



Paul, Lyn, Ian and Michelle in our Gerbera glasshouse.

We're also active in the professional community as members of both Interflora and NZFGA, and enjoy a strong association with Farmlands.

K&L is specialising in Gerberas and Roses

K&L Nurseries produces more than 2 million stems of cut flowers per year producing more than 70% of the South Island's supply of Gerberas.

Committed to an energy-efficient, environmentally-friendly approach, the Polytechnik Biomass Boiler, which runs on woodchips rather than coal, is the first of its kind to be utilised by flower growers in New Zealand,



Roses



Gerberas



Bunches

Why conversion from coal

As a business we looked at our biggest costs in our nursery

Heating

Wages

Fertiliser, replanting and general operating expenses

We then looked at how we could cut these costs

Wages – very hard with minimum wage increasing

We have reduced chemical use (up to 90%) and using Eco friendly sprays and a IPM program

Heating was the biggest cost and the one we could potentially get the biggest saving

Nursery Heating



Two coal boilers



900kw Vekos



300kw Beacroft

...at best maybe 60% efficient, meaning 40% waste out the flue

Vekos condition:

- needed new refractory
- re tube
- new auger and feed hoper etc
- grates

Total repair cost: - estimate over \$100,000

Coal – very hard to get good coal after Pike River, price, smell, soot on glasshouses, etc.

K&L Nurseries

...old boiler running while we installed the new one



Owning a wood fuelled heat plant

We are pleased to have a renewable, sustainable, and environmentally friendly heat plant

Just started a web site to promote the nursery and heat system

Step learning curve having started plant in June 6th 2013 then 8 inch rain!

To keep up efficiencies so the boiler doesn't turn off and on like the coal boiler did we installed a heat storage tank



Heat Storage Tank

Possible options

- steel pressurized
- wood tank non pressurized
- in ground tank, non pressurized

