Woody Biomass for Energy in Michigan

TOPICS FOR DISCUSSION AND INQUIRY

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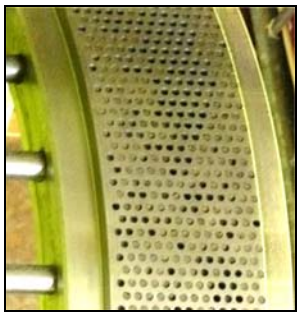
So, You Want to Build a Pellet Mill?

Pellets have been around for decades but have recently garnered a lot of attention. Demand for wood pellets is strong. With heating fuel costs rising and likely to keep going up, it's no wonder that wood sources are being looked at, along with other alternatives. Michigan has an abundant supply of wood, and even more abundance is possible through improved forest management. Currently, wood is much cheaper than fossil fuels as a heating feedstock.

Finding pelletizing technology is not difficult. A number of market-ready, off-the-shelf systems can be considered. Pellets are formed under heat and high pressure by extruding fiber through a heavy die. No adhesives are required with adequate feedstock mixes. Feedstock must be dry before pellets are made.

A pellet die that fits into a pelletizing press.



Bank of pelletizing presses.

There's no particular mystery in wood handling systems, drying ovens, pellet presses, compressors, packaging lines, etc. Though credit is tight, finding financing may not necessarily be the biggest challenge -- at least, with a sound business plan.

It's also pretty easy to find a rural community eager to support a manufacturing business. The challenge lies in acquiring enough of the right kind of feedstock and becoming established in the market.

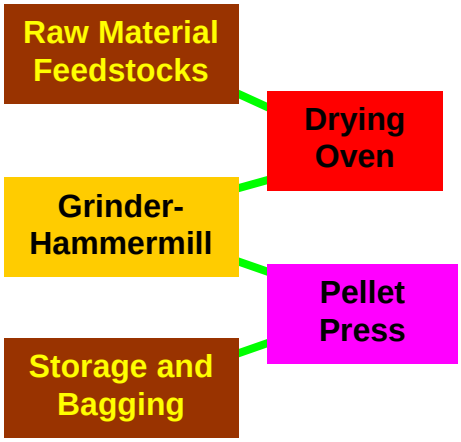
The notion that there are tons of wood mill residues available is generally a myth. Existing forest industries have been highly efficient in using raw materials for quite some time. Unless a company intends to generate its own supply, purchasing sawdust or waste wood at an affordable price can be difficult. Using logging slash (the material left behind after roundwood is removed) contains a high proportion of bark. Bark tends to increase the ash content and lower the heat value. A pellet plant might be able to use municipal wood waste (demolition wood), given existing or potential facilities and volumes. However, new pellet mills will usually need to look at our forests for at least a portion of their feedstock.

Old pallets, shredded construction debris, and other solid wood waste can be converted to wood pellets.

Though Michigan has a large forest resource and its rate of volume accumulation exceeds that of most states, the amount of *available* and *affordable* volume within a specified radius from a proposed mill is a difficult figure to calculate. Many forest owners are becoming increasingly reluctant to harvest trees for any reason. Price may be an incentive for some forest owners, but most private forest owners do not hold timber harvest as a high ownership priority.

As we look into the potentially available wood supply, we need to consider species and wood conditions. Some species will simply make better pellets for particular applications. The presence of

rot and bark are also factors. Very importantly, competing with existing wood-based industries for existing wood volume may become counter-productive to a rural economy. Using currently non-commercial species and products holds the greatest promise. Critical questions about feedstock availability and supply are difficult to answer at this time.



The pellet-making process from green feedstocks.

The demand for pellets has been growing and will likely continue to increase. A proposed mill needs to consider the effects that production volume, economy of scale, packaging, and distribution and transport costs will have on the price received from various markets. Use for home heating and smaller business space will likely require a high quality pellet. Industrial and larger commercial use will likely be more flexible about pellet quality. Most of the global pellet market exists in Europe, although demand in the United States is rising rapidly.

Forest certification by third parties may limit access to certain energy markets, such as power plants that are regulated by state renewable portfolio standards (RPS). These are the laws that make utilities provide a specified percentage of their power from renewable sources by a certain year, such as 10 percent renewables by 2015. The regulations often define woody feedstocks as only those from *certified* forests. Most individual and family forest owners do not have their forests certified. Certified requirements effectively exclude about half of Michigan's forest area and wood volume from feedstock consideration. Of course, most end consumers don't care where their pellets come from, and most harvests are well within the realm of sustainable forestry, certified or not. So there remains a potentially large market opportunity among homeowners and businesses that don't fall under RPS regulations.

Bagged pellets for the home market and bulk pellets for commercial consumers.

For existing wood-based industries, it might make sense to incorporate a pellet mill into an operational mix. This integrated concept allows for production of multiple products, allowing a company to better flex with market fluctuations. Producing more of the product that's generating the highest revenue is a way of maintaining competitiveness.

Pellets can be packaged and delivered several ways. Most commonly, pellets are bagged for the home market. Some manufacturers will deliver in larger bags or in bulk via truck, train, and ship. Much of the North American pellet production goes to European countries.

Several countries, such as The Netherlands and Sweden, have been working with improved pellets through a process called torrefaction, which heats wood fiber in oxygen-free ovens, increases the energy content per unit weight, and makes pellets hydrophobic (they repel water). A hydrophobic wood pellet should reduce packaging and storage costs.

So, while it's relatively easy to place known technology on the ground, the tough part is finding the right feedstocks, obtaining financing, and connecting with the right markets.

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