



HVAC/R SMART ENERGY SYSTEMS (SES)

TRAK International's sustainable, innovative HVAC/R Smart Energy Systems (SES) and Engineering Services helps industrial, commercial, institutional and recreational property owners who want to improve their facility and climate environmental controls by operating HVAC/R systems more efficiently and significantly reduce their overall energy use and carbon footprint unlike the conventional systems provided by typical HVAC/R companies.

TRAK HVAC/R SMART ENERGY SYSTEMS (SES) optimally integrate Heating, Ventilation, Air Conditioning, and Refrigeration with Heat Recovery, Thermal Storage and Onsite Electricity Generation to deliver precision indoor environments and improve production processes. Our SES use energy techniques that include Centralized Hydronic Heat Pumps, GeoExchange, Internal and Exhaust Heat Recovery, Fan Coil / Radiant Distribution and Storage, Onsite Combined Heat & Power (CHP) Co-generation, and Energy Management Controls (EMS) for Building Automation Systems (BAS). To the extent to which they are appropriate for each unique design, these various methods of internal energy-recycling, energy-efficiency and thermal storage can cost-effectively combine with CHP Co-generation to deliver better sustainable and resilient conditions.

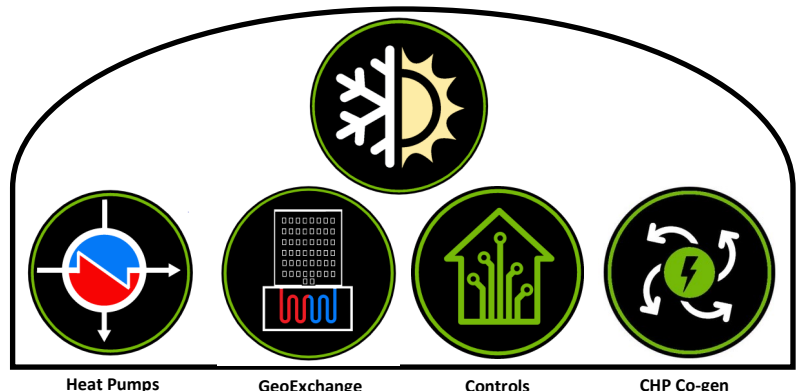
- Reduce energy operating costs 40%-60%.
- Eliminate boilers and chillers.
- Eliminate toxic, dangerous ammonia refrigerants.
- Eliminate guarded plant costs.
- Fast return on investment with low life-cycle cost.
- Eliminate fossil fuels and GeoExchange renewable energy reduces GHG emissions up to 100%.
- Exchange thermal energy and simultaneously heat and cool with the same work input using heat pumps, heat recovery and thermal storage methods.
- Precise building climate and process controls provide increased safety and productivity. Energy-efficient high-volume fresh air changes at regulated temperatures and humidity eliminate or greatly reduce CO, VOCs, radon gas and other contaminants.
- Conserve and recycle water.
- Less plant space required.
- Long, efficient equipment life with high reliability.
- Reduced maintenance costs and easy servicing.

Our Professional Engineers and Specialists would be pleased to meet with you.



MAIN OFFICE
5-1050 Leathead Road
Kelowna, BC V1X 2K1
Telephone: (250) 491-8460
Email: info@trakge.com
Website: www.trakge.com

