

PAPER CHINA

1

Volume 1



China Pulp&Paper International Alliance

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Publishers' Note

Paper China is a new established journal in China paper industry which is co-edited and published by China Pulp& Paper Industry Publishing House (publisher of China Pulp& Paper Industry, the official journal of China Paper Association) and China Pulp& Paper International Alliance(CPPIA).

China has been widely recognized as one of the fastest growing countries in global paper industry for the past two decades, and went beyond that of the United States to be the largest paper production and consumption economy nearly ten years ago. Moreover, China paper industry has secured its leading position although the growth slows down slightly these years. For instance, both the production and consumption of paper and board amounted to over a hundred million tons respectively, each accounting for a quarter in the globe. Furthermore, prompted by urbanization and elimination of backward production capacity, China paper industry is expected to develop faster in the field of paper consumption and capacity investment, thus still remaining the fastest locomotive of global paper industry .

Furthermore, the collaboration between China and global paper industry has been strengthened after further operation in reform and opening-up, economic and trade globalization, and “the Belt and Road Initiative”[1] by Chinese government. On one hand, it's a precious opportunity for China paper manufacturers to participate in international cooperation, in which resources allocation can be optimized greatly, such as the allocation of fibers and advanced technologies; on the other hand, a better platform will be established for China paper machinery suppliers, whose competitive products and services could help to show a better market performance in international competition. Thus, joint construction and benefits as well as the oversea strategy have been the “new normal”[2] and inevitably played an essential role in the development of China paper industry.

The publication of *Paper China* keeps up with the trends of times, in which China paper industry requires a free floor for oversea understandings urgently. Thus Paper China is supposed to make great sense in the new era of economic globalization when both

China and global paper industry could step up into a new stage.

In addition, through *Paper China*, we wish to open a window outward for the understanding of China paper industry in transition. The journal has good coverage of industry news and market potentials related to China paper industry, with the brief introduction of China paper policies, investment trends, environmental protections and business potentials; the emphases on projects, product innovations, research direction of leading organizations; the discussion on special technologies and typical machineries; also the image display of China paper companies, experts and professors.

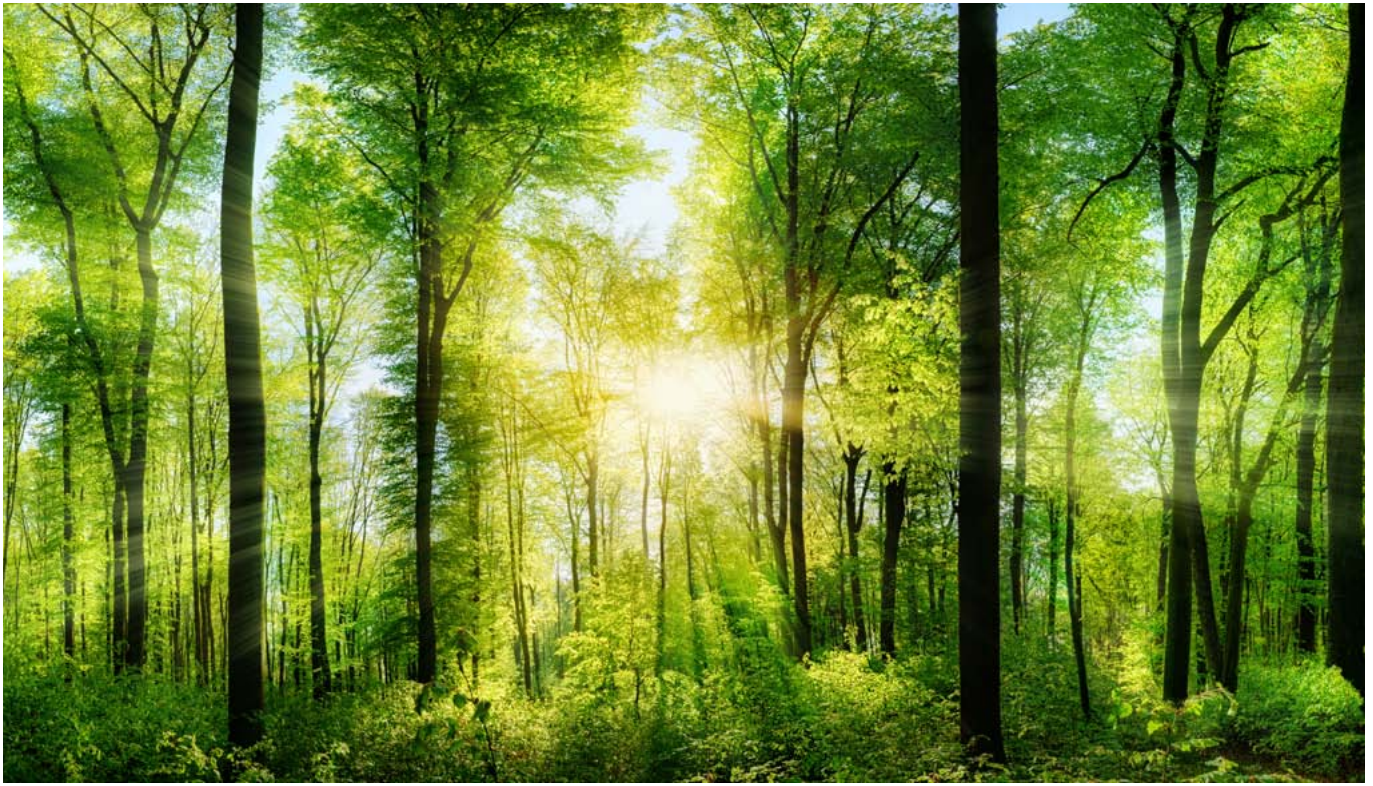
Paper China is planned to be published three issues each year in May, August and November respectively. The initial publication of *Paper China* mainly covers major countries and areas listed in “the B&R Initiative”, such as India, Vietnam, Indonesia, Thailand, Pakistan, and Russia. Going forward, it will further extend to all other paper-producing regions and areas. The journal is available in both paper and electronic versions, and it’s also free online. Up to now, the circulation of *Paper China* is about 3000 Copies covering nearly a thousand paper mills in 11 countries, among which a new bridge for paper exchanges will be established throughout the world.

We are looking forward to your kindly attention and support.

Notes:

1. *The Belt and Road Initiative: The Silk Road Economic Belt and the 21st-century Maritime Silk Road, a development strategy proposed by China’s paramount leader Xi Jinping that focuses on connectivity and cooperation mainly between Eurasian and east and south Asian countries. The strategy underlines China’s push to take a larger role in global affairs, and the desire to coordinate manufacturing capacity with other countries in these areas.*

2. *New normal: a term in business and economics firstly appeared in Xi Jinping’s speech. Now the term has since been more frequently used in a variety of other contexts to imply that something which was previously abnormal has become commonplace.*



Wang Haiyang, senior market analyst of Asia Symbol

A Research on Developing Tendency of China Pulp & Paper Industry

China pulp and paper industry had gone through a rapidly rising period from 2001 to 2011, and a steadily growing period from 2012 to 2016. How about its future in the next few years from 2017 to 2020?

I China remaining the major engine in global paper market
Paper and board demand of developed countries will continue to shrink in the future. By 2020, the compound annual growth rate(CAGR) of demand will be minus 1% in USA, west Europe and Japan. On the contrary, the demand is expected to rise in developing countries, with the

CAGR to be 3% in China, east Europe and Latin America by 2020. Furthermore, China is supposed to contribute 65% to the total growth of demand(27.24 million tons) in the world from 2015 to 2020, still remaining the major engine of global paper market(Figure 1). By 2020, it is predicted that China will take up 70% of the total demand growth of bleached pulp(6.7 million tons) globally from 2015(as Figure 2). Meanwhile, waste pulp demand will stay in the growth rate of 3% during the period

from 2015 to 2020.

II China paper industry to witness continuous growth in output and sales

Economic development will bring about the continuous growth of output and sales in China paper industry, though departing from that of GDP. With the booming of online shopping and newly-emerging logistics, container board becomes the engine for the growth in output and sales. It's forecasted that Chinese paper output will

increase by 13 million tons by 2020, 70% of which benefits from container board(Figure 3& 4).

III Internal structure of China paper industry to be optimized constantly

The paper quality will be improved gradually, with high-end paper and paper products continuing to occupy low-grade market. More popular are those products featured by differentiation, customization and individuation.

The higher growth rate of output than consumption will certainly promote the optimization of industrial environment by backward production elimination, merging and restructuring, transformation, upgrading and going overseas.

Profits polarization will lead to subsequent centralization of enterprises. Competitive manufacturers are supposed to make more profits, merger the disadvantaged, and promote cross-border development, thus making the industrial background more and more friendly.

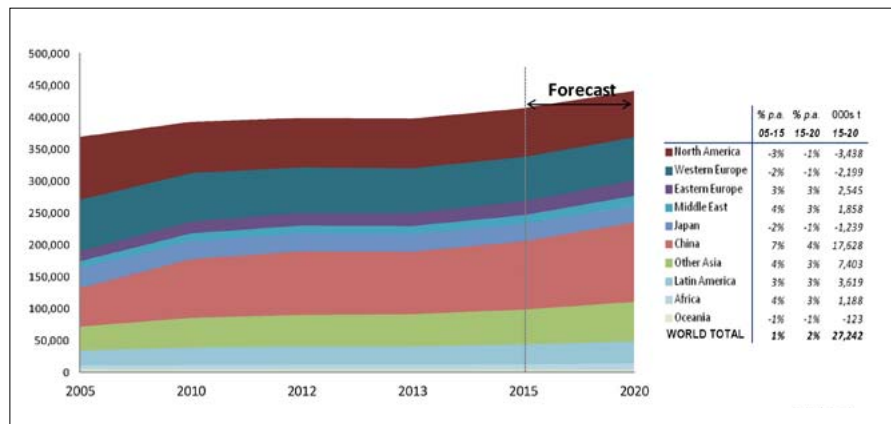


Figure 1 Demand Increase& Prospect of Global Paper& Board Market

Via Popyry

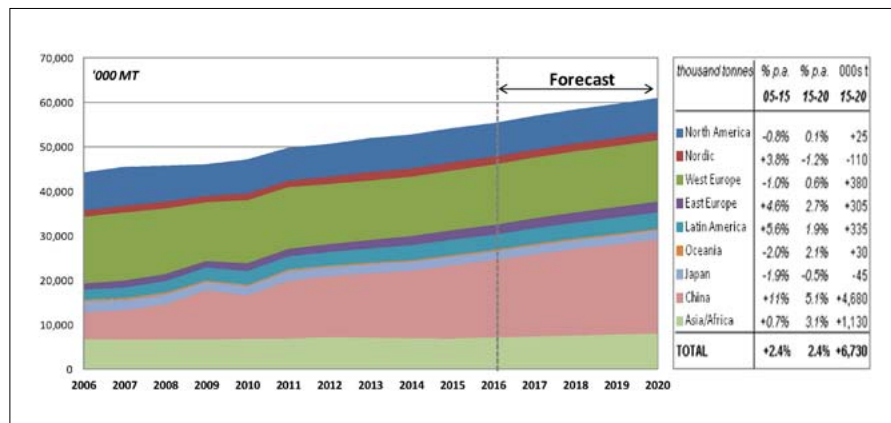


Figure 2 Demand Increase& Prospect of Global Wood Pulp Market

Via Popyry

IV Chinese enterprises to participate more in global competition

From 2007, China has transformed into net exportation from net importation. In 2016, Chinese paper export grew by 20% compared with the previous year. Excess productive capacity will certainly spur the continuous rise of sales overseas, and will also

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increase overseas investment by Chinese pulp and paper manufacturers.

