

Powerful New Version of Mills OnLine Database Now Available

By Aselia Urmanbetova

In our January issue, CPBIS Director Patrick McCarthy noted that we have made additions to the existing Mills Online database. The data were collected from the latest (2013) edition of RISI's Lockwood-Post Directory of Pulp & Paper Mills, which is available for purchase at:

<http://www.risiinfo.com/risi-store/do/product/detail/lockwood-post-directory-of-pulp-paper-mills-2013-global-edition.html>.

As stated in Lockwood, the data reflect mill information as of end of May 2013. The data added include:

- List of all company headquarters with their physical addresses, phone/fax numbers, and email and website addresses (when available)
- Total mill and company employment
- Breakdown of the type of pulping capacity (chemical, mechanical and recycled)
- Energy data represented by the number of power boilers, hydro, steam, and combustion turbines, and their megawatt ratings, and daily mill electrical demand
- SIC and NAICS product codes
- Census regions and divisions

The Mills Online database follows the regional definitions of the Census Bureau, shown in Table 1 below. See the CPBIS report “2011 U.S. Pulp and Paper Capacity” by Patrick McCarthy (<http://www.cpbis.gatech.edu/research/projects-and-final-reports>).

Table 1. U.S. Census R

Census Regio	
<ul style="list-style-type: none"> • <i>Region 1 – Northeast</i> <ul style="list-style-type: none"> ○ Division 1 – New England <ul style="list-style-type: none"> ▪ ME, NH, VT, MA, RI, and CT ○ Division 2 – Mid-Atlantic <ul style="list-style-type: none"> ▪ NY, PA, NJ • <i>Region 2 – Midwest</i> <ul style="list-style-type: none"> ○ Division 3 – East North Central <ul style="list-style-type: none"> ▪ WI, MI, IL, IN, OH ○ Division 4 – West North Central <ul style="list-style-type: none"> ▪ MO, ND, SD, NE, KS, MN, IA 	<ul style="list-style-type: none"> ○ Division 5 – South Atlantic <ul style="list-style-type: none"> ▪ DE, MD, DC, VA, WV, NC, SC, GA, FL ○ Division 6 – East South Atlantic <ul style="list-style-type: none"> ▪ KY, TN, MS, AL ○ Division 7 – West South Atlantic <ul style="list-style-type: none"> ▪ OK, TX, AR, LA • <i>Region 4 – West</i> <ul style="list-style-type: none"> ○ Division 8 – Mountain <ul style="list-style-type: none"> ▪ ID, MT, WY, NV, UT, CO, AZ, NM ○ Division 9 – Pacific <ul style="list-style-type: none"> ▪ AK, WA, OR, CA, HI

Headquarters, Mill Employment and Capacity

Currently there are 345 operating, 16 closed and 3 idle mills and 125 headquarters locations. Forty-two headquarters are located in the Northeast, 34 in the Midwest, 33 in the South and 16 in the West. In contrast to the regional distribution of papermakers' headquarters, mill capacity is highly concentrated in the South. Specifically, the South is home to (Figures 1 and 2):

- 61 percent of total pulp and paper product capacity – 61,586 thousand short tons out of total national capacity of 100,595 thousand short tons,
- 51 percent of national pulp and paper mill employment – 47,905 out of the national 94,252 mill employees,
- Nearly 60 percent of all pulping capacity – 38,450 short tons out of a national total of 64,532 short tons, and
- Nearly 40 percent of all pulp and paper mills – 137 out of the national total of 364.

It is important to note that not all mills report employment, capacity and energy data. Mill employment is reported by 91 percent of mills; total product capacity and pulping capacity are both reported by 98 percent of mills; 50 mills do not list power boilers in the list of equipment; and 207 mills report at least one energy generation/consumption

indicator be it combustion, steam, or hydro power generation, or daily electrical demand.

