

## **Mill story**

Sun Paper Industry,  
Yanzhou PM27 and PM28, China



# Gathering impressions Shandong and Yanzhou

Shandong province — within this concentrated area is a world of Chinese history, culture and contemporary life.

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▲ Aerial view of the Jiaozhou Bay Bridge in Qingdao East, Shandong province, @Bing

Shandong is a province in the eastern part of China. It has played a major role in Chinese history from the beginning of civilization along the lower reaches of the Yellow River and served as a pivotal cultural and religious site for Taoism, Chinese Buddhism, and Confucianism. Shandong's

Mount Tai is the most revered mountain of Taoism and one of the world's sites with the longest history of continuous religious worship. The Buddhist temples in the mountains to the south of the provincial capital of Jinan were once among the foremost Buddhist sites in China.



▲ Daming Lake, a scenic spot in Jinan, capital of Shandong province, @Xinhua

Yanzhou is a district and former county-level city under the administration of Jining, in the southwestern part of Shandong province. Yanzhou was the first place to install the "school-fields" (xuetian) in 1022, during the Song dynasty. Today the city is characterized by the coal mining and the paper industry.

### Yanzhou city — key facts:

- Inhabitants: approx. 600,000
- Size: 648 km<sup>2</sup>
- Main industries:  
coal mining,  
paper production



▲ Sun Paper Industry headquarters in Yanzhou city.

## The region's key player Sun Paper Industry

Apart from coal mining, paper production is the region's most important industry. The company Sun Paper Industry, headquartered in Yanzhou, is one of the largest employers.

Apart from coal mining, paper production is the region's most important industry. Sun Paper Industry, headquartered in Yanzhou, is one of the largest employers in this region. In addition, Sun Paper makes a remarkable contribution to the city's environment: With its own thermal power plant, it uses circulation water from an area of 2 million m<sup>2</sup> to produce power not only for its own production operations, but for urban households as well.

This "green" energy production provides an environmentally friendly supply.

As described on the following pages, Sun Paper Industry is now starting to produce high-quality tissue grades on two ANDRITZ PrimeLine tissue machines. Fitting perfectly into Sun Paper's mission and values, both machines are equipped with state-of-the-art key components for energy saving.



# Sun Paper Industry

## Starting with the tissue business

Sun Paper Industry is China's largest privately-owned papermaking enterprise and focuses on energy savings and emission reduction.



▲ Main entry of Shandong Sun Paper in Yanzhou city.

### Active in several business areas

The business of Sun Paper covers many fields such as papermaking, the chemical industry, foreign trade, power generation, scientific research, forestry and the paper industry, hotels, investments, textiles, and food. With total assets of 26 billion yuan and a staff of more than 10,000 employees, the annual pulp and paper production capacity of Sun Paper is 4.6 million tons. After 30 years of development, Sun Paper has developed into a globally advanced transnational papermaking group and an enterprise integrating pulp and papermaking.

### China's giant

Sun Paper is the largest privately-owned papermaking enterprise in China, one of China's top 500 enterprises and one of the top 100 papermaking companies in the world. In 2006, Sun Paper was listed on the Shenzhen Stock Exchange.

Sun Paper insists on using high technology to transform and upgrade the traditional industries and promote the transformation and upgrading of the papermaking industry. In the papermaking industry, Sun Paper has taken the lead in passing the accreditation

of six systems dealing with quality management, environmental protection management, energy management, occupational health and safety, food safety, and forest inspection. The main products of Sun Paper include four series: high-end coated packaging board, superior art coated paper, superior cultural office paper, and special fiber dissolving pulp. The Group owns the brands Golden Sun, Huaxia Sun, Brilliant Sun, Weier, Lecopy and Koolprint, of which Golden Sun is a famous Chinese trademark.

### Green production

Building a resource-saving and environmentally friendly enterprise and pursuing harmonious unity and mutual benefit for the enterprise, the environment, and society at large is the target of unremitting efforts of Sun Paper.

