



Fuel Handling for Biomass Systems

Typical Applications

- » Pellet Plants
- » OSB / MDF Plants
- » Particleboard Plants
- » Sawmills & Dry Kilns
- » Power Generation
- » Combined Heat & Power
- » District Heating
- » Hot Gas Generation for Direct Dryers
- » Thermal Oil Heating
- » Steam Generation

A dependable fuel feed system is crucial to maintaining complete and thorough combustion control in any biomass fired energy system.

Your fuel feed system should be as steady and worry free as possible. Sigma Thermal offers a complete fuel feed package to support your furnace. Engineered to be as complete and turn-key as possible, the conveyors and fuel bins are designed to work specifically with your furnace to deliver exactly the amount of fuel required. This minimizes the waste of valuable fuel, along with ensuring that the energy needs of your plant are consistently met. In many plants, the fuel feed and combustion systems are engineered as separate packages, treating integration as an afterthought. This results in equipment wear and operational difficulties. Your system is unique and should be designed with the complete process in mind.

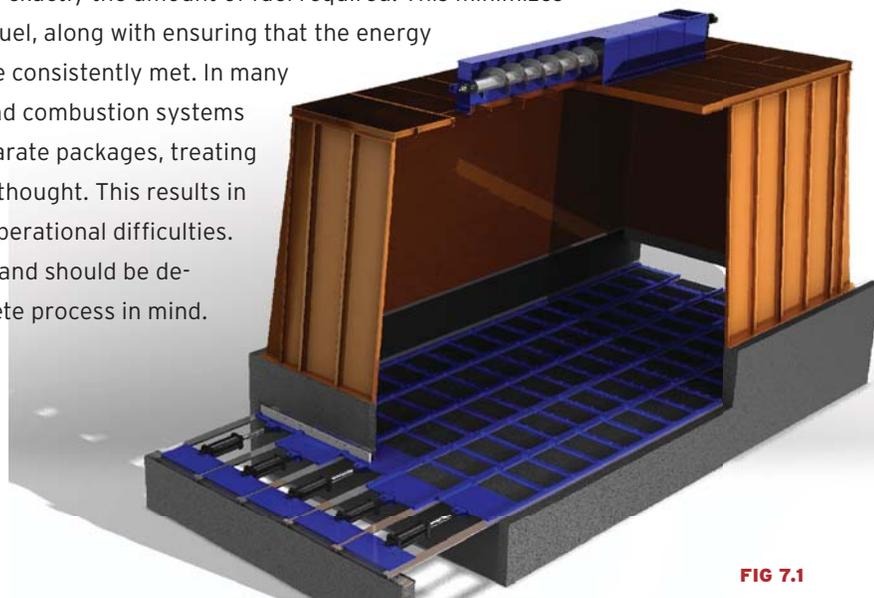


FIG 7.1
Wet Fuel Storage Bin

Wet Fuel Storage Bin

The *Wet Fuel Storage Bin* (FIG 7.1) includes rugged live bottom fuel feed design utilizing “ladders” for accurate feed rate control. Ladders have hold down clips on each side. Many live bottom feed designs guide and hold down just one side or have a single center support. The Sigma Thermal design does not use screws in the base of the bin like many popular silo storage bin designs.

Our ladder design is more conservatively designed and capable of handling larger pieces of varying fuel. The Hydraulic cylinders, motors, and power units for the storage bins are completely external to the bin. Minimal maintenance requirement and reduces costly downtime. The range of fuel storage sizes offered to meet feed requirements and operating schedule of your plant. Typical sizes from 1,000 ft³ to 40,000 ft³.

Fuel Feed Metering Bin

The *Fuel Feed Metering Bin* (FIG 7.2) is attached to the front of the furnace. Hydraulically driven fuel rams deliver precise amount of fuel required by the furnace at any time based on demand. The dedicated hydraulic power unit for the metering bin is designed with variable speed capability. The fuel feed metering bin provides premium combustion control. No overfeeding or underfeeding.



FIG 7.2 Fuel Feed Metering Bin

Intermediate Storage Bin

There are times when there is a need to have additional fuel storage above the furnace metering bin such as when there are multiple furnaces being fed from one large storage bin on the ground. Having an intermediate storage bin that is above the metering bin provides additional flexibility for fuel feeding.

The design of the *Intermediate Storage Bin* (FIG 7.3) is similar to the larger wet fuel storage bin in that it also utilizes hydraulically driven ladders. The discharge of the intermediate storage bin feeds directly into the top of the fuel feed metering bin. It minimizes the loss of fuel to the metering bin by filling in any gaps when the conveyors are feeding fuel to a different furnace. It can be fed quickly and make up any lost fuel feed by adding surge capacity to the feeding system.

FIG 7.3 Intermediate Storage Bin

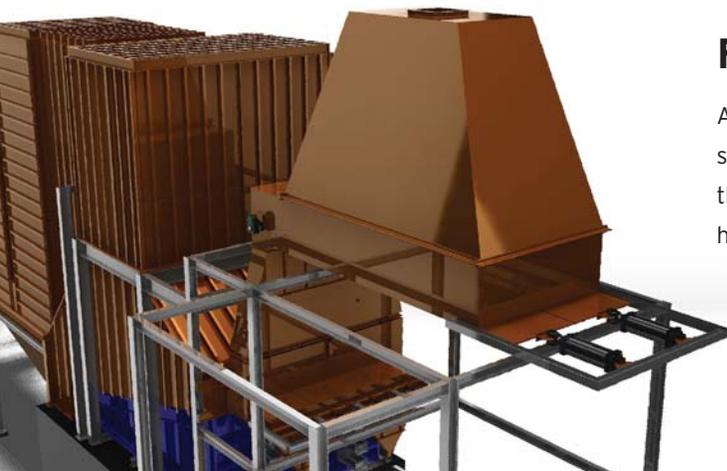


FIG 7.4 Fuel Feed Conveyor

Fuel Feed Conveyor

A robust *Fuel Feed Conveyor* (FIG 7.4) is extremely important to the energy system design. The design must allow for constant and reliable feed to the furnace. Sigma Thermal uses a drag chain conveyor design that uses heavy duty chain to handle hogged bark and other large wood waste materials. The chain is a bottom feed design with the return over top. Chain guards insure that fuel is not dumped directly on the bottom chain and UHMW sweeps minimize chain wear to increase the chain life.

