

Biorefinery News

“Project Liberty,” the nation’s first commercial-scale cellulosic ethanol plant to use corn waste as a feedstock, announced the start of production on September 3. The biorefinery, in Emmetsburg, Iowa, will produce 25 million gallons of cellulosic ethanol per year from corncobs, leaves, husks, and corn stalk harvested by farmers located within a 30 to 40 mile radius of the plant. The project is a joint venture between POET LLC in Sioux Falls, South Dakota, and DSM Royal, a Dutch enzyme manufacturer. It is co-located with POET’s existing corn ethanol plant to allow the facilities to share staff and infrastructure, thereby improving economies of scale. Project Liberty is the nation’s second commercial-scale cellulosic ethanol biorefinery to come on line. In 2013, INEOS Bio’s Indian River BioEnergy Center in Vero Beach, Florida, began producing 8 million gallons of cellulosic ethanol per year from vegetative, yard, and municipal solid waste.

On September 19 the Departments of Navy, Energy and Agriculture announced that three companies have been awarded contracts to construct and commission biorefineries to produce “drop-in” biofuels for the military and private sectors. The drop-in alternative fuels can be blended at a 50/50 ratio with traditional fossil fuels. The companies receiving federal investments for the construction and commissioning of biorefineries are:

- **Emerald Biofuels:** To build an 82 million gallon per year refinery on the Gulf Coast using waste fats to create military grade fuel.
- **Fulcrum BioEnergy:** To build a 10 million gallon per year refinery in McCarran, Nev. using municipal solid waste as its feedstock and the Fischer-Tropsch process to create fuel. On Sept. 4, USDA announced a \$105 million Biorefinery Assistance Program loan

guarantee to Fulcrum BioEnergy for the construction of this facility.

- **Red Rock Biofuels:** To build a 12 million gallon per year refinery in Lakeview, Ore. using woody biomass, or the by-products of forest management, as its feedstock and the Fischer-Tropsch process to create a refined product.

University of Washington Professor Rick Gustafson set the stage for last week’s International Bioenergy and Bioproducts Conference in Tacoma, Washington. In his keynote speech he provided an update on Advanced Hardwood Biofuels Northwest (AHB), a consortium of Pacific Northwest university and industry partners led by the University of Washington. AHB is working to prepare Washington, Oregon, Northern California, and Northern Idaho for a sustainable hardwood bioproducts and biofuels industry. AHB will be the subject of an article in an upcoming issue of this newsletter.

Trend Indicators from Industry Intelligence Inc.

[Industry Intelligence Inc.](http://www.industryintel.com) has provided market intelligence to more than 600 companies worldwide since it began as Forestweb in 1999. Industry Intelligence delivers a daily report featuring news of the paper and forest products industries. For your subscription visit: <http://www.industryintel.com>

Below is a small sampling of recent Industry Intelligence headlines, chosen to mirror significant trends in and around the paper and forest products industries.

UAE self-sufficient in tissue production through it three paper mills in Abu Dhabi, while entire Arab world largely relies on UAE for production and printing of paper, says official with organizers of Paper Arabia 2014, which opened in Dubai Sept. 21

UAE per capita consumption in 2013 at 12 kg, against 4.5 kg in China, 24 kg in the US and 16 kg in Western Europe.

in 2013. Consumption was 70,000 tonnes, with hotels and the tourism industry taking a significant share of this demand.

IP to invest US\$90M in idled PM No. 3 at its Valliant, Oklahoma, containerboard mill and restart the machine in summer 2015, raising mill's medium production capacity by 360,000 tons/year, announces Gov. Fallin; PM No. 3 has been down since October 2009

The Valliant mill is the largest employer in southeast Oklahoma.

UPM receives more than 876 applications for its vocational training program at its Kymi, Kaukas and Pietarsaari paper mills and its Kaukas sawmill, all in Finland; final selections will be made by January, with about 50 places to be filled

The program is motivated by the desire to start the training of a new generation of employees before the baby boomers retire. Trainees selected for the program will receive a fixed-term apprenticeship contract for two years.