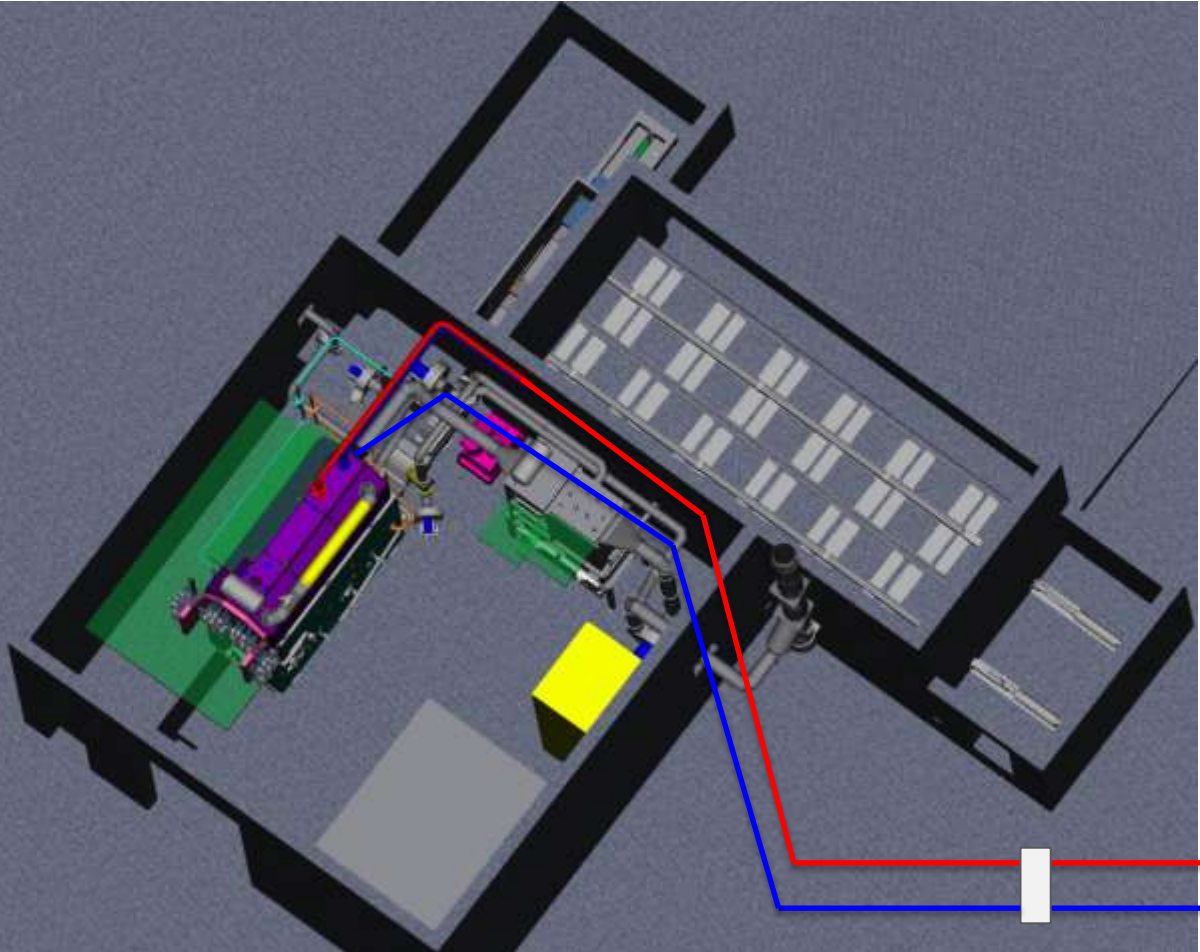
Storage Tank

- Butynol rubber in ground, cooler panel and liner on top
- 400,000 liters
- better insulation factor than steel and wood tank
- Glasshouse can be built over top of tank

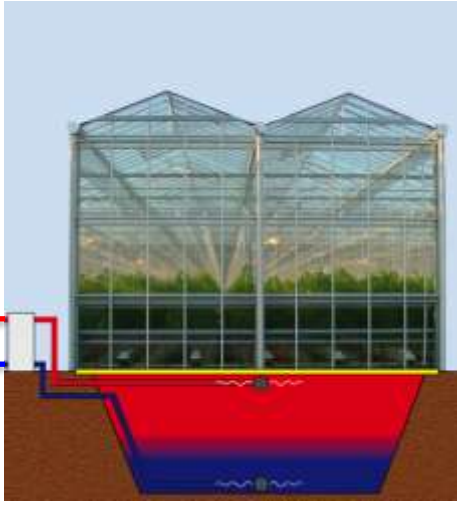
Disadvantages for K&L

- high water table
- heat exchangers to separate pressurized parts

Heat Plant Layout



400m3
heat storage tank



Process for selecting and installing a wood fired heat plant

We looked local, mainly converted coal boilers

We talked to people that have run wood fuel boilers and problems they have had

- Augers breaking
- Fuel bridging, feed issues
- Moisture content and poor heat when wet
- Fuel flexibility

We looked on internet for options overseas.

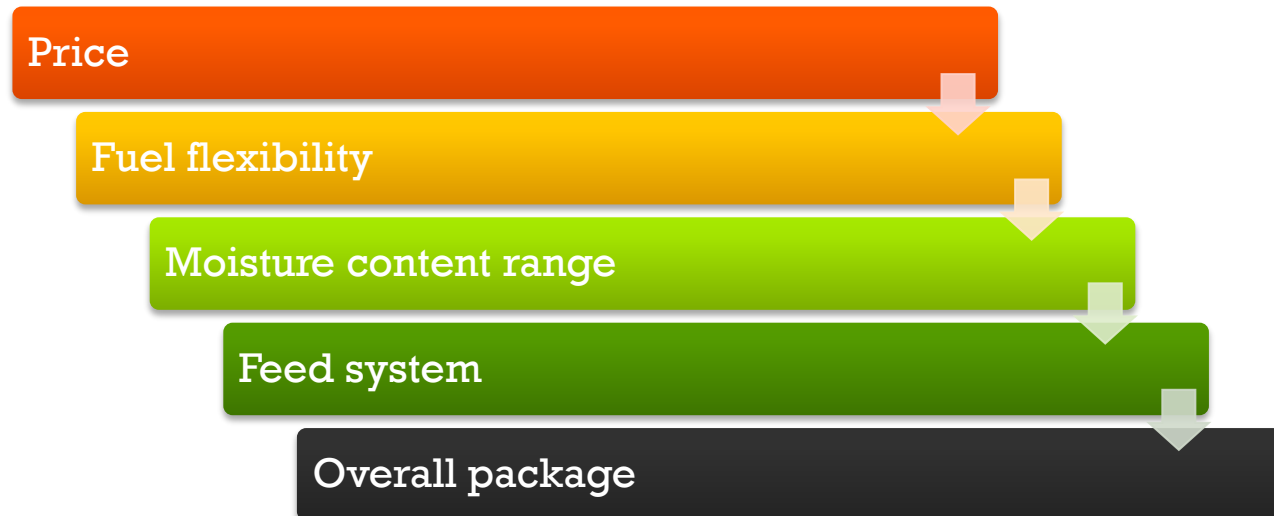
- Trip to see growers in Europe who was using wood boilers.

