



# Beijing Keyscin Petrochemical Engineering Co., Ltd.



# Contents

**01**

**Company Profile**

**02**

**Proprietary Technology**

**03**

**Reference List**

A red square containing the text 'PART 01' in white. The 'P' is large and bold, with 'ART 01' in a smaller font to its right. The square is positioned in the upper left quadrant of the slide.

# Company Profile

---



# COMPANY PROFILE



**Beijing Keyscin Petrochemical Engineering Co., Ltd. is a technology-driven engineering company specializing in full EPC (Engineering, Procurement, Construction and Management) services. We own independent intellectual property and provide integrated solutions across the following sectors:**

**Polymer Materials**

**Petrochemical**

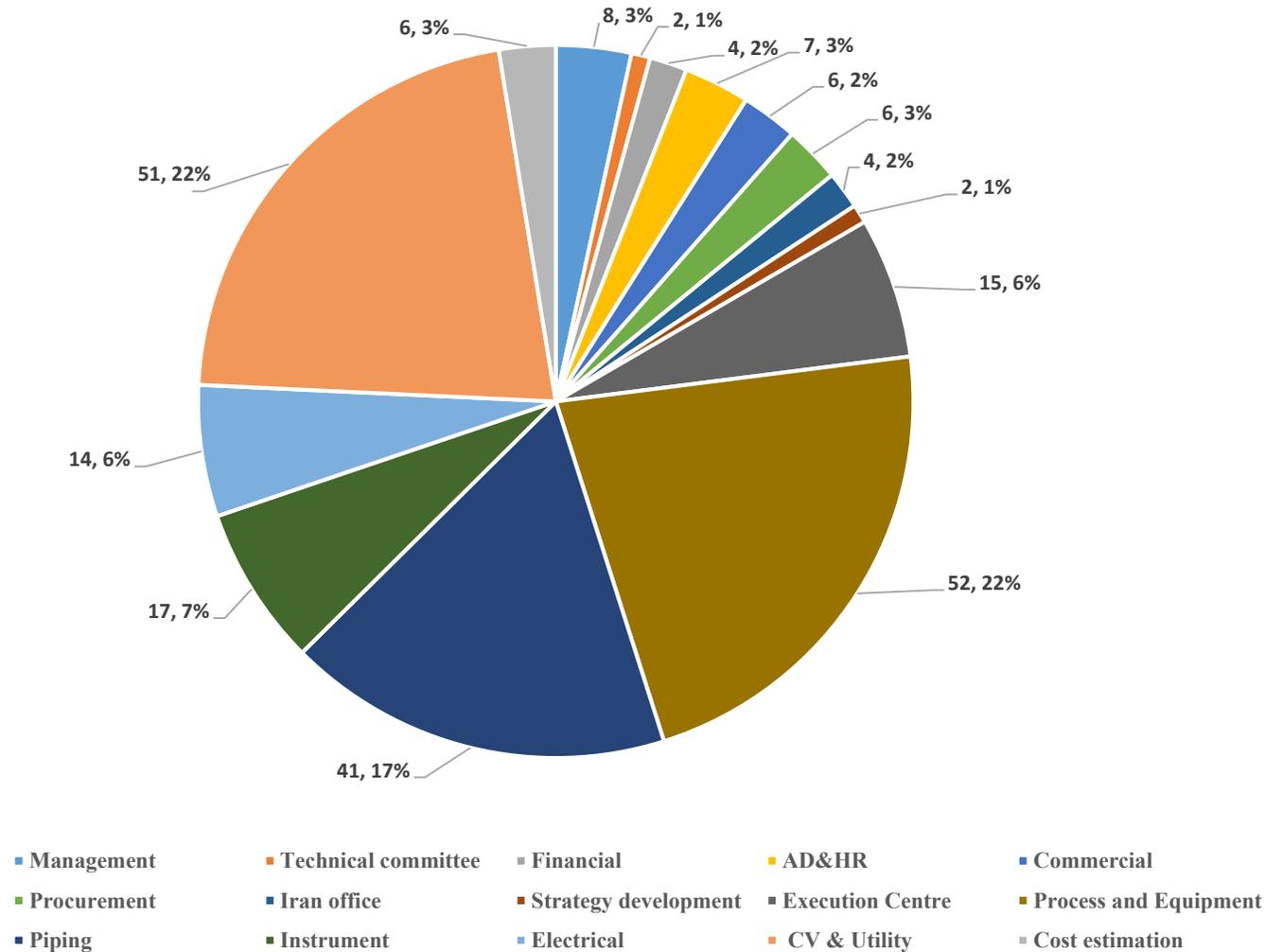
