



genesis

Biomass Trial

Huntly Power Station
February 2023



Outline

1. Huntly Power Station
2. Fuel selection
3. Black pellets
4. The trial
5. Next steps
6. Q & A



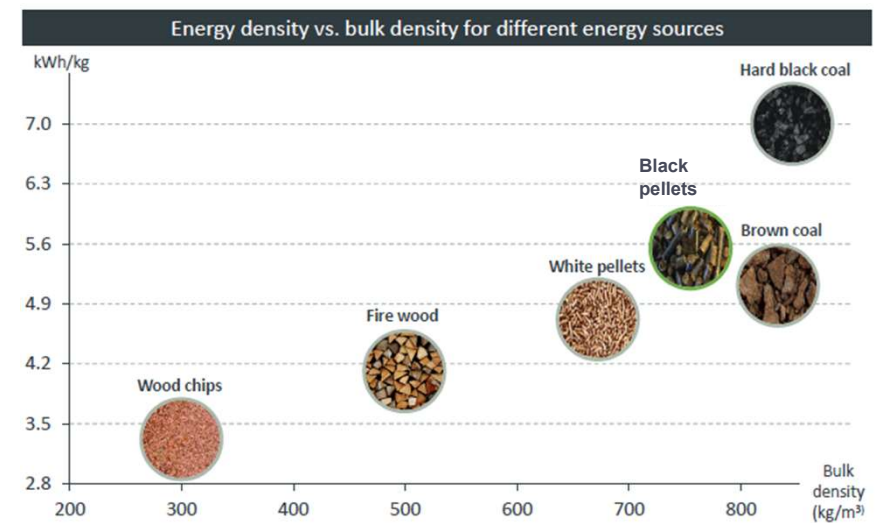
Huntly Power Station



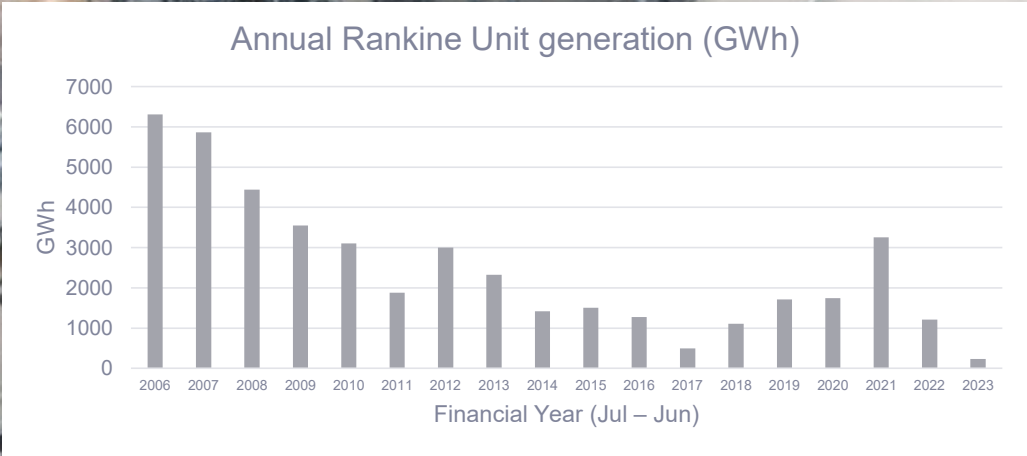
Background

— The Genesis biomass journey

- Early 2000's wood chips testing – up to 10% blend
- Biomass feedstock study in 2010
- Early 2011 Government target of 90% renewable electricity by 2025
- 5% biomass co-milling modelled
 - Wood chips (60% moisture)
 - Hogged lumber (18% moisture)
 - White wood pellets (7% moisture)
- Three significant challenges:
 1. Low heat content per weight
 2. High moisture content
 3. Very difficult to grind
- 2012 Fuel Handling study (wood chips and white pellets)
- Trial halted due to deterioration in market demand. Unit #3 decommissioned.



Backup, not baseload



Black pellets

— Torrefied

- Torrefaction is a fuel upgrading technique that makes raw biomass more practical to handle by making it water resistant, easy to grind, non-corrosive, and energy dense.