Sun Paper has accumulatively invested a total of more than 2.2 billion yuan in pollution control and implementing the recycling regime, thus reducing the overall wastewater COD to fall below 60mg/L, where the BOD reaches 10mg/L or less and the trans-regional water quality reaches 30mg/L, thus ensuring that the treated wastewater can be recirculated for further use.

### Future strategy

Looking to the future, Sun Paper will continue to base itself in China and develop across the world. At global level, Sun Paper will launch a new round of strategic planning for sustainable development, diversified development, environmental protection, and standard management, which will secure growth for both upstream and downstream partners, enabling the stakeholders to share the fruits of enterprise development and turn Sun Paper into a top-class papermaking enterprise worldwide with maximum growth and the respect of the population.

### The company in brief

Sun Paper is one of the largest private enterprises in China, active in many areas besides pulp and paper, where it ranks among the world's top 100 papermaking companies.

The company has its headquarters in Yanzhou, Shandong Province, the hometown of the philosopher Confucius.

▼ The art of paper making: inside Sun Paper's incredible paper museum at the Yanzhou site.





# Decisions at the speed of Sun-light

## Expanding into the tissue and hygiene sector

We talked with Kevin Liu, General Manager, and Guangdong Ying, VP and Chief Engineer, to learn about the selection of ANDRITZ as a key technology partner.



Kevin Liu  
General Manager  
Sun Household Papers

▲ Kevin Liu, General Manager, Sun Household Papers

### Speed, but with purpose

“Just so you understand, we do not equate speed with carelessness,” explains Kevin Liu, General Manager of Sun Household Papers. “We decide on a strategy, identify opportunities, and then move fast, at what I like to call the “speed of Sun-light”. The doors to top management are always open. Their minds are open as well.”

Unlike paper companies counting on grade conversions as a matter of survival, Sun Paper is approaching the tissue business from a position of strength. Well known for packaging products and printing/writing grades, Sun Paper is now aiming to get its share of China's growing tissue consumption (estimated at about 4.4 kg per capita compared to 11-16 kg in Europe and 23 kg

in the USA) and consumption of other household papers such as diapers, disposables, and so on.

### Latecomers can have advantages

Liu brings extensive business experience and a consumer's perspective with him. He started his career in international trade in China, moved to the USA and earned a Masters of Business Administration (MBA) degree, then returned to China to work in the tissue business with APP and April. He joined Sun Household Papers in March 2013.

While he admits that his company is “a latecomer to tissue,” Liu sees this as an advantage. “We don't have to upgrade

old machines and converting lines to get the newest and best technology. And, we are motivated to do things better than our competitors.”

### Thinking backwards

A part of “doing things better” is looking at the business from the consumer view. “With consumer products, it is all about the brand experience; the touchpoints where consumers interact with the company and its products,” Liu says. “This is different to commodity industrial products, where production efficiency is the focus.”

To this end, Liu and his team have “thought backwards” through the value chain. “The critical elements are building the distribution network and the brand,” Liu says. “The easiest part for us is to actually manufacture the product. After all, we have 26 machines at this mill alone, so we know something about papermaking.”

Sun Household Paper's goal is to have at least 100,000 retail stores selling its products in the Shandong region. “We are moving at the speed of Sun-light to make that happen,” Liu says. “To go national, there are over 2,500,000 stores in China. We have very ambitious goals.”

### New distribution channel

An interesting channel for Liu and his team is B2C (business-to-consumer) retailing over the internet. “This is rising in China and holds exciting potential for us,” Liu says. “In a country our size, logistics are always an issue. But there is a service in Beijing, for example, that promises delivery anywhere in the city within three hours.”



▲ Sun Paper Industry has won the award of the “Top 100 Most Viable Enterprises of China” for four years consecutively, and passed five system authentications with respect to quality management, environmental protection management, occupational health and safety, food safety, and forest monitoring. The main brands of the company are Golden Sun, Huaxia Sun, Brilliant Sun, Weier, Lecopy, and Coolprint.