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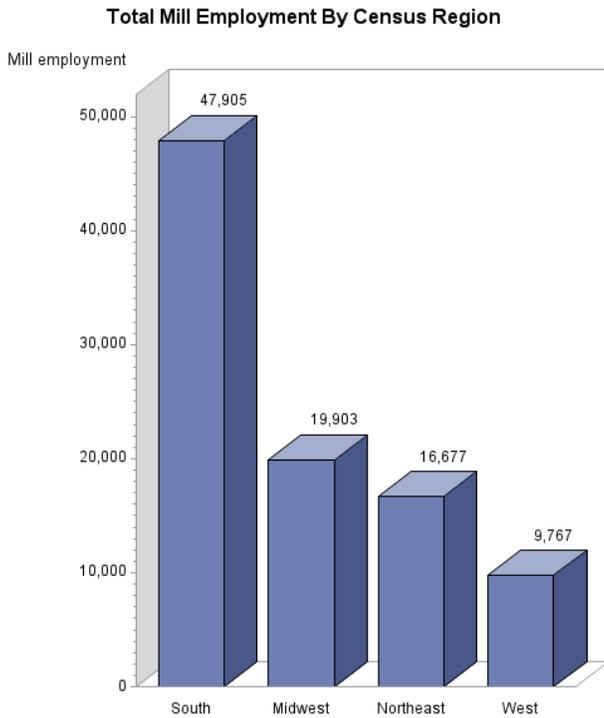


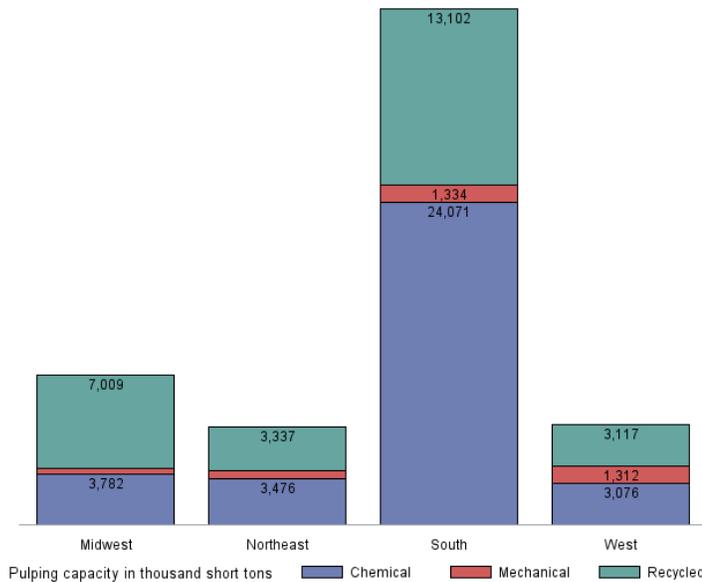
Figure 1. Total 2013 U.S. Mill Employment by Census Region

Mill Energy Indicators

The South continues to dominate in the number of national energy indicators reported by pulp and paper mills. The number of power boilers is highest in the South – 297 out of national total 739. Similarly, steam turbine power and daily mill electrical demand are highest in the South – 5,565 megawatts of steam power, which constitutes 67 percent of the national total; and 107,110 megawatt of daily electrical demand, which is a little more than 71 percent of the national total. Hydro power generation, in contrast, is smallest in the South and highest in the Northeast with 42 percent of the total national. Similarly, combustion turbines are predominant in the West, accounting for a bit more than 40 percent of the total national combustion turbine power generation.

Table 2. 2013 U.S. Pulp and Paper Mill Energy Data by Census Region

Pulping Capacities By Census Region



Note: Mechanical Pulp: Midwest - 431, Northeast - 542.

Figure 2. Total 2013 U.S. Pulping Capacity by Census Region

Energy Data Reported By Mills By Census Region

Census region	Number of power boilers	Combustion turbines (MW)	Steam turbines (MW)	Hydro turbines (MW)	Electrical demand (MWD)
Northeast	157	111.3	1,079.0	120.2	14,590
Midwest	201	88.8	1,019.0	98.5	15,361
South	297	230.8	5,564.8	66.0	107,110
West	84	298.2	661.0	0.4	13,543

Note: MW - megawatt, MWD - megawatt per day.