- Pyrolysis; heat 200 - 320 °C in low-oxygen environment
- Drives off moisture
- Drives off light volatile matter
- Cellulose, hemicellulose, and lignin fibres broken down into more friable substance
- On the path to charcoal

Black pellets

— Steam exploded

- Steam exploded pellets are a new application of a long-standing (1926 wood treatment patent) pulp and paper technology
- In general, steam explosion is a process where biomass is treated in steam at raised pressure (1–3.5 MPa) and temperature (180–240 °C) for several minutes, followed by an explosive decompression of the biomass.
- The sudden drop in pressure causes the material to instantaneously disintegrate or “explode” into small particles, rupturing the rigid structure of the biomass.
- A thermal treatment process can be added to existing white pellet plants, as well as to sawmills, board plants, and other wood processing facilities.

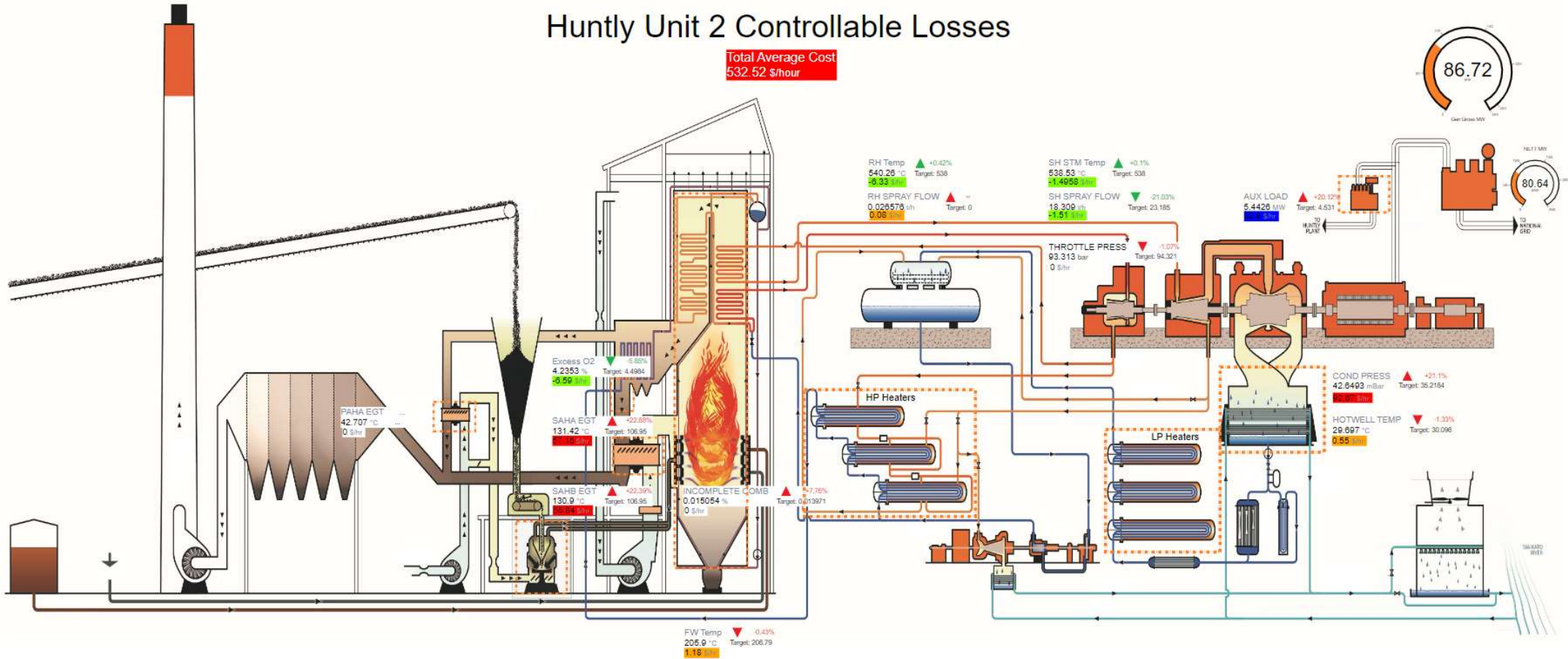


[Video: Steam Explosion Pre-treatment](#)

