



Asian INNOVATION on the RISE

Old stereotypes no longer apply, and those who remain blind to the innovation engines of China, Japan, and other Asian nations will miss enormous opportunities

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Since moving to China, I've often had the impression that the West is somewhat blind to dramatic trends here in innovation. As a result, many opportunities will be missed. This applies to the forest products industries and related sectors such as consumer goods, packaging, and biofuels.

For example, a 2011 report from Thompson-Reuters named the "Top 100 Global Innovators" based on patent activity from 2005 to 2010.¹ The methodology emphasized international applications and not just filings in one country. The United States dominated the list with 47 U.S.-based companies in the top 100, followed by Japan, France, Sweden, Germany, the Netherlands, South Korea, Switzerland, and Liechtenstein—not a single company from China, Taiwan, or Hong Kong made the list.

Innovation giant Apple was on the list, naturally, but Foxconn was not. Foxconn is the "silent" innovator that makes Apple's products in China, a Taiwanese company with many more internationally filed patents than Apple. Foxconn innovations are essential for Apple's success. This includes the Chinese innovations in its supply chain and the technical innovations of its hardware and software, expressed through its vast body of patents—roughly three times more U.S. patents than Apple during the time period of the study, and 50 times more U.S. granted patents than one of the companies on the list.

Based on the published information it is hard to fathom how Foxconn (or rather its parent, Hon Hai Precision) did not make the list. China-based Lenovo and Huawei also seem to have more than enough international patents to have made the list. However, upon contacting the publisher, I learned that the

details of their proprietary methodology only counted patent families that were filed in Europe, Japan, China, and the U.S.

Hon Hai has been content with aggressive filings in the U.S. and Asia, and has far fewer European filings. Their low Intellectual Property (IP) activity in Europe, though logical given the cost, apparently made a global innovation leader essentially invisible in this highly publicized study. Other heavy international filers in China suffered similar barriers due to fewer filings in either Europe or Japan. The methodology of the study may have been accurately implemented, but the results might not paint an accurate image of innovation coming from Asia.

Today, two of the world's top five filers of international patents are the Chinese companies Huawei and ZTE, and China is about to become the world's largest source of patents, but the West continues to view China as a

copier and not as a source of serious IP and innovation. Chinese innovation, like a good deal of innovation in Asia, just seems to be invisible to the West.

Innovation in China and much of Asia is still inadequate in many sectors, but rapid changes are underway and the West may be caught off guard by the new era of innovation in the East. This will be true not just in electronics, but in many other areas including the forest products industries. As one example,

an analysis of patents related to biofuels, an area of much relevance to the future of the forest bioproducts industry, shows that China is taking the lead in terms of patent families filed. Japan is also very active and dominates in some areas like gasification.

NEW ROLES AND RELATIONSHIPS

Asian innovation will continue to defy stereotypes, as illustrated by one of the first paper industry stories I encountered after coming to

China. I learned that local Chinese engineers had made an innovation in a papermaking system that impressed the Western vendor. The vendor was so impressed, in fact, that they filed a patent application for it, ignoring the Chinese inventors. The old paradigm of China stealing the IP of the West was turned on its head. Now Chinese and other Asian companies are increasingly concerned with protecting their intellectual property from theft by the West² (and by other Asian companies, of course).

Much of Asia still has a long way to go before innovation and IP are respected, understood, and become an established part of the culture. But the rapid changes in China must not be ignored. China has gone from having no patent laws and no patent system 30 years ago, to having a rapidly developing, world-class system in which Western companies can enforce their IP with success. China's government policies under its latest five-year plan, calls for China to not just participate in IP but to become a world leader in IP and technology.

Rapid acceleration of investment in R&D is taking place in China, and vigorous, generous incentives are being offered to companies to motivate them to pursue IP. China is now taking the global lead in terms of patents filed, and they are becoming one of the world's top patenters in the U.S. and other arenas. How this will play out in the paper industry remains to be seen, but old stereotypes will be turned on their head and those who remain blind to the innovation engines of China, Japan, and other Asian nations will miss enormous opportunities.