ONTARIO OFFICES
Thunder Bay | Kitchener | Toronto

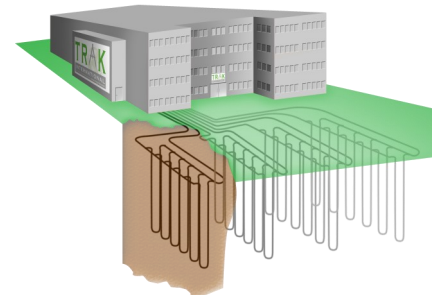


HEAT PUMPS exchange thermal energy and simultaneously heat and cool with the same work input. Coupled with hydronic distribution systems, heat recovery and thermal storage methods, instant heating and cooling are provided based on the individual needs of different building spaces or processes. TRAK Heat Pumps are manufactured in Canada and they are an ideal chiller alternative enabling fully usable heat recovery with an extended chilling capacity. TRAK SES Heat Pump applications cover a temperature range from chilling down to -15°C (+5°F) and heating up to +71°C (+160°F). Our Heat Pumps are flexible and adaptive to many applications such as space, water and amenity heating, dehumidification and reheating, refrigeration, ice-making, ice-rinks, snow and ice melt systems, food processing, pasteurization, and more. Our SES energy-efficient modular design can be easily expanded and used in distributed district systems. Our Heat Pumps can be serviced by any refrigeration technician through an easy-access housing and eliminate requirements and costs for guarded plants.



HYDRONIC HEAT PUMPS
MODULAR 30 RT ~ 60 RT ~ 120 RT

GEOEXCHANGE systems are the most energy-efficient, environmentally clean, and cost-effective space conditioning systems available. Over two-thirds of the energy delivered to a building or process by a GeoExchange system is renewable solar energy stored in the ground. Achieve onsite GHG reductions of up to 100% with the elimination of fossil fuel use. GeoExchange uses the earth as a heat source in winter or as a heat sink in summer to borrow energy from nature and put it back. GeoExchange lowers electricity demand by nearly 1 kW per ton of capacity. Each kilowatt-hour (kWh) of electricity used to operate a GeoExchange system draws more than 3 kWh of free, renewable energy from the ground. Geoexchange is used in our TRAK SES as a load leveling thermal capacitor. When done in balance, renewable energy is always available. Our focus is on the cubic volume of ground field as thermal storage.



GEOEXCHANGE
LOAD LEVELING THERMAL CAPACITOR

ENERGY MANAGEMENT SYSTEM (EMS) CONTROLS are a sophisticated TRAK software and hardware platform that monitors current and anticipated energy usage, weather patterns, utility costs and seasonal trends. It integrates with other facility control and automation systems. Sensors constantly check temperatures, humidity, air and fluid flows, open and closed valves, dampers, start and stop motors, circulating pumps and more. The EMS determines the way the SES will use its various components to create and conserve energy in the most efficient way possible. It enables onsite and offsite monitoring and controlling 24/7 and anticipates and gives alarms when operational situations are outside of normal settings so corrections and maintenance can be done promptly. TRAK will evaluate, engineer, design, program, install, and commission a state-of-the-art controls system for your building and/or process, and provide monitoring to keep your system operating at peak performance.



CONTROLS
ENERGY MANAGEMENT SYSTEM (EMS)
BUILDING AUTOMATION SYSTEM (BAS)

COMBINED HEAT & POWER (CHP) CO-GENERATION is the use of a prime mover engine to generate electricity and useful heat at the same time on site. CHP is a more efficient use of fuel because otherwise wasted heat from electricity generation is put to productive use. CHP plants recover otherwise wasted “high-grade” thermal energy for heating from the engine cooling jacket and exhaust. CHP is likely to be suitable where there is a fairly constant demand for heat for at least 2,900 hours (33%) per year. CHP systems can be employed over a wide range of sizes (50 kW – 2,000 kW), applications and fuels (natural gas, propane, biofuel) and can regulate their electricity output quickly. They are infinitely adjustable in the power range between 50%-100% load. With TRAK Controls technology, they adjust to the client’s actual energy demand. CHP systems can be installed in existing buildings or can be set up in a container or engine room. Noise emissions can be as low as 55 dBA at 1 metre away, which is comparable to a home refrigerator. TRAK designs a balance between the building/process needs (major electricity loads, central heat pump compressors, variable-speed-drive circulating pumps and fans) and the CHP system (generator output, island mode, parallel electricity grid input and photovoltaic panel offset). Thermal balancers include GeoExchange, groundwater, fluid coolers, exhaust air, domestic cold water, wastewater, solar thermal, laundry, kilns and other items.



CHP CO-GEN
50 kW – 2,000 kW