

the concentrated (about 60 percent solids) liquor in two smelters. Molten smelt is drawn from the smelters and dissolved in water to recover the pulping chemical sodium carbonate. Exhaust gases from the smelters pass through a venturi scrubber and are then discharged to the atmosphere.

IV. The Georgia-Pacific XL Project

A. What Are the Basic Elements of the Project?

The mill currently is subject to two air emission standards. The first was promulgated under Clean Air Act (CAA) section 112, as part of the "Cluster Rule," on April 15, 1998 (63 FR 18617). That rule set standards reflecting performance of maximum achievable control technology (MACT) for hazardous air pollutants (HAPs) emitted by certain emission sources in pulp and paper mills. EPA promulgated a second air standard for pulp and paper mills on January 12, 2001 (66 FR 3179). The second standard, likewise reflecting MACT, specifically addresses HAP emissions from combustion sources associated with the recovery of pulping chemicals from liquid pulping wastes (e.g., black liquor) (40 CFR part 63, subpart MM—National Emission Standards for Hazardous Air Pollutants From Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills or "MACT II"). Georgia-Pacific's facility at Big Island is a semi-chemical pulp mill and its two existing smelters (types of combustion units) are subject to the MACT II rule.

The MACT II rule contains emission limitations, but does not require use of a particular technology to meet the limitations. The current emissions from Georgia-Pacific's two existing smelters at Big Island exceed the HAP emission standard in the MACT II rule. For Georgia-Pacific's Big Island facility to meet the standard, the smelters would have to be upgraded substantially. The age and physical condition of the smelters dictate that they either be rebuilt with additional emission control devices or replaced, such as with a conventional recovery boiler commonly used in the industry. Of these two options, Georgia-Pacific would choose to replace the smelters with a conventional recovery boiler.

However, Georgia-Pacific also investigated, and eventually chose, a third alternative for chemical recovery, replacing the smelters with a PulseEnhanced™, steam reforming black liquor gasification system developed by Stone Chem, Inc. This technology uses steam reforming to

convert the organics in black liquor to a hydrogen-rich gas fuel, leaving the residual pulping chemicals (primarily sodium carbonate) for reuse. The gas can then be used as a clean burning energy source for heat in the gasification unit and as an alternative boiler fuel, replacing fossil-fuel based (non-renewable) natural gas. Implementation of such a gasification system is expected to allow the Big Island facility to reduce emissions well below the MACT II HAP emission standards, and to significantly lower emissions of other criteria pollutants, compared to installation of conventional technology. However, the technology has yet to be commercially demonstrated.

The signatories to the FPA, and the other project stakeholders, believe that gasification of black liquor represents a new and better approach for the chemical recovery process and eliminates many of the deficiencies of the conventional recovery furnace and fluid bed combustion technologies. The benefits of gasification to the paper industry generally are expected to include: increased efficiency in energy conversion and chemical recovery, elimination of the smelt-water explosion hazard, reduced operation and maintenance costs, and significantly lower environmental emissions. The emissions expected to be reduced include: particulates, sulfur dioxide (SO₂), total reduced sulfur (TRS), nitrogen oxides (NO_x), volatile organic compounds (VOC), carbon monoxide (CO), hazardous air pollutants (HAP), and greenhouse gases, specifically carbon dioxide (CO₂). These benefits are particularly attractive to pulp mills such as Georgia-Pacific's at Big Island that use a semi-chemical non-sulfur process that requires auxiliary fossil fuel to sustain combustion of the black liquor. Projected benefits to the Big Island facility and surrounding areas include significant reductions in NO_x, VOC, CO, and particulates.

Although Georgia-Pacific's feasibility analysis indicated the risks of attempting to construct and operate the new technology would be within acceptable limits from a technical standpoint, the company had two other concerns. The first concern was the cost of the project. Estimated costs to complete a black liquor gasification project, the first commercial scale implementation of this technology, were quite high and considerably more than the cost of installing a new conventional recovery boiler. Therefore, Georgia-Pacific sought and has received some co-funding from the U.S. Department of Energy (DOE), which has recognized the technology's potential usefulness.

The second concern involved compliance with the MACT II rule. With this demonstration of a new technology come risks that the technology ultimately will not be successful. If this occurs, Georgia-Pacific's Big Island mill will not have a functioning replacement for the smelters in time to meet the MACT II compliance date, which is March 13, 2004. Therefore, for this XL project EPA committed to undertake a rulemaking to provide temporary relief from the MACT II compliance date for this situation (and also for a defined time period in which Georgia-Pacific will run the new gasification system on black liquor from a Kraft pulp mill, to meet an obligation under their funding agreement with DOE). To fulfill this commitment, EPA promulgated amendments to the MACT II rule on March 26, 2001 (66 FR 16400).

The amendments included a provision to allow the Big Island facility until March 1, 2007, to comply with the applicable performance standard, if Georgia-Pacific's attempt to implement commercial scale black liquor gasification at the Big Island mill fails. The compliance extension, nearly three years later than the otherwise applicable compliance date, was intended to allow Georgia-Pacific time to replace the unsuccessful gasifier with a conventional chemical recovery system.

B. What Is the Construction Status Under the Project?

Proceeding according to the FPA and the original site-specific rule, and after signing a co-funding contract with the Department of Energy (DOE), Georgia-Pacific began final design and construction of the black liquor gasification system in early 2001. Since that time, Georgia-Pacific has spent about 13 million dollars, and has made considerable construction progress. As of the end of December 2002, construction was about 50% complete (see Georgia-Pacific's Web site for current project construction information: <http://www.gp.com/containerboard/mills/big/steam.html>). But Georgia-Pacific also has experienced delays. To begin with, in the FPA Georgia-Pacific agreed to begin construction after signing a contract with DOE. That signing was expected to take place in mid-2000, but did not occur until February 15, 2001. Additionally, Georgia-Pacific encountered several unexpected, significant design issues. For example, control of sulfur emissions from the system was originally based on scrubbing hydrogen sulfide from the product gas using green liquor. This strategy proved infeasible. After