**Coal Chemical**

**Renewable Energy**

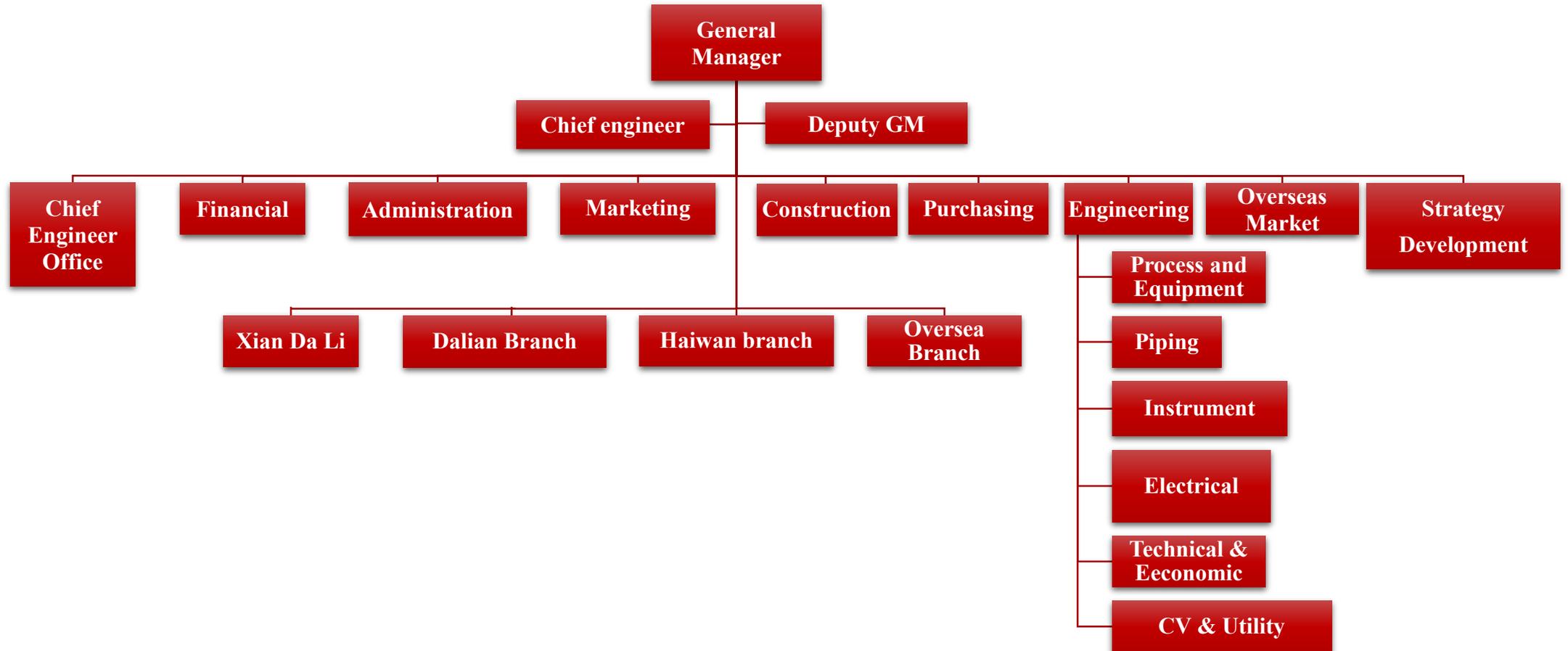
# HUMAN RESOURCE

- At present, the company has more than 240 employees, 90% of whom have bachelor's degrees or above, and 30% of whom have master's degrees.
- In the fields of petrochemicals, coal chemical industry, and polyolefins, we have 1 design master, 8 professor-level senior engineers, and 55 senior engineers.
- KSC team has strong technical development capabilities, rich experience in domestic and foreign engineering design and project management, and have led or participated in the design and construction of many large-scale engineering projects at home and abroad.