V Rigid future situations for China pulp industry to cause large-scale shutdown of non-wood pulping manufacturers

In the second half of 2017, interim excess will appear in hardwood

pulp supply globally, if the newly increased productive capacity is put into operation as scheduled. Shutting down or transformation of woodpulp manufacturers are likely to happen more frequently, and large-scale suspension may take place in China non-wood pulping producers. However, price for waste paper and woodpulp has been rocketing since the fourth quarter of 2016. But now the output of the wood pulp and non-wood pulp do not appear to increase substantially, partly resulting from the environmental protection and capacity constraints. Drastic fluctuation of foreign exchanges remains the major uncertainty to woodpulp market.

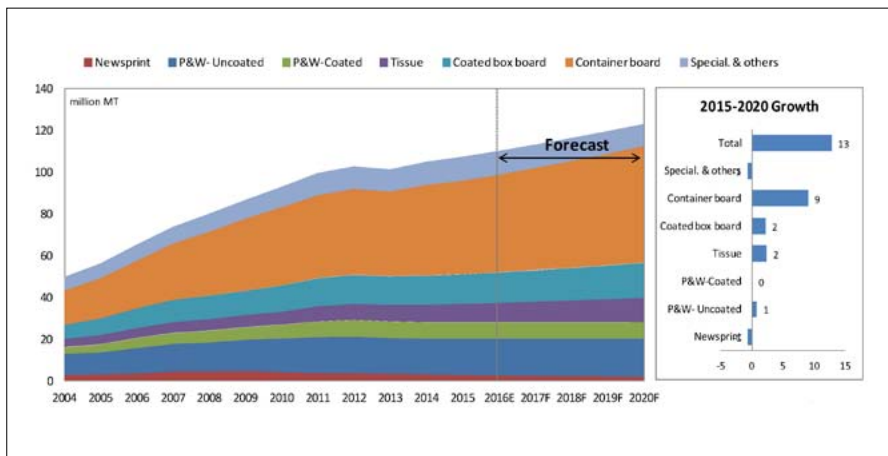


Figure 3 Prospect of China Paper Output

Via China Paper Association, Hawkins Wright, RISI

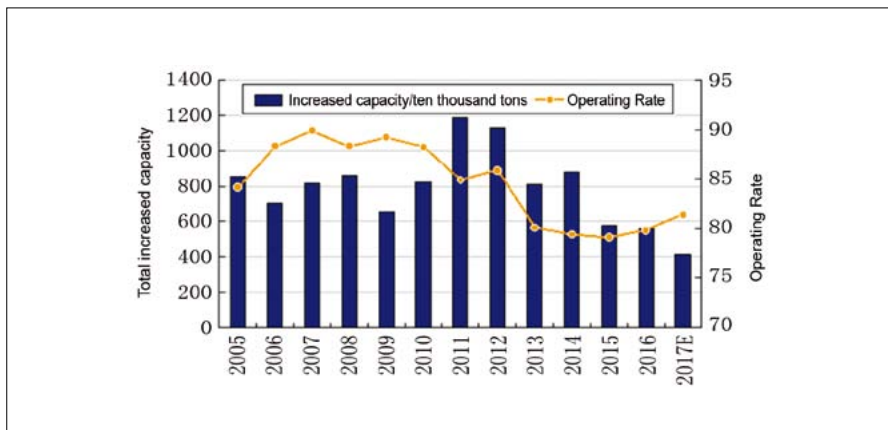


Figure 4 Increased Capacity & Operating Rate of China Paper Industry from 2005 to 2017

Via MIIT, China Paper Association, Hawkins Wright

Since the fourth quarter of 2016, finished paper products market has been booming in China, with case board and corrugating medium in rather short supply. It's predicted that price climbing of finished paper may continue, which is promoted by the price rising of raw materials, foreign exchanges depreciation, backward productive capacity elimination, freight rise and inflation. Price changes of raw materials remains the major uncertainty for finished paper market.



New Characters and Trends of China Household Paper Industry

China National Household Paper Industry Association

Nowadays, the output and sales of household paper is the fastest in the four major species of paper, including fine paper, packaging, specialty and household paper. The annual growth rate of household paper consumption remains not less than 6.6% in recent five years. However, household paper industry

in China remains in a period of relative over-capacity, with fierce competition and operating rate less than 80%, thus requiring a rational judgment for investment. Following are the new features and trends of China household paper recently.

I Industrial innovation leaning to customer intentions

Household paper, as the branch of traditional paper industry, has integrated relatively advanced technology and turned to focus on market requires and customer intentions.

- New paper products are promoted

► Industry Focus

featured by distinctive specification and packaging design.

- New products are developed that concern physical fitness and eco-friendliness. For instance, the unbleached paper is becoming more and more popular, among which the paper products made by unbleached wood pulp started to be promoted, in addition to those made by straw, bamboo and bagasse pulp.

- Conceptual products appears, such as dry and wet tissue, soluble easy rolls, tough facial tissue and embossed rolls.

II Market share of online sales rising rapidly

Promotion of China household paper mainly depends on traditional distributors and super market sales nowadays, with only a little part on online sales. However, online sales volume is developing in a very rapid growth rate, such as Vinda Paper whose online promotion value has taken up 17% totally in the first half of 2016 compared with 9.8% in the same period of last year.

III Technological advance of domestic paper machinery

By the end of 2016, the updated speed of China-made tissue paper machine has reached 1400 m/min; both steel dryers and their surface coating can be finished by domestic manufacturers; wrinkle alloy scraper in constant pressure has been innovated successfully.



IV Application of new foreign technologies& equipment in China

The optimized technology of tissue machine has led the developing direction mainly to improvement of the energy exploiting efficiency and decrease of the energy consumption per unit. Following are promotion and applications of new foreign technologies and equipment in China last year:

- Toscotec promoted its short circuit approach system (TT SAF) and heat-recycling system for hood of Yankee dryer.

- GapCon's EconPRESSTM Shoe Press technique, with independent units, could, compared with previous shoe pressure, effectively avoid the deformation of Yankee dryer which negatively affects the paper machine runnability, and improve the operation of tissue

paper machine, thus realizing a proper bulk and higher dryness of paper sheets.

- Valmet's advantage ReDry technique is famous for the recycling and re-using of heat effluent from Yankee dryer, thus reducing energy consumption per unit effectively.

- Kemira's quality analyzer for tissue paper could detect the wrinkle structure of tissue paper, measure the amount of free fiber on the paper sheet surface, and analyze the properties of paper products from the micro perspective, according to which the process will be optimized and product quality will be improved, thus realizing a better management in technology and operation.

China Paper Enterprises Shining in the Global Top100 List

--based on the list analysis for 2015 Global Top100 Pulp & Paper Enterprises by RISI

Li Yufeng

CHINA PAPER



According to 2015 Global Top 100 Pulp& Paper Enterprises released by RISI, 14 Chinese enterprises were nominated in the global list, making China the second largest paper-producing country in the world, only ranking after USA with 18 nominees in the list. There are 11 Chinese mainland and 3 Taiwan enterprises among 14 Chinese nominees. Nine Dragons, moving forward by 1 position and ranking 18th in the global list, ranked first in Chinese enterprises, making it the only one Chinese paper manufacturer in the global top 20. Chenming Group, moving forward by one position to No.30 in the global list, ranked the second among all Chinese listing enterprises (Table 1).

There are 11 Chinese paper manufacturers that have moved forward compared with 2014. Besides Rongcheng Paper who appeared firstly in the list, there are another four enterprises rising by more than 10 positions, including Yongfengyu Paper, Sun Paper, Shanying Paper and Vinda Paper, among which Sun Paper has dashed into the top 50 for the first time, becoming the fastest-growing one among these 11 paper manufacturers. Moreover, all the top 7 Chinese companies have moved forward compared with 2014,

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showing that the centralization of Chinese outstanding companies was improved and their competitiveness was enhanced gradually.

However, there's still a long way to go due to the large gap between Chinese enterprises and global top 10 ones such as International Paper, Procter& Gamble, Oji Paper, WestRock, UPM, SCA, Kimberly Clark, Stora Enso, Smurfit Kappa Group and Marubeni, especially compared with International Paper whose annual sales revenue hit USD22.37 billion in 2015.

Table 1 China Paper Enterprises in Global Top 100 list

Ranking 2015	Ranking 2014	2015 sales revenue/ million dollar	2015/2014 ratio	Company	Commercial pulp output/ thousand tons	Paper & board output/ thousand tons
18	19	4932.2	6.2	Nine Dragons Paper Holdings	0	12630
30	31	2902	0.5	Shandong Chenming Paper Holdings	0	4150
34	37	2272.2	3	Lee & Man Paper Manufacturing	0	5250
39	49	2001.2	13.7	Yong Feng Yu Paper	0	3143
48	60	1588.9	26	Shandong Sun Paper Industry	0	1820
53	63	1496.3	30	Anhui Shanying Paper	0	3033
55	56	1393.1	-0.5	Hengan International Group	0	1020
57	55	1365.7	-1	Cheng Loong	0	1837
59	62	1223.2	3.8	Shandong Huatai Paper	0	3144
60	70	1207	18.9	Vinda Paper Group	0	950
65	64	1121.2	1.5	Shandong Bohui Paper Industry	0	1486
77	71	880.1	-11.3	Yueyang Forest & Paper Co.	196	1069
78		844.4		Long Chen Paper Co., Ltd.	0	2013
93	95	567.2	7.9	Century Sunshine Group	0	1200

Institution of Pollutant Discharge Management in China Paper Industry

Pollutant discharge permit is required
from July, 2017

Zhong Hua

Pollutant discharge permit is a certificate applied by pollutant discharge units and authorized by China environmental protection departments. It is an “identity card” that is required during pollutant discharging in the daily operation, and it constitutes a globe-wide management institution of environmental protection.

Pollutant discharge permit is widely required in China paper industry, including all the pulping mills, paper manufacturers, associated enterprises of pulp& paper, and paper products suppliers included in the management institution of pollutant discharge. The application and authorization of pollutant discharge permit is required to be finished before 30th, June, and pollutant discharge is not allowed without the certificate from 1st, July.

Regulations on Application and Authorization

of Pollutant Discharge Permit in China Paper Industry was carried out recently to clarify more details about paper industry. The Regulation dictated that the permit is required during the emission of both waste water and gas pollutant. The validity period of first application is three years, and the validity of reissued certificate is five years.

Allowed specifications are needed to be clarified in the permit, including profile of pollutant discharging enterprises such as company name, legal representative, major products, capacity, raw and auxiliary materials, and fuel; position and number of pollutant emission outlets, draining mode and direction; species, concentration and quantity of permitted pollutant; and other items demanded by the law and regulations. Furthermore, special requirement for waste emission shall be specially noted in the pollutant discharge permit

Policy

when the regulation on environment standard and measures for heavy-polluted weather are carried out by local governments.

There are also some other requirements need clarifying in pollutant discharge permit, including the operation and maintenance of pollutant management devices, and non-organized pollutant control; self-monitoring plan, ledger record, and operation report; information-openness requirements of self-monitoring and operation report by pollutant discharging units; and other items demanded by law and regulations.

Extension: Management of pollutant discharge specified all the requirements for pollutant discharging, and it also widely covered all the waste discharging units. Firstly, pollutant discharge permit cements a foundation for the

legal monitoring of pollutant emission, covering the application and standard of pollutant discharge, monitoring method, management of environmental protection infrastructure, limited-time treatment, and punishment against the law. The permit clarifies the way to discharge pollutant, according to which every pollutant emission unit could establish their own environmental management system. And it's also a legal proof of law enforcement and monitoring for law executors. Secondly, the permit is considered as a public information certificate for pollutant discharge. The experts noted that authorization of pollutant discharge permit is a key institution that strengthens the legalization, routinization and particularity in the management of fixed pollutant emission. China has stridden forward greatly in the monitoring of fixed pollutant emission after the establishment of legal institution, especially in the industrial emission such as paper industry.