INNOVATION AND PULP AND PAPER

Trade shows related to the paper industry and Asian publications such as the research-packed *China Pulp and Paper Industry* journal reveal an increasing commitment to innovation in the paper industry of Asia. Some individual provinces of China even have their own pulp and paper trade journals.

Numerous universities are conducting research in forest products areas and are among the leading holders of IP in this area, in addition to providing large numbers of bright engineers and scientists entering the field. From my perspective, some of the current highlights of Asian innovation in this area include:



APP eucalyptus plantation. All photos courtesy of APP.



Guangxi plantation.



Hainan Jin Hai Environmental Park.

- Business methods for raw materials management, including advanced supply chain certification systems.
- Plantation management, including advanced forest genetics and many aspects of supply chain management.
- Advanced packaging systems using paper, including sophisticated molded pulp systems from Japan and a wide variety of elegant packaging designs.
- Many advances in coated paper formulations and manufacturing methods giving high quality at surprisingly low cost.
- Advanced polymers and other chemical ingredients for superior paper products of all kinds, drawing upon increasingly innovative Asian chemical companies.
- Advances in pigment and particles for paper.
- Improvements in water quality management, both for whitewater systems and also for effluent management.

Asia also boasts a dizzying array of natural ingredients with opportunities for many new paper-based products for cosmetics, personal care, and health care that are only now emerging.

ONGOING ENVIRONMENTAL INNOVATION

My first exposure to the innovative pulp and paper industry in Asia came during a visit to Japan in 1990 where I toured a large kraft mill on the island of Hokkaido. The Tomokomai mill of Oji Paper surprised me

with its complete lack of odor, unlike the kraft mills I had visited in the United States. The papermaking operations were remarkably clean and efficient. The grounds of the mill also reflected a high dedication to environmental stewardship. What I was experiencing was innovation, not just in the speed and quality of paper production, but in the way the environment was affected.

This kind of progress continues today with many large Asian paper companies, driven in part by tough government policies such as anti-pollution measures in China that have resulted in the closing of hundreds of small paper mills. Progress is also driven by expectations from international customers and agencies. Such progress includes the managed plantation systems of Asia Pulp and Paper and collaborative projects between Asian and European nations aimed at innovation in reducing the carbon footprint and environmental impact of forest products operations.

The Western stereotype of foul, polluting Asian mills—though they still exist in some areas—is readily challenged by a visit to leading Asian papermaking operations. For example, at the Gold Hongye mills in the beautiful industrial park of Suzhou—one of China’s most attractive cities—the water treatment facilities are more like a park than a factory, with abundant fish in the water holding pond and with elements of traditional Chinese gardens. Thanks in part

to advanced technology and seriously pursued environmental goals, emissions levels for air and water by APP-China are well below national and international standards.³ There is a severe pollution challenge in China, but the forest products industry in general is working to be part of the answer, not the problem.

CONCLUSION

The paper industry in Asia has had its share of problems in the past, but common assumptions and stereotypes from the West do not fairly describe the remarkable progress that has occurred and the rise in innovation that is now underway. To focus on the problems of the past is to miss the impressive progress that is underway.

The West has much to be proud of when it comes to paper and related industries, but it would do well to remember our Asian roots. Paper, of course, was invented in China, attributed to Cai Lun in 105 A.D. And while we think of modern printing as a Western invention, it’s time for the West to learn that that the first mass produced book printed with movable type was not Gutenberg’s Bible in 1454, but Wang Zhen’s *Nong Shu* of 1313⁴—a book that could well have been proudly stamped with “Made in China.” We can look forward to ongoing revolutions in the industry for the new materials, processes, and products that will arise from Asian innovation.

Don’t close your eyes to Asia. 

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