

Need to Know: Biomass Boilers

Are biomass boilers the answer to your energy costs?

Find out what you need to consider first.

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Read about the advantages of biomass (or alternate fuel) boilers on the Internet and you'll find articles explaining the economic and environmental upsides. However, few actually get down to the practical, dollars-and-cents side of the process.

DOWN TO BASICS

Many growers want to cut energy costs, and are considering a biomass system. Simply stated, biomass uses natural fuels to generate heat. These fuels might be:

- Wood cuttings, trimmings, wood chips, sawdust, etc.
- Paper/cardboard waste
- Agricultural waste (shells, husks, crop waste)
- Dedicated crops (corn, trees, grasses)
- Animal waste, or other materials

The appeal in biomass is that most of these fuels are inexpensive and abundant. However, it's not that simple. The typical biomass boiler setup requires either a regular delivery of a consistent quality fuel or ample on-site storage, conveying into the boiler, ash and residue collection, possible emissions control units, and regular maintenance.

And most units take up a lot of space. Compare the footprint of a typical boiler to a VW bug, and then the footprint of a biomass system to that of a bus!

KEY CONSIDERATIONS FOR BIOMASS

As a grower running a professional operation, there are important considerations to make when considering the biomass option:

1. Fuel Selection: Most organic fuels have a lot of moisture, so they will weigh more and cost more to transport, so biomass users try to find local sources of fuel. Because they will need a larger volume of fuel for the same energy output, biomass users need to have ample fuel storage and handling systems. And, fuel delivery must be reliable for this to be acceptable for business operations.

Some fuels require additional processing for use, and many biomass installations include separate pelletizers to take natural materials and transform them into uniform pellets for burning. ▶▶▶



One biomass boiler setup at a New York state growing operation

Top 3 Things to Know

Before you can benefit from a biomass system, you should have an understanding of these three elements:

- 1 Fuel Selection
- 2 Fuel Cost Scenario
- 3 Return on Investment Picture



Above:
Many biomass boilers run on woodchips and debris



Right:
Fuel storage and conveying to the boiler require advance planning

2. Fuel Cost Scenario: Because abundant natural fuels should be cheaper than processed fossil fuels, biomass should save energy costs over time. This may be true if natural fuel transport costs stay the same and natural gas, propane or heating oil costs soar dramatically. But some of these fuels, like natural gas, are also abundant and prices continue to be relatively stable.

3. Return on Investment Picture: Common sense tells us that an investment should pay for itself within four to five years.

Payback Picture

Compare biomass and traditional systems before you decide:

- Natural gas boilers cost less initially and in the future if prices stay stable.
- Run several scenarios for fuel price changes, capital investment, maintenance

This might be hard to achieve with a payback scenario based on rising fossil fuel costs plus a biomass system capital investment of possibly three to five times more than that for a natural gas boiler system.

Consider also possible unexpected or unforeseen costs related to inconsistency or unavailability of natural materials, required routine maintenance, storage and handling, and potential pollution control issues due to ash and smoke. Some biomass producers minimize the ash/smoke generation issue, but it still has future ramifications. Even now, cities like Denver are requiring 'burn days' because of pollution created by so many wood-burning home stoves.

Some biomass users are lucky enough to have on-site fuel sources, and can get payback much sooner. But a capital investment of anywhere from three to five times more for a biomass system may take too long to recover for many operations. ▲

Delta T Solutions are experts in greenhouse heating system design and energy savings. For more information, call 800-552-5058 or email: info@deltatsolutions.com.

Biomass Pros/Cons ▶▶

Biomass Pros

- Biomass energy is an unlimited and renewable energy source
- It is cost effective. Generally, the energy is generated and supplied in the same area due to which installation of large pipelines is not required.
- There is surplus of organic waste and agricultural waste generated everyday. Biomass is produced from these wastes, which makes biomass an easily available resource.

Biomass Cons

- Some of the gases like carbon-dioxide, methane and nitrous oxide are emitted into the atmosphere during biomass production which may damage the ozone layer.
- The accumulation, harvesting and storage of raw biomass materials can be expensive compared to that of fossil fuels.



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