I arrived in Sweden last night but unfortunately my luggage didn't! With a 40 min connection in Frankfurt something had to give, I suppose. Never mind, after four hours sleep in Stockholm (thanks Michael and Paul) I was on the 05:20 a.m. to Växjö where I was greeted by my gracious guide Suzana from Växjö Kommun (council). First up we visited a district heating plant using 100% wood processing residue from a local sawmill.

Silve Piejko showed me around the plant. Silve is VP of the plant's manufacturer, Järnforsen Energi System AB, www.jf-energi.se .

Key facts about the plant:

- Capacity 5MW (currently running at 1.5 MW as its early summer).
- Three pass, step grate, 100% underfed.
- Electric auger and fuel feed
- Designed for 50% moisture in fuel.
- Fuel a mixture of chip and fines. Blended by supplier to achieve 50% moisture and other quality parameters.
- Hydraulic grate
- Electrostatic precipitator, no baghouse (latter too much downtime, with shut every 8 weeks).
- Maintenance shut once a year.
- Totally automated, no attendant.
- Owned by municipality. 15 km of reticulation.
- Water out 100 degrees, return 80. Only those two set points, all other boiler parameters automated.
- Full remote internet management of all aspects of plant.
- At full capacity (5MW) uses 1.9 tonnes/hour, depending on fuel quality (assume 50% moisture).
- Fuel supply from one plant. Current delivery rate (early summer) 2x weekly.
- Fuel store can hold three days at winter rates (no weekend delivery).
- Paying approx 22 ore (Swedish cents) per kWh for fuel (go on Mark, you can do it!).
- Fuel store pretty slick - underground bunker with retractable roof.

Other market stuff:

Consumers pay for their own heat exchanger, heat meter and connection to the network. Pay only for heat used. Can integrate with existing household boilers (if any). Can integrate with solar hot water, and distributed boilers. Domestic electricity is taxed, to ensure that district heating is the most economic residential space and hot water heating option. Scheme also supplies industry, including wood drying kilns. Consent is issued by owner (council)!!!! No problem there! National NOx standards getting tougher. Even with taxes, Swedish consumer electricity prices (22 cents US/kWh?? check) are slightly more expensive than ours, which are internationally cheap.

Rottne Industri AB

Suzana and I went out to Rottne to see this manufacturing business. Sona Björck met us and showed us some of the company's 55 year history of nmanufacturing forestry harvesting equipment. This company manufactures and distrubutes forwarding and harvesting equipment and will have a big team up at Elmia Woods in a fortnight. I will hopefully see their equipment operating there. The have just sold their biggest harvester in Australia, where they have their nearest dealer. The Russioan harvesting slowdown has affected their export sales but domestically demand is quite strong.

Their cockpit layout looks superb, right down to the independent cab hydraulic suspension. Their machines are designed for double shifts, upward of 3000 hours/year and at over NZ$500,000 for the biggest forwarder you would need to be running it like that. A plant with a great sense of history and I was lucky enough to meet the longest serving employee, still on the shop floor after 45 years.

I shared some key differences between our respective countries' silvicultural regime and the question is: Would one of their smaller forwarders work on our typical cutover for residue recovery. Certainly it would need some modification, maybe for load retension and compression. At Elmia Woods they will have a mobile chipper so I will watch out for that.