### Consumer is first to touch

“We maintain very high standards for clean production, including a clean environment,” Liu says. “Due to the degree of automation, the consumer will be the very first person to touch our product.” The company's brand is being supported by the theme: Clean in the hand; warm in the heart. “We don't just use our brains, we use our heart to make the right product,” Liu says. “This may sound strange to some Westerners, but it is absolutely true. We will be a substantial competitor. I invite you to come back in a year and see how we have progressed.” The speed of light is 299,792 km/s. The speed of Sun-light might be even faster. We are looking forward to coming back.

### Starting with tissue business

The installation of a tissue machine and converting line is something new for Sun, and for Guangdong Ying, Vice President & Chief Engineer for Sun Paper Industry. “There are some new things to learn,” he admits, “but we have a profound experience in papermaking.”

Shandong Sun Paper Industry started manufacturing paper over 30 years ago with a second-hand machine producing one ton per day. Today, the total capacity is about four million tons on 32 machines.

Ying is responsible for the technical, engineering, and project direction for all of Sun

Paper's assets. He has become quite familiar with ANDRITZ over the years. “We have had long and good cooperation with ANDRITZ, having installed their stock prep lines (first in 2004) and APMP mechanical pulping lines (first in 2007),” he says. “In fact, we have four APMP lines in this mill alone, producing 600,000 t/a.”

The selection of ANDRITZ as supplier for the tissue production lines (two lines with stock prep, machine, and pumps) was seen as a risk-free choice for Sun Household Papers.





**PrimeLine™ W8**  
High-speed tissue machine with 5.6 m width





*“This technology provides us with stable production, delivers the right quality, and allows us to focus on the market – not on production problems.”*

Guangdong Ying  
Vice President & Chief Engineer  
Sun Paper Industry

control systems), as well as all the stock pumps and agitators,” Bai says.

#### Focus on energy savings

“The configuration really fits our needs,” Ying says. “The CrescentFormer gives us the desired bulk and smoothness, the steel Yankee helps us save energy. We will manufacture in the range from 12.5-45 gsm, but our focus at the moment is on bathroom tissue at 15.5 gsm.”

Ying commented on the *PrimeDry* ReEvaporation heat recovery system, which uses waste heat to evaporate condensate. “This form of heat recovery returns a large portion of potentially lost energy back to our process, and the condensate goes back as steam to the Yankee” he says. “Up to 20% of the steam demand for the drying process can be generated from waste heat.”

For efficiency, Sun Paper matched the width of the ANDRITZ machine (5.62 m) with the converting line (2.81 m). “This reduces our waste by about half of the industry average,” Ying says. There are thousands of converting lines in China, manual and semi-automatic. But, Sun Household Papers is the first to install a fully automatic line.



▲ The two new *PrimeLine*™ tissue machines are equipped with the latest resource-saving technologies: the *PrimeDry* Steel Yankee and the ReEvaporation system.

#### An amazing start-up

Before the machine started up, Sun Household Papers had already launched its brand. They did this by installing the converting machines and purchasing parent rolls from Chinese suppliers who were producing tissue on ANDRITZ machines so we would have similar quality. Sun Paper planned to have paper on the reel on June 18, and actually was able to beat this date by about a

week. “It was a tight schedule,” Bincheng Bai of ANDRITZ says. “We had 14 months from contract to start-up. This installation at Yanzhou set a new record for fast start-ups in China for ANDRITZ tissue machines.”

Ying called the start-up “just amazing” in that there were only 140 tonnes of off-spec paper produced. “Since then, everything

has been uniform quality and saleable,” he says. “ANDRITZ technology is the best in China now,” Ying explains. “We certainly made the right decision. This technology provides us with stable production, delivers the right quality, and allows us to focus on the market – not on production problems.”

#### The right partner

ANDRITZ was selected to supply the first two tissue machines to the Yanzhou mill for the production of high-quality facial and toilet paper. The first machine started up in June 2014 and the second is scheduled to start up at the beginning of 2015.

