



What We Do

Independent Systems Engineering for Complex Energy & Material Decisions

We provide independent modeling, scenario analysis, and structured technical support for industries navigating modernization, decarbonization, and technology evaluation across all project stages.

With a focus on boiler-heavy industrial systems and waste-to-energy facilities, our work helps engineering teams and plant operators understand system behavior, align stakeholders, clarify uncertainties, de-risk planning, evaluate retrofit options, and make confident strategic decisions.

Our work helps you decide:

- Where energy efficiency improvements have the largest impact
- Which equipment retrofits are technically and economically viable
- How to operate with lower emissions without compromising reliability
- Which decarbonization pathways are economically sound under uncertainty
- What happens when the system boundary is expanded beyond the equipment itself

Core Services

1. Process & System Modeling

- Energy and mass balance modeling
- Chemical process modeling (e.g., sorption-based carbon capture)
- Scenario modeling for heat integration, fuel switching, and equipment reuse
- Early-stage retrofit feasibility studies
- Identification of bottlenecks and improvement opportunities

2. Techno-Economic Scenario Analysis

- Custom TEA frameworks (including Monte Carlo uncertainty)
- Comparison of energy and carbon footprint reduction pathways
- High-level cost, ROI, and performance benchmarking
- Executive-ready decision briefs

3. Independent Review

- Review and validation of vendor assumptions and proposals
- Boundary-condition and logic audits
- Simplified re-modeling of complex simulation chains

4. Technical Coordination & Facilitation

- Structured technical coordination across engineering teams and stakeholders
- Support or lead alignment meetings (e.g., LOP-style open-point reviews)
- Facilitation of cross-disciplinary discussions and decision processes
- HAZOP and structured risk-assessment facilitation

Application Area Examples

Energy Facility Optimization

Support for planning and evaluation of:

- Exhaust-gas treatment upgrade options
- Modernization pathways for aging facilities
- Steam-cycle and heat-recovery improvement concepts

Detailed engineering, combustion optimization, and SCADA/PLC work are performed with engineering partners.

Carbon Capture Integration (High-Level)

- Sorption-based capture modeling
- TEA for early-stage CCUS concepts
- CO₂ offtake and utilization scenario analysis
- Support for pilot-scale feasibility studies

How We Work

Quiet, efficient, independent delivery · minimal overhead · high analytical depth · clear communication · flexible engagement (rapid reviews or multi-week modeling) · collaboration with engineering partners when deeper implementation is required

If you're evaluating a technical decision and would like an independent engineering perspective before committing significant resources, we'd be glad to have a conversation.