

SUCCESS STORY

The world's largest chip
washing and pressurized
refining system at
Guangxi Lelin Group, China



PANELBOARD

GOING LARGE

A GIANT IN MDF PRODUCTION

ANDRITZ

ENGINEERED SUCCESS



Gathering impressions – Chongzuo region

Located in south China's autonomous Guangxi Zhuang region, the Chongzuo region is known for its mountainous and hilly areas with many karst formations.



The Chongzuo region is very rich in biodiversity

Located close to the Vietnamese border, Chongzuo is known for the beauty of its stunning mountain ranges, rivers, and waterfalls. The most famous visitor attraction in the area is the Detian Waterfall, which is the world's second largest waterfall (Niagra Falls being the largest) and is situated on a national border. .

The area is rich in biodiversity with thousands of species of plants and many kinds of animals, including some 30 rare and protected species such as crested striped hornbills, pangolins, and clouded leopards.

The economy in the region is mainly based on forestry and agriculture, with the forest products industry playing a major role. Forest products produced in the Chongzuo area range from timber for construction and building materials to turpentine and paper.

CHONGZUO – KEY FACTS:

- Inhabitants: approx. 2,510,000
- Size: 17,345 km²
- Main industries:
Forestry, agriculture, and mining. Sugarcane is the mainstay of the economy in the region.



Karst formations in Chongzuo region

ON SITE AT
LELIN

Wei Kang (left), Vice Chief Engineer, Guangxi Chongzuo Lelin Forestry Development Co. Ltd. and Chen Zhuo, Sales Manager, Paper, Fiber and Recycling, ANDRITZ (China) Ltd.



Lelin Group – a model of the circular economy in forestry

Guangxi Chongzuo Lelin Forestry Development Company is part of the Lelin Group, which is headquartered in Nanning, Guangxi, China.



The Guangxi Lelin Forestry Group, headquartered in Guangxi, has been engaged in the production of wood-based panels for 22 years

The Lelin Group has been operating in the wood panel manufacturing market for more than 22 years and has four wood-based panel manufacturing sites with a total fiberboard output of 1,300,000 m³ a year.

The company focusses on producing top-quality fiberboards as well as formaldehyde-free board and furniture board.

The company also owns and operates three biomass power plants. The group is seen as a model for the circular economy in forestry covering two major renewable business sectors, Lelin Plate (wood-based panels) and Deli Energy (biomass power plants). The output and production processes of the two businesses are interlinked and recycled, ensuring a circular approach to both industries.

LELIN GROUP IN BRIEF

Organization	Wood panel manufacturing sites: Guangxi Chongzuo Lelin Forestry Development Co., Ltd., Guangxi Lelin Forestry Group Co., Ltd., Guangxi Deli Wood Development Co., Ltd., Guangxi Guiping Lelin Forestry Development Co., Ltd
Products	Medium and high-density fiberboards for doors, floors, furniture, fan leaves, electronic circuit boards, and special functional materials such as moisture-proof materials, fireproof materials, and materials for carbon crystal absorption.
Brands	Lelin
Key markets	Lelin products are sold to more than 30 provinces and autonomous regions in China and are exported to various European countries and regions.
Total capacity	1,300,000 m ³ per year



The world's largest chip washing and pressurized refining system

Guangxi Chongzuo Lelin Forestry Development Company has started up the world's largest chip washing and pressurized refining system, supplied by ANDRITZ. The system which was installed as a key part of its greenfield MDF line in the city of Chongzuo in southern China.

THE PERFECT LOCATION

The new MDF line was built by Guangxi Chongzuo Lelin Forestry Development Company on a new industrial site in Chongzuo City in a mountainous region of southern China's autonomous Guangxi Zhuang region. The company is part of the Lelin Group which has its headquarters Nanning, also in Guangxi.

Chen Zhuo, ANDRITZ's Sales Manager, Panelboard, based in Beijing, China says: "The Lelin Group, has developed a reputation for producing high-quality wood products used for the production of furniture for the booming domestic market in southern China, as well as for export."

QUALITY IS THE KEY

The company focusses on producing top-quality fiberboards as well as formaldehyde-free board and furniture board as environmental and health aspects become more of an issue among consumers.

The company has really set itself apart from the hundreds of other MDF producers in the region. The location of the new line has been carefully planned bearing in mind both the availability of raw materials and the location of furniture producers, which are mainly situated in the neighboring Guangdong Province."

GOING LARGE

Back in 2020, in view of the booming market, the Lelin Group decided to enhance its growing reputation in the production of quality fiberboard by building a high-capacity, energy-efficient MDF line to meet the demand for its products.

