HÚSAVÍK GEOTHERMAL POWER PLANT

April 7, 2000

The first geothermal power application of the Kalina Cycle is on schedule for a June 2000 start-up. The project is a 2 megawatt (net) binary geothermal power plant being built by the electric division of Húsavík, Iceland.

Húsavík is a picturesque town of just 2,500 inhabitants. It is located on the north coast of Iceland, just south of the Artic Circle. Húsavík has a diverse commercial base and is becoming quite a prominent stop for tourist during the whale watching season.

The Kalina power project is part of a comprehensive renovation and expansion program of the existing geothermal heating and utilization system for the town. Once completed, this program will result in what will be one of the most geothermal energy efficient towns in the world. Certainly, no other town will be able to claim a more diverse use of geothermal energy.

The 2 MW plant will provide up to 80 percent of the town's electric power demand. The heat source for the plant will come from geothermal wells located 20 km south of Húsavík. The plant will use 90 kg/sec (714,000 lb/hr) of hot geothermal brine at a temperature of 124ºC (255ºF). This gives a high specific power output of 6.17 W-h/kg (2.80 W-h/lb) of brine.

The efficient and overall economic advantage of the Kalina Cycle over other existing technologies was a prime consideration in the decision to install the Kalina Cycle. The distinguishing trait of the Kalina Cycle is its working fluid of ammonia-water. The efficiency gain is achieved by the ability of this working fluid to closely parallel the temperature of the heat source (in this case – hot geothermal brine) and the heat sink (cooling water). Cost effective energy recuperation within the cycle is also possible due to the unique characteristics of the ammonia-water mixture.

The efficient utilization of the geothermal energy doesn't stop at the power station. In parallel with the power plant, the hot water will be used by local industries for shrimp processing, drying of wool, process heat and drying of hardwood. (The hardwood comes from oak trees cut in Maine, USA and, after drying in Húsavík, is shipped to mainland Europe.) This geothermal energy is even being considered for pasteurizing, sterilizing and evaporating milk for the town's flourishing dairy industry.

The geothermal brine that exits the power station will also be used. After the generation of electric power, the geothermal brine will leave the power station at a cooled temperature of 80ºC (176ºF). This is just the right temperature for space heating and hot water use in all the homes and businesses in Húsavík. Other uses of this water include greenhouse heating, snow melting and heating of the town's swimming pool.

Finally, even the cold, clean mountain water used in the Kalina Cycle's condenser finds a secondary use. The cold water, initially at a temperature of 5ºC (41ºF), exits the condenser at 25ºC (80ºF). This warm water will be piped to a trout (fish) farm where the higher temperature promotes optimal growth rate and health conditions for the fish.

The township of Húsavík expects to profit from this program in two ways. The efficient use of geothermal energy will maintain the high environmental standards of the area, while the availability of inexpensive thermal and electrical energy will promote economic growth. The geothermal capacity potential for the town has been assessed at 75 to 100 megawatts of sustained power generation.