Engineering Capabilities

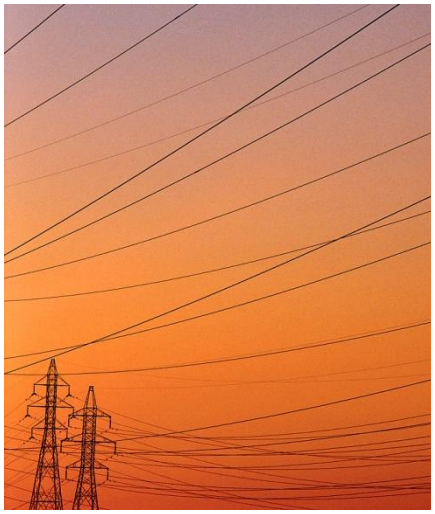
TRAX's engineering capabilities provide a wide range of services for our clients. TRAX was founded to provide simulation services to the power industry, and while that still remains a core part of our business, we now offer many other proficiencies.

Our engineering staff uses a wide array of software tools to analyze current plant conditions and evaluate alternative process and control system solutions, and our years of experience in the power industry makes us the perfect partner for your engineering projects.

Whether you are designing a new plant, adding new equipment or controls, or correcting an existing problem, our experienced engineers are here to help.

Performance

Over the course of 25 years, TRAX has produced hundreds of high-fidelity power plant models and delivered more than 200 operator training simulators worldwide. Our vast experience includes work with leading-edge power generation technologies, including CFB, IGCC, and environmental control procedures such as FGD, SCR, and mercury removal.



Electrical Modeling & Simulation

TRAX uses state of the art electrical simulation software to provide both steady-state and dynamic analysis of new and existing electrical networks. Models can address in-plant distribution, local grid connections, or transmission and distribution lines. Typical analyses include load flow, short circuit, single or multiple motor starting, transient stability, protective device coordination, and arc flash protection.

TRAX specializes in the analysis of micro-grids and their need to exactly balance generation and loads. We can recommend grid architecture and on-site generation to ensure your facility will withstand natural or man-made calamities that result in islanding. We will show you how intelligent load shedding and generation dispatching will keep your electrical network functioning and on-line. This is especially important for military facilities that need to maintain their critical mission regardless of power interruptions.

TRAX LLC

Furnace Draft & Boiler Implosion Analysis

TRAX is the world leader in providing furnace draft studies for new and existing power plants. TRAX has analyzed over 200 boilers and their addition of equipment in order to meet environmental regulations. Additions can include:

- Scrubbers
- SCRs
- Baghouses
- Booster fans
- Bypass dampers and stacks

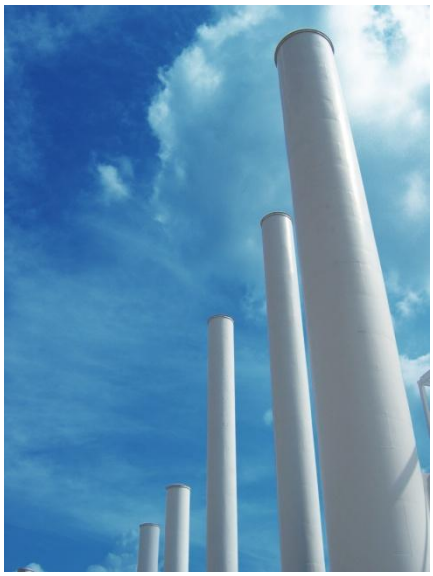
TRAX assesses operation of the plant with the proposed new equipment through normal and abnormal operation including catastrophic failures. We also design and test control logic for the new equipment, as well as its interaction with existing control logic. TRAX verifies that the furnace and all ductwork remain within structural limits through MFTs, fan trips, equipment failures, or other plant operating scenarios.

Optimization

TRAX works with major control system vendors to design and implement optimization algorithms. These calculations are used to ensure that the maximum amount of power is produced for the fuel being input. These routines can be used for any type of power plant, but are especially useful in hydro chains where there are multiple plants and multiple generating units at each plant. Economic load allocation software determines the optimum operating point for each unit at each site. This software is loaded onto the DCS or PLC hardware, and is periodically updated by plant personnel.

