Thermal Fluid Heaters

**Equipment Data:**
- **Capacity:** 0.5 - 75 MMBtu/hr
- **Media Temperature:** 50°F - 750°F
- **Burner Turndown:** Up to 40:1
- **Fuels:** Natural Gas, #2, #6, Propane, Syngas, Dual Fuel
- **Efficiency:** Up to 94% LHV
- **Orientation:** Vertical or Horizontal

**Control Systems:**
- Burner Management
- PLC Systems (option)
- DCS Systems (option)

**Design Standards:**
- ASME, NFPA 87, FM/IRI, CRN, PED, GOST, UL, NEMA, Class I Division I, ATEX

**Typical Applications:**
- Thermal Oil Heating
- Glycol Heating
- Amine Reboiler
- Regeneration Gas Heating
- Reactor Vessel Heating
- Tank Heating
- Cooking / Food Processing
- Platen or Press Heating
- Molds or Dies Heating
- Dryers
- In-Line Gas Heating
- Building Heaters
- Process Reboilers
- Natural Gas Heating
- Crude Oil Heating

FSE Energy offers a full range of thermal fluid heaters, which are highly customizable depending on customer requirements.

Electric Process Heaters

**Equipment Data:**
- **Capacity:** 200kW - 2.0 MW
- **Media Temperature:** Up to 750°F

**Control Systems:**
- Burner Management
- PLC Systems (option)
- DCS Systems (option)

**Approvals:**
- ASME, NFPA 87, FM/IRI, CRN, PED, GOST, UL, NEMA, Class I Division I, ATEX
**Water Bath Heaters**

**Equipment Data:**
- **Capacity:** 0.5 - 15 MMBtu/hr
- **Media Temperature:** Up to 250°F
- **Burner Turndown:**
  - Natural Draft: 4:1
  - Forced Draft: 40:1 max
- **Fuels:** Natural Gas, #2, #6, Propane, Syngas, Dual Fuel
- **Efficiency:**
  - Natural Draft: Up to 75% LHV
  - Forced Draft: Up to 87% LHV
- **Control Systems:**
  - Burner Management
  - PLC Systems (option)
  - DCS Systems (option)
- **Approvals:**
  - ASME, NFPA 87, FM/IRI, CRN, PED, GOST, UL, NEMA, Class I Division I, ATEX

**Typical Applications:**
- Natural Gas Heating
- Crude Oil Heating
- In-Line Gas Heating
- Glycol Reheating
- Amine Reboiler
- In-Line Liquid Heating

FSE Energy designs and supplies high efficiency forced draft and natural draft water bath heaters for liquid and gas heating applications.
Direct Fired Convection Heaters

**Equipment Data:**
- **Capacity:** 0.5 - 125 MMBtu/hr
- **Process Media Temperature:**
  - Temperature Range: Up to 1200°F
  - Pressure Range: Up to 2500 psig
- **Burner Turndown:** Up to 40:1
- **Fuels:** Natural Gas, #2, #6, Propane, Syn gas, dual fuel
- **Efficiency:** Up to 93% LHV

**Control Systems:**
- Burner Management
- PLC Systems (option)
- DCS Systems (option)

**Typical Applications:**
- Regeneration Gas Heating
- Steam Superheating
- Natural Gas Heating
- Crude Oil Heating
- Thermal Oil Heating
- In-Line Gas Heating
- Other Direct Process Heating

FSE Energy offers convection liquid and gas heaters for various industries that can be designed to meet process demands.

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Waste Heat Recovery

**Typical Waste Heat Producers**
- Boilers
- Fired Heaters
- Dryers
- Exhaust Flue Gas
- Thermal Oxidizers
- Kilns

**Typical Waste Heat Users**
- Building Heat
- Air Preheaters
- Process Heat
- Steam Injectors
- Water Heating
- Other Direct Process Heating

FSE Energy can design and fabricate a completely customizable skid to reclaim waste heat energy (above 250°F) from different types of processes. Each unit is designed based upon the available energy stream.