Current MoL Data Projects

In addition to this most current information on the industry mill and headquarters location, employment, capacity and energy data, CPBIS has accumulated and is ready to compile mill and industry data on a few years. Combining industry expertise shared through both daily and weekly news updates of Industry Intelligence Inc. (<http://www.industryintel.com>) and RISI's annual editions of Lockwood-Post Directory of Pulp & Paper Mills, the Center is working on aggregating the quarterly status changes with annual mill capacity updated for 2004-2013. In the following years, we are planning to bridge the historical Forest Product Laboratory data for 1970-2000 with Lockwood capacity data starting for 1979 and our own Mills Online for 2004-2013.

The importance of the accurate bridge of the historical mill data can not be over-emphasized. The Center frequently receives questions on the number of mill closures, openings and other structural fluctuations that happened in the last 5, 10, 15 and more years. We are fairly comfortable providing such data on the last few years. For instance, we estimate that since 2004 there have been approximately 120 mill closures and that there have been seven new greenfield operations announced in the trade press during 2010-2012, with five of them already being reported in 2013 Lockwood with operating capacity and mill employment. Working on bridging the historical data and analysing what constitutes mill closures and openings, using consistent definitions, would allow us to provide a unique historical perspective on industry's evolution over the last 40 years.

MoL Buyer's Guide

The current 2013 Mills Online data can be purchased and downloaded in a user-friendly Excel format at https://epay.gatech.edu/C20793_ustores/web/store_main.jsp?STOREID=92. Essentially, there are five MoL data products catered for different users. For instance, those who are interested only in mill and company contact information can purchase the appropriate subset of the data for a fraction of the total price. The MoL data subsets are: (1) GIS data, (2) Address/PhoneNumber, (3) Energy, and (4) Capacity/Pulping and they can be found here: https://epay.gatech.edu/C20793_ustores/web/store_cat.jsp?STOREID=92&CATID=298. The MoL Master File combines all of these data together; its price is a discounted sum of the four parts. Finally, detailed description of the MoL, its sources and variable definitions can be found at:

<http://www.cpbis.gatech.edu/data/mills-online-new>.

Author's note: I would like to thank Sina Mehdikarimi, Undergraduate Research Assistant at the Georgia Tech School of Economics, for his timely and efficient assistance on the MoL updates and multiple data cleaning and maintenance projects.

IPST Renamed

Editor's Note: The following article is reprinted, with permission, from the May 22, 2014 issue of the Georgia Tech Daily Digest.

Georgia Tech is pleased to announce a broader research mission, additional resources and a new name for the Institute of Paper Science and Technology (IPST), one of Georgia Tech's 10 interdisciplinary research institutes. IPST is being renamed the

Renewable Bioproducts Institute [RBI] effective June 1, 2014.

Over the past decade, the research mission of IPST has broadened beyond papermaking to include technologies that produce chemicals, biofuels and new material products from forest raw materials. The new name reflects this broader research scope designed to better serve the global development of new forest-based economies.

According to Institute Director Norman Marsolan, the new RBI will continue to develop value for the paper industry while growing its engagements with new industry partners to create future opportunities.

“As the industry's needs have changed, so has our approach,” said Marsolan. “Our longstanding commitment to education and research in papermaking carries forward to the expanded area of bioproducts. And, as the Renewable Bioproducts Institute, we will help a broader set of companies create economic opportunity through access to Georgia Tech's world-class experts in materials science, chemistry and engineering as well as through access to talented engineering graduates familiar with bioproducts technologies and opportunities.”

All interdisciplinary research institutes at Georgia Tech bring together a blend of innovative faculty and staff – spanning colleges, departments and individual labs – to work with interested companies to develop technologies and solutions that create new market opportunities in strategically important areas. Such work can include pairing applied research and economic development support to focus on challenges and opportunities in that market area.