Sample: pollutant discharge permit of China Nine Dragons Paper

Development Goals of China Pulp& Paper Machinery Manufacture Industry by 2020

Yang Xu, Zhang Hui

Some technical bottlenecks are expected to be overcome in China pulp& paper machinery manufacture industry based on the previous achievements. Up to 2020, some breakthroughs are supposed to be made for the single machine capacity and key techniques, and the overall level will get close to the global first-class paper machinery manufactures. The developmental goals of key paper machinery are as follows.

1. Raw material treatment& pulping system

The non-wood pulping equipment should be improved and strengthened. The annual capacity for non-wood continuous cooking equipment should be up to 100 to 150 thousand tons, and the annual capacity for bamboo/wood cooking should be up to 200 to 300 thousand tons. Furthermore, new breakthrough is expected to be made in energy saving technology development, intelligent control technology and software packaging.

2. Waste paper materials treatment system

The complete set waste paper treatment system of 300 thousand tons/year and the deinking line of 150 to 200 thousand tons/year will be improved to solve the processing, structure precision and operation stability of large disc heat dispersion machine(above 40 inches), and to optimize the flow structure of deinking cell in order to increase the deinking efficiency and decrease energy



consumption.

3. High yield chemi-mechanical pulping system

The chemi-mechanical complete set of 150 to 200 thousand tons/year will be developed, and especially some breakthroughs will be made in disc refiner(above 68 inches), the manufacture and material technology for tearing machines, and the technology of medium and high consistency mixer will be improved, thus a complete set system will be formed.

4. Washing& bleaching equipment

The clean bleaching complete set of 150 to 200 thousand tons/year will be developed, especially the high consistency pulp pump will be optimized. The chlorine dioxide preparation technology is supposed to be developed to improve material, tower equipment technology and preparation technology in order to solve the contradiction between anti-corrosion and price. The large screen cylinder(diameter above 3 meters) is expected to be researched and developed, and the hydrodynamics performance of the rotor will be optimized. The medium and high consistency screening equipment will also be developed, and the sieve plate processing technology will be improved to solve the problems of energy consumption and efficiency to improve.

Table 1 Innovative Engineering Projects

Category	Item	Contents
Pulp& paper machine	key components and complete set of large paper board line with capacity of 500 to 700 thousand tons/year	Width: 7-9 meters; speed: 900-1100 m/min high-efficiency and energy-saving pulping& screening equipment, large disc heat dispersion equipment, new waste paper deinking system, the pulp flow & headbox technology with consistency of 1% to 3%, combined shoe press technology, high-efficiency and energy- saving dry technology
Paper machine	High-speed multi-layer oblique wire special machine	Speed:300m/min, width:2400-3800mm simultaneous forming technology for multiple fibers; dehydration curve and intelligent control technology for on-line white water degassing; drag reduction technology for high speed forming net
Paper machine	Research on key equipment of special ultra thick base material of 3-10mm	Research on key equipment of special ultra thick base material production, including special former, new winding cylinder, and polymerization unit
Paper machine	The production and processing of functional coated paper	Key equipment needed in the production of functional coated paper, including curtain coater, high-speed automatic paper receiving system, high efficiency dryer and so on

Table 2 Products Quality Improvement Projects

Category	Item	Contents
Paper machine	Research on the technology of shoe press in wide pressure area	Further study on the technological theory of pressure zone, pressure curve, shoe plate material, manufacturing process and hydraulic system reliability; advanced technology of partition controlled shoe press
Paper machine	Key components of high-speed medium and large paper machine	Key equipment of manufacturing technology, including headbox, shoe press, calender, coater, high-speed rewinder and so on.
	Variable crown roll, vacuum roll	Manufacturing technology, material and machine accuracy improvement technology
	Large disc mill and heat dispersion machine	Disc structure and manufacturing technology, transmission control and protection system
	Large screen and rotor	Manufacturing and materials technology

Table 3 Green Manufacturing projects

Category	Item	Contents
Pulp machine	Complete sets of waste paper deinking line with capacity of above 150 thousand tons/year	Domestic equipment will substitute imported ones, including China-made low energy pulping equipment, high efficiency deinking equipment, medium and high consistency screening and bleaching equipment, and large disc heat dispersion equipment.
Pulp machine	Non-chlorine or chlorine free pulp bleaching equipment with capacity of above 150 thousand tons/year	Domestic equipment will substitute imported ones, including China-made medium consistency pumps, medium consistency mixer, reaction tower distributor, dumper and automatic control system.
Pulp machine	Pre-treatment key equipment of large scale biomass comprehensive utilization	Research on the production of second generation ethanol with straw, and study on biomass smashing, storage and transportation, clean-up and pulping equipment

5. The high dryness wet pulpboard machine with capacity of over 100 thousand tons/year

The forming and press technologies of high dryness is expected to be developed and improved.

6. Paper Machinery

The large paperboard machine with high-speed and wide web and the high-speed multilayer inclined wire specialty paper machine will be developed, and the medium and high speed fine paper and tissue paper machine will be optimized and improved.

For the paper board machine, some bottleneck problems should be solved including series of headbox technology, shoe press technology, high-speed pickup technology, high efficiency dry technology and medium& high consistency flow and forming technology, etc... It is expected that the width of domestic paper board machine could be up to 9 meters and the speed could be above 900m/min.

The inclined wire specialty paper machine with 3-meter width and 300-plus m/min speed will be developed to meet production requirement of increasingly adding non-plant fiber. Technologies are expected to be improved including multi-layer oblique wire headbox, intelligent control system for forming box dewatering curve, large flow

dehydration forming wire dragging technology.

For fine paper machine, it is important to improve the performance and control of hydraulic headbox, the stability of gap former and top wire former, and promote the application of shoe press technology in the combined press.

For the tissue paper machine, the research and development of headbox technology should be a key point, and the manufacture and converting of large steel dryer and the surface spraying technology should be improved. The domestic crescent former tissue machine will also be vigorously promoted for further application.

Meanwhile, the performance and running stability of the key components of paper machine should be improved, including all kinds of suction rolls, film sizing machine, calender machine, precision scraper, dewatering equipment, soft calender and so on. The problems of processing precision, material and heat treatment should be solved proceedingly.

By 2020, the key innovative engineering projects, product quality improvement projects and green manufacturing projects can be seen in the table 1 to table 3.

Innovative Achievements of China
Pulp and Paper Independently-
Developed Facilities (I)

Technologies for Waste-Paper Disposal Machinery



Zhang Hongcheng, Xu Yinchuan, Zhong Laifa, Zheng Shaobin

Since 2000, China has been making outstanding achievements in machinery for waste-paper disposal and waste-paper pulping. A series of advanced equipment were developed, which not only supported the growth of China pulp and paper industry, but also made great contribution to the effective application of waste paper resources in the globe.

1 Promotion and application of technologies for waste-paper unbaling and dry screening

The system for waste paper unbaling and dry screening, incorporated with waste paper unbaling, classification, and dry screening, realized the mechanization and automation in waste paper materials disposal. The advantages are: waste paper materials are unbaled to discard forklift, and the efficiency of following equipment is improved; light and heavy impurities are removed with dry screening system to reduce the wear and tear of equipment and improve the pulp quality; the space for manual classification and labor is saved, and the available value of the classified waste paper and solid waste are improved.

2 Low and high-consistency pulpers and drum pulpers

Through the practice for years, many Chinese machinery manufactures have been able to produce incorporating equipment for waste paper pulping, including horizontal pulpers, vertical pulpers, D-shaped pulpers, and drum pulpers. The D-shaped pulper was developed with volume of 120m³ for productive capacity of 1000t/d. The maximum productive capacity of drum pulper, with the specification of 4250mm×39m, reached the capacity of 1000t/d. Recently, the key parts of drum pulper,

such as rotator and screening plate, are being innovatively developed by many Chinese manufacturers, which aimed at the energy-saving and the improvement of the defibering degree of the pulp.

From the practice in a half decade, the low-consistency pulper is still the dominant one due to the large productive capacity and high defibering efficiency. However, the high-consistency pulpers and drum pulpers were applied widely in deinking pulping line. With the recycling rate rises, the recycled fiber gets shorter and shorter, and the strength decreased. The drum pulper was gradually popularized and applied in OCC pulping line.

3 Promotion of energy-saving screening technologies

With the increase of impurities in waste paper raw materials and the higher quality requirement of recycled paper products, intensive screening and reduced energy consumption have become the developing tendency. For this new demand, many Chinese paper machinery manufacturers developed a new generation of screening equipment to meet the needs of 300 thousand t/a waste paper pulping lines. A series of rotors with energy-saving, anti-enwinding slot screening drum for coarse screening with high efficiency, and corrugated drum with multi-disturbing strip were successively developed. Although stability in operation and abrasion performance of wear and tear parts needed to be improved.

Medium-consistency screening is a developing direction in future. The medium-consistency screen independently-developed by China can meet the needs of pulping lines with the capacity of 150 thousand t/a.



screening equipment



4 Technical facilities for fiber classification

Classification of waste paper fiber into long, medium and short fiber fraction can reduce the equipment investment, simplify the treating process, save energy, and utilize the advantage of long fiber and overcome the disadvantage of short fiber. For the production of high-end linerboard, a heat dispersing system is often installed in pulping line for treatment of the hot melting substances existing in imported waste paper raw materials. For the sake of investment and running cost, a fiber classification screen is often installed before heat dispersion, with which long fiber and short fiber are separated. The long fiber is treated in heat dispersing system, and the short fiber is directly sent to low consistency cleaner, then to the core layer

line of papermaking.

5 Efficient floatation deinking system

New multi-stage air distribution deinking and floatation system is mainly applied in the new projects in China market, whereas the deinked system with bubble produced in a dissolved air vessel, though effective in energy saving, still has a long way to go in deinking effect compared with multi-stage air distribution deinking and floatation system. Various deinking cells, such as counter flow type, step diffuser and 5 stage closed floatation cell, were almost seceded from China market because of many disadvantages.

The key technologies to be solved in the development in multi-stage air distribution deinking and floatation system consists of



deinking facilities with high deinking efficiency, inspecting device for impurities of heat melting substance and stickies, as well as their removal. The specifications of multi-stage air distribution deinking and floatation system that have been developed in China are: long diameter 4400mm; short diameter 2800mm, single cell length 3000mm, productive capacity 350t/d, treating consistency 1%-1.2%.

6 Disc heat dispersing system

Compared with roll heat dispersing system, disc heat dispersing system can effectively treat a varieties of heat smelting substance, wax, soft asphalt, and other impurities, substantially improving the pulp strength and fiber characteristics. Thus it is widely applied in pulping and deinking pulping lines with old newspaper, old office paper due to its adaption and flexible configuration. Whole automatic

program control is realized in the system.

Specifications of the disc heat dispersing system that has developed by China are: max. disc diameter $\Phi 1050\text{mm}$, productive capacity 500~600t/d, single hydraulic cylinder blade-feeding, inter-tooth plate, plate gap accuracy 0.01mm, slurry temperature $100^{\circ}\text{C}+5^{\circ}\text{C}$, consistency more than 26%.

Foreshow in next issue:

Innovative achievements of China pulp and paper independently-developed facilities (II): technologies for pulping machinery

The Spraying of Steel Yankee Cylinders Used in Tissue Machine

Xia Jirui, Zhang Fengyu
(Shandong Xinhe Paper-making Engineering Co., Ltd.)

In the manufacture of tissue paper, the cast iron Yankee dryers are being replaced by the dryers made from steel gradually, because the latter has obvious advantages in toughness, heat conduction and safety. The surface of steel Yankee dryer cylinder sprayed with cemented carbide coating is harder than the surface of cast iron, which can improve the quality of paper products, extend the life of the dryer and the maintenance cycle, and help to complete chemical coating and wrinkling process. The grade of steel Yankee dryer cylinder would not be reduced with the decrease in thickness or thinning of a metallic coating. Shandong Xinhe has developed and produced the steel Yankee dryer cylinder with $\phi 3000\text{mm}$ and $\Phi 3660\text{mm}$. Nowadays, Xinhe has had the ability to produce the steel Yankee dryer cylinder with size of $\Phi 6000\text{mm} \times 5000\text{mm}$, with the spraying implemented by RIF corporation in Italy.

The steel used in the Yankee dryer cylinder produced by Xinhe is medium-strength steel plate, which can better endure sand blasting roughening surface, activate the surface by increasing surface free energy, and also enlarge the surface area of spraying particles adhered. The principle of thermal spray can be seen in Figure 1.

Coating material: It can be linear or sticky which depends on the techniques of thermal spray. The coating material of the steel Yankee dryer cylinder

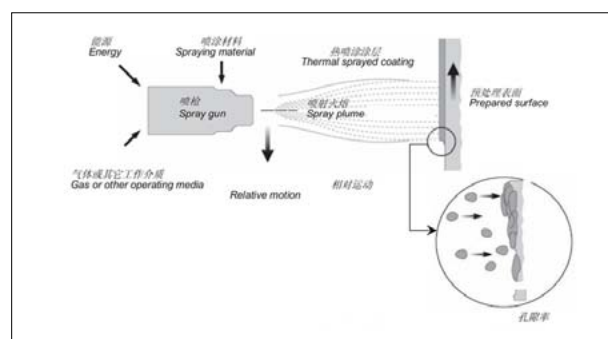


Figure 1 Principles of Thermal Spray

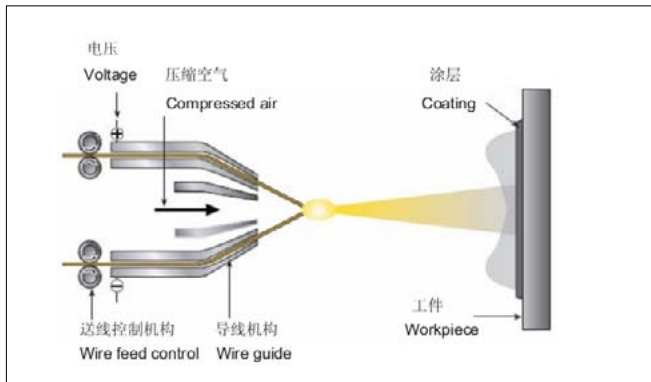


Figure 2 Principles of Arc Spraying Process

is featured by: (1) high surface strength, over 55HRC; (2) wear resistant and long service life; (3) good heat conduction and corrosion resistance; (4) dense and smooth coating; (5) good bonding strength and not easy to fall off; (6) uniform material and chemically inert.

Techniques of thermal spray: The Yankee dryer with thermal spray coating process is wire arc spraying. In the process, two metal wires with positive and negative charges and usually the same chemical composition are used to produce the arc, which can instantly generate heat to melt the metal wire tip, and the compressed air can make the spray material melting atomization, then accelerate spray into the cylinder surface. The spraying speed of wire can be control by adjusting the wire feed speed appropriately, so a constant arc can be maintained (Figure 2). At present, the Yankee

dryer, with coating thickness of about 0.75mm and roughness of 0.3 ~ 0.6 μ m, can endure harder scraper operation and improve the softness of the paper, thus making a wider space for the operation and promotion of dryers.

Steel dryer cylinder must be pre-grinded before spraying, and the appropriate camber should be calculated according to the structure of Yankee and vacuum roller.

The specific process of steel Yankee dryer spraying is shown in Figure 3.

The Yankee dryer cylinder after spraying has high thermal conductivity, thus saving 30% steam consumption compared with cast iron cylinder.

Coating measurement: In addition to coating properties, there are some features that are relatively easy to test and have standard quality control inspection methods, including visual inspection, measurement of coating thickness and surface roughness measurement. If necessary, the test sample can be sprayed at the same time and under the same conditions, and the coating can be tested in time to determine other properties of the coating quality. In order to accurately determine the coating thickness, porosity and structure, as well as the microstructure of the melted particles and oxide inclusions, the coatings were subjected to lateral cross sectional testing. What's more, the combination method of

strength determination can also be promoted by using a special glue and test equipment. In addition, some other methods are also useful, including the analysis of various elements, scratch test, tribology properties research, stress analysis, and research of corrosion and abrasion characteristics.



Figure 3 The Specific Process of Steel Yankee Dryer Spraying



Development and Application of New Hot-Air Drying System

Wang Liangqiao, Jiang Zhenxiong
(Shashi Light Industry Machinery Co., Ltd.)

Hot-air drying system is an essential part of coating machine, which has a substantial influence on products quality. Shashi Light Industry Machinery Co., Ltd., as a leading enterprise in China coating field, formed a complete set of excellent hot-air drying system suitable for coating and converting field.

The development of hot-air drying system

According to heating ways of coating layer, the hot-air drying was classified into single-side hot-air drying and two-side hot-air drying. And their distinction is mainly the using of different drying boxes. Efficient hot-air nozzle with sideling blowing in reverse direction developed by Shashi Light Industry was shown in Fig 1. An air-even cell was designed in hot-air nozzle, making the

pressure of hot-air entering to the nozzle distribute even in cross direction profile, especially the new nozzle was designed to blow diagonally against to the web running direction. Compared to the traditional vertically blowing hot-air nozzle, the blowing force from new hot-air nozzle is far smaller than that from the traditional nozzle under the same conditions, whose destruction to the coating layer is

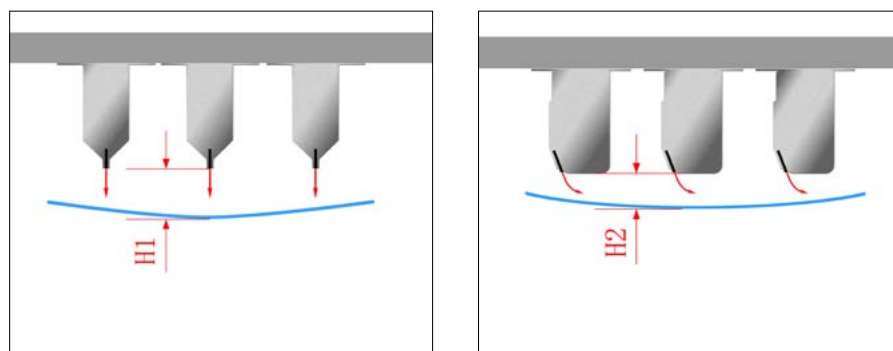


Figure 1 Efficient Hot-air Nozzle (right) and Traditional Hot-air Nozzle (left) in a Single-side Hot-air Drying Box

much less. Meanwhile the web is much closer to the nozzle, thus the air velocity is higher toward the web. The moisture or water film over the surface of paper web was removed rapidly with high velocity hot-air blowing against the running web, thus greatly improving the dewatering efficiency of the hot-air drying system.

As for the two-side hot-air drying, a new kind of air float nozzle was especially developed, with nozzles alternatively arranged in up rank

drying boxes and bottom rank drying boxes. The comparison between new type air nozzle and traditional air nozzle was shown in Fig. 2. New type nozzle was designed to a steady flow structure with three chambers, which makes the entering of hot air into the nozzle more even before blowing out. Three chambers of constant pressure, steady flow and gradual narrow zone were configured, with the air pressure loss getting much smaller. Furthermore, the wall attachment effect of air flow is reduced by the optimization of gradual narrow working zone of new nozzles, which results in a strike of more air flow to the web. So the heat and moisture exchange efficiency and the drying efficiency is improved. In addition, air curtain nozzles were arranged in the inlet and outlet of the new drying box, which can stabilize the paper web,

Table 1 Running Parameters of Hot-air Drying System

Item	Width /mm	Speed /m/min	Coating weight /g/m ²	Solid content/%	Hot-air temperature /°C	Hot-air box /set	Drying efficiency /kgH ₂ O / (m ² ·h)
single-side box	4260	640	14	62	160	4.5m, 2sets	~29
two-side box 1	1760	300	10	38	150	3.8m, 2sets	~33
two-side box 2	2300	1100	3.5	22	280	4.5m, 3sets	~57.5

Notes: natural gas was used as the heat resource for circulated air, which has the advantage of efficiency, no pollution and accuracy in temperature control, high thermal efficiency, especially suitable for the high-speed, efficient and energy-conserved coating machines.

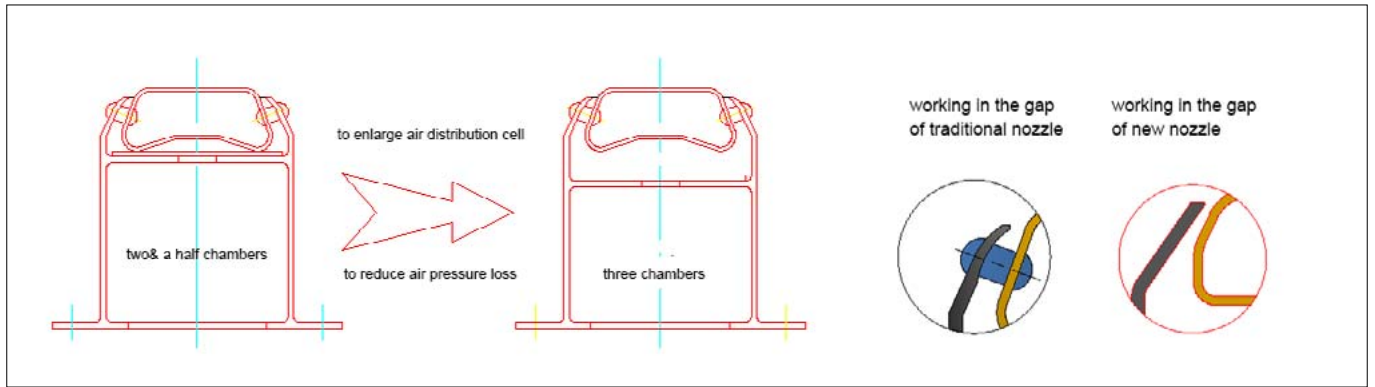


Figure 2 Comparison between New Nozzle and Traditional Nozzle in Two-side Hot-air Drying

and prevent the hot-air leakage in drying box.

The paper web runs more stably with the application of the new hot-air drying box. Therefore arc bridge structure of traditional drying box was transformed into a horizontal structure, shown in Fig. 3. Compared to the arc bridge drying boxes, a paper web guide roll between two adjacent drying boxes was removed to reduce the energy loss between two drying boxes. Meanwhile, the twisted pipes in drying boxes were also reduced to

decrease the loss of air pressure, so the hot-air velocity and the drying efficiency was improved. The paper web would go through the drying box in the form of “sinusoid” with the removal of paper web guide roll between the adjacent drying boxes. In new hot-air drying system, an on-line moisture detecting device was designed in the return air pipe to detect and control the start, stop and the opening altitude of exhaust fan. A heat recovery device was added in air make-up pipe, as shown in Fig.4. The waste heat was

used to warm the fresh air added to the hot-air system, thus the energy consumption was reduced

The application of hot-air drying system

Through a practical running, the parameters of a new hot-air system were determined, as shown in Table 1.

The data detected shows: either single hot-air drying or two-side hot-air drying greatly surpass the traditional hot-air drying system in drying efficiency, to reach the advanced level in China.