Monash University's Australian Pulp and Paper Institute marks 25 years of innovation, announces plans to become Biosource Processing Research Institute of Australia; university also launches three-year project to convert bio-materials into new products

As well as announcing the name change the Institute launched the "Hub for BioProcessing Advanced Manufacturing Initiative (BAMI)," a three-year \$1.6 million project, bolstered by \$1.3 million from industry and \$600,000 from Monash. It will target technology to convert biomaterials into marketable materials, chemicals and energy products.

Svetlogorsk Pulp and Paper Mill in Belarus targeted to start bleached kraft pulp production at new mill in July 2015, with capacity of 400,000 tonnes/year, all for the market, following US\$860M investment

According to industry consultant Brian McClay the mill will be capable of producing bleached softwood kraft pulp (BSKP), bleached hardwood kraft pulp (BHKP) and dissolving pulp (DP).

Glatfelter awarded total of US\$8M in state grants to help its Spring Grove, Pennsylvania, specialty paper

mill convert to natural gas; company plans to invest more than US\$100M to modernize the mill over next three years The mill produces 120,000 tonnes

Glatfelter's new boilers will use more than 2 billion cubic feet of natural gas annually. Its gas consumption will be greater than the amount needed to fuel every household in Pennsylvania for two full days.

GP rumored to be interested in buying Evergreen Packaging in North Carolina, says former town mayor; Graeme Hart, who bought the mill in 2006 for US\$500M, might decide with delay in state funding that he's 'had enough of this,' says state Sen. Jim Davis

Hart, who bought the mill in 2006 for \$500 million and renamed it Evergreen Packaging, is seeking \$12 million over six years to help pay for modernized boilers that burn more natural gas and reduce coal use to meet new federal rules on emissions. Political leaders want the plant, which provides more than 1,000 jobs, to stay open. Delays in granting the funding caused State senator Jim Davis to say, "We're afraid [Hart's] going to say, 'I've had enough of this,' and just shut it down," Talk around Canton is that Koch Industries' Georgia Pacific might buy the plant, former Mayor Pat Smathers says.

Growth rate for China's paper industry began to decline in 2011 due to huge capacity level reached over preceding 11 years, and in 2013 it was just 1.2% rise year-over-year to 115.14 million tonnes, which was produced by about 7,000 manufacturers: report

According to a new MarketResearchReports.biz report, insufficient supply of raw fiber materials seriously hinders the development of the paper industry in China.

Second of four new PMP IntelliTissue 1600 paper machines planned by Yuen Foong Yu for 2014-2015 starts up at its mill in Yangzhou, China; PM No. 8 has capacity to produce 75 tonnes a day of virgin fiber-based facial tissue, toilet paper and toweling

Yuen Foong Yu is one of Asia's leading tissue producers. The new 2.8 m width machine operates at a speed 1600 m/min.

Global warming, extended growing season, are accelerating tree growth, German study of 600,000 tree surveys finds; beech trees on plots monitored since 1870 are growing 77% faster than in 1960, spruce growth rate is up 32%

Scientists are putting the growth acceleration down to rising temperatures and the extended growing season.

Södra's planned expansion of its Värö, Sweden, pulp mill, receives interim approval from country's Land and Environment Court; capacity increase project includes new wood room, digester, bio-purification, chlorine dioxide facility

Production is to increase from 425,000 tonnes per year to 850,000 tonnes after the investment.