Process for selecting and installing a wood fired heat plant

3 boiler manufactures were found

1 could not support New Zealand, 2 others had reps in NZ.

We got Quotes from both parties and looked at

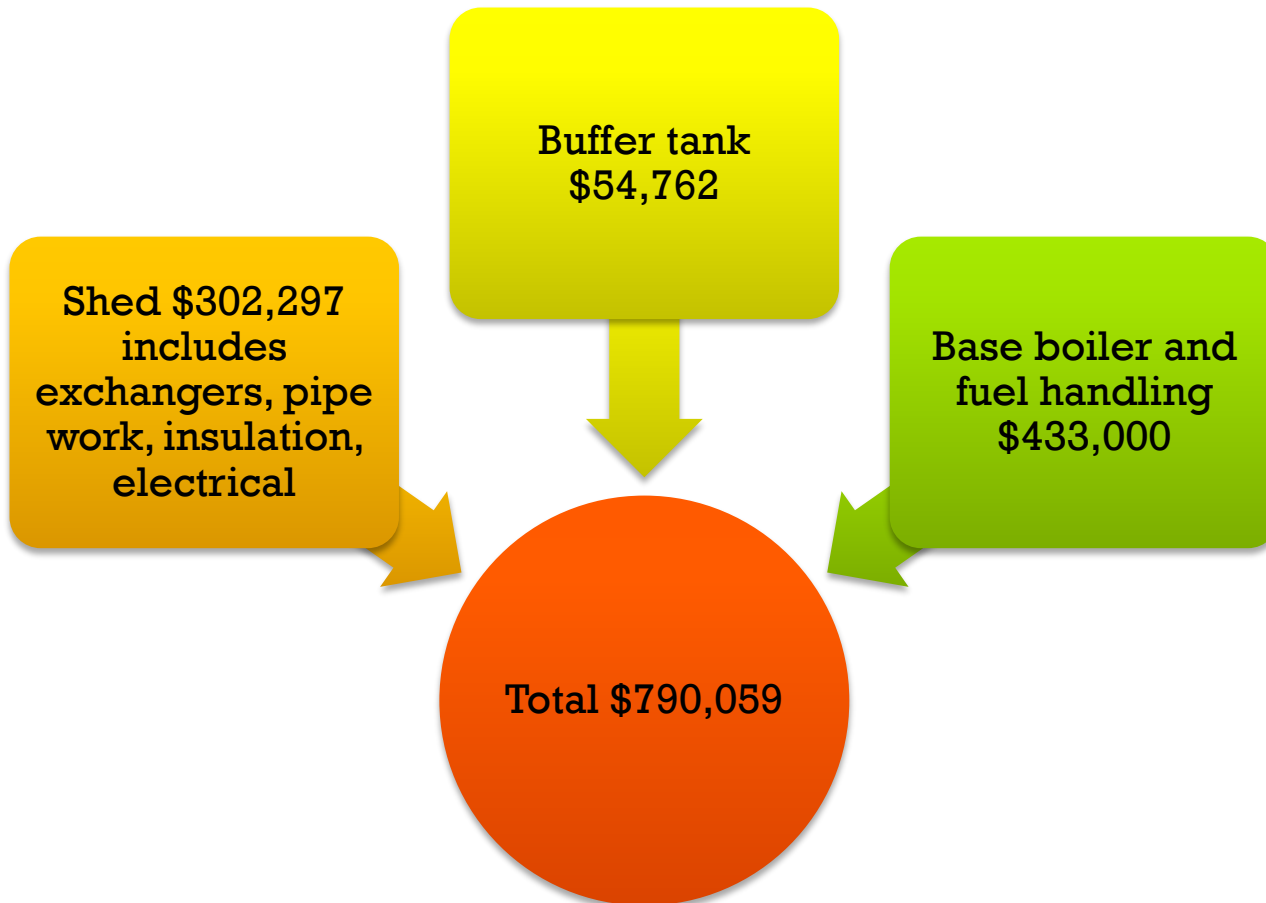


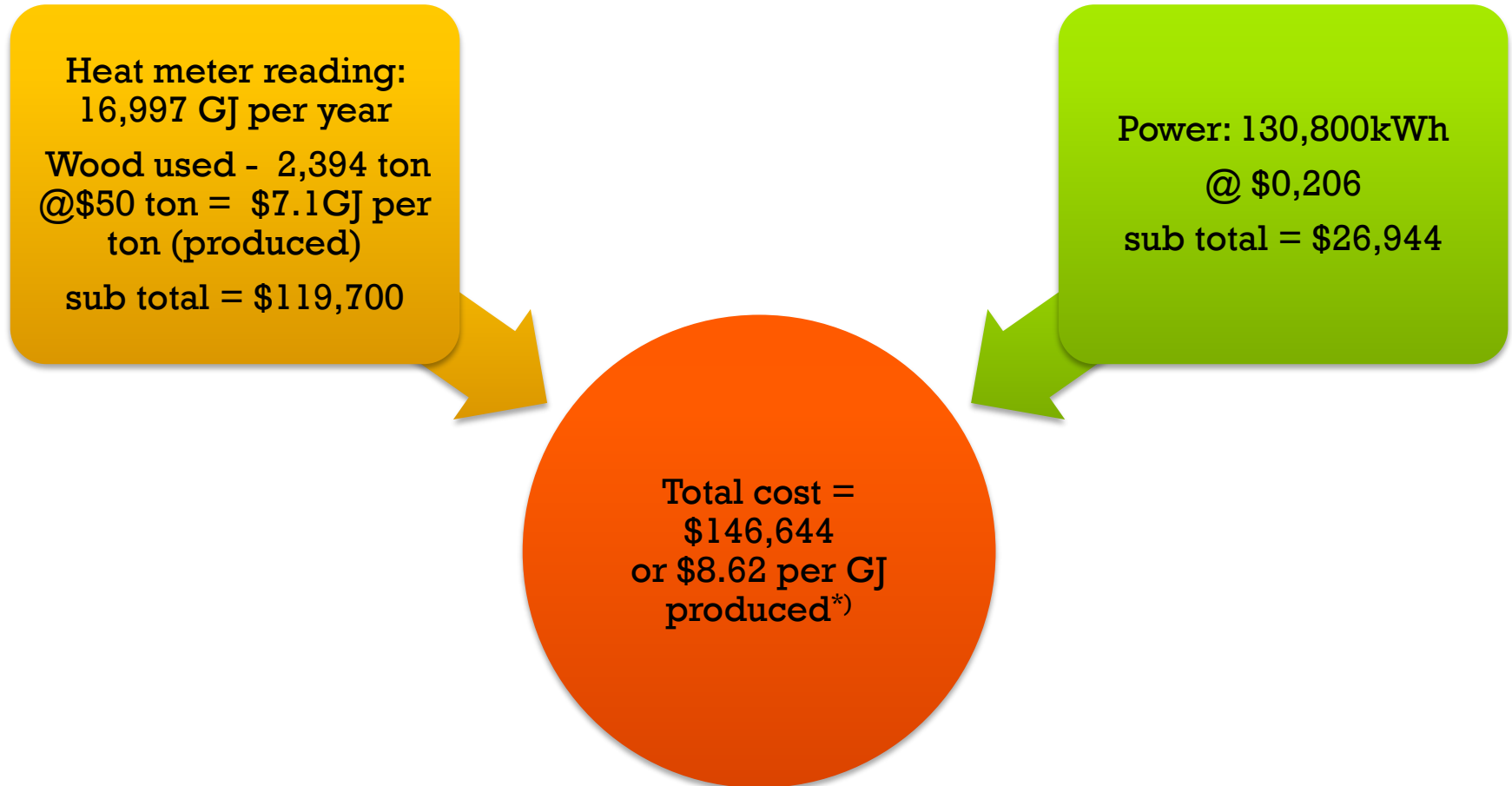
Polytechnik then got there first order for Australasia

