

## ARC WHITE PAPER

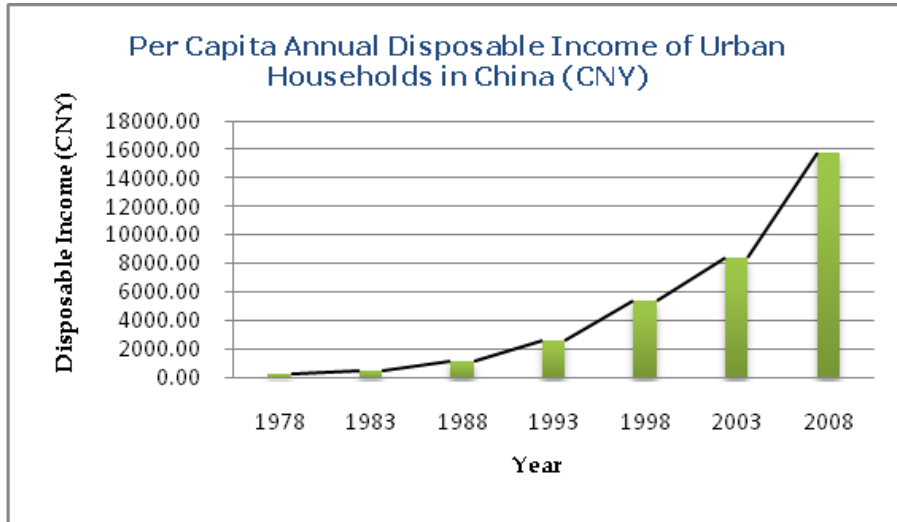
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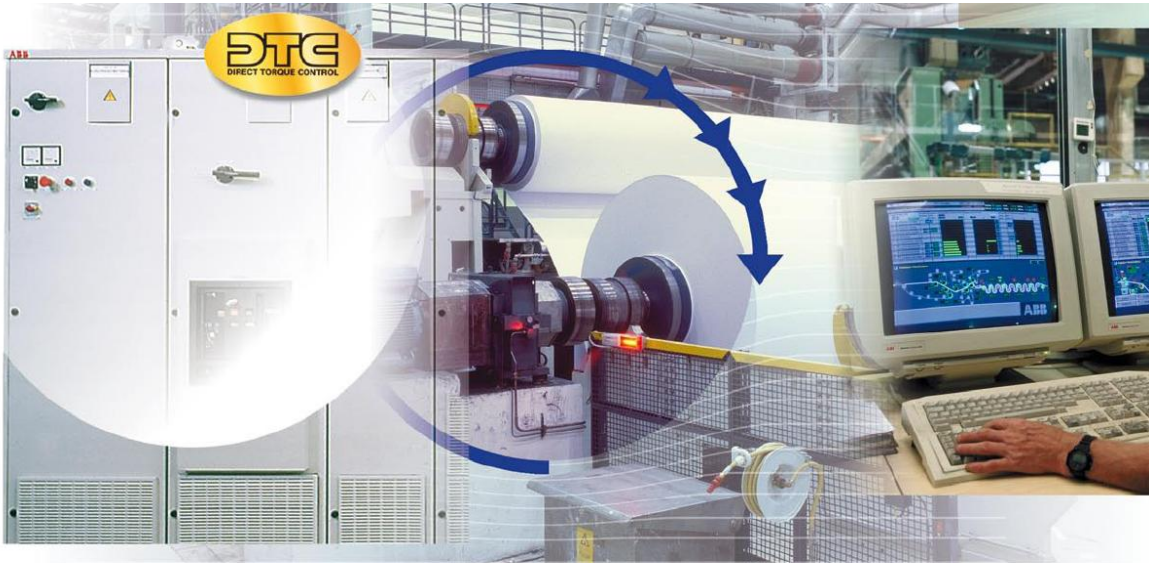
### **Success of Heng An Paper Highlights Need for Strong User/Supplier Relationships in China**

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### Rapid Growth of Household Income in China



**ABB Direct Drive Technology, Automation Systems, and Local Domain Knowledge Help Heng An Paper Meet China's Rapidly Growing Demand for High-Quality Tissue Paper Products**

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## Executive Overview

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In China, unlike other countries (except perhaps India), an emerging middle class drives increasing indigenous demand for high-quality tissue paper products for household consumption. This rising demand, in turn, drives major automation investments in new world-class tissue paper production facilities. According to a June 10, 2009 article in *The China Post*, household paper consumption volume in China grew rapidly in the last two decades to hit 3.91 million tons in 2008, accounting for about 10 percent of the global market (according to China National Household Paper Industry Association statistics.) Many expect China to overtake the US as the world's largest paper consumer within the next few years.

Founded in 1996, Heng An Paper has become the largest tissue paper provider in China. At the beginning of 2009, Heng An Paper decided to invest in three additional production lines – PM 8, PM 9, and PM 10. Advanced production techniques brought it renowned competitive advantage and confidence to invest in the company's future.