“Georgia Tech is known for its interdisciplinary strength, sustainability leadership and collaboration with business and industry. The Renewable Bioproducts Institute will build on this legacy of excellence as it focuses on research, innovation, partnerships and education,” said Georgia Tech President G.P. “Bud” Peterson.

RBI's strategic initiatives are rooted in and expand upon nearly 85 years of expertise in pulp- and paper-focused research and will now be concentrated on advancing the use of renewable raw materials in expanding markets such as biochemicals, specialty paper products, food and beverage packaging, biofuels, health and hygiene, pharmaceuticals, automotive, electronics and advanced materials.

To further support the future growth of RBI, Georgia Tech has committed to the following actions:

Recruit at least one new tenure track professor in the School of Chemistry and Biochemistry with relevant bioproducts experience to join more than 40 Georgia Tech faculty now working with RBI.

Recruit a new tenure track professor in the School of Chemical and Biomolecular Engineering to contribute to the educational and research mission of the RBI.

Recruit a professor of the practice with relevant industrial experience to work at the academic and research interface between industry and the RBI.

Invest significant capital funds to expand and repurpose core lab facilities in the existing IPST building to better align with the expanded research focus areas of biorefining, biopolymers and new materials.

Draw on the full range of Georgia Tech's many industrial and political relationships to help promote and capture the opportunities in the bioproducts area.

IPST was created as the Institute of Paper Chemistry [IPC] in 1929 in Appleton, Wisconsin, to support the growing paper industry through education and research. In 1989, IPC began its affiliation with Georgia Tech, where it operated as the Institute of Paper Science and Technology (IPST) until merging with Georgia Tech in 2003.

Working closely with industry over those years, researchers at IPC/IPST developed the technologies and fundamental scientific understanding that helped make the U.S. paper industry efficient, competitive and profitable. In addition, the faculty of IPST/IPC trained generations of industry leaders, many of whom became CEOs of their companies.

The Renewable Bioproducts Institute benefits from a significant endowment originating with the Institute of Paper Chemistry. That endowment currently supports more than 50 students who advance the research mission of IPST/RBI through their faculty-directed research. The research institute will continue to build on that legacy by working closely with industrial partners to understand the science, build the technology and train future leaders to ultimately create an efficient, competitive and profitable bioproducts industry from forest raw materials. For more information on RBI, please visit www.gatech.edu.

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.

Association of Colombian media editors ships 62 tonnes of newsprint to assist Venezuela's oldest newspaper during paper shortage; 12 Venezuelan newspapers have gone out of circulation since 2013 due to lack of newsprint

So far this year, 33 newspapers have been forced to reduce the number of pages in their publications for the same reason.

Obama administration likely to partly backtrack on proposed steep cuts to renewable fuel targets for 2014 when rule is finalized, hints at leaving biodiesel target at proposed 1.28 billion gallons, slightly raise target for advanced biofuels, sources say

The final rule is due out in June.

Sweden's Q1 production of paper and paperboard down 5.5% year-over-year, to 2.7 million tonnes, with newsprint falling 26.9% and printing-writing paper off 6.2%; Q1 pulp output off 2.4%, to 2.9 million tonnes, but sulphate pulp up 1%

However, there was a slight increase, 1.1 percent, in the production of other paper and paperboard grades.

Finland's paper and paperboard production in Q1 unchanged year-over-year, at 2.7 million tonnes; pulp production up 1.2% at 1.8 million tonnes; printing and writing paper production flat at 1.6 million tonnes; production of wood products increased: FFIF

Pulp and fine paper exports grew.