"MDF is a cost-driven commodities industry" says Michael Rupp, Vice President Panelboard at ANDRITZ. "And it is essential that the fiberboards are of a high quality. To be successful and profitable, an MDF plant has to meet a number of prerequisites; enough raw material nearby, a well-organized and energy-efficient production line, and a good logistics infrastructure for delivery to customers. The same number of people are needed to run an MDF plant whatever its size. So after some consultation, the company made the decision to go large."

ONLY THE VERY BEST

"The Lelin Group wanted only the very best in energy-efficient equipment for its new MDF line, so that it could not only produce more high-quality fiberboards, but also operate with minimum energy consumption. ANDRITZ was chosen to supply chip washing and pressurized refining equipment for a number of reasons, says Rupp: "We already have some of the world's largest and most energy-efficient references in the MDF industry, including what was the largest line located in South America. But its not just about size. We are the market leader in this area across the board, with a share of more than 70% of the global market."

Zhuo adds: "In the case of the Lelin Group's new line, we have supplied over 180 MDF lines to Chinese producers, so we are already well known in the country. In addition to this, we have a full team of ANDRITZ technology experts based at our service center not far from Chongzuo City in Foshan, Guangdong Province."



"With our reputation, experience, and service teams, we could assure the company that we could confidently take on a project of this size and scope."

CHEN ZHUO

Sales Manager Panelboard at ANDRITZ

ANDRITZ is an expert for complete front-end systems and key components for innovative MDF production



Getting technical: The ANDRITZ product range and technological highlights



THE ANDRITZ PRODUCT RANGE

- Chip washing system
- Chip bin discharger for high capacities
- 28" plug screw feeder; 2,2 MW power
- 84" vertical digester and discharger
- Constant feeder (C-feeder) concept
- World-record S2074M refiner

Capacity: 1,920 t/d
Raw material: Hardwood
Final product: MDF



AUTOMATION AND DIGITALIZATION

With the addition of the latest process control and plant instrumentation, customers receive a complete, highly sophisticated front-end system, all from a single source.



S2074M REFINER

The heart of the fiber preparation process is the pressurized refiner. It is sized to meet specific requirements and produce high-quality fiber with a low energy consumption. The pressurized refining system is designed to last: top performance, high reliability, and excellent availability are the hallmarks of this high-consistency refiner, which ensures trouble-free operation and ease of maintenance. The innovative "swing-door" design allows refiner plates to be changed quickly and easily.

VERTICAL DIGESTER AND CONSTANT FEEDER

Prior to high-consistency refining, wood chips or annual plants are further processed in the 84" vertical digester. Depending on the raw material properties, the retention time is up to four minutes. An emphasis is placed on continuous discharge over the complete production range to ensure maximum fiber quality with a minimum specific energy consumption by the refiner.



THE ENTIRE PACKAGE AND BEYOND

ANDRITZ capabilities for the MDF industry include project planning, engineering, design, installation, start-up, and after-sales services to ensure that each customer's vision becomes a reality.

WORLD RECORD

LARGEST SINGLE STAGE CHIP WASHING AND REFINING SYSTEM IN THE WORLD



GOOD TO KNOW

ANDRITZ' MDF machines process any species of wood (in the form of wood chips, sawdust, shavings,...) or annual plants, such as bagasse and bamboo.

CHIP STORAGE AND CHIP WASHING

The highly efficient raw material storage ensures a continuous supply to the production line. The chip washing system enables uniformly clean chips and consistent quality in the end product. It not only removes foreign objects from the process (preventing damage to downstream production equipment), but also substantially reduces the silicate content in the raw material. This prolongs the life of the production equipment and enhances the cost efficiency of Lelin's fiber preparation.



PRESSURIZED REFINING SYSTEM AND PLUG SCREW FEEDER

The pressurized refining system is the centerpiece of the line at Lelin. Wood chips are pre-treated in an atmospheric pre-steaming bin to generate the best possible conditions in terms of temperature (up to 95°C) and moisture by keeping them in the pre-steaming bin as long as necessary. The 28" plug screw feeder transports and dewateres wood chips even at high inlet moisture as well as building up a pressure seal to allow proper further processing in the pressurized digester.