Installation of the Polytechnik heat plant



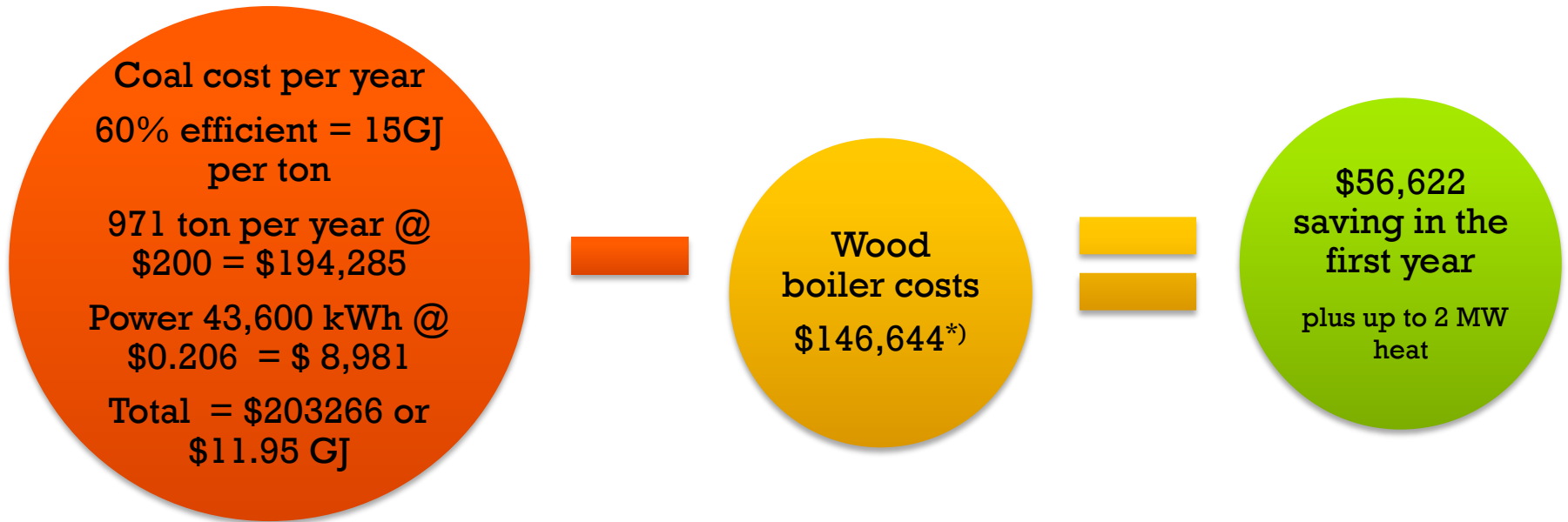
Cost and benefits – Running Cost





*) first year = commissioning year

Cost compare to coal



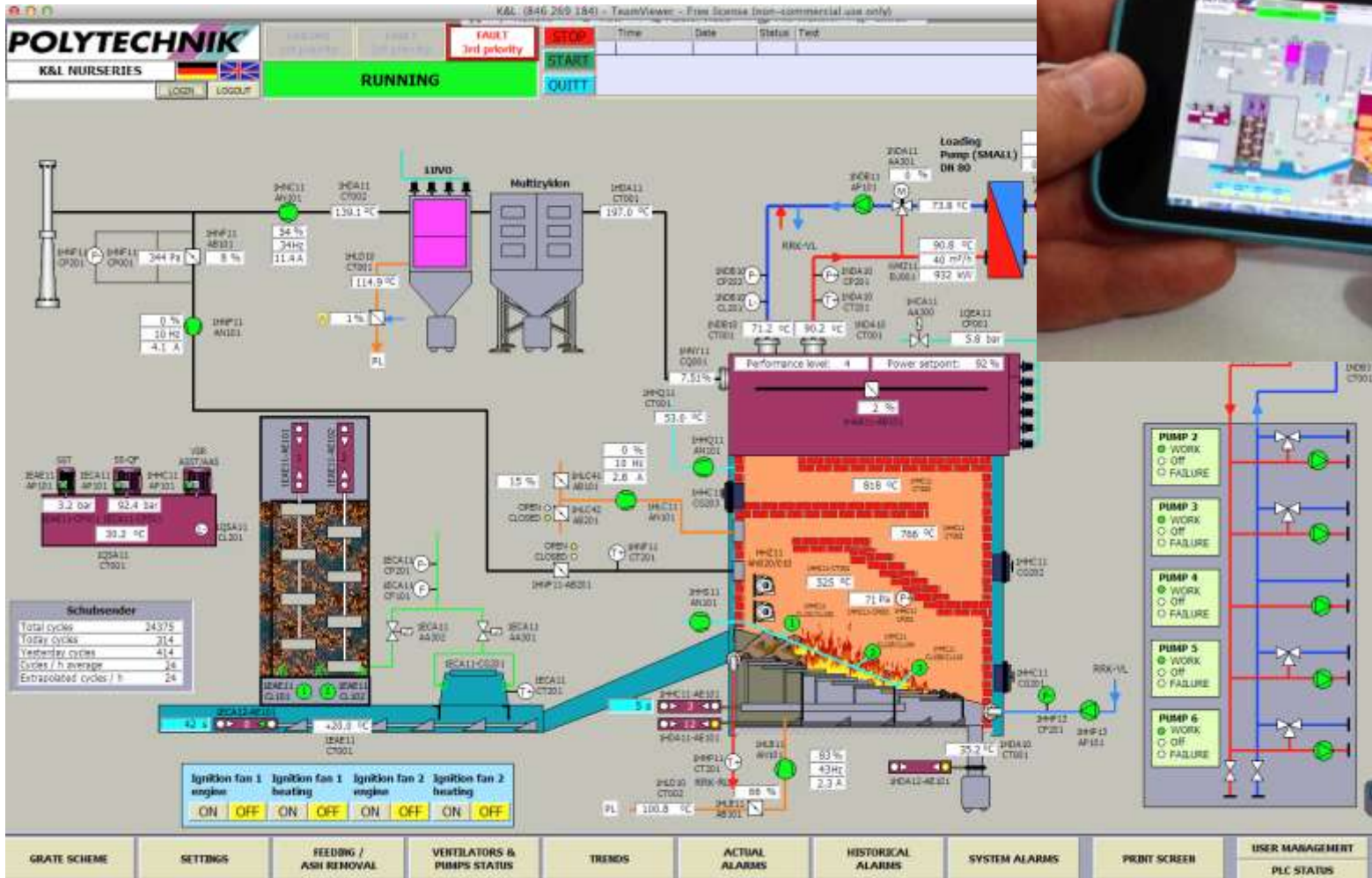
*) first year = commissioning year, without buffer tank for 6 months
Wood boiler cost second year to be 10 to 20% lower (cheaper fuel, more efficient operation)
= savings between \$70,000 and \$80,000 per annum