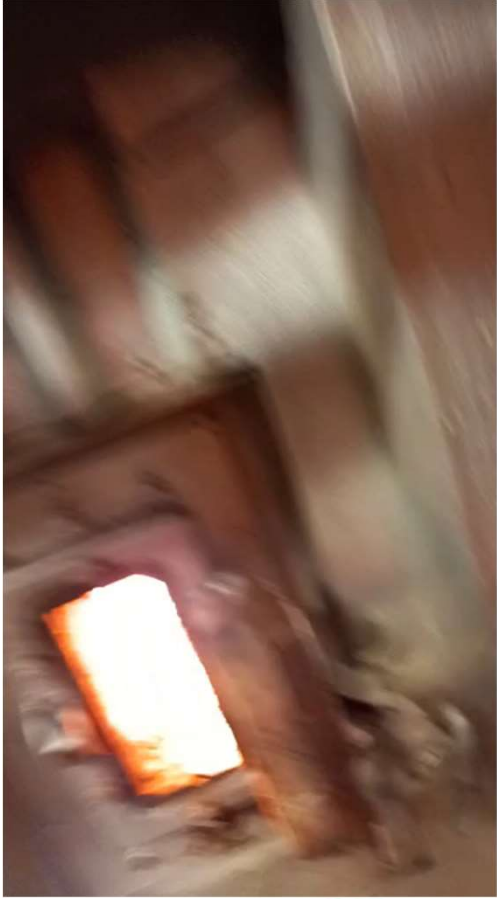
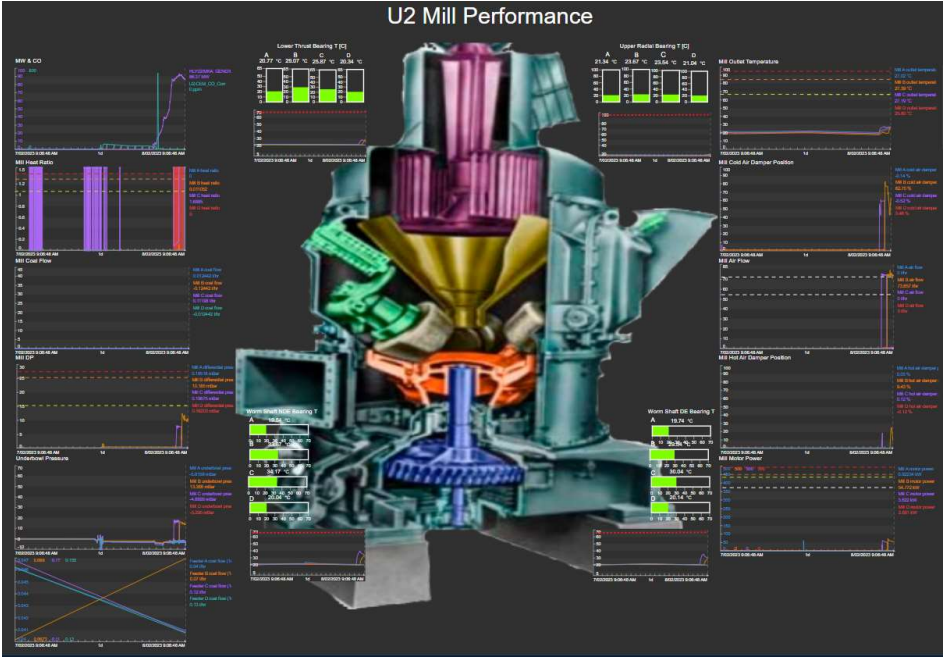
Process flow