The global economy and some market pulp end uses, especially tissue, looking positive, though capacity growth is outstripping demand, says PPC economist Paul Leclair at International Pulp Week

He said that in 2013 world demand for printing and writing papers fell 0.5%, or 500,000 tonnes. It declined 2.7% in mature markets and it has sunk by about 14 million tonnes since the recession. Developing countries now account for 44% of world

demand. The 2013 decrease was largely in the coated sector. He said global demand for tissue increased 3.7%, or 1.1 million tonnes, in 2013, with emerging markets accounting for 70% of the increase. Tissue capacity is expected to increase 5.8% in the next five years; 6 million tonnes in the next three years, and that this will match the expected demand increase in five years. Sixty percent of the capacity increase will be coming on line in China; from 2011-2016, China's tissue capacity will have doubled, he said, noting that there is a rising gap between capacity and demand, so rolls and converted products are increasingly being exported.

Global viscose fiber production capacity shifting to Asia-Pacific, where growth is accelerating, while US, Europe and Japan have scaled back due to labor costs, environmental protection, other factors; China's output more than 65% of total in 2013: report

The Austria-based Lenzing Group and the India-based Aditya Birla Group gained capacity of more than 800,000 tons each in 2013 but Chinese counterparts obtained greater capacity.

Demand for market hardwood pulp to grow to more than 40 million tonnes/year by 2025 from current 30 million tonnes/year, while demand for long-fiber pulp will increase to 21 million tonnes/year from about 19 million tonnes/year, forecasts Pöyry

The growth of demand is based on consumer products, and demand for tissue papers is rising the fastest.

Global market pulp capacity growth is ahead of demand, especially in hardwood pulp, which could lead to unsustainable operating rates and closures or conversions, but softwood balance is stable, says the PPPC's Emanuele Bona at International Pulp Week

He said global chemical market pulp capacity rose 2.4% in 2013 and is expected to go up 3.5% in 2014.

He expects capacity to grow 2.6%/year on average from 2014-2018, including 0.7%/year for softwood pulp, up 950,000 tonnes, and 4.1%/year for hardwood pulp, shooting up 7 million tonnes, with Brazil, Uruguay, and Indonesia accounting for most of the growth.

Latin American pulp producers no longer low-cost and are losing competitive advantage, softwood pulp capacity expansions needed to meet expected growing demand, speakers tell International Pulp Week audience

According to Jefferson Mendes, director and head of Pöyry Management Consulting in Latin America, most of the new capacity in Latin America has been low

cost, but this is changing, in part due to inflation, labor costs and exchange rates. In spite of this, the Brazilian industry continues to grow, with 2.8 million tonnes of capacity currently under construction and set for completion in the second quarter of 2016, and an additional 4.5 million tonnes planned for startup during 2016 and early 2017. He noted that South America increased its capacity by 490% between 1990, when it was at 3.7 million tonnes, and 2014, now at 22 million tonnes.

Magnus Björkman, president of Södra Cell International, explained why Södra is investing in bleached softwood pulp production. He said demand for softwood pulp is growing at a rate of 1.8% per year. Noting that there had been concerns about how much wood would go to bioenergy, he said forestry cooperative Södra has a secure supply of wood. Commenting on three other major capacity announcements, he observed that other companies, too, can see the same potential and in this "transparent" industry, they turn to the same suppliers, analysts, and consultants.

McDonald's seeking to procure 100% fiber-based packaging from certified or recycled sources as part of company's recently announced 2020 Corporate Social Responsibility & Sustainability Framework

In addition, the fast food chain is looking to increase in-restaurant recycling to 50% and minimize waste in nine of its top markets.

US paper recovery rate in 2013 at 63.5% of all paper consumed, according to AF&PA; US paper industry has set goal to recover for recycling more than 70% of all paper consumed, by 2020

The annual paper recovery rate has nearly doubled since 1990.

Stora Enso to shut down 280,000 tonnes/year uncoated fine paper machine at its Varkaus, Sweden, (sic) mill in August 2015, convert it to produce virgin fiber-based containerboard in Q4 2015; €110M project includes work on paper machine and in pulp mill

Stora Enso is taking advantage of the combination of two market forces: the decreasing global market for paper but increasing global market for renewable packaging board.