### Human resource of Department



# ORGANIZATION STRUCTURE





# EPC BUSINESS SECTOR

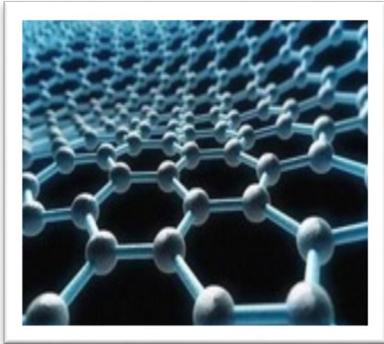
+ Polymer

+ Coal and NG Chemical

+ Refinery & Petrochemical

+ Environmental protection and Biomass

# BUSINESS FIELDS



## Polymer

PP, PVC, PBS + PBAT, PBR,  
UHW PE, POE , PLA , EPP, ABS,  
HIPS, GPPS, MS, PMMA, SAN,  
LCBR\SBR\SIS\SIBS\SEBS\SEPS\  
EPDM



## Refinery & Petrochemical

Atm & Vacuum refinery, oil  
hydrogenation, MTBE/ETBE,  
MTP, light HC crack, PDH,  
EO/EG, ETX, EB/SM.



## Coal and NG Chemical

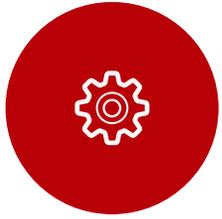
Coal gasification, Coal to H<sub>2</sub>,  
Coal gas purification , NH<sub>3</sub>,  
Urea, MeOH, MA/DMA/TMA,  
DMF, NMF, DMAC, Choline  
Chloride, Acetic Acid



## Environmental protection and Biomass

Energy: Biomass, Compressed Air  
Energy Storage, mini LNG.  
Intelligent Plant and Modular Design  
Water Treatment, Seawater  
Desalination

# SERVICE MODES



Engineering Procurement  
Construction



Technical Consultation



Engineering Design



Procurement Services



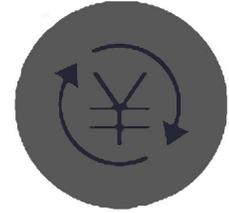
Intelligent Plant



Project Management



Technology Development



Investment and Development

# QUALIFICATION & CERTIFICATE



Business Licenses



Engineering Design (Grade A) Consultant Certificate



Pressure Piping Certificate



30+ Invention Patents and Utility Patents

# QUALIFICATION & CERTIFICATE



National High-tech Enterprise



Zhongguancun Hi-Tech



Beijing "Innovative" SME



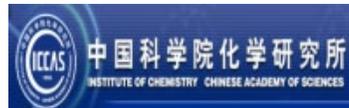
Beijing Specialized, High-end and Innovation-driven SME



## QHSE System Certification

# COOPERATIVE PARTNER

KSC



Technology as the guide, quality as the survival, and reputation as the development

A red square containing the text 'PART 02' in white. The 'P' is large and bold, with 'ART 02' in a smaller font to its right. A white line extends from the top-left corner of the square, and a red line extends from the bottom-left corner.A small red square positioned to the left of the main title.

# Proprietary Technology

---



# PROPRIETARY TECHNOLOGY

*A number of independent intellectual property technologies: PP, DK-Bulk ABS, MA/DMF, Mini LNG...*

**SPG-II  
PP**

**WATER  
TREATMNET**

**DK-PS  
DK-BULK ABS**

**Skid-Mounted  
Mini LNG**

**RUBBER**

**MA/DMF**



## SPG II PP Process

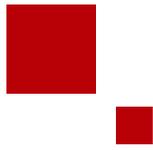


SPG II Process is based on “Slurry polymerization+ Horizontal reactor”, the max design capacity of single line is **500** KMTA.

Continuous PP process with independent IP of Beijing Keyscin. It is suitable for the construction of large-scale PP project. The product has competitive advantages: quality, energy consumption, investment, safety, environmental protection and operability. Keyscin is member of China Synthetic Resin Association and China Petroleum Engineering Construction Association.

