



# Center for Paper Business and Industry Studies

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*Newsletter of the Center for Paper Business and Industry Studies*  
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## **Research Update: External Benefits Study of Black Liquor Gasification**

*(This is the eighth in a series of "Research Updates." Previous installments appeared in the recent September, January, February, March, May, June and July issues of the Newsletter. This article is based on a document prepared by Dr. Michael Farmer and Dr. Scott Siquefield, the Principal Investigators of the project.)*

Black Liquor Gasification (BLG) is a new technology for recovering energy and chemicals from spent kraft pulping liquor. An alternative to the time-honored but imperfect Tomlinson recovery boiler technology, it has been developed nearly to the point of commercialization. Adoption of the new technology by pulp mills could yield substantial economies as well as environmental benefits, but this will only happen if firms and community leaders come to a mutual understanding of its potential ramifications. The key questions being addressed in the course of the study are:

- What attitudes do key players at plants and in local communities have toward BLG?
- What factors are most important in influencing the choice of BLG or alternative technologies?

Several significant milestones were reached during the early phases of the project:

- Construction of a sample frame that identifies currently operating pulp mills that employ a Tomlinson boiler, together with an identification of those mills that will face a 'rebuild or replace' decision in the next decade.

- Compilation of a list of community economic development officials and local environmental protection division officials in each community with a pulp mill, exercising special attention to locate several officials in communities with firms facing a 'rebuild or replace decision
- Construction of a web site to locate on state maps the location of each pulp mill with links to census information regarding each community, basic mill information (pulping capacity and status), and links to our project description . (For a more detailed description, see the June, 2004 issue of this Newsletter.)

The investigators conducted preliminary interviews of economic development officers and other, similarly qualified representatives of 25 communities adjacent to pulp mills. This sample was chosen to represent mills that were not expected to make major changes to their recovery systems within the next 10 years. The goal was to identify concerns that would be specifically addressed in subsequent interviews elsewhere, in recognition of the need for careful pre-survey and interview instrument design to ensure a high-quality process and publishable outcome.

More than 50 additional interviews of community and mill officials have been conducted since then, covering communities with mills facing recovery rebuilds in the foreseeable future as well as those with mills not expected to make major recovery changes.

It became apparent in initial interviews and pre-surveys that the environmental priorities of USEPA and local environmental and county policy officials

are not the same. While strategic goals are similar, EPA's review concerns appear dated, following up on older concerns that locals by and large feel have been adequately addressed. Local officials are much more concerned about environmental issues that may stand in the way of economic development, while environmental review priorities of the federal EPA center on relatively low-level waterborne and airborne emissions.

Another significant finding counters existing assumptions. These firms began a campaign of aggressive boiler maintenance in the mid-1990s and now commit sizable repairs annually to extend the life of the boilers another 10 to 15 years. The particular 25-35 plants assumed to be likely conversions for this reason are of paramount importance. Analysis suggests that large-scale adoption of BLG in the foreseeable future is much less likely than prior economic analyses suggest. Yet the same maintenance programs that have extended boiler life have added efficiencies so that many mills have excess capacity in the remaining pulping infrastructure (lime cycle). Smaller-scale BLG, designed to provide incremental pulping capacity, may be much more attractive to industry in the short run. Research priorities in the majority of the engineering research community could be shifted marginally toward mill integration studies to retrofit incremental scale over full-scale boiler substitution.

For further information, contact Dr. Michael C. Farmer, [michael.farmer@ipst.gatech.edu](mailto:michael.farmer@ipst.gatech.edu), 404-894-8718, or Dr. Scott Sinquefield, 404-385-0241, [scott.sinquefield@ipst.gatech.edu](mailto:scott.sinquefield@ipst.gatech.edu).

### ***Innovation, Transfer and Deployment: A Techno-Business Forum***

The scientific and engineering communities are demonstrably adept at introducing innovative technologies with apparent potential for industrial application. Representative of these are the rapidly developing field of nanotechnology and the steady advancement of the biorefinery concept, both of which are the subjects of extensive research at Georgia Tech. In the past, many potentially important technological developments have remained unused, usually as a result of ineffective concept transfer, operational deployment, or both. This is a circumstance for which both researchers and industry must bear a share of the responsibility. Where might the developments now underway take the forest products industries? What steps must be taken at the current stages of their development to ensure that they do not suffer the same fate as underutilized technologies of

the past? These and many related questions will be explored at the Forest Products Techno-Business Forum, at the Georgia Tech Hotel and Conference Center, Oct. 26-27. A successor to the IPST Executives' Conference, the Forum is sponsored by IPST and CPBIS. It will devote considerable attention to the technologies, especially their business and social aspects.

### ***CPBIS Symposium Slated***

On Monday, November 1, in conjunction with the TAPPI Fall Technical Conference at the Atlanta Marriott Marquis, CPBIS will sponsor a two-session symposium on paper industry business issues. The first session, entitled "Workplace Transformation" will include a presentation on change management by Donald Fedor of the Georgia Tech College of Management and one on workplace transformation by Charles Parsons, also of the College of Management. Andrew Shelton of the Paper, Allied-Industrial, Chemical & Energy Workers International Union (PACE) will deliver the final presentation in this morning session. In the afternoon session, "Economics, Logistics and Supply Chains," Marc Goettschalckx and J.-C. Lu, both of Georgia Tech's School of Industrial and Systems Engineering, will talk about global supply chains and box plant trucking logistics, respectively. Also in this session will be a presentation on the impact of forest biotechnology on box plant economics by David White of IPST.

### ***Upcoming Events***

**Six Sigma.** The PIMA/CPBIS Webcast Course on Six Sigma will begin on September 8. See <http://www.pimaweb.org/training/fall04seminar2.html>

**CPBIS Industry Advisory Board (IAB) Meeting,** Friday September 24, 8:00 a.m. - 2:00 p.m., Room 114, IPST at Georgia Tech. **Note date and time change.** This meeting will focus on the CPBIS research program, reviewing results and charting a path forward. IAB members, please mark your calendars. For more information, contact Colleen Walker, 404-894-5756.

**Management Development Course.** October 25-29, IPST. A unique opportunity to acquire skills that will radically improve your management performance and value to your organization. See <http://www.cpbis.gatech.edu/mgtdev>

**Techno-Business Forum.** October 26-27, Ga. Tech Hotel and Conference Center. See article above.

**CPBIS at the TAPPI Fall Technical Conference.** Nov. 1, Atlanta. See article above. ■