Paper Quotes

“ ... there is no economically viable option for the mill,” – *Resolute Forest Products CEO Richard Garneau on Sept. 2, announcing the closure of the Laurentide specialty paper mill in Shawinigan, Quebec.*

“Truly innovative research and development must be nourished and expanded, because on it will depend the future health and vigor of the industry.” – *Roy P. Whitney, retired dean and vice-president of the Institute of Paper Chemistry, in “The Story of Paper” (TAPPI Press, Atlanta, 1980).*

Technology for the Nontechnical: Paper Forming on a Fourdrinier Paper Machine

Picture a large elongated metal box, perhaps 2 ft. by 2 ft. in cross-section and about 30 ft. long. Now imagine that it is equipped with an inlet pipe that continuously feeds it with a very dilute suspension of wood pulp fibers and that the suspension is allowed to continuously escape from the box (called the “headbox”) through a narrow slit extending the full length of the box at the bottom of one of its sides. The result is a thin, planar, high-speed jet of pulp fibers. The planar jet impinges on a conveyor belt that is as wide as the box is long. It carries the suspension rapidly (perhaps 60 mph) away from the box. One more thing: the conveyor belt is made from material that is more like a fine window screen than a belt. The water in the jet of pulp suspension drains through the openings in the screen, which is fine enough to prevent the pulp fibers from passing through it. As a result, a “web” of fibers forms on the top of the moving screen (called the “wire.”) As it moves rapidly away from the box, more water drains from the web until, at the end of the wire, it has enough strength to be transferred

from the wire to another conveyor belt, this one made from thick fabric called “felt.” The felt carries the wet web into the next part of the paper machine, where water is removed by pressing.

As a footnote, it must be acknowledged, with apologies to any engineers or papermakers reading this, that the above is a gross simplification. The headbox, for example, is infinitely more complex than the above description would suggest. Not just a “box,” it is, in fact, a sophisticated device that embodies design principles of advanced fluid mechanics to ensure that the jet of stock laid on the wire is optimized with respect to uniformity of velocity, fiber orientation and other important flow characteristics.

AF&PA Statistics

Since our last reporting of American Forest and Paper Association statistics releases, the Association has issued its August 2014 Printing and Writing Report, Kraft Paper and Containerboard Reports.

Printing and Writing

Total shipments decreased 7 percent in August compared to August 2013, with total paper inventories remaining unchanged compared to July. Uncoated free sheet (UFS) paper shipments in August decreased 11 percent compared to August 2013. YTD shipments are down 9 percent in 2014. Imports of UFS increased 38 percent in July and were up 23 percent in 2014, the ninth consecutive monthly increase. August coated free sheet (CFS) paper shipments decreased 7 percent compared to 2013. YTD shipments of CFS grades are down 2 percent. Exports of CFS papers increased 3 percent, the third year-over-year monthly increase in 2014. Uncoated mechanical (UM) paper shipments increased 7 percent in August, the seventh consecutive month of year-over-year increases. Year-to-date shipments of UM are up 5 percent compared to 2013. Coated mechanical (CM) shipments in August increased slightly less than 1 percent relative to August 2013 and are down 5 percent for the year. Exports of CM grades increased 54 percent year-over-year in July and are up 5 percent compared to the first seven months of 2013.

Kraft Paper

Total shipments were 120.1 thousand tons, 1.9 percent lower than July. Bleached Kraft paper shipments decreased from 9.6 thousand tons in July to 8.7 in August, while unbleached Kraft paper shipments

decreased slightly from 112.8 thousand tons to 111.4. Overall, shipments for the first eight months of 2014 were 3.5 percent lower than the same period last year. Total month-end inventories increased 6.3 percent compared to July.

Containerboard

Containerboard production was flat compared to July 2014 and 1.2 percent lower than August of last year. The month-over-month average daily production was also flat, owing to the same number of production days in July and August. The containerboard operating rate for August rose slightly to 96.2 percent from July's 96.1 percent.

The full reports can be purchased by contacting Caroline Nealon, Statistics_Publications@afandpa.org or 202-463-2448.

Statistics Corner: US Pulp and Paper Industry Effluent Discharge

The figure below illustrates the reduction in wastewater discharge achieved by the industry since 1959. During that year the industry released 57,000 gallons of effluent per ton of production. By 2010 that had been reduced to a little more than 11,000 gallons per ton. The effluent is treated to meet or exceed environmental regulatory requirements. ■

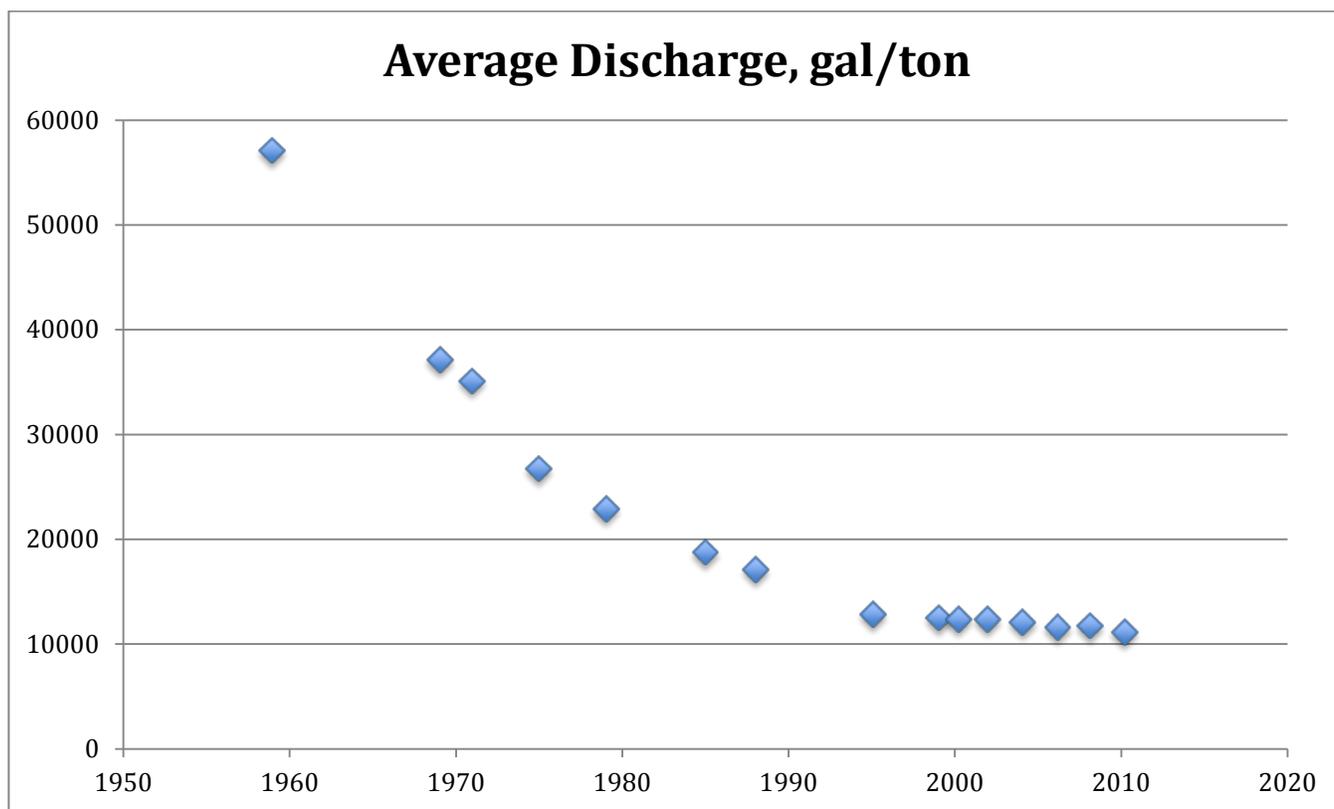


Figure 1. Effluent Discharge, US Pulp and Paper Industry (Source: 2014 TAPPI PEERS Conference presentation by Barry Malmberg, NCASI)