Huntly Unit 2 Controllable Losses

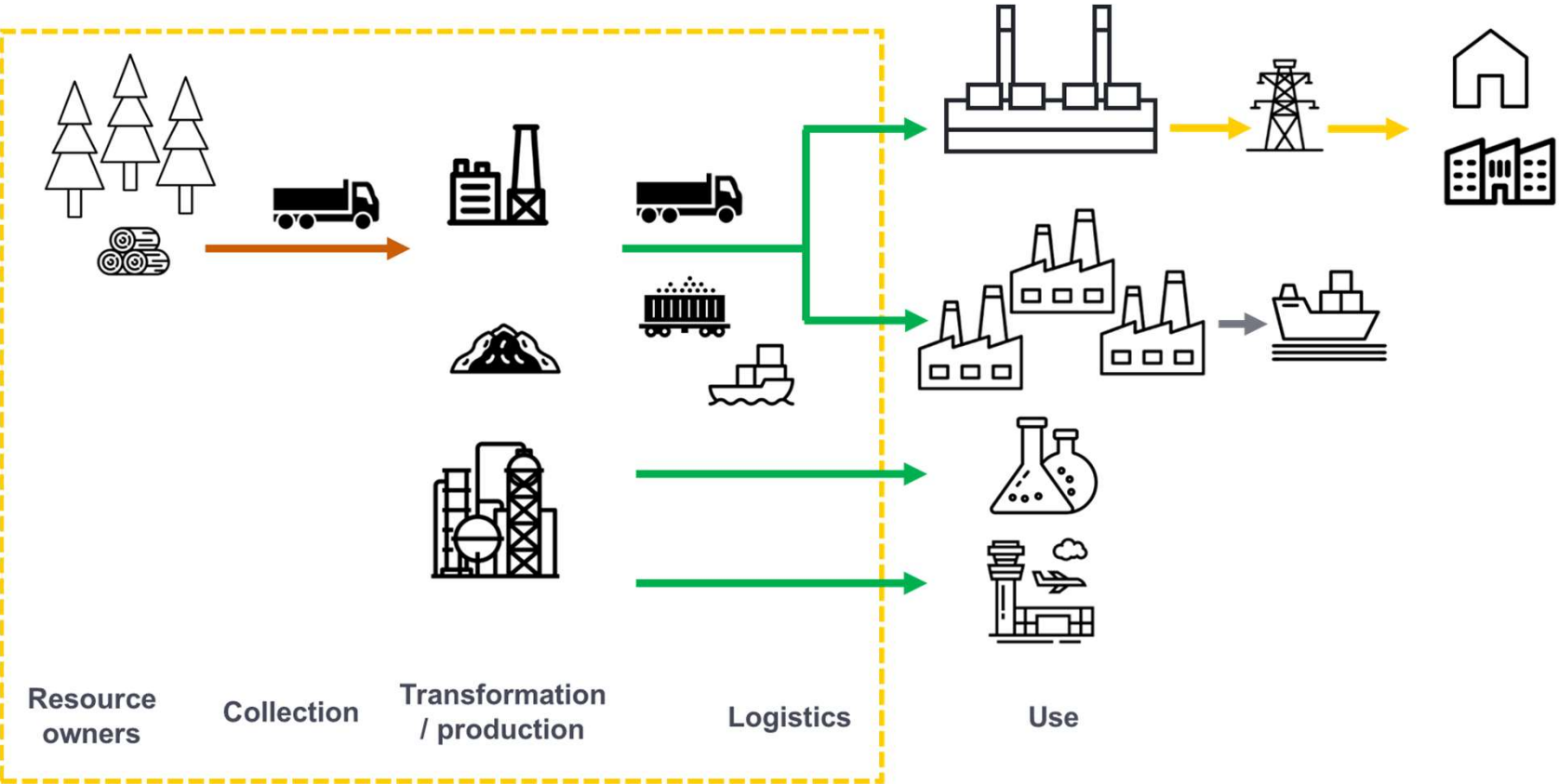
Total Average Cost
532.52 \$/hour



Milling



Next steps



A dense forest of tall evergreen trees, likely spruce or fir, with a misty atmosphere. The trees are dark green and fill the frame. The mist is most visible in the upper half of the image, creating a soft, ethereal glow around the tree tops.

Questions?

Finding a pathway to decarbonise coal

genesis With you. For you.



Thank you