Paper demand in India expected to grow 53% by 2020, to estimated 20 million tonnes/year from 13 million tonnes/year currently, due to increasing consumerism, modern retailing, rising literacy, greater use of documents, say JK Paper

India's low rate of per capita paper consumption--at 9 kilograms versus the global average of 58kg--gives India a great potential for growth, said Yogesh Agarwal, managing director and CEO of Ballarpur Industries Ltd.

Paper Quotes

"After almost 11 years leading CEPI, it is now time for me to write the next chapter ... on paper of course." – *Teresa Presas, outgoing Director General, Confederation of European Paper Industries.*

"The margin that we can have on this material is much greater than the margin one can have on a ton of kraft pulp." – *Richard Berry, Vice President and Chief Technical Officer, Celluforce, Inc., referring to the business potential of nanocellulose production.*

AF&PA Statistics

Since our last reporting of American Forest and Paper Association statistics releases, the Association has issued its March and April 2014 Printing and Writing Reports and its April 2014 Kraft Paper and Containerboard Reports. Also released during that period was its Annual Survey of Paper, Paperboard and Pulp Capacity.

Printing and Writing

April: Total shipments decreased 3 percent in April compared to April 2013, with increases in year-over-year shipments in uncoated mechanical, coated mechanical and coated free sheet grades. Uncoated free sheet (UFS) paper shipments in April decreased 8 percent compared to April 2013. Year-to-date shipments are down 7 percent in 2014. UFS imports increased 38 percent in March compared with a decrease in UFS export shipments of 12 percent. Coated free sheet paper shipments increased 1 percent to 313,800 tons. Year-to-date shipments of coated free sheet grades are essentially flat compared to 2013. Uncoated mechanical paper shipments increased 5 percent in April, the seventh year-over-year increase in the past eight months. Year-to-date shipments of UM are up 3 percent compared to 2013. Coated mechanical shipments in April increased 1 percent relative to April 2013, the first year-over-year increase in the past 21 months. Imports of CM through March were down 12 percent relative to the same three month period in 2013.

March: Total shipments decreased 2 percent in March compared to March 2013, with increases in year-over-year shipments in uncoated mechanical and coated free sheet grades. Uncoated free sheet paper shipments in

March decreased 6 percent compared to March 2013. Year-to-date shipments are down 7 percent in 2014. Coated free sheet paper shipments increased 4 percent, the first year-over-year increase in eight months. Year-to-date shipments of coated free sheet grades are essentially flat compared to 2013. Uncoated mechanical (UM) paper shipments also increased 4 percent in March, the sixth year-over-year increase in the past seven months. Year-to-date shipments of UM are up 2 percent compared to 2013. Coated mechanical (CM) shipments in March decreased 4 percent compared to March 2013 to 237,000 tons. Imports of CM through February were down 9 percent relative to the same period in 2013.

Kraft Paper

Total shipments were 133.5 thousand tons, 4.4 percent higher compared to March. Bleached kraft paper shipments were 2.6 percent higher than March, while unbleached shipments were 4.6 percent higher. Overall, shipments for the first four months of 2014 were 2 percent lower than the same period last year. Total month-end inventories decreased 3.6 percent compared to March.

Containerboard

Containerboard production decreased 5.6 percent from March and was 0.8 percent lower compared to the same month last year. The month-over-month average daily production decreased 2.4 percent. Shipments for April were 2.8 million tons, representing 160.2 billion square feet. The containerboard operating rate for April decreased 1.2 points from March, from 95.9 percent to 94.7 percent.

The above reports can be purchased by contacting Caroline Nealon, Statistics.Publications@afandpa.org or 202-463-2448.

Annual Survey of Paper, Paperboard and Pulp Capacity

The American Forest & Paper Association (AF&PA) on May 14 released the 54th Annual Survey of Paper, Paperboard and Pulp Capacity, reporting that U.S. paper and paperboard capacity declined 1.1 percent in 2013. The survey findings reveal the direction and magnitude of capacity changes vary by grade category. Tissue paper capacity reached an all-time high in 2013 due in part to rising tissue paper consumption resulting from U.S. population growth. Containerboard capacity has been rebounding from recession-induced reductions. However, capacity to produce newsprint and printing-writing papers has been trending downwards. The survey reports U.S. industry

capacity data for 2013 and 2014 for all major grades of paper, paperboard and pulp, as well as fiber consumption, based on a comprehensive survey of all U.S. pulp and paper mills. Survey respondents represent about 90 percent of the U.S industry capacity. The complete survey with detailed tables can be purchased for \$1,975 by contacting Kory Bockman at kory_bockman@afandpa.org or 202-463-4716.

Technology for the Nontechnical: Pulping Chemical Recovery

At the end of the pulping step the spent cooking liquor is separated from the cooked wood chips (now pulp). The liquor is fed to evaporators, where its water content is reduced from about 85% to less than 40%.

The concentrated liquor is then fed to a recovery boiler, where the organic materials from the wood are burned and the spent pulping chemicals are converted to a molten “smelt.” The burning liquor heats water in tubes inside the boiler, converting it to high pressure steam that is fed to turbines, generating much of the energy that is needed to power the mill.

The smelt, which is an inactive form of the original pulping chemicals, is treated with lime to reactivate

the chemicals for re-use. The lime, in turn, is reactivated by heating it in a kiln.

The recovery system makes the kraft pulping process a masterpiece of recycling and re-use: the dissolved portion of the wood is re-used as energy; the pulping chemicals are reactivated and re-used, and the lime used to re-activate the pulping chemicals is itself reactivated and re-used.

Statistics Corner: Supervisory and Nonsupervisory Mill Employment

Figure 3 shows that the decline in employment by pulp, paper and paperboard mills that has occurred since 2000 has been more severe for nonsupervisory employees than for others. Overall, mills employed 46% fewer people in February 2014 than in January 2000. During the same period the decrease in the number of supervisory employees was only 42%. Overall, the rate of decline in employment slowed in 2011 and 2012. Since then overall employment has remained steady. Supervisory employment stopped falling in early 2010 and has increased since the beginning of 2013. ■

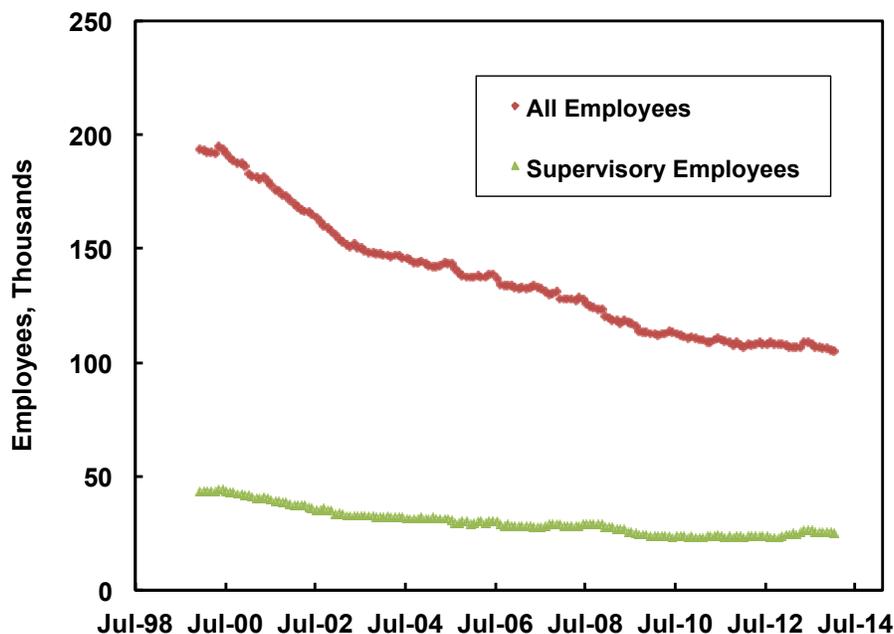


Figure 3. Paper Industry Employment by Supervisory Level, 2000 - 2014 (Source: Bureau of Labor Statistics)