Fuelsalt flow kg/s 2934 ~704 C

**Pump:**

* Vertical centrifugal sump pump (proven to be able to move salts)
* Liquid cooling to prevent overheating from radiation
* thermal/radiation shields

**Feedwater Pump**

* Header-type design provides excellent thermal flexibility allowing faster daily start-ups

**Primary HX**

**IHX**

**SHX**

* shell and tube (helical coiled) type HX
* spiral geometry of the tubes results in a higher heat transfer
* Used in gas liquid
* Helical coiled heat exchangers are more reliable and easier to operate and maintain than PCHEs.
* Overall, the helical coiled heat exchanger is preferred for its material performance (corrosion), technology readiness, system integration, inspection, maintenance, and operability, while the PCHE is preferred for its thermal and structural performance.
  + (https://inldigitallibrary.inl.gov/sites/STI/STI/5144351.pdf)
* main application of PCHEs is offshore rigs where they are used to cool gas when it comes out of the ground
* high allowable pressure and temperature limits in combination with the compactness of the heat exchanger. Specifically, the manufacturing company claims that, as a result of its original design, Heatric™ heat exchangers are able to operate at pressures up to 60 MPa and at temperatures not exceeding 900°C

**Steam Generator**

* Standard shell and tube (experience)
* CSP BENSON SIEMEN’s vessel for the economizer, evaporator and superheater reduces
  + Header-type design provides excellent thermal flexibility allowing faster daily start-ups

**Feedwater heater**

* Start up, shut down (low power option)

**Condenser**

* safety/reliability for start up?

**Super Crit Steam Turbines:**

* common in coal
* Common to have 2 spinning at 2 speeds
* Supercritical pressure is associated with low specific volume of steam and hence leads to a very narrow steam blade path at the turbine inlet with relative high secondary losses. For this reason, supercritical steam parameters in full-speed utility type turbines are common only for power output range beyond 500 MW
* are better suited to frequent load variations than
* This limits the load change rate to 3% per minute, while once-through boilers can step-up the load by 5% per minute.
* Siemens SST-900 (shown in Figure 3) is an excellent match for the required conditions. It is a dual-casing steam turbine with up to 200 MW power output

**Attemperators**

Piping

expansion tanks,

Alloys N, 800H, and 617, which exhibit (in varying degrees) high temperature tensile and creep strength and resistance to environmental degradation in molten salts