Boiler Modeling

TRAX has a unique set of software that allows two and three-dimensional analysis of new boiler designs. This has been applied to the latest ultra-supercritical boiler designs in order to assess operation in a full plant environment. These boiler models provide a three-dimensional model of the heat transfer in the combustion region of the boiler and can simulate both straight and spiral wound designs. A boiler model with this level of detail can be used to evaluate a proposed design through startup, load ramping, trips, and abnormal operation, and is an ideal tool to assess boiler operation against performance guarantees.



Carbon Capture

TRAX has a full set of carbon capture simulation software that will allow examination of various technologies to see which is best for your application. We have expertise in all the current methodologies including pre or post-combustion carbon removal, gasification, oxy-combustion, or amine scrubbing. TRAX capabilities include understanding the process dynamics, assessing the impact of carbon capture equipment on your current plant configuration (including power consumption and unit ramping rates), designing carbon capture control logic and integrating it with existing plant controls, and operator training.

After removal, the carbon dioxide is dried, purified, compressed, and disposed of. TRAX can also help with this part of the process. Equipment sizing, operating limits, power consumption, and plant safety are all issues that can be examined with our design and simulation capabilities.

Unconventional Energy

TRAX has demonstrated expertise in the design and simulation of unconventional power plants including:

- Solar
- Coal or oil gasification
- Hydro
- Fuel cells

We have worked with stand-alone unconventional plants, and hybrid plants that combine one of these technologies with an existing, conventional plant. Our analysis includes startup and shutdown, control system design, emergency operations through plant or equipment trips or malfunctions, confirming performance guarantees, and establishing safe operating procedures.

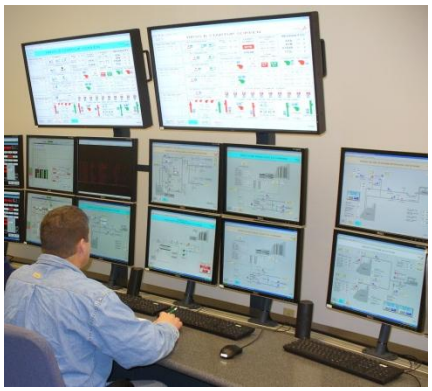
Piping Design/Steam Distribution Network

Let TRAX analyze your piping distribution network to ensure the most efficient design. We specialize in steam distribution systems with long piping runs, multiple boilers, multiple consumers, multi-level pressure regulation, steam headers, steam traps, and control valves. Our network design calculations provide efficient use of steam with minimum losses. We can determine optimum placement of pressure control and pressure reduction stations, and evaluate the impact of long piping runs on steam conditions. Our optimization routines help determine which boilers to run and at which pressures. Our piping models provide stress analysis and life expenditure calculations. Let TRAX analyze your piping network to save you money and costly repairs.

Fuel Conversions

TRAX has helped numerous utilities convert their boilers from coal to natural gas, or biomass co-firing. We can examine the impact of these changes on boiler operation, help design safe and efficient control strategies, examine different coal or biomass blends, and evaluate unit performance. We can help you answer such questions as:

- Will the existing air and flue gas equipment (fans, air heaters) handle the new conditions?
- What is the optimum fuel blend?
- How will the unit perform with this new fuel blend?
- Is my unit at greater risk for a furnace implosion?
- What fuel shutoff rates will keep my unit safe?



NFPA Compliance

Over time, changes in operating procedures, degradation of instrumentation, temporary fixes, and the addition of new equipment can result in controls and instrumentation that no longer comply with existing NFPA standards. TRAX engineers can review your control system and instrumentation to determine if new or existing gas path logic complies with Combustion Control Requirements (Section 6.4), Furnace Implosion Protection (Section 6.5), and Instrumentation sections of the NFPA code.

TRAX LLC

5061 Fort Avenue
Lynchburg, VA 24502
USA

Phone: (434) 485-7100
Fax: (434) 485 7101

Website:
http://energy.traxintl.com/

E-mail:
SalesMarketing@traxintl.com