



Forward thinking

If reducing the volume of material going to landfills and using the waste to generate green energy is indicative of the new environmental thinking, then Koppe is ahead of the game, finds out from Jerry



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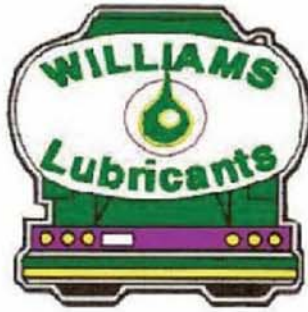
ver a century ago, the railroads played a key role in opening up the interior of North America, carrying supplies and people, and ultimately spreading what we perceive as civilization across the central plains to the Pacific coast. The railroads today continue to serve industry and business, transporting freight over a network that needs constant maintenance and overhaul. Old railroad ties are continuously being replaced with new ones, so no matter where freight is transported, the likelihood is that it will be traveling over ties manufactured by North America's largest provider and disposer of railroad ties, Koppers Inc.

Based in Pittsburgh, Koppers is a global organization employing around 1,750 people across the US, the UK, Denmark, Australia and China. In addition to producing and disposing of creosote-treated wooden railroad ties and utility poles, Koppers also manufactures carbon compounds for the steel, aluminum, chemical and rubber industries.

The story of Koppers' role in recycling old ties and poles dates back to 1988 when, as part of a strategic alliance with Conrail and Pennsylvania Power and Light (PPL), the company built the Susquehanna co-generation plant alongside its wood treatment plant in Montgomery, Pennsylvania. The aim was to take in old creosote-treated wooden poles and ties that would otherwise have been consigned to landfill and burn them. The steam produced at the plant's boiler then had two uses: it drove a turbine to generate electricity, and it was also transferred to the adjacent wood treatment plant and used to run the treating process for new ties.

"The Susquehanna generator is a General Electric plant manufactured in 1948 and rated for 12.5 megawatts, though we generally run it at around 9 megawatts," explains co-generation supervisor Jerry Horning. All the power produced by the turbine generator is fed into the distribution grid through a power purchase agreement with PPL, with whom it has been dealing since the plant opened. "We generally net around \$1 million a year from power generation; however, we'll be changing buyer at the beginning of next year."

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requires a strict preventive maintenance regime and a continuous schedule of upgrades and improvements. "We schedule two maintenance outages a year, one in the spring and one in the fall, when we address major issues," Horning says.

Whenever replacement parts are required for the turbine/generator, General Electric generally manufactures them to order. "There is often a long lead time on these parts, depending on the part we require," says Horning. "So we schedule far enough in advance to have the replacements on site when we're ready to do the retrofit."

In addition to this regular maintenance, the turbine is also completely stripped down, inspected and repaired every five years by GE technicians—a major event in the plant's calendar that lasts around three weeks.

The company is also continuously looking for ways to upgrade and improve the boiler and turbine. During the last year, for example, the boiler was upgraded with two new feedwater pumps, each costing around \$80,000, and further improvements are in the pipeline. "We're currently looking at retrofitting the turbine with a digital





governor system, which will give us better control over the turbine and will increase our output," Horning says.

"On the boiler system, we're looking at retrofitting sonic horns to replace the steam soot blowers." The sonic horns, also known as acoustic cleaners, will be much more efficient at preventing the buildup of ash in the boiler tubes, therefore increasing the efficiency of the steam generation. "The hotter the steam, the more power we can generate," Horning concludes.

The environmental achievements of the Susquehanna plant are interesting. The plant burns around 4,000 ties a day, reducing this vast mound of wood to just 13 tons of clean ash, which the local landfill company then spreads over the landfill site as an alternative overnight cover. There is, therefore, an enormous reduction of

waste going to landfill.

The steam used to power the adjacent treatment plant is supplied for around 326 days a year. But when the boilers and generator are down for maintenance, the treatment plant fires up a boiler that consumes 1,700 gallons of fuel a day, which means Susquehanna reduces the plant's fuel consumption by some 554,200 gallons a year.

Pollution caused by the system is minimal. The ash itself is deemed to be clean and safe, while the emissions from the combustion are filtered by an electrostatic precipitator before being released into the air. The site is regulated by the very stringent Title V Permit, and its emissions are continuously monitored, with particular regard to carbon monoxide, NOx, O2 and opacity.

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Safety has always been very important for Koppers. “Safety is a corporate-wide issue,” Horning says. “When an improvement is made at one plant, it’s implemented through all the plants.” The Susquehanna plant has continuously been monitoring and improving its safety procedures. “All our plants are unionized, and the unions are also heavily involved in safety. We have a safety committee that meets once a month to discuss

the issues we as a company want to address and the issues the union feels we need to address. We also have weekly safety meetings, and on bigger issues we touch base with each of our employees, and everyone is trained on all job procedures.”

The Susquehanna co-generation plant, for example, contains a considerable amount of moving equipment such as conveyors, elevators and the sheers that slice the ties into manageable pieces, and much work has been done in recent years to improve the safety guards and safety interlocks on this equipment.

Looking to the future, Horning expects to continue improving and upgrading the Susquehanna plant and building on the knowledge and experience the company has built up in co-generation and recycling over the past 20 years. With industry becoming increasingly conscious of its carbon footprint and the need to cut waste going to landfill, this experience is likely to have significant value throughout the company. ●



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