Thus, even following many years of double-digit investment growth, increasing production capacity continues to be the prime objective for Chinese tissue paper manufacturers. This is particularly true for the top-tier, high-volume manufacturers that are in a significantly better position to meet increasingly more stringent environmental and product quality regulations.

The robust Chinese landscape motivates manufacturers to search out equipment and automation suppliers with advanced technology; proven domain expertise; strong local design, implementation, and support capabilities; and a demonstrated, long-term commitment to serving the Chinese market.

Heng An Paper, a wholly owned subsidiary of Heng An International Group Co., Ltd., has been dedicated to the pulp & paper business for more than two decades. Founded in 1997, Heng An Paper is now China's largest tissue paper manufacturer. At the beginning of 2009, when the global economic recession was at its worst, Heng An Paper boldly decided to invest in three more paper machines.

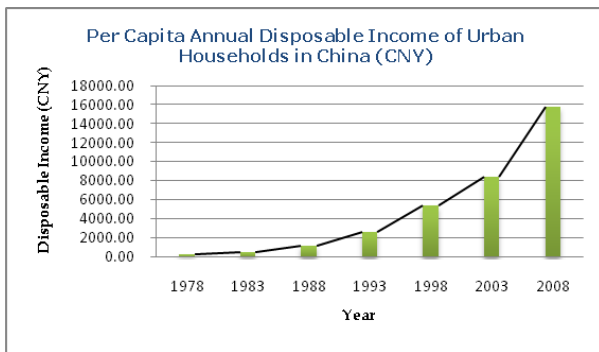
While household tissue paper has proven to be a class of products with low consumer elasticity (i.e., sales not strongly impacted by economic downturns), the recent economic downturn added an element of uncertainty to Heng An Paper's decision to add production capacity to meet growing do-

mestic market demand. However, the company believed strongly that persistent pursuit of high quality and operational performance would enable it to maintain its competitive advantage in any market condition.

ARC China recently discussed this bold decision with Mr. He An, vice chief engineer with Heng An Paper responsible for electrical and instruments engineering. Mr. He An shared his perspectives on the importance of the advanced production techniques required to keep Heng An Paper ahead in meeting the growing demand for tissue paper in China and the significance of the company’s successful, long-term business partnership with its automation supplier, ABB China.

## Meeting Rapid Growth in Domestic Demand for Tissue Paper Products

Heng An Group has been dedicated to the pulp and paper business from its foundation in the mid 1980's. In the beginning, the company approached this business as a trader and product producer, but did not actually produce tissue paper until 1996. With a booming economy, Heng An group saw the huge domestic demand for tissue paper products for household use, and decided to invest in large-scale production of tissue paper to expand the business. Today, Heng An Paper is the leading producer of high-quality tissue paper products in China.



Thanks to increasing disposable income since the mid 1990s, the quality of life of Chinese residents has improved greatly, resulting in huge domestic demand for tissue paper products. This is particularly true in the large urban areas, such as Shanghai and Beijing. From an initial investment of one production line in 1997, Heng An Paper has now become the largest tissue paper producer in China, with annual capacity of approximately

500,000 tons and revenue of about \$1.39 billion.

A total of ten paper production lines, distributed in five provinces around China, will be on line in the near future as planned. Each paper mill also has integrated utilities, including both on-site power generation and wastewater treatment plants. Such an operation requires sophisticated, ad-

vanced production techniques to keep up with demand and meet quality objectives.

## Finding the Right Automation Partner

Since beginning production in 1996, Heng An Paper's goal has been to be the leader in applying modern production technology and operational management for tissue paper production in China. Heng An has always used world-class technology and equipment. Most of its paper machines have speeds of at least 2000 m/min. When the company began this quest, there was no successful installation within the pulp & paper industry in China from which it could learn, so it searched for suppliers outside China with solid industrial expertise to help address its ambitious goals.

Heng An found that ABB's Pulp and Paper business unit had the prerequisite technology and experience. Heng An subsequently awarded ABB contracts to provide a variety of automation products, services, and solutions for its first paper production line. These included distributed control systems (DCS), quality control systems (QCS), drives, system integration, and site commissioning services.

From 1997 to 2009, ABB's ten projects covered all Heng An's mills in Changde in Hunan Province, Jinjiang and Xiamen in Fujian Province, and Weifang in Shandong Province. Heng An Group equipped all its paper machines with ABB's control systems, including drives, integral drive control systems, distributed control systems (DCS), local control systems, quality control systems (QCS), and motor control centers (MCC).



**ABB Direct Drive**

As early as 1997, ABB provided drive systems for Heng An's Changde Paper Mill. At that time, high-speed tissue paper machines were rare in China. ABB's advanced Direct Drive technology fulfilled Heng An's need to precisely control high-speed paper machines to ensure consistent quality and prevent sheet breakage, without requiring a separate pulse encoder.

