

Waste not, want not

It's time to stop wasting our waste and start turning it into fuel. Why? Because now more than ever before ... we can!



A sample of the waste processed by the CBI Magnum Force 4000 machine

Turns waste to energy: case study

In 1976, Peter Crowell and Arthur Durgin founded **Durgin & Crowell** in New Hampshire, USA, with just six employees working a small rough green sawmill specialising in Eastern White Pine. Thirty years later, Durgin & Crowell is a totally integrated forest resource company. Its manufacturing operations include a two-sided sawmill complex, two planer facilities, two cut-up shop areas and 18 dry kilns. The company employs more than 100 people and produces over 30 million board feet of lumber annually. This growth is largely the result of a willingness to embrace new technology and ample forethought with regard to installing technically-advanced equipment and minimising waste.

In 1987, Durgin & Crowell took their commitment to the environment, waste reduction, and the forestry industry to the next level and partnered in a joint venture to build Hemphill Power and Light (now Springfield Power) – a 16 MW co-generation power plant adjacent to its property. The owners believed that the presence of this plant in their region would create a win-win dynamic because the plant would provide foresters with an additional market for substandard wood and insure that only the highest quality logs would

be sent to their sawmill. Plus, any unusable wood by-products that were created by their own sawmill could be converted to quality biofuel for the power plant. To this day, all shorts at Durgin & Crowell go to their cut-up shop where they are cut into useful pieces and any knotty sections are processed to make biofuel. The company has devised other Earth-friendly recycling programs for their by-products and green sawdust is burned to create steam used to heat the dry kilns, wood shavings are sold to stables and farms and quality chips are sold to paper manufacturers.

Five years ago, Durgin & Crowell began an initiative to purchase and process additional waste wood, forestry debris and other biomass. Local foresters, builders, contractors and businesses contributed a range of materials including pallets, dimensional lumber, kiln-dried wood, brush, oversized logs, stumpwood, mill waste and even 'metal logs' carrying hard-to-remove nails. This mixed bag of biomass presented a real processing challenge. So, Ben Crowell, serving as the company's fuel technician, purchased a **Continental Biomass Industries (CBI) Magnum Force 4000** grinder to convert the material into a biofuel ideal for this co-generation power plant – now consuming 700 t/week, 195,000 green t of wood fuel annually and yielding 120,000 MWhrs each year of renewable electricity to the Lake Sunapee region and sold under a Power Purchase Agreement.

The success of the operation resulted in the purchase of the power plant by Marubeni Sustainable Energy, headquartered in San Diego, California. This company shares Durgin & Crowell's environmental vision and has recently made additional improvements to the installation. The addition of a polishing nitrogen oxide scrubber system along with upgrades to the plant's boiler and central systems are measures that contributed to the recent qualification of the facility as a

The end product en route as feed for the Durgin & Crowell co-generation plant



Connecticut Class I Renewable Energy Credit producer.

Durgin & Crowell continues to supply Springfield Power with approximately 120 t/week of biofuel while continually growing the sawmill business and looking for ways to minimise operational costs. Having fueled or powered portions of the mill with alternative biofuel for more than two decades, the company currently has its sights set on the installation of its own onsite wood boiler. Once again, Durgin & Crowell has looked to CBI – because of its close proximity as well as its specialisation in the area of engineering custom material processing systems – to include a stationary wood hog and a conveyor system for the boiler. The end result will be increased efficiency, profitability and growth. According to owner Ben Crowell: "What appears on the outside to be time-honoured, traditional New England sawmill is actually a constantly evolving business that leverages technology in order to grow and to help protect the environment."



The CBI Magnum Force 4000 grinder in action at the Durgin & Crowell operation