



CASE STUDY

Prince Paper (Making) Co., Ltd., Nantong, China

ENGINEERING COMPANY

Zhejiang Creation Environment Technology Co., Ltd.

CAPACITY

First Stage 17,500 m³/Day

[Total Capacity 35,000 m³/Day]

INSTALLED UNITS

8 Trains with a Total of 281 pressure vessel units

MODEL

8 inch | 300 psi | 450 psi | 600 psi

6 element multi-port up to 2.5"

START-UP DATE

October 2014



BACKGROUND

The Prince Paper (Making) Co., Ltd. is part of the Oji Group from Japan with a long history in papermaking dating back to 1873 in Oji-mura, Japan. The Oji Group has come full circle, being a country that acquired its traditional techniques from China, a process that resulted in washi, or Japanese paper.

Papermaking involves vast quantities of water – millions of gallons per day. It is as integral to the process as fiber and energy. The paper industry is also the second largest consumer of energy and uses more water to produce a ton of product than any other industry.

The Prince Paper (Making) Co., Ltd. is the first and biggest pulping and papermaking company that employs water reclamation and reuse with zero liquid discharge, and operates inside the Nantong Economic and Technological Development Zone in Nantong, Jiangsu Province, China. Located on the northern bank of the Yangtze River, near the river mouth. Nantong is a vital river port bordering Yancheng to the north, Taizhou to the west, Suzhou and Shanghai to the south across the river, and the East China Sea to the east.

Zhejiang Creation Environment Technology Co., Ltd. (Zhejiang) is a top engineering company engaged in sewage treatment, membrane separation, reclaimed water recycling, water purification, and super purification and seawater desalination. Their clients are from papermaking, printing and dyeing, electric plating, solar energy photovoltaic, and pharmaceutical and electronics industries. They also specialize in membrane material research for various applications including the areas of:

- Environmental Protection
- Liquid Material Separation
- Degassing and Air Entraining
- Seawater Desalination

WATER RECLAMATION AND REUSE PROJECT

In May, 2014, Zhejiang was awarded the contract by the Nantong Economic and Technological Development Zone to build the sewage and water reuse for the Prince Paper (Making) Co., Ltd.



Nantong Economic and Technological Development Zone
Nantong, Jiangsu Province, China.

About First Line

First Line has over 50 years of combined experience in FRP pressure vessel engineering and design specializing in the manufacture of high quality pressure vessels designed to provide long-term, trouble-free operation, with minimal down time and improve running costs.

Our experienced, highly trained engineers worked with the top pressure vessel manufacturers and Universities in China. Our lead engineering team comes from the prestigious Harbin Institute of Technology, with research and development in composite materials applications dedicated to aerospace and military applications. That's why First Line engineers excel in pressure vessel structure and resin system design.

Learn more at firstline.com.cn

This project was designed with a total capacity of 35,000 m³/day with the first stage of the project producing 17,500 m³/day and became operational in October 2014.

The water source originates from the pulp and papermaking discharge and filtered through 281 specialized membranes enclosed within 8" First Line pressure vessels. First Line pressure vessels were selected due to their versatile engineering designs that are capable of withstanding 300-600 PSI. The pure water is used not only by the papermaking plant, but also sustains others companies within the Economic Zone.

Zhejiang employed the following processes to achieve Zero Liquid Discharge:

**Mechanical Stirring Clarification Tank + Rapid Filter +
Ozone Biological Activated Carbon +
Sodium Ion Exchange + UF + RO + ED**

It is important to note that the Prince Paper Company's zero-environmental burden is a key part in the company's strategic environmental management action plan at every operational procedure. The Oji Group has released this statement in their Environment and Community Relations communications; *"We will aim for zero-environmental burden in each and every operational procedure by further promoting environmental awareness-raising and bringing together capabilities of technology, operation and planning."*

"We are proud to be awarded this project by the Zhejiang Creation Environment Technology. This is a testament to the hard work that First Line engineers have devoted to designing and developing performance engineered pressure vessels. We are also honored to make a contribution to this historic, innovative project that is sustainable for the environment."

Said James Huang, First Line's General Manager.

Zhejiang continues to make many critical projects for municipalities and provinces, and whose total management of the water cycle's processes drives innovation and efficiency.

First Line
Engineered Composite Pressure Vessels

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