By the end of 2008, the rapid growth in consumer demand for tissue paper products resulted in Heng An increasing to seven production lines, with PM 7 officially commissioned at the Changde Paper Mill on February 18,

2009. Along with growing demand, however, came increasing pressure for rapid return on investment (ROI). This not only challenged Heng An, but also challenged ABB and the company's other technology suppliers to provide effective communications and quick response to service needs.

Heng An Paper built a strong internal engineering and maintenance team, consisting of hundreds of professionals with various skills and expertise to support the company countrywide. In addition, it relies on ABB China's local pulp & paper business unit for additional support, both for implementing new systems and for lifecycle support for the company's large installed base of ABB systems across its various mills. ABB China's pulp & paper business unit includes a team of more than 100 ABB professionals who implement projects in China and other countries in the north Asia region.

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During the initial engagements between Heng An Paper and ABB China, ABB needed to bring in technical specialists from its European operations to help design, configure, and commission the ABB systems, and/or send local specialists to Europe for additional training, but that's no longer the case. Today, the third generation of bright young domain specialists from ABB China's pulp & paper business unit have the knowledge and expertise to design, configure, commission, and support automation and drive systems for even the most sophisticated high-speed paper machines, such as those installed in Heng An Paper's production facilities. In fact, domain specialists from ABB China's pulp & paper business unit regularly teach courses on these subjects at leading technical colleges in China.

## **Harsh Economy Brings New Challenges**

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Although Heng An has achieved a great deal of success, the economic crisis at the end of 2008 forced harsh changes in China's development. The pulp & paper industry was not exempt. Executives in China's rapidly expanding pulp & paper industry face both ethical and economic concerns due to environmental impacts (such as water consumption, waste disposal, and greenhouse gas emissions), high energy consumption, and high costs for the imported wood fiber typically used to produce high-quality tissue paper products.

Technical innovation in production equipment and automation can certainly help, but many believe that progress on process management and management information systems (MIS) will provide a big step forward for sustainable manufacturing.

In early 2009, Heng An Paper decided to continue investing in the company's growth. It had experienced continued year-over-year growth in consumer demand, but no one was certain where the global economic crisis

In early 2009, Heng An Paper decided to continue investing in the company's growth by building three additional production lines.

would lead. The company decided to add three more production lines, and will soon have ten production lines distributed in five provinces nationwide, all controlled by ABB automation systems. It will need to tackle the energy and

environment challenges through collaborative approaches across all production operations. To keep ahead of competitors, Heng An Paper will need to form better economies of scale and economies of scope through efficient production planning and optimized resources allocation to reduce energy consumption.

It will introduce more recycled paper from effective supply chain management to encourage better use of secondary tissue raw material. This will reduce the numbers of trees that must be cut, therefore lowering the company's overall environmental impact.

Heng An Paper is building a collaborative management information system (MIS) that will provide operators with access to real-time information across its mills. Several mill sections involve environmental information, such as for wastewater treatment and power generation for process heating. Better control of these utilities will help Heng An Paper meet the company's environmental protection objectives. To a large extent, the company will rely on ABB Totally Integrated Technology to link utility and process units within its mills with the corporate MIS.



**ABB China  
Engineering and  
Service Center**



**ABB Paper Machine Drive**

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**Acronym Reference:** For a complete list of industry acronyms, refer to our web page at [www.arcweb.com/Research/IndustryTerms/](http://www.arcweb.com/Research/IndustryTerms/)

<b>API</b>	Application Program Interface	<b>IOP</b>	Interoperability
<b>B2B</b>	Business-to-Business	<b>IT</b>	Information Technology
<b>BPM</b>	Business Process Management	<b>MIS</b>	Management Information System
<b>CAGR</b>	Compound Annual Growth Rate	<b>OpX</b>	Operational Excellence
<b>CAS</b>	Collaborative Automation System	<b>PAS</b>	Process Automation System
<b>CMC</b>	Collaborative Management Model	<b>PLC</b>	Programmable Logic Controller
<b>CPG</b>	Consumer Packaged Goods	<b>PLM</b>	Product Lifecycle Management
<b>CPM</b>	Collaborative Production Management	<b>PM</b>	Paper Machine
<b>CRM</b>	Customer Relationship Management	<b>QCS</b>	Quality Control System
<b>DCS</b>	Distributed Control System	<b>RFID</b>	Radio Frequency Identification
<b>EAM</b>	Enterprise Asset Management	<b>ROA</b>	Return on Assets
<b>ERP</b>	Enterprise Resource Planning	<b>RPM</b>	Real-time Performance Management
<b>HMI</b>	Human Machine Interface	<b>SCM</b>	Supply Chain Management
		<b>WMS</b>	Warehouse Management System

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