

## Rōnile Case Study

Private manufacturer turns to neighbors for fuel to meet demand for process heat

Rōnile Incorporated, one of the world's leading supplier of custom dyed accent yarn, is an employee-owned manufacturer with over 100 associates, located in Rocky Mount, Virginia. Situated in a part of Virginia with no access to natural gas, Rōnile historically depended on diesel for generating the large amounts of steam necessary to set the dye and dry their yarn. In 2006, with diesel prices having nearly tripled over the previous four years, Rōnile decided to convert from fossil fuel to biomass (sawdust sourced from area mills) for generating their steam. At the peak in diesel prices, when diesel was \$3.50 per gallon, they saved over \$2,000,000 a year!

When Rōnile began their search for alternative fuels for steam generation, they were interested in the lower costs and the positive environmental aspects of a sustainable, non-fossil fuel source. Rōnile's CEO and mechanical engineer began their research online, looking for information about biomass fuels and available technologies. They also identified and visited other manufacturers in their area with biomass boilers to see the systems in operation. They then verified the continuous availability of fuels and suppliers (sawmills) to sell them their waste product. After that, it was choosing a system design and location within their 350,000 square foot manufacturing facility. Rōnile eventually decided to install a 400 HP water tube English Boiler, with under-grate and over-grate forced air, which generates about 14,000 pounds of steam per hour.

Rōnile established certain criteria that the project had to meet in order to move forward. As a private business, it was necessary for the project payback to be under 3 years to meet their cost justification. In their case, if they had tried to use the boiler steam solely for generating electricity instead of process heat for the plant, they would not have been able to justify the cost. Additionally, they had to be satisfied that there was a reliable supply of fuel available in their area and that they would have the ability to project fuel costs. Their due diligence included the interview of other, similar manufacturing facilities with biomass boilers, to learn what sort of problems they had encountered. Along the way Rōnile learned that there is much more to a biomass system than just the boiler. The feed system (unload auger to silo to day bin to boiler) is just as critical. Some of the lessons they learned include the importance of screening the sawdust before it enters the handling system, the value of additional alarms within the feed system to alert personal of impending sawdust delivery interruptions and that sawdust is surprisingly abrasive, making longer lasting, top quality augers well worth the money.

Rōnile's conversion to biomass demonstrates the cost savings of wood energy and offers valuable lessons to industries considering a biomass system. Rōnile urges anyone interested in biomass systems to talk to others before taking the leap to biomass energy. Rōnile knows that they are blessed with an abundance of local saw mills who want them to remain in the area and be successful, and that above all, supplier loyalty has proved important!



*Figure 1. Walking floor trailer offloading sawdust at the Rönile plant.*



*Figure 2. Back side of Rönile's receiving bay from where the sawdust is augured into the storage silo.*



*Figure 3. Rönile's handling system that conveys fuel from the storage silo to the day bin.*



*Figure 4. Rönile's external biomass handling and storage system.*



Figure 5. Rõnile's 400 HP English Boiler generates process steam for the 350,000 square foot manufacturing facility.



Figure 6. Example of overs (oversized material) screened out of the saw dust supply received by Rõnile.