According to Bai Bingchen, ANDRITZ China General Manager Sales for Tissue China,

the new *PrimeLine*™ W8 machines are designed for a speed of 2,000 m/min. Each machine is equipped with a *PrimeFlow* 2-layer headbox including dilution control, a *PrimeDry* Steel Yankee with a diameter of 18 ft., and a *PrimeDry* ReEvaporation system. “We delivered the complete stock preparation plant, machine approach, and automation (both distributed and quality

#### Technical highlights

ANDRITZ delivered the complete stock preparation and machine approach systems for both tissue machines. ▼



ANDRITZ TwinFlo refiner in the stock preparation areas. ▼



ANDRITZ *PrimeFlow* 2-layer headbox with dilution control system. ▼



The two tissue machines are equipped with *PrimeDry* Steel Yankees and *PrimeDry* ReEvaporation. ▼



The scope of supply includes all the stock pumps (15 sets) and agitators (13 sets). ▼



View of the control room. Both tissue machines are fully controlled with ANDRITZ automation systems. ▼





# ANDRITZ in China: a success story

## The local tissue partner

It pays to have a proven technology and service partner on your side when making important decisions about how to increase the efficiency and profitability of your mill. Equally important is whether that partner has a local presence to give you support before, during, and after completion of your project. As part of the ANDRITZ Group, the ANDRITZ China location in Foshan is well-positioned to be your technology and service partner.



▲ Headquarter of ANDRITZ China in Foshan

ANDRITZ's first steps into China were in the traditional export mode. In 1997, ANDRITZ formed the joint venture ANDRITZ-Kenflo Foshan Pump Co., Ltd. and began the transfer of technology required to manufacture stock pumps in China. With ANDRITZ as the sole owner, the company has achieved good success in the recent past. The total number of pumps sold into the pulp and paper industry now stands at more than 11,000.

Another strategic move in the pump area has been to consolidate manufacture of the ANDRITZ Vertical Line Shaft Pump (VLSP) in China. The move to standardize the VLSP has allowed ANDRITZ to be more cost-competitive and to shorten the delivery times. More than 40 such pumps have

been sold in China and Southeast Asia to date. From these beginnings, the company has dramatically increased sales every year such that the installed pump base in China and Southeast Asia exceeds 30,000 units.

In 2002 ANDRITZ formed a wholly-owned subsidiary (ANDRITZ Technologies Ltd.) that initially concentrated on producing equipment for the Environmental Business (separation technologies such as belt filter presses and centrifuges). Gradually, the other business areas and Divisions in the Pulp & Paper Business Area began the technology transfer process to support their products in China.

In 2013, ANDRITZ China opened its first pulp and paper laboratory. The lab has the

capability for conducting professional and accurate tests on stock and paper properties, which is a big help to ANDRITZ engineers doing tests at the many installations sold in China and Southeast Asia. These tests are often critical for proving performance guarantees or optimizing stock preparation lines successfully and efficiently. The new laboratory has instruments for measuring stickies, shives, etc. as well as equipment for testing formation, ash content, beating degree, and consistency.

More than 40 references and record installations in Asia confirm that ANDRITZ is one of the leading suppliers of tissue machines, components, and local services for this key market.

## Steel Yankee business center



In 2014 ANDRITZ brought the local support to another level: at ANDRITZ China, the new steel Yankee business center opened its doors to enable state-of-the-art steel Yankee manufacturing, local field service and quality management.

With an area of 4,200 m<sup>2</sup> the business center features the latest machinery to enable steel Yankee production and service at the highest quality level.

*"Our business center with a broad range of service capabilities enables us to provide state-of-the-art technology and to create added value for our customers."*

Erwin Walcher  
Director Service Tissue and Drying  
ANDRITZ AG



### Great on-site support

Having specialized tools and equipment is important for any technology supplier. But having the experienced people to provide service is even more important. Our people are skilled at raising the production efficiency of your mill or plant. We work closely with you to monitor, maintain, repair, and upgrade your assets. ANDRITZ is by your side with years of experience and proven results.



### Perfect results

With PrimeLine tissue technology, it is easy to configure your production to achieve perfect results. Customized solutions are possible or even new developments together with our experts. Fast and smooth start-ups reflect our success.



### Manufacturing quality

ANDRITZ China in Foshan has its own workshop, where tissue components are manufactured and pre-assembled according to stringent European quality standards and controls.

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