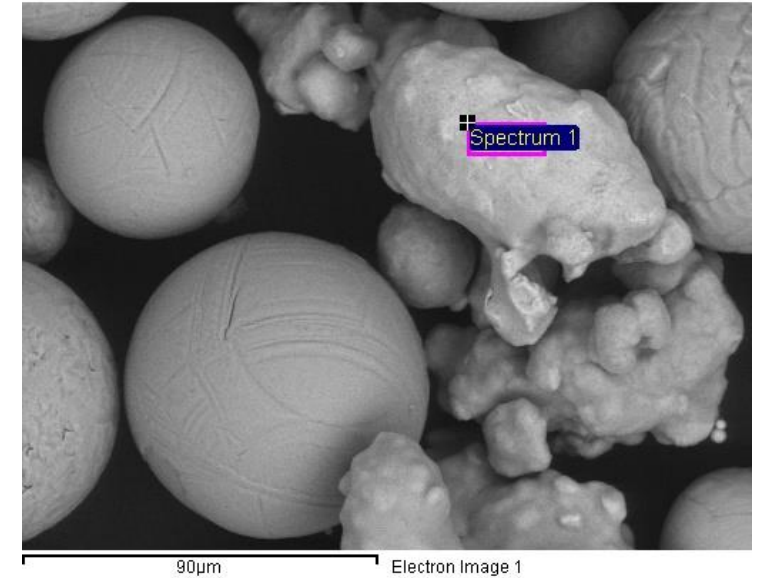
Magnetite



Spectrum processing :

Element	Weight%	Atomic%
O K	26.12	55.23
Fe K	73.88	44.77
Totals	100.00	

Partial Oxidization



Spectrum processing :

Element	Weight%	Atomic%
O K	5.22	16.12
Fe K	94.78	83.88
Totals	100.00	

Test Results

