

Montrose Local Energy Project

Aims:

To create new local biofuel business by diversion of waste cattle bedding into solid biofuel pellets.

Location:

Pettycur Farm, Montrose
450 beef cattle
Produce 1500 tonnes/year of used
cattle bedding

Opportunities:

Used bedding is currently a waste that requires spreading on farmland

Could reduce forestry impact of wood as a bio-mass fuel.

20% of used bedding from all Scotland's beef cattle could produce 5% of Scotland's renewable heat requirement.



Project Partners



Rosemount
Farms

Montrose Local Energy Project

Achievements and Challenges

Used bedding in Dryer



The team carried out trials to test to concepts of drying, pelleting and then combustion of the used animal bedding.

We took the bedding and used a STRONGA FD30 continuous dryer at Kinknockie Farm. Here we were able to dry 22 tonnes of the bedding from 69% to 20% moisture content. There were issues with the material clumping into balls in the dryer and further drying was also required to reduce to c.15% required for pelleting.

We used equipment at Harpers, a wood recycling centre, to turn the 10 tonnes of dried bedding into pellets.

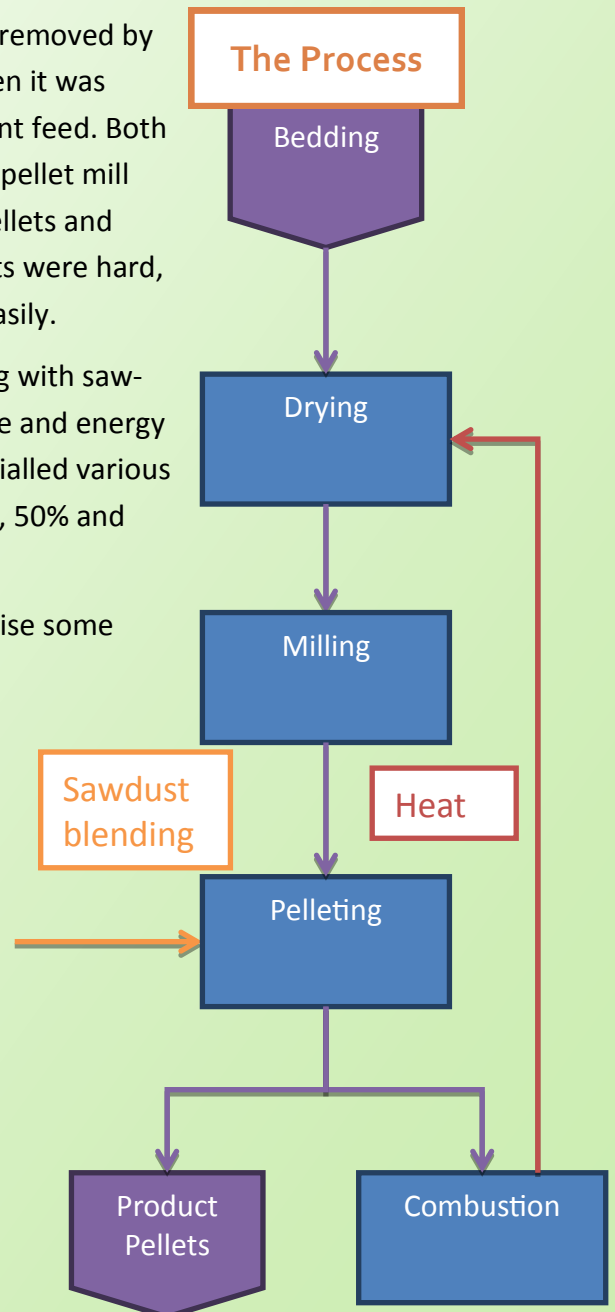
First stones and metal were removed by an Air Density Separator, then it was milled to produce a consistent feed. Both a large scale and small scale pellet mill was trialled to create the pellets and both worked well. The pellets were hard, shiny and did not crumble easily.

We chose to mix the bedding with sawdust to improve the moisture and energy content of the pellets. We trialled various mixtures contained 0%, 25%, 50% and 75% sawdust.

Combustion of the pellets raise some challenges.

All of the pellets caused periodic blockages in the feed screw conveyers that supplied the fuel to the boiler burner.

The Process



Flame from 50% sawdust pellets



The 50% and 75% sawdust pellets were the only mixes that would combust at a steady state. Even these pellets had high levels of CO and NOx in their flue gasses.

The Team sought to organise further boiler trials to see if these issues could be resolved, however this was not possible due to time constraints .

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Looking Ahead:

The Project is aiming to achieve capital funding for Plant Design and Installation.

Then, use this funding to install and trial a farm scale plant at Pettycur Farm.

If successful, try and scale up to larger scale “hub” plant to process bedding from multiple farms.

Contact:

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Farmer Alex and wife Wendy with the fuel
“source”

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