

## MVR Technology and Its Application in High-salt Industrial Wastewater Treatment

Mechanical Vapor Recompression (MVR) evaporation presents is an efficient energy saving and environmental protection technology that reduces consumption of external energy by recycling and reusing secondary steam energy generated within the evaporator. The principle of MVR technology is that secondary steam is compressed to increase its pressure and temperature and then is used as the heating source of the evaporation system. Material being evaporated absorbs heat and continues to release secondary steam which is again compressed and recycled so that the complete evaporation system requires minimized amount of fresh steam only as starting heat source. This article mainly introduces the advantages of MVR evaporation technology and its application in the field of high-salt industrial wastewater treatment.



### 1. Traditional multi-effect evaporation VS MVR evaporation

For multi-effect evaporation, the more effects there are, the higher its evaporation efficiency. Compared with multi-effect evaporation, MVR evaporation has obvious advantage in terms of energy saving, especially when the capacity per hour is large. Thus, MVR evaporation brings more economic and energy-saving benefits to enterprises and is of great significance to the effective utilization of resources and environmental protection.

Table 1 Comparison of multi-effect evaporation and MVR evaporation

	Energy consumption (steam/ton)	Ton waste water processing price (RMB)
Double Effect	0.57	125.4
Triple Effect	0.4	88
Quadruple Effect	0.3	66
Quintuple Effect	0.27	59.4
MVR	70kw	56

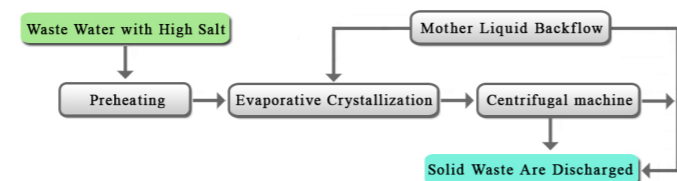
### 2. Application in high-salt industrial wastewater treatment

The MVR evaporators are widely used in various fields and can be used in the zero-discharge solutions of high salt inorganic and organic wastewater.



In recent years, with development of biochemical technology, the successful separation, cultivation and domestication of halotolerant and halophilic bacteria have made it possible to adopt biochemical methods to treat high-salt industrial wastewater. However, since halotolerant and halophilic bacteria can only deal with a limited range of salt content and are costly and difficult to cultivate, large amount of high-salt industrial wastewater remain a tough problem. The ultimate goal of treating high-salt wastewater is to effectively reduce COD value, regain soluble salt substances as bi-products, and recycle wastewater.

MVR evaporation technology can treat all types high-salt industrial wastewater and achieves the goal of separation of soluble salt substances in high-salt industrial wastewater and effectively reducing COD value of condensate water and reuse water resources repeatedly. The main process is as follows:



(Translated by Wu Yunzhu)

激情豪迈 *Enthusiasm*  
 精细为豆 *Precision*  
 诚信是德 *Honesty*

*Quality Creates Future*

www.myandegroup.com  
 E-mail: info@myande.com  
 myande@gmail.com

# Glimpse of Myande

An English Version of  
 迈安德之窗

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 MYANDE GROUP

Oils&Fats Equipment and Technology  
Solid-state Fermentation Equipment and Technology

Starch&Derivatives Equipment and Technology  
Evaporation Crystallization Equipment and Technology

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## Myande Celebrates its 16th Anniversary

July 18, 2019 is the 16th anniversary of the establishment of Myande Group. All staff and management team gathered together to celebrate this event and shared the happy time together. At this exciting moment, Mr.Xu Bin, Chairman of Myande Group, delivered a warm speech. He said that every step of growth and progress of Myande is inseparable from the hard work and selfless dedication of all the team and the trust and caring of its customers.

Taking a group photo every two years is the tradition of Myande, and this year is no exception. Everyone was dressed in neat work clothes to post for a meaningful picture that marks the 16th anniversary.

On this day 16 years ago, founders of Myande released their passion and dreams. Today, after 16 years, they meet again, together with all staff, to rejoice success, and to welcome new responsibilities and new challenges. After 16 years of hard work, our customers have spread all over the world. After 16 years of struggle, we have created the glory of Myande.

The past 16 years represents only one step forward. 100 years' of development is our vision. Today we stand at a higher

starting point, measure our work with international standards, and comprehensively improve the technical level of products, the efficiency and quality of delivery. In the days to come, Myande will continue to be persistent and determined to make progress. We will use our struggle to win market recognition, and use our expertise to win customers trust. With professional spirit, dedicated attitude, full confidence, unity and hard work, Myande will advance towards a higher goal and become a true value-creating enterprise.