How we manage our fuel supply

- All fuel stored outside, no need for storage sheds
- Try to get seasoned wood with moisture content around 35 to 40 %
- Seasoned wood has less needle and green matter
- Green waste can be burnt in small volumes
- Boiler can handle 20 to 60% moisture content
- Cleaner fuel less maintenance

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Control and visualisation



Fuel bunker and water-cooled reciprocating grate





Boiler ash



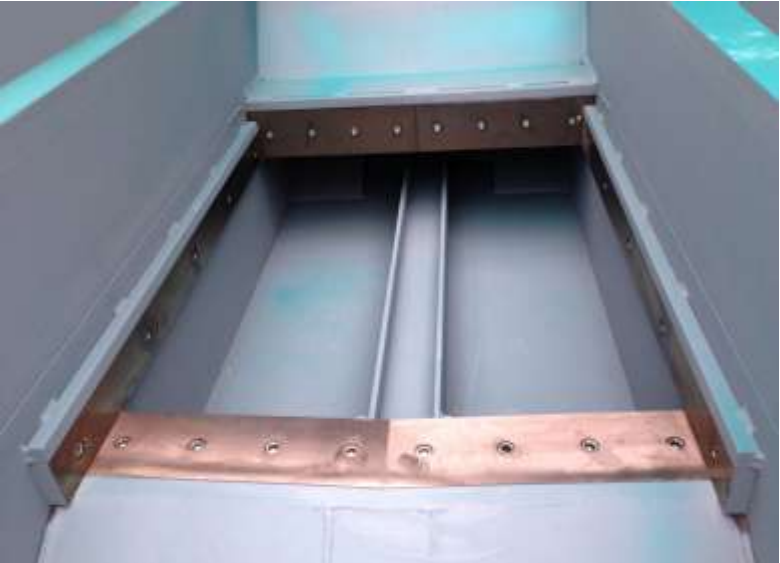


Fuel



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K&L's Polytechnik Biomass Energy heat plant





Fuel yard





Ballance
Farm Environment Awards®
Promoting Sustainable Profitable Farming

Paul and Lyn Loader (with family)
K & L Nurseries

MASSEY UNIVERSITY INNOVATION AWARD
HILL LABORATORIES HARVEST AWARD
MERIDIAN ENERGY EXCELLENCE AWARD

FINALIST 2014



EECA
AWARDS



Thank you for your attention



Roses



Gerberas



Bunches