Join making the national standards:  
*"Code for Design of Anchor Bolts for Petrochemical Buildings and Structures"*  
*"Energy Consumption index of Critical Products in the Refining Industry" (Standard for Energy Consumption Index for Polypropylene)*





# SPG II Polypropylene Technical Forum



北京鑫美格工程设计有限公司“首届 SPG II 聚丙烯技术交流会议”  
山东·淄博 2024.5.30



**Hosted SPG II Polypropylene Technical Forum**  
**Committed to the Industrial Development and Prosperity**

# Water Treatment

## Complete Design Process

- Hydraulic calculations were performed using the latest version of the PIPENET software.
- Piping design was carried out with the 3D modeling software PDMS.

## Advanced Water Process Equipment

- The seawater electrolysis sodium hypochlorite generation equipment is not only technologically advanced and highly efficient but also comes in a complete range of specifications.
- The pumps are highly efficient, with the main pumps in this project achieving an efficiency of no less than 90%.
- Advanced water hammer protection devices are used. A single charge of gas can sustain long-term operation, thereby achieving energy-saving objectives.

## Electrolytic Sodium Hypochlorite Dosing



# ■ YANGMEI TAIHUA WATER ■ TREATMENT PROJECT

## Treatment Capacity

- Circulating water facility: 40,000 m<sup>3</sup>/h
- Feed water treatment facility: 1,500 m<sup>3</sup>/h
- Wastewater treatment facility: 600 m<sup>3</sup>/h

## Technical Challenges

- For difficult-to-degrade wastewater, a combination of chemical processes such as pretreatment, adsorption, and extraction, along with biochemical processes, is employed to ensure the effluent meets discharge standards.



# JINCHI CHEMICAL WATER TREATMENT STATION

## Treatment Capacity

- Circulating water facility: 8,000 m<sup>3</sup>/h
- Feed water treatment facility: 2,500 m<sup>3</sup>/h
- Wastewater treatment facility: 1,000 m<sup>3</sup>/h
- Fire water pumping station: 1,800 m<sup>3</sup>/h
- Demineralized water station: 4,000 m<sup>3</sup>/h

## Technical Challenges

- Due to the complex quality of the raw water intake, microbial disinfection was difficult to meet standards. An advanced electrolysis of sodium chloride solution was adopted to ensure water quality compliance.



# DK-Bulk ABS

DEVELOPED BY DALIAN UNIVERSITY OF TECHNOLOGY AND BEIJING KEYSKIN

## Technical Advantages:

- Bulk process is Shorter,
- Small land area, Low investment
- Low energy consumption
- Environment Friendly
- Variety of products, Easy to switch

