In the very small village of Dalstorp in the Swedish municipality of Tranemo kommun, the Hållanders Sawmill is a big employer. Since 2006, it has also been the town’s primary heat supplier.

The mill built a biomass heating plant on its property, about 1.5 kilometers (one mile) outside of Dalstorp, and created a spinoff business that uses its own mill residues to generate heat in a five thermal MW woodchip boiler. About 60 percent of that heat goes into the mill’s lumber-drying kiln, adding value to its product; the rest travels on seven kilometers (4.5 miles) of piping to provide district heating to the town.

The sawmill’s only heating customer is the town. The mill sends out one bill to its customer each month.

“The kommun of Tranemo spent SEK 15 million ($1.8 million US) to build the pipe network, which they own,” says Lars-Ola Segerqvist, a Hållanders employee and operator of the district heating plant.

“Our company built and owns the plant here at the sawmill, which makes hot water for district heating and for our dry kilns. It cost us SEK 20 million ($2.5 million US) to build the plant. The kommun is responsible for the network, billing for their customers, and all customer service. We just make the heat.”

“The kommun has connected 150 customers to the district heating network, about 70 percent of the building heat load in the village.”

Dalstorp’s total population is about 1,500. Among those served by the biomass system are a furniture maker and a manufacturer of auto parts, along with some smaller industry, a school, elder housing, a small grocery store, and a number of residences. In all, about 70 percent of local buildings are connected to the district heating system.

“There is one neighborhood where all the houses have electric heat,” Segerqvist notes. “It would cost each house about SEK 75,000 [$9,000 US] to convert from electric heat to hot water, not counting the additional district heat hookup charge of SEK 22,000 [$2,700 US]. Those houses have not connected to the system. At least, not yet.”

The sawmill-owned heating plant has a heat meter onsite, which measures the temperature of the heated water leaving the plant and the lower temperature of the water that returns. Billing to the kommun is based on the difference between those two temperatures.
Innovation in a Thriving Marketplace

The system enables Hållanders Sawmill to generate revenue from what was once a waste product—but no longer is. Today, wood waste in Sweden is a valuable product, in a thriving marketplace.

“If we hadn’t built this plant, we would have sold the bark and sawdust as fuel to other district heating systems in the area,” Segerqvist says. At the office his boss, one of the mill owners, just smiled when asked if this is a good business venture for the sawmill. His facility’s look of obvious success was answer enough.

The success of biomass heating in Sweden has fueled competition and innovation among the various plant equipment manufacturers. The Järnforsen woodchip boiler system in Dalstorp is a good example.

“To get the very best, cleanest combustion of wood fuel, there must be a very long flame path before the hot gases reach the heat exchanger, so that the gases are kept hot and all the carbon in the wood will be converted to energy,” explains Järnforsen Vice President Silve Piejko. “We supply combustion air in just the right places and increase turbulence in the firebox, all to promote complete combustion and clean emissions. We use an oxygen sensor at the exit from the boiler to tell the computer exactly how much air to supply to the fire.

“When we do all these things, and do them right, we do not have to work so hard to clean up the emissions. Just a multi-cyclone is all we need for a plant like the one in Dalstorp.”

Still, when required, it is possible to go to the next level. Järnforsen hopes to install condensing systems downstream of the multi-cyclones on a number of their systems. These devices improve system efficiency—by recapturing energy used to drive off moisture in green wood—and cut particulate emissions by as much as an additional 90 percent.

If this happens at the Hållanders plant, it will give the owners one more thing to smile about.

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