(Translated by Lu Le)



## New Technology Assessment: Myande Bulk Material Storage and Reclaim System

On June 5, 2019, Jiangsu Provincial Industry and Information Technology Department organized an evaluation meeting to assess Myande's CCJL26×300 Large-scale General Reclaim System. Prestigious experts and professors from Nanjing University of Science & Technology, Nanjing

University of Aeronautics and Astronautics, Jiangsu Machinery Research Institute, Yangzhou University and Jiangsu University of Science and Technology participated in the evaluation meeting. They evaluated and inquired about key technical issues such as product inspection and innovation of the reclaim system. In addition, experts and professors conducted in-depth discussions with Myande technical director on further research and development of the new product.

After repeated and careful discussion, experts of the evaluation committee unanimously agreed that the "CCJL26×300 Large-scale General Reclaim System" developed by Myande Group has advanced technology and high innovation, breaking the monopoly of foreign brands and filling the gap in the domestic market.

With the increasingly fierce competition in the global



oils & fats market and the increasing scale of edible oil processing projects, Myande CCJL series reclaimers are the core equipment of the efficient and modernized bulk material storage and reclaim system, suitable for storage and discharge of soybean meal, rapeseed meal and other bulk material. With the advantages of safety, stability, intelligence, high efficiency, flexible feeding and discharging, the reclaimers not

only completely solve the problems of storage and discharge of product meal, but also reduce the loss of moisture and ash to create the maximum economic benefit for customers. The all-new intelligent automatic control system ensures stable operation of the reclaim system and has broad application prospects.

(Translated by Lu Le)

### Completion of One 300TPD Peanut Oil Production Line



Neutralizing Section

On May 16, 2019, the 300tpd peanut oil production line of Shandong Jinsheng Group Industrial Park supplied by Myande Group was put into operation on time. The project achieved the goal of construction and production in the same year, which marked Myande's another solid step in peanut oil refining industry.



Winterization Section

Since its establishment 16 years ago, Myande has undertaken more than 200 edible oil processing lines worldwide, including more than 50 oil refining projects, of which 7 have the capacity of more than 1,000tpd. Myande has accumulated rich experience in various oils refining, covering soybean oil, rapeseed oil, corn germ oil, peanut oil, sunflower oil, sesame oil, cottonseed oil, rice bran oil and etc.

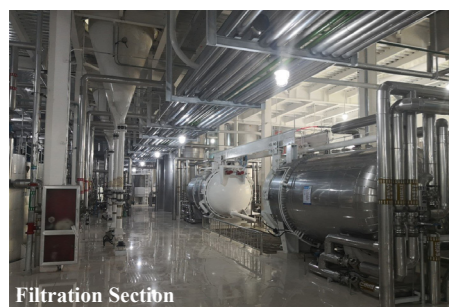
(Translated by Lu Le)



Winterization Section



Bleaching Section



Filtration Section



Degumming Section



Automatic Control Center

### Glimpse of Myande Won Second Prize of "National Corporate Culture & Brand Publicity"

On May 15-17, 2019, the 6th China Corporate Media and Brand Publicity Annual Conference hosted by China Corporate Culture Institute was held in Jinan. Myande Group's "Glimpse of Myande" won the second prize of "China Outstanding Journal of Corporate Culture and Brand Communication in 2018-2019", and "Timeline of Myande" won the second prize of "China Excellent Wechat Public Account of Corporate Culture and Brand Communication in 2018-2019".

propaganda methods and innovate propaganda carriers, and gradually built a more mature "media communication system". Myande has formed a large pattern of corporate media and brand communication, adding vitality into corporate culture construction and brand communication.

(Translated by Lu Le)



In the era of information and big data, Myande Group actively adapts to the changes in the communication pattern brought about by technological development, and has made efforts to change the

Mr. LI Xudong Director of Global Business Dept  
Global Business Development  
Email: myande@gmail.com, LXD@myande.com  
Tel: 0086-514-8784 9111 Mobile: 0086-138 1318 9222

Mr. LI Hujun Global Sales  
Starch Engineering and Equipment  
Email: myandehj@gmail.com, LHJ@myande.com  
Mobile: 0086-187 6230 5339

Mr. LIU Wenwen Global Sales  
Oils & Fats Engineering and Equipment  
Email: myandelw@gmail.com, LWW@myande.com  
Mobile: 0086-187 6230 5251

MYANDE GROUP CO., LTD  
Add: No.199, South Ji'an Road, Yangzhou  
City: 225027, Jiangsu Province, China  
Tel: 0086-514-8784 9111 Fax: 0086-514-8784 8883  
Web: www.myandegroup.com

### Launch of SSMB Chromatograph System Supplied to Anhui Pinqing

On April 1, 2019, the third set of SSMB Chromatograph system provided by Myande for Anhui Pinqing Biotechnology Co., Ltd was successfully commissioned.