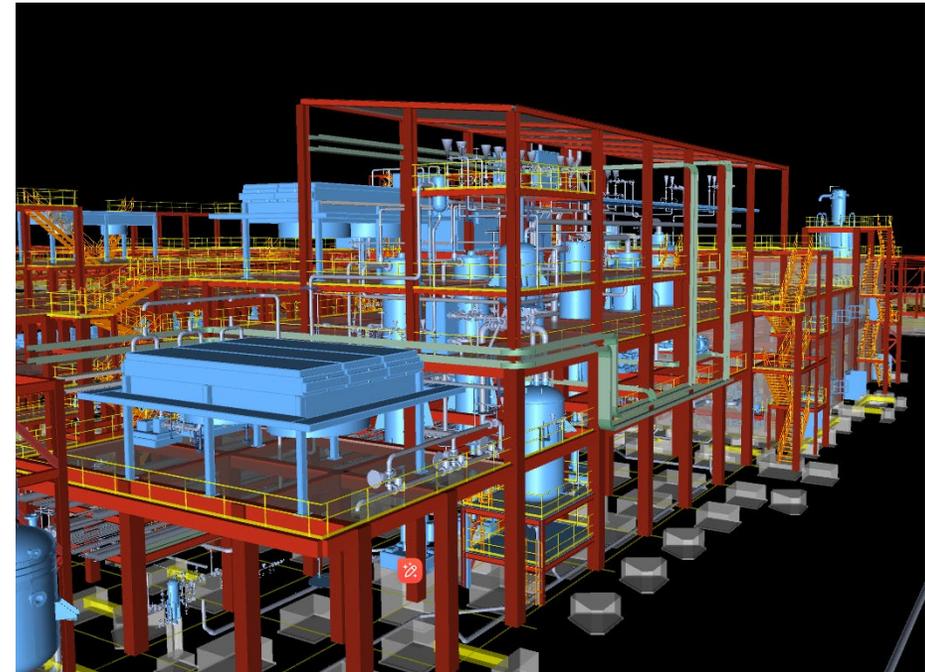
## Product Features

- High impact resistance,
- High gloss, heat resistance

## Reference List

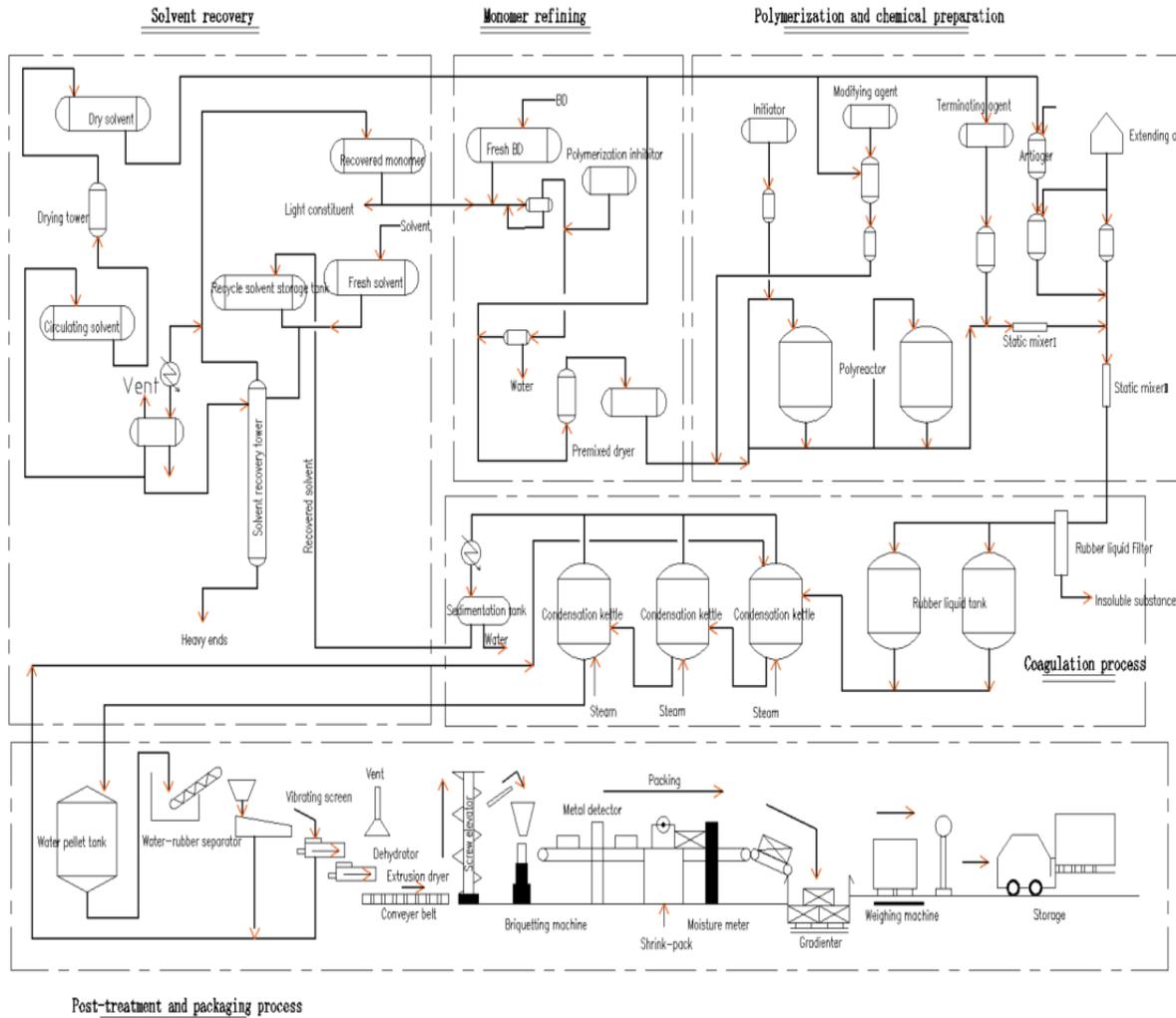
- ABS : 4 plants, Total Capacity:740KTA
- RUBBER: 6 plants, Total Capacity: 450KTA