ANDRITZ

ANDRITZ
Andritz AG / Graz
SWIRL DISC PRESSURED REFINER
S2074 M. TANGENTIAL OUTLET
133377621
2021
C-01-8-0264-926

压力容器产品铭牌
PRODUCT NAMEPLATE OF PRESSURE VESSELS

产品名称: REFINER S2074	压力容器类别:	设计日期:
Product Name: REFINER S2074	Pressure Vessel Category:	Design Date: 2020/10/11 13:00
产品编号: 16093	测试类别:	制造日期:
Product Serial No.: 16093	Test Category:	Manufacture Date:
设计压力: 1 MPa	测试压力: 1.1 MPa	最高允许工作压力:
Design Pressure: 1 MPa	Test Pressure: 1.1 MPa	Maximum Allowable Working Pressure:
设计温度: 168 °C	工作压力: 1.1 MPa	主要材料: 1.4571
Design Temperature: 168 °C	Working Pressure: 1.1 MPa	Main Body Materials: 1.4571
材料: S304	工作压力: 1.1 MPa	产品标准: AD20001
Material: S304	Working Pressure: 1.1 MPa	Product Standard: AD20001
制造许可证号: D1	工作压力: 1.1 MPa	制造许可证号: TB 220063-2021
Manufacture License No.: D1	Working Pressure: 1.1 MPa	Manufacture License No.: TB 220063-2021
制造单位: Andritz AG		
Manufacturer: Andritz AG		
设备编号: 170 03463 2021 1693		
Equipment No.: 170 03463 2021 1693		

**HIGH-PRECISION
MANUFACTURING**

The world-record S-Refiner for Lelin at the ANDRITZ workshop in Graz, Austria

Challenges and opportunities

This was a mammoth project, presenting a real challenge in terms of not only the size and weight of the equipment, but also the enormous hurdles that came with Covid-19 during the entire project phase from sales to start-up.

ONE MACHINE INSTEAD OF TWO

Delivery and installation took place over the space of 13 months, with equipment coming in from both Vienna in Austria and China. "This was a big project, and unique in its design and size," says Rupp. "The main challenge was to supply a pressurized refining system that can handle a high capacity with just one line. Processing 80 tons of fiber per hour is not really an issue with two lines, but to do it with one line requires a major rethink in terms of the technology needed."

THE NEED FOR CREATIVITY

Yang Kun, Project Manager at ANDRITZ in Foshan, commented on the installation of the equipment: "The plug screw feeder was probably the most challenging part of the installation as its weight and dimensions meant that we had to assemble it on the platform itself because we didn't have a large enough crane on site to lift it."

INFLUENCED BY THE PANDEMIC

Another challenge thrown at ANDRITZ and the Lelin Group was the onset of Covid-19, which coincided with the exact time the decision was made to go ahead with the new line. "The onset of the pandemic made it impossible to have face-to-face meetings with the customer, so we became very experienced in online meetings across time zones and countries as the project developed," says Rupp.

"This is where we were really rewarded by having such a good team of people on the ground in China and Austria, and it has to be said that the cooperation across the whole project from customer to supplier was brilliant."

"The real challenge came in the installation phase when we sent two engineers from Austria to manage and supervise things and they had to go into quarantine for weeks before engaging in the project. But again, the team in China was exemplary, and some of the skilled workers stayed with the project for months. The whole new line started up pretty much on time, despite these challenges."



"Despite all challenges the installation of the equipment went very well."

YANG KUN

Project Manager at ANDRITZ

ALL TARGETS MET

The brand new MDF line started up in 2022 and is running well and at full capacity. "We are really pleased with this project," says Rupp. "The goal was to enable the customer to save both thermal and electrical energy and we have achieved what we planned to. The line has excellent cleaning efficiency and stable feeding over the complete production rate with our C Feeder. Moreover, because the line has just one plug feeder and one refiner, only one set of refiner plates needs to be exchanged thus essentially halving ongoing operating costs. With our design, we succeeded in supplying a system that handles 80 tons of fiber per hour, on one line, and which now has huge benefits for the customer when it comes to energy efficiency and operating costs."

"We are really proud of the end result. The S2074M HC refiner, is a real giant at a height of nearly 2.4 meters and with a total weight of 21.7 tons when empty. The complete system has been built for outstanding production rates with the highest energy efficiency on the new MDF line."

MICHAEL RUPP

Vice President Panelboard at ANDRITZ







DISCOVER OUR FULL-RANGE PORTFOLIO FROM FIBER PROCESSING TO PAPERMAKING

An outstanding paper product requires outstanding production – matched with the particular needs of raw material and final product. Discover the full-range portfolio from ANDRITZ: Excellent stock preparation that allows best fiber development according to furnish and with economical use of resources. *PrimeLine* paper machines that are a synonym for producing top-quality tissue, paper, and board grades. Complete lines or single units, upgrades, and modernizations. Contact us and benefit from your individual package in papermaking technology.

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