The new hot-air drying system can be not only applied to the newly built coating line, but also utilized to the transformation and updating for old coating lines, thus saving the energy consumption by 15% to 20%, or raising the speed by 10% to 15%.

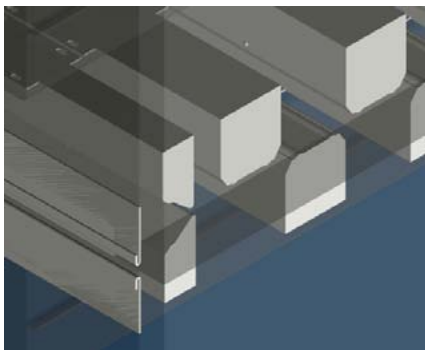


Figure 3 Drying Boxes in Horizontal Arrangement

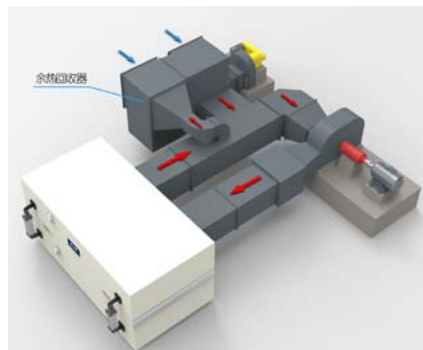


Figure 4 Waste-heat Recovery Device

Key Economic Indexes of China Paper Industry

I Production

In 2016, the total output of China mechanical paper and board reached 123.19 million tons, with an annual growth rate of 3.1%.

II Sales

Total export delivery value of China paper industry in 2016 amounted to CNY31.53 billion(+6.8%), and the sales-output ratio was 98.4%(+0.4%).

III Benefit

In 2016, the main business incomes of China paper industry was up to CNY872.52 billion(+7.0%); total profits reached CNY48.61 billion(+28.7%); net receivables

was CNY88.03 billion(+1.1%); inventory value of finished paper products fell down to CNY27.47 billion(-13.1%); current assets value added up to CNY439.79 billion(-3.1%); total assets was CNY1003.69 billion(+0.5%); total liability dropped to CNY571.17 billion(-3.0%); main business cost reached to CNY765.24 billion(+6.9%); sum of deficit for unprofitable manufacturers fell to CNY5.56 billion(-21.0%); and the concrete number of designated paper manufacturers counted to 2757, among which only 316 was unprofitable ones.

Selected from 2016 statistics by National Bureau of Statistics of China



Output of Pulp, Paper and Paper Products in China 31 Administrative Areas

Unit:10 thousand tons

area	pulp	machine-made paper & board			paper products
		total amount	uncoated printing paper	case board	
Nation wide	1611.95	12319.22	723.61	1095.28	7190.28
Beijing		6.06			39.12
Tianjin		285.00	0.075	7.66	142.32
Hebei	46.37	345.04	43.11	116.91	359.72
Shanxi	2.70	41.67	1.32		18.68
Inner Mongolia		12.27		4.20	82.15
Liaoning	7.58	54.12	5.47	18.64	69.99
Jilin	2.31	75.15	1.65	0.61	78.15
Heilongjiang		34.38		6.10	20.32
Shanghai		62.08		4.44	135.68
Jiangsu	40.64	1319.83	45.59	54.25	606.56
Zhejiang	7.21	1889.76	1.55	145.25	799.43
Anhui	8.50	343.80	35.06	184.74	179.17
Fujian	36.26	727.00	25.67	191.89	425.52
Jiangxi	15.87	200.34	0.69	4.00	146.44
Shandong	554.68	2170.38	287.18	127.62	369.37
Henan	244.63	739.39	86.25	4.44	724.83
Hubei	13.44	251.13	60.07	1.67	359.62
Hunan	81.12	422.13	50.27	38.83	329.49
Guangdong	120.21	2127.52	50.45	109.96	1078.91
Guangxi	149.89	288.71	10.88	2.41	219.43
Hainan	159.89	167.06			0.59
Chongqing	17.00	299.57		16.20	260.43
Sichuan	30.28	210.58	4.60	23.96	346.55
Guizhou	25.65	27.80			129.96
Yunnan	31.59	78.46		8.25	59.35
Tibet	-	11.10			3.75
Shaanxi	-	72.15		6.40	107.24
Gansu	-	4.54			43.05
Qinghai	-				0.039
Ningxia	5.89	20.67	11.60		12.18
Xinjiang	10.23	31.50	2.12	16.84	42.27

Selected from 2016 statistics by National Bureau of Statistics of China



Dynamics of
CPPIA
Members

Sun Paper: Four major projects to be invested and installed with capacity of two million tons/year

Sun Paper will initiate four major projects, including specialty fine paper project with annual capacity of 0.20 million tons in Yanzhou (Sun Paper's headquarter location), packaging paper project with annual capacity of 0.80 million tons in Zoucheng (Sun Paper's manufacturing base), biomass refinery project with capacity of 0.70 million tons in the United States, and LBKP project with capacity of 0.30 million tons in Laos. And the allocation for the first three projects has added up to CNY11 billion in total.

The specialty fine paper project, allocated CNY0.6 billion, is expected to realize the annual sales revenue of CNY1.3 billion and total profits of CNY0.14 billion. To be built for a year and a half, this project will focus on the manufacturing of advanced high-weight fine paper by using superior pulp as raw materials.



Li Hongxin (chairman of Shandong Sun Paper)

The LBKP project, with capacity of 0.30 million tons in Muang Phin, Savannakhét, Laos, was started in early 2017 and is expected to be put into operation in the second season 2018. Valmet supplied all the key techniques in dissolving pulp production line with annual capacity of 0.25 million tons, including techniques of batch cooking process, squeezed pulp washing and bleaching, wood burning, band dryer and limekiln. This LBKP project constitutes an essential part of the forestry-pulp-paper integration project of Sun Paper (Laos), and 0.10 million hectares forest will be planted to support this project.

► Information

Sun Paper is the leading enterprise in China paper industry and is nominated in the top 50 list in the world paper market, with business revenue of CNY14.43 billion and total profits of CNY1.46 billion in 2016, rising rapidly compared with the same period of last year.

Tranlin Group: Total size of straw processing to hit 50 million tons/year by 2020

Tranlin Group implements the “going out” strategy actively. In October 2015, Tranlin’s production base has been established in America successfully. Supported by China technology and made in America, Tranlin’s independent brand tissue paper and fulvic acid fertilizer will enter American high-end market smoothly.

Straw pulping and papermaking projects will be carried out in China rich straw-production areas. By 2020, total size of straw projects solely owned, held or supported by Tranlin will hit 50 million tons/ year. Among all of them,



Li Hongfa (chairman of Shandong Tranlin Group)

the projects in Gaotang(in Shandong Province), Dehui(in Jilin Province) and Jiamusi(in Heilongjiang Province) have been put into operation in succession.

On 31th March 2017, the trial run of tissue production line in Jiamusi has achieved perspective effects, and the first phase of the production line was put into operation. Jiamusi’s project is divided into three phases, among which the first phase project was installed with annual straw processing volume of 0.60 million tons, unbleached straw pulp output of 0.20 million tons, unbleached tissue paper output of 0.20 million tons, fulvic acid fertilizer output of 0.30 million tons, and generator sets of 80 thousand kilowatt. Recently, the first phase project is being installed and debugged, with successful trial run of electricity workshop and tissue production line already.

It’s told by Li Hongfa, the chairman of the board in Tranlin, that recent goal of Tranlin is to realize the annual straw processing volume of 50 million tons, annual unbleached straw pulp output of 20 million tons, and fulvic acid output of 20 million tons annually, which will finally help to realize the sales volume of over CNY300 billion, employment positions of 100-plus thousand, crop output increase of over 200 billion catty, and peasant’s revenue increase of over CNY300 billion in total.

Qifeng New Material: Ultra-low emission of coal-fired boilers that can meet emission standard of natural gas

Recently, Qifeng finished the ultra-low emission project of boiler2(130tons/h) and boiler1 to meet the standard of natural gas emission, thus lifting the efficiency of energy exploitation, lowering the pollutant effluent, and finally benefiting local eco-construction as well.

Only the retrofit project of boiler 2 was allocated CNY47.96 million, which promotes desulfurization by limestone-gypsum wet removal and twin-tower bi-circulating technology, pushes on denitration by urea SNCR+SCR method, and promotes dust-removing by wet electrostatic and bag precipitator. The national emission standard of dust, sulfur dioxide and nitrogen oxide is 20 mg/m³, 200 mg/m³ and 200 mg/m³ respectively, and a rather lower emission of 5 mg/m³, 35 mg/m³ and 50 mg/m³ will be realized after the establishment of this project, thus cutting the emission of sulfur dioxide, nitrogen oxide and



Li Xuefeng (chairman of Qifeng New Material)

dust down by 7040 tons, 736 tons and 115 tons respectively.

Qifeng has 20 global first-class specialty paper machines. With total assets of over CNY4.1 billion and annual output of 430 thousand tons, Qifeng has developed three major brands of decor base paper, overlay wear-resistant paper and non-woven wall paper ranking first in paper industry throughout the world. The year of 2016 has witnessed the annual output of 0.35 million tons and total output value of over CNY3.5 billion.

Wenrui Machinery: Pulping and RC equipment operating well in OKI Indonesia

OKI BHKP project in Indonesia APP group goes into operation stage. The project has two pulping lines with design annual capacity of 2.8 million pulp, which went into operation from middle December in 2016 and attains the expected goal.

The project adopts the most advanced process technology and equipment supplied by Wenrui Machinery (Shandong) Co., Ltd., Andritz, Valmet etc. Wenrui Machinery (Shandong) Co., Ltd. supplied 18 set key pulp-washing equipment of twin roll wash press SJA2282 (pressure roll diameter is 2200mm, length is



Jiang Peng (GM of Wenrui Machinery)

8400mm) and 187 set RC equipment, which has been in successful operation.

Twin roll wash press SJA2284 has advantages of the biggest model, highest capacity, lower power consumption and advanced washing efficiency, which single machine capacity achieved 4000-4300t/d. Pressure RC system has advantages of good closure, less exhaust emission, high white liquor temperature, low heat less, high lime mud dryness and low residual alkali etc.. The white liquor clarity is 15~30ppm, lime mud dryness is higher than 75%, lime mud residual alkali is lower than 0.3%, which achieved design requirement.

The pulp line goes in successful operation, which shows that Chinese pulp-washing and RC equipment have entered into pulping equipment line of world high-end, and have been competitive in international market with landmark meaning.

Shandong Xinhé: Optimal paper-making solution provider

As a professional manufacture of paper machines, Shandong Xinhé developed new models of crescent former tissue machines for jumbo roll makers. Nowadays crescent former tissue machine is a trend in worldwide tissue industry. Shandong Xinhé has developed crescent former tissue machine with sheet width up to 5600mm and operation speed up to 1800mpm, and tailored the machine according to specific requirement and conditions in order to meet different demands from their customers. On the basis of good quality of paper, Xinhé improved its tissue machines with steel shell Yankee dryer and high efficiency hood, which are able to reduce more than 30% steam consumption. Turbine vacuum pump is also applied to reduce power and water consumption significantly. Besides tissue machines and key parts such as steel Yankee dryers, Xinhé also makes print and copy paper machines, board machines and specialty paper machines.



Zhang Lei (chairman of Shandong Xinhé)



China Pulp& Paper International Alliance



China Pulp& Paper International Alliance (CPPIA) was founded on 11st January 2017 in Jinan, Shandong province by 17 Chinese leading pulp& paper enterprises and China Pulp& Paper Industry Publishing House. CPPIA, founded on the purpose of integrating China paper resources and serving global paper market, is aimed to convergence China and oversea advanced paper resources and co-build a standard and free platform for paper exchanges around the world.

In recent years, China pulp& paper enterprises has improved their comprehensive strength and brand competitiveness greatly with the constant expansion of paper, board and paper machinery exportation, improvement of exported product quality, and the increase of market share. Official statistics shows that China paper and board production hit 108.55 million tons in 2016, making China the biggest paper and board manufacturer globally for the eighth consecutive year; exportation volume is 7.33 million tons, increased by 13.64% compared with that of 2015. Over the past decade, China paper machinery enterprises has become an essential part of world paper machinery field. The technologies, manufacture capacity, product quality and market share were all improved a lot. Some paper equipment has entered into the world-

Image Display

leading level, with its function covering fiber preparation, cooking, washing and bleaching, its application scope covering culture paper machine, board machine, tissue machine, and specialty paper machine, and its accessory equipment covering pumps and pollutant effluent treating devices. Furthermore, qualified products of CPPIA has been exported not only to developing counties such as Russia, India, Egypt and Iran, but also to those developed counties like America, Britain and Canada.

Nowadays, the sluggish economic growth, financial crisis and large developing gap are still remaining worldwide. As the locomotive of world economy especially the paper industry, CPPIA encourages win-win cooperation among leading enterprises. Built under the principle of wide consultation, joint contribution and shared benefits in the context of “the Belt and Road Initiative”, CPPIA will provide an open stage for paper enterprises to explore new opportunities, promote new dynamics, extend developing spaces and finally achieve the joint benefits and health development of paper industry.

There are 18 member enterprises now in CPPIA, with their products covering packaging paper, household paper, cultural paper, specialty paper and board, papermaking equipment, pulping equipment, automatic devices, specially used equipment, trading, etc.. All CPPIA members have been sharing a common commitment of promoting the development of the alliance. Meanwhile, they has supplied high-level products and pursued sustainable development by providing reliable services all the time. All the member enterprises will work together to make the alliance a free platform for exchanges and cooperation in paper industry at home and abroad, and to step into a new stage of joint development for global paper industry.



Coating Finishing Equipment Manufacturing Base For Global Services – SLMC

China-Shashi Light Ind. Machinery Co., Ltd. was founded in 1965. On the base of introduction technology from Germany and Finland, and with continuous self- innovation, SLMC has provided more than 500 sets of coating machines, soft/hard crown controlled calenders and film press sizers to the customers all over the world, representing the highest level of China coating finishing equipment.

SLMC has served more than twenty Indian customers, such as Bindal Paper Limit, etc.

The Name Of Customer	Specification Of Machine
Bindal Paper Limited	5000/800 film press sizer
Mehali Papers Private Limited	3750/500 four sets of blade coaters
Ruchira Papers Limited	3250/450 single nip hard calender
Silverton Pulp & Papers PVT. Ltd	3750/1000 drying oven, air turner

Shashi Light Ind.Machinery Co.,Ltd.

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--using 4th generation new technology of PMC as the method to improve running efficiency and create new value for mainstream paper making machine



Company Induction

Sichuan VANOV Technical Fabrics Co., Ltd., is belonging to VANOV Group. Company engages in R&D, sales and production field. It owned "GOBEAR" & "VANOV" two famous brand, and is National high-tech enterprise, also passed ISO9001: 2008 national quality. We've achieved more than 50 newly and practical patents and inventions. Company devotes to afford clients paper making clothing with best quality, stable effect, professional service and environmental protection according to standardization, specialization, datamation. We service widely in all kinds of paper machine and PM speed. It recently has Chengdu Wenjiang and Shanghai Jinxiong two large production bases. Company devotes to be first class of PMC supplier in the world and uses 4th generation new technology of PMC as the method to improve running efficiency and create new value for mainstream paper making machine.

Product Introduction

◆ Twill Weaving Felt

Application to all kinds of packing/culture/special PM

Features: Angle exists between base fabrics, which cannot be compressed

Advantage: Perfect initial adaptability, stable space for containing water, consistent dewatering, enlarging felt service time, reduce PM running cost, promote PM running efficiency.

◆ Seam Felt

Application to packing/culture/pulp PM

Features: Seamed device on the machine, needless to move any roller of the PM and fixed supporting device

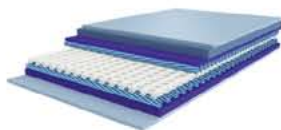
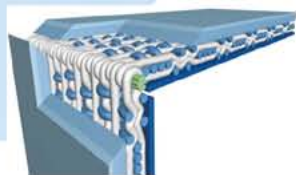
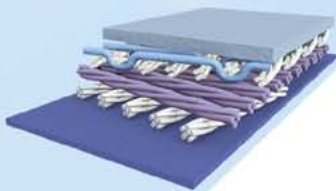
Advantage: the exchanging time of one piece felt can be controlled within 2 hours, which is much less than 4-6 hours of usual.

◆ Non-woven Felt

Application to all kinds of paper

Features: high elasticity, high smooth surface, high density, high ability to maintain caliper

Advantage: better initial adaptability, lower consumption of vacuum system, higher dryness of sheet, more stable property of PM running



We sincerely invite All Paper Mills and Agency to join us and accomplish win-win

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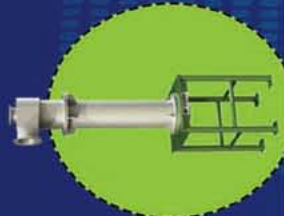
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HD Cleaner
 Used to remove the heavy reject, like the iron nails, sands, glass and so on



Drum Screen
 Used in the last stage of pulping system, to remove large piece light reject and recycle the fiber



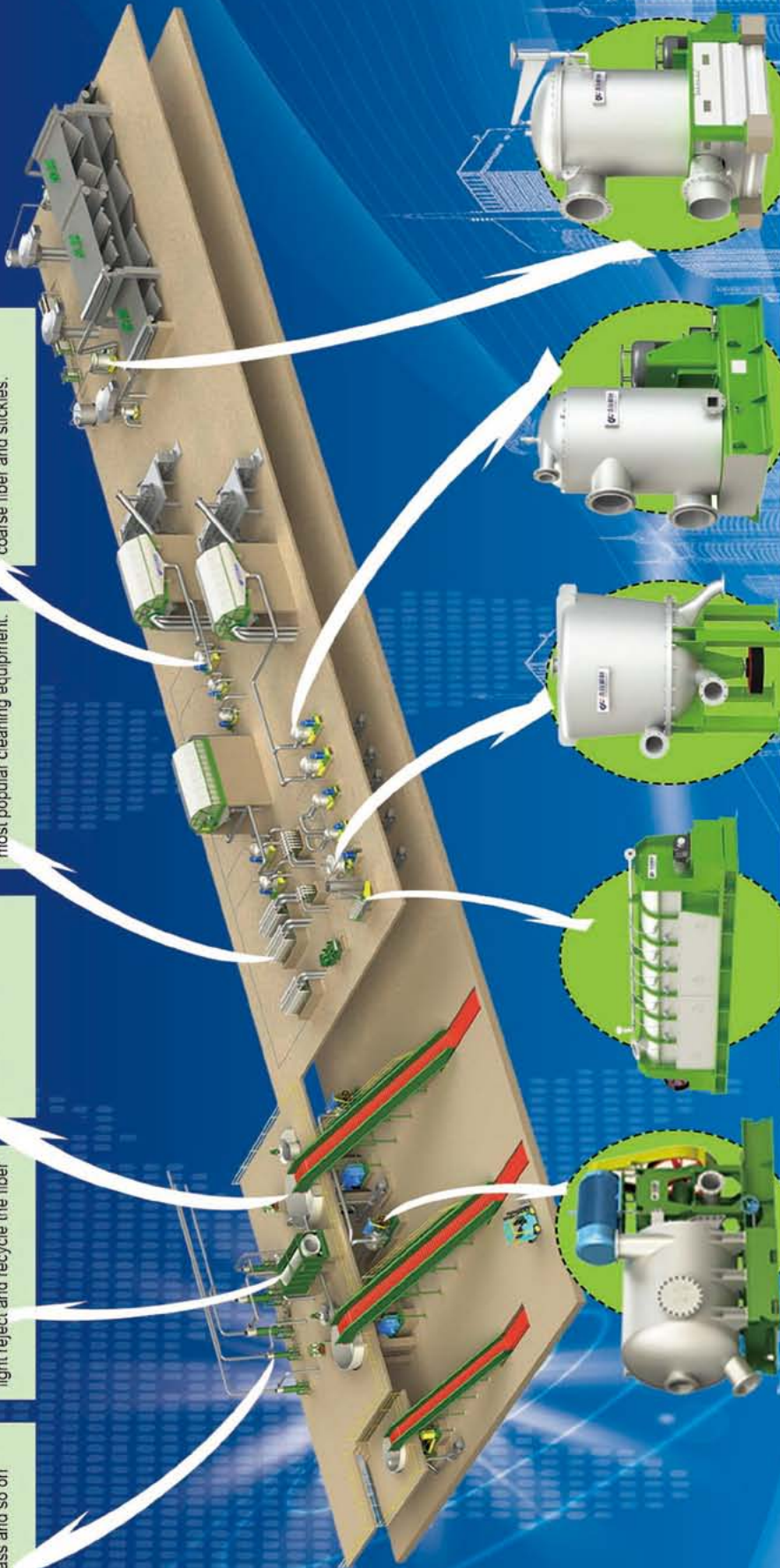
D Pulper
 Used for continuous waste paper pulping.



LD Cleaner
 Used to remove the heavy rejects that density is higher than 1 g/cm³, most popular cleaning equipment.



Fine Screen
 Used to screen the pulp further, to remove the small reject, coarse fiber and stickies.



Hydropurger
 Used to remove the light reject from the pulping system, match with trash well



Reject Sorter
 Used in the last stage of coarse screening system, to recycle the fiber from the tailing reject.



Light Reject Separator
 Used to process the tailing rejects of 1st stage coarse screen, to remove the light and heavy reject.



Upflow Coarse Pressure Screen
 Used in the coarse screening system to remove the large rejects.



Headbox Screen
 Used for screening before paper machine, to remove the fiber agglomerates.

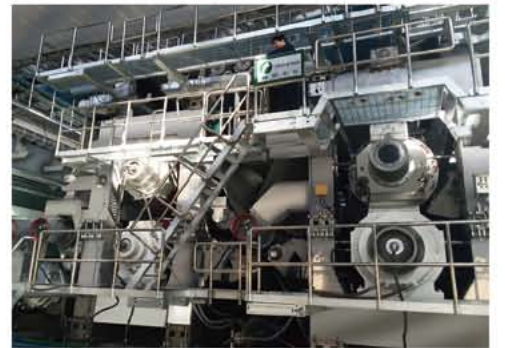
Your Reliable Parter & Supplier for whole line of stock preparing and approach system



Shandong Changhua Machinery Technology Co.,Ltd.

Shandong Changhua Machinery Technology Co.,Ltd.holds more than 400 employees, including 180 technical personnel. It covers the land of 200000m², building area 80000 m², fixed-assets 300 million RMB. Now the manufacturing capacity is 50000t/a. Our plant was set up in 1967 as the 2nd Light Industry Mechanical Factory and in 2001 it was reformed from state-owned to the joint-stock enterprise. By more than 50 year's development, facing the new market condition and competition, we will perfect and strengthen our brand strategy continuously, regard quality and service as the foundation of long-run development, by implementing the innovation of technology and management, based on the large paper machines, we strive to develop into the most advanced paper-making machinery plant in China and stride forward to the international stage actively.

We have only one goal-provide quality paper machines for our customers.



Shandong Changhua Machinery Technology Co.,Ltd.