PetroChina Jilin 200KTA ABS Project 3D model



HIPS/ABS Pilot Unit

# RUBBER



- **Variety of products, such as:**  
SIS\SIBS\SEBS\SEPS\EPDM
- **Anionic active solution polymerization method, the process is mature/simple and easy to operate.**
- **Environment friendly, no gas/liquid/solid waste, low consumption**
- **Good market, mature industrial chain**



# Project- Rubber/Resin Pilot Unit





# Methylamine / DMF

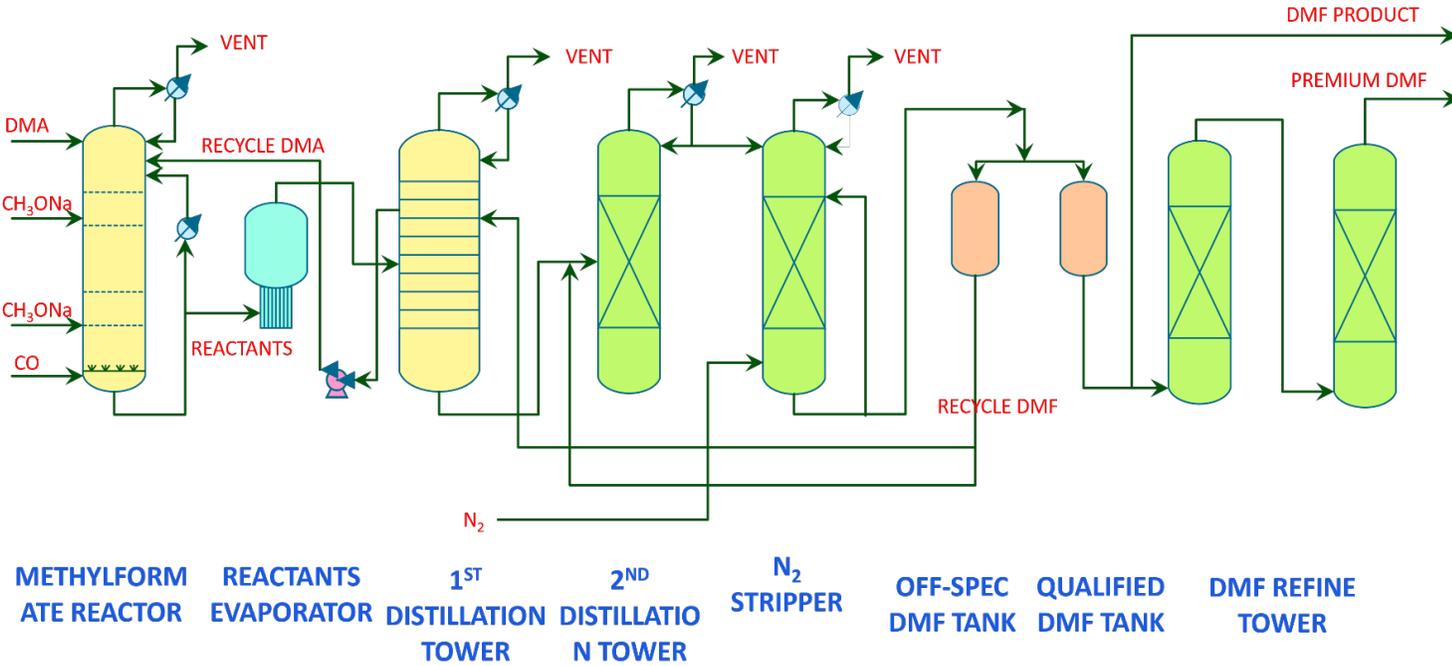
- **Product:** MA/DMA/TMA; DMF; NMF; DMAC
- **Application:** Medicine, Liquid fuel for rocket, **solvent for lithium battery**; feeding stuffs

## ➤ Dimethylamine-CO One-step Method

**DMF yield is 98%, purity is 99.99%**

Raw materