



## A. Reponen Oy

A. Reponen Oy (Ltd.) is a small family enterprise manufacturing metal components such as plates and frames for generators. They are also involved in an earthmoving business with a few excavators and trucks. With an expansion of the company in 2007 new investments were made in workshops and garages. At the same time it was a prime time to replace an old oil fired heating boiler with a modern wood fired boiler.

The company is completely self-sufficient in wood fuel and the owners are able to manage the heating system by themselves.

## Fuel procurement

### Feedstock

The heating system runs most of the time on wood chips made of loading pallets or small trees. Only in summer, June to August, is an oil fired back up boiler used. About half of the feedstock is provided through the recycling of old loading pallets. The other half is procured from the forest of the owner of the company. With using recycled dry wood (moisture content less than 30%-w) together with forest chips the quality of the fuel mix can be improved considerably. More dry wood is naturally used in winter when the need for heat is the highest.

### Methods and technology of wood chip production

Recycled loading pallets are ground in the backyard of the workshop. Reponen owns an effective Doppstadt AK-330 grinder that is used to do the grinding. Once in a while, the same machine is used to grind wood fuel for other heating plants as well.



All forest fuel comes from the forest of Mr. Reponen, the founder of the company. He owns a forwarder equipped with an accumulating felling head suitable for harvesting of small trees and pulpwood. However, only small trees from pre-commercial or first thinnings are used for wood fuel, timber is sold to the forest and wood industry.

### A. Reponen Oy

Jari Reponen  
jari.reponen@areponen.fi  
Tel. +358 400 699 866

## Heating plant

A new boiler house including a wood chip silo and heating system was built in 2007. However, the old oil fired boiler was left to serve as a back up boiler. Keuruun energiatekniikka Oy delivered the whole system with a 250 kW Tulimax (by HT Enerco) boiler. The plant operates unmanned and is highly automated. Fuzzy logic is used to control the operations and combustion of the boiler. In case of disturbance, fuzzy logic uses original settings and sends a message to the controlling computer and to a mobile phone of the operator. Combustion is controlled by an oxygen sensor.

The old heating network is still in use, only a short connection from the new boiler house was needed.

### Facts

Boiler output	250 kW
Fuel	Wood chips 97% of which 20% from small trees and 80% from loading pallets, oil 3%
Heated building volume	10,000 m <sup>3</sup>
Heat production	400 MWh
Investment costs	130,000 €
Operation started	2007

### VTT

Mr. Jyrki Raitila, Team leader  
Biomass fuel production  
VTT, Koivurannantie 1, Jyväskylä  
P.O. Box 1603, FI-40101, Finland  
jyrki.raitila@vtt.fi  
Tel. +358 20 722 111