Pinqing Biotechnology Co., Ltd is a starch syrup producer specializing in research, development, production and sales of high fructose syrup and is the first enterprise in mainland China to produce syrup with 55% or higher fructose. In recent years, Pinqing has opened 2 new companies: Dongtai Pinqing Biotechnology Co., Ltd and Anhui Pinqing Food Industry Co., Ltd, producing 3000 tons of high fructose syrup in one year.

The 100,000T/D high fructose corn syrup production line was successfully put into production in 2017. The ion exchange system, evaporation concentration system and SSMB chromatograph system,

which are the important sections in the production line, are all designed, manufactured and built by Myande. Myande also designed and constructed the automated control system for the whole production line.

(Translated by Wu Yunzhu)

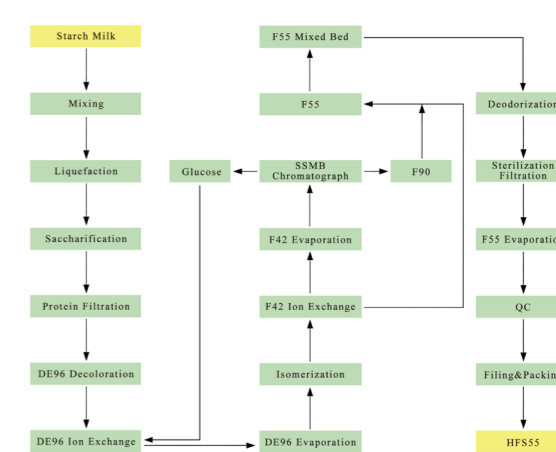


Fig.1 F55 Fructose Process Diagram

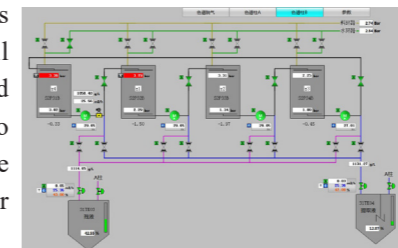


Fig.2 Chromatographic control interface



Fig.3 & 4 Chromatographic system in the workshop

### The 14th Shanghai International Starch Exhibition



The 14th Shanghai International Starch and Starch Derivation Exhibition was held at the Shanghai National Convention Center from June 19th to 21st of 2019. Companies from all over the world participated in the exhibition. As a well-known supplier of starch and starch sugar equipment and turn-key project, Myande Group exhibited its Model 38 Centrifuge Separator, Model 00 Pin Mill and other equipment. These machines have excellent processing capabilities and first class workmanship.

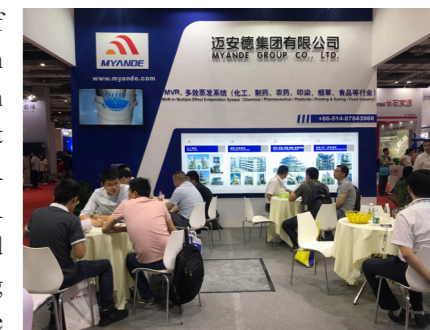
(Translated by Chen Ting)

### Shanghai International Wastewater Treatment Exhibition

The 12th AQUATCH CHINA of Shanghai International Wastewater Treatment Exhibition was held at Shanghai National Convention and Exhibition Center from June 3rd to June 5th, 2019. The exhibition was hosted by RAI International Convention and Exhibition Center from Amsterdam and Shanghai Herui Convention and Exhibition Co., Ltd. This event received high support from the Ministry of Housing and Urban-Rural Development of the People's Republic of China as it provides an effective technology forum. Myande was invited to participate in the exhibition as a leading company in the field of wastewater evaporation and crystallization.

For the treatment of chemical wastewater, Myande

has a variety of mature evaporation processes such as multi-effect evaporation, MVR evaporation, TVR evaporation and rich engineering experience. Myande can make specified solutions according to the details and requirements of different customers. At the same time, Myande has a complete wastewater experimental facility.



(Translated by Chen Ting)