Tel:+86-635-2128866 2126218

Mb:+86-13806351172 13969559962

Fax:+86-635-2128877



Crescent Former Tissue Machine



Suction Cylinder Tissue Machine



Trimmed width:2660~5600mm

Machine speed:600~1000m/min

Basis weight:13~42g/m²



Double Wire Air Borne Drying Pulp Machine

Trimmed width:2400~6600 mm

Machine speed:50~250 m/min

Basis weight:600~1200 g/m²



High-speed Rewinder

Trimmed width:2640~7800 mm

Machine speed:1500~2500m/min

Excellent equipment supplier perfect stock preparation line solution

Information

As the excellent equipment supplier in China, Shandong Chenzhong Machinery Co.,Ltd.It was founded in 1954,with a long history of 63years until now. At present, we can provide 1000TPD of OCC pulp line,300TPD of DIP deinking pulp line,200 TPD of rice and wheat straw, bagasse pulp line and 70TPD bone dry sludge dewatering equipment project etc.We can provide technology consulting, complete line technology and equipment, pulp line modification and also can guide the equipment installation, commissioning, training, etc. We reach to provide perfect service for our customers.

Welcome to "PAPEREX" 13th International Exhibition and Conference on Pulp and Paper Industries in 2017,Chenzhong Machinery booth No.: 1051(at the front gate of 10 Hall),Welcomes friends from all walks of life to come.



SHANDONG CHENZHONG MACHINERY CO.,LTD

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Huazhang Technology Holding Limited (hereinafter referred to as "Huazhang Technology") (Stock code:01673.HK) is a research and development, design, manufacturing, sales and provision for value-added service of automation system and solid-liquid separation processing products with a high-quality one-stop integrated service providers. The company has over 20 years experience in the automation systems industry, mainly serving the paper industry and gradually expands to the metallurgical, power, municipal and other industries. According to Euromonitor, a reputable market research firm, Huazhang technology have a leading market share in automation system in the paper industry in China and is competitive with other well-known multi-international enterprises. Huazhang have become one of the leading suppliers in automation system in the paper industry in China. The advantages of Huazhang Technology are strong in research and development and engineering teams with professional knowledge. Using our branding and unique patents and technologies, our strength is enhanced accordingly.



Business Scope:

Drive control system, MCS, MCC, DCS, Headbox, Wast water treatment system, Sludge dewatering machine, EPC project and Reject RDF.



Huazhang Technology Holding Limited

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E-mail: hzt@hzeg.com tony@hzeg.com Web: www.hzeg.com



Shandong Renfeng Special Materials Co. Ltd.



Shandong Renfeng Special Materials Co. Ltd., established in 2006, is located in Qifeng industry concentrated area which is adjacent to Mata lake, Huantai county, Shandong Province. The company covers an area of 370,000 m². The company engages in developing, producing and supplying to both domestic market and international market filter materials (Automobile cured filter paper, non-cured filter paper, electrostatic spinning, industrial composite and oil-water separation filter materials), non-woven materials, digital transfer printing materials and packaging materials etc. The company is certified by quality and environment management systems including ISO9001, ISO14001. In addition, the company is IATF 16949 (International Automotive Task Force) certified as well.





LIHUA

力华—胶辊专业制造商



Tengzhou Lihua Mitex Elastomer Roller Co., Ltd. has more than 30 years' experience in roller manufacture. Production base is located in Tengzhou city Shandong province and Huaqiao town in Kunshan city. Our rollers are used in the field of paper making, iron and steel and in some other industries. Our company can provide series services of R&D of new rollers, new roll bodies' manufacturing and repairing, covering, onsite service etc. Annual processing capacities of rollers reach to more than 10 thousand. On the new roll bodies' manufacturing, we chose cast iron, cast steel, steel profiles, stainless steel and other high quality materials. The manufacture process including processing, hot and cold assembly, heat treatment, crack detection, dynamic balance, inspection and so on. The max diameter can reach to 2m and the max length can reach to 12m. The covering materials including rubber, polyurethane, composite material and spraying. Our products are used in wire section, press section, applicator and coating section, soft calendar section and rewinding section of papermaking. Also used in cold rolled stainless steel annealing and pickling line, cold rolled carbon steel pickling line and color coated galvanized line of iron and steel industry and rolling, pickling, coating, straightening, cutting edge and other parts of nonferrous metal production line. Apply to the line pressure equal to or lower than 400KN/m; temperature of 300°C; wear resistant, acid and alkali; wide hardness range, good elasticity (ShA20~100°, ShD92°, P&J350~0°), using in high speed and harsh operating conditions of site. The company focuses on the customer's demand. With integrity, innovation of enterprise culture, exquisite processing technology, advanced equipment, efficient service team to meet domestic and foreign customer's demand; to create the most influential professional roller manufacturer.



Tengzhou Lihua Mitex Elastomer Roller Co., Ltd.

Address: Shandong province Su turbine north road no. 366

Fax: +86 632-5699275 E-mail: sdlihua@vip.163.com lihua@sdlh.com

Tel: +86 632-5699450 5699298

Web: www.sdlihua.com



household paper



ulvic fertilizer



offset paper



food packaging



Shandong Tranlin Paper Co.,Ltd
 15 Guangming East Rd, Gaotang Town, Shandong
 Province, China
 Tel: 0086-635-3961329
 Fax:0086-635-3961597
 Email: malucy.2000@163.com
 Web: www.tranlin.cn

Shandong Tranlin group is the large group of companies who uses straw as raw material to make unbleached straw pulp products and fulvic acid as the core products.

Relying on innovative technologies, she uses wheat, corn, rice and other crop stalks as raw materials and built the world's advanced and innovative straw utilization mode, provides a whole industry chain solution to solve straw burning, carbon reduction, and mention quality, increase yield, reduce fertilizer, pesticide reduction, soil degradation and pollution and other pressing issues of agriculture.

Now leadership products are fulvic acid fertilizer and unbleached pulp products including unbleached straw pulp, unbleached household paper, unbleached food wrappers, unbleached food package case, etc. They are all competitive high value-added products.

包装纸机 Packaging Paper Machine

纸种 Paper Grade	瓦楞纸、箱板纸、挂面纸 Currgated paper, borad paper, Liner
幅宽 Paper Width	3200mm~5600mm
车速 Machine Speed	300m/min~1000m/min
最大产能 Maximum Machine Production	100t/d~950t/d

生活纸机 Tissue Machine

纸种 Paper Grade	卫生纸, 面巾纸, 厨房用纸 Tissue, Napkin, Kitchen tower
幅宽 Paper Width	2850mm ~ 4100mm
车速 Machine Speed	400m/min~1600m/min
最大产能 Maximum Machine Production	40t/d~75t/d

SHQL




PAPER MACHINE | SERVICE | UPGRADE & REBUILD

For more information please visit: www.shqlsy.com

PAPER CHINA 43



中国制浆造纸 China Pulp & Paper

 Anhui Taipingyang Special Fabrics Co., Ltd


 Huazhang Technology Holding Co., Ltd.

 Qifeng New Material Co., Ltd.

 Shandong Century SunShine Paper Group Co., Ltd.

 Shandong Changhua Technology Co.,Ltd.

 Shandong Chenzhong Machinery Co., Ltd


 Shandong Jiefeng Machinery Manufacturing Co., Ltd

 Shandong Renfeng Special Materials Co., Ltd.

 Shandong Sun Paper Industry Co., Ltd.

 Shandong Tranlin Paper Co., Ltd.

 Shandong Xinhe Paper-making Engineering Co., Ltd.

 Shanghai Qingliang Industry Co., Ltd.

 Shashi Light Ind. Machinery Co., LTD.


 Sichuan VANOV Technical Fabrics Co., Ltd

 Tengzhou Lihua Mitex Rubber Roller Co., Ltd.

 Tianli Machine Building Co., Ltd

 Weifang Hicredit Machinery Co., Ltd

 Wenrui Machinery (Shandong) Co., Ltd.

 Shandong Sinolion Machinery Co., Ltd.

Printing and Writing paper

unbleached printing and writing paper
(Shandong Tranlin Group)
coated woodfree paper, light-weight paper
(Sun Paper)
xerographic paper
(Sun Paper, Shandong Tranlin Group)

Tissue

unbleached tissue paper
(Tranlin Group)
white tissue paper
(Sun Paper)

Papermaking equipment

multi wire packaging paper machines
(Shanghai Qingliang, Changhua Technology)
Printing and Writing paper machines
(Changhua Technology, Shanghai Qingliang)
specialty paper machines
(Shanghai Qingliang, Changhua Technology)
crescent former tissue machines
(Shanghai Qingliang, Hicredit Machinery, Shandong Xinhe)
shoe press (Changhua Technology)
steel Yankee dryers (Shandong Xinhe)
headboxes (Huazhang Technology, MCN)

Pulping equipment

pressure screens
(Jiefeng Machinery, Chenzhong Machinery)
pulpers
(Chenzhong Machinery, Jiefeng Machinery)
twin roll press
(Wenrui Machinery)
disc filters
(Wenrui Machinery)
disc refiners
(Chenzhong Machinery)
cleaners
(Anqiu Tianli)

Paper converting equipment

coating machines
(Shashi Light Ind. Machinery)
film transfer sizers
(Shashi Light Ind. Machinery)
calenders
(Shashi Light Ind. Machinery)
rewinders
(Hicredit Machinery)

roll covering

rubber, polyurethane and EPMC coating
coated roll series
(Tengzhou Lihua)
thermal spraying roll series
(Tengzhou Lihua)

Contact: Wenrui Machinery +86-536-4372632 Century Sunshine Paper Group, Sunshine Oji +86-18354263562
Huazhang Technology +86-571-88994499 MCN +86-571-85096526 Qifeng New Material +86-533-7783787
VANOV Technical Fabrics +86-13438494475 Lihua Mitex Rubber Roller +86-632-5699450 Shanghai Qingliang +86-21-59741536
Shandong Tranlin Group +86-0635-3961838 Taipingyang Special Fabrics +86-18955867218 Anqiu Tianli +86-536-4252808

及装备国际联盟 优势产品 International Alliance Products Display

Packaging paper

folding boxboard
(Sun Paper)
coated/uncoated white top testliner
(Century Sunshine Paper Group)
high strength corrugating medium
(Renfeng Special Materials)
coreboard
(Century Sunshine Paper Group)

Specialty paper

food wrapping paper (Renfeng Special Materials)
décor Paper (Sunshine Oji, Qifeng New Material,)
filter paper (Renfeng Special Materials)
overlay wear-resistant paper (Qifeng New Material)
base wall paper (Renfeng Special Materials, Qifeng New Material)

Dewatering devices

twill weaving/multi-axis felts
(VANOVA Technical Fabrics)
seamed felts
(VANOVA Technical Fabrics)
drying fabrics
(Taipingyang Special Fabrics)
forming fabrics
(Taipingyang Special Fabrics)

clean production

Clean production (Chenzhong Machinery)
press dehydrators
one-stop waste disposal solution, including treatment
of both liquid and solid waste (Huazhang Technology)

Automation

automatic technology
(Huazhang Technology)
Paper Roll Conveyors & Wrapping Machine
(Sinolion Machinery)

Pulp

dissolving wood pulp (Sun Paper)
unbleached straw pulp (ShandongTranlin Group)

Exporting countries and area

America, Britain, France, Japan, South Korea,
India, Vietnam, Iran, Pakistan, Brazil, Russia,
Southeast Asia, Oceania, Middle East, Turkey,
Czechia, Uzbekistan, Algeria, Peru, Malaysia,
Indonesia, Myanmar, China Taiwan



Tianli Machinery:

Integrity · Professional · Innovation



TGC DOUBLE CONE HIGH-CONCENTRATION SEPARATOR

TGC Double Cone High-concentration Separator is an advanced paper pulp purification equipment, especially for wastepaper pulp, as key equipment in wastepaper recovery. Centrifugal forces used to separate impurities from pulp according to their specific gravity difference.

This product has advantages of straightforward structure, high production capacity, easy operation, high purification efficiency, and the de-slugging mouth is free from blockage. The pulp needs only one-time separating and the additional reject treatment equipment is unnecessary. Therefore, the fiber loss is minimal. The cone is highly durable and lasting the usage lifespan. No transmission parts are involved and the maintenance is minimal. It contains auto and manual modes.



TFY-450 HIGH-WEIGHT SEPARATOR

TFY-450 separately controls the concentration of the coarse slag through axial flushing water in order to effectively control the fiber loss effectively, which could reduce the sections and number of separators. This type of separator has the advantages of high separation efficiency, running concentrations up to 2%, isotatic press forming ceramic cone, outer wall by the CNC lathe processing, high dimensional accuracy, smooth inner surface, high impurity content in the coarse slag is high, less fiber loss. Block could be avoided in the running process through the dilution of the coarse slag and continuous discharge in every section. Key feature is to reduce the fiber loss, improve the separation ability, reduce the quantity of separators and the sections of one separator. Customers also can use the original separators. If you select to install new axial rinse water device, we will check and optimize your separator, and only process the necessary pipeline renovation for the system. The optimization of axial rinse water device near the bottom could reduce the impact to separator from material composition change.



TSC-600 EFFICIENT HEAVY-WEIGHT SEPARATOR

TSC Efficient Heavy-weight separator is a type of positive going separator based on principle of centrifugal force to remove impurities from pulp. It can be used in all kinds of paper purification system to remove sand, small iron, dust, larger ink, and other heavy impurities.

Key Feature

- A. Parted frame: The whole separator can be parted to 3~4 sections, reaching convenient for parting and changing.
- B. Different Discharge Way This separator can be chosen different residue discharge ways, pressure residue discharge and open residue discharge, to satisfy their working environment according to different needs of users.



TWLC-700 BIDIRECTIONAL SEPARATOR

TWLC-700 multifunction separator is a modern type of multifunction paper purification equipment designed by TIANLI company on basis of domestic and foreign advanced technology, which can remove light and heavy impurity through centrifugal effect. This product has new designed pulp inlet, union through the accelerated flow and long stick time. This designed characteristic make separator has higher separation effect. It can be applied in paper pulp purification system to remove both light and heavy impurities such as mixed refuse, olefin, adhesive substance, plastic piece, bubble, gas, sand stone, scrap iron and etc.



TWZC-1000 HELIX HIGH-WEIGHT SEPARATOR

TWZC separator is a patented product specially designed by Tianli Company to solve impurity removal difficulties for paper mills based on the first generation product and the feedbacks from foreign and domestic customers. The configuration of this product is adjustable, according to user requirement, to solely separate heavy impurity or jointly separate light and heavy impurity, consequently reducing user resources investment. This separator is capable for separating heavy impurity such as gravel, scrap iron, dope and other heavy mixtures, and light impurity such as plastic piece, bubble, air, printing ink, powder and etc. The flush water device is installed at the bottom could make the separator run on the higher concentration pulp, thus reducing the investment.



TXC-150 THIRD GENERATION LIGHT-WEIGHT SEPARATOR

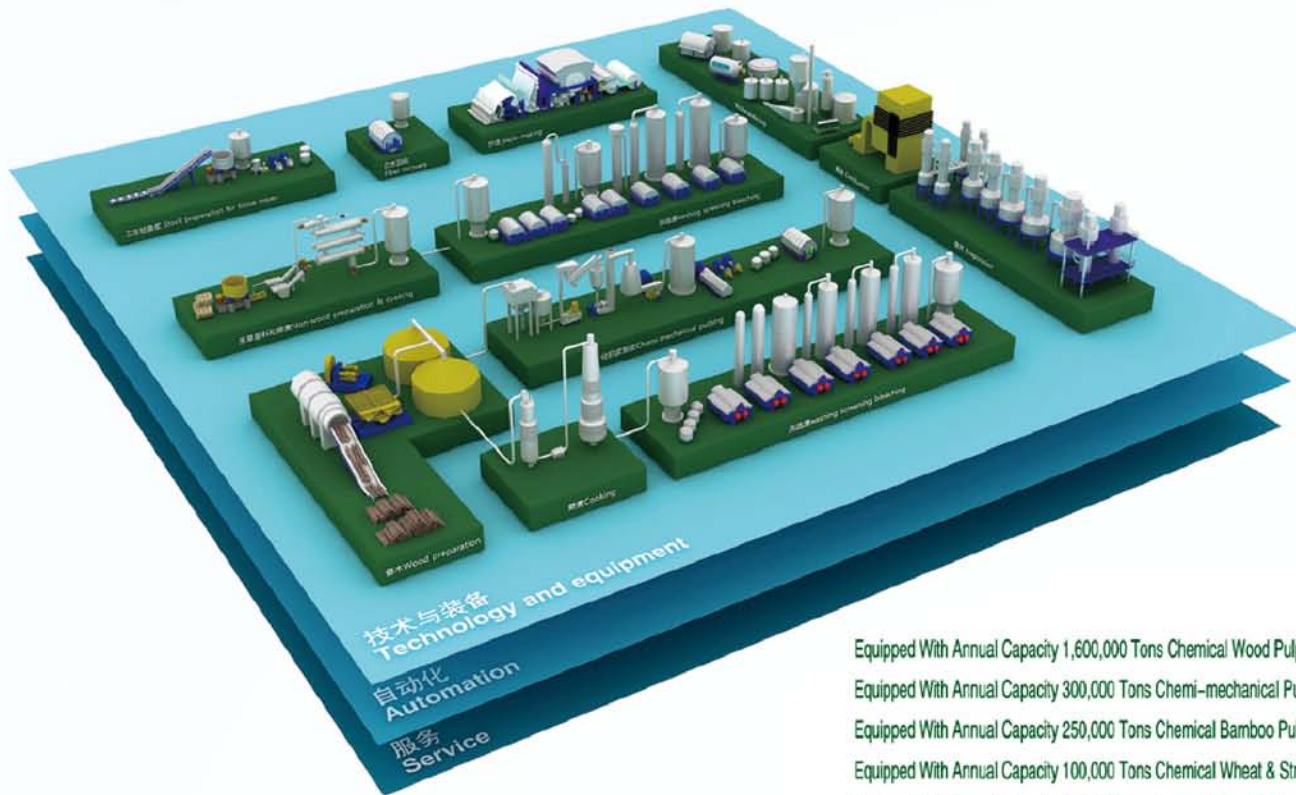
This product mainly removes light impurity such as wax, polystyrene bubble, printing ink mark, heat dissolved conglutinate substance and etc by vortex centrifugal theory. TXC light weight separator is a new type of cost-effective equipment that resolves light impurity interference in OCC.



Service Provider For Pulp-paper Integration Solutions

Presently, Wenrui has serviced for more than 1000 pulp & paper mills all over the world, pulp washing equipment has a share of more than 85% in the domestic market. Our equipment was export to Canada, Brazil, India, Indonesia, Russia, Thailand, Myanmar, Vietnam, Bangladesh and Pakistan etc.

Wenrui was certified with ISO9001 quality system authentication in 1999, and was also certified with American ASME "U" stamp authentication for pressure vessel in 2012.



- Equipped With Annual Capacity 1,600,000 Tons Chemical Wood Pulping Lines
- Equipped With Annual Capacity 300,000 Tons Chemi-mechanical Pulping Lines
- Equipped With Annual Capacity 250,000 Tons Chemical Bamboo Pulping Lines
- Equipped With Annual Capacity 100,000 Tons Chemical Wheat & Straw Pulping Lines
- Equipped With Annual Capacity 300,000 Tons Recycle Paper Pulping Lines
- Equipped With Annual Capacity 60,000 Tons Tissue Paper Lines



Twin Roll Wash Press
IKPP Perawang Mill, Indonesia



Pressure Disc Filter
Brazilian JARAGUA Company



Vacuum Drum Washer
Sichuan Yibin Paper



Plate Falling Film Evaporator
Canada HSPP Pulp Mill

WENRUI MACHINERY (SHANDONG) CO., LTD.



ANHUI TAIPINGYANG SPECAIL FABRIC CO.,LTD

Our high strength flat yarn dryer fabric have super smooth surface and high drying efficiency, great anti-hydrolysis and top stability features, suitable for the dryer part of paper machine within 2000m/min speed for special paper and culture paper and packing paper and etc.

Using high strength, high anti-pollution, high anti-hydrolysis monofilament that 100% imported from Germany,

Weaved by imported heavy width Rapier loom machine, and hot air treatment in heating process

The structure is stable, running well with anti-friction, long-life performance.

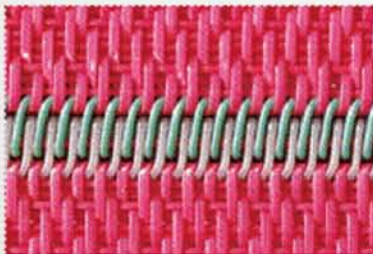
66% PPS filaments in the edges of fabric with 18-25cm

Imported PEEK spiral loop equipped with imported threading filament, imported glue for edge sealing.

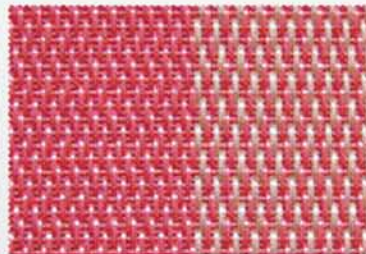
Professional press machine for wire interface to handle wire interface more fine and smooth.

Handmade zipper that greatly increase the aesthetics, practicability and efficiency of fabrics.

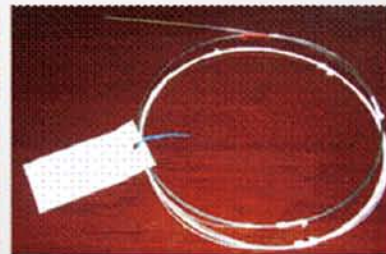
Many types for easy selection with air permeability in the range 75 to 495 CFM.



PEEK spiral loop



PPS dryer fabric edge



Imported steel wire for connection

Add:Industrial Zone, Taihe County, Anhui Province,China Tel:+86 0558 8639313
Fax: + 86 0558 8655653 Email: tpy0558@163.com Web:Http://www.0558tpy.com

《Paper China》读者意见调查

致读者——

首先，衷心感谢您对于《Paper China》的关注和支持。《Paper China》是由中国造纸协会会刊《中华纸业》的出版方中华纸业杂志社、“中国制浆造纸及装备国际联盟”共同编辑出版。旨在集合中国优势资源服务全球造纸行业，第一期已于2017年8月出版，为办好《Paper China》我们恳请您能抽出一点宝贵的时间参与“《Paper China》读者意见调查”活动。您的意见和建议，对于我们提高办刊质量、更好地服务读者非常重要。

◆对栏目设置、内容的评价，好 一般 差；
还希望看到哪些内容？

◆对翻译的评价，可以 有的地方难看懂 差；
主要问题是（可否指出几处需改进的地方？）

◆编排设计好 一般；
及广告的评价，可否举例说明？

◆扩大发行范围、提高发行准确度，有何好的建议？

◆可否推荐几个朋友（姓名、单位、地址、邮箱）？我们赠阅。

若希望今后继续得到赠阅，请留下您的联系方式：

姓名、职务、单位 _____ 地址 _____

电话 _____ 邮箱 _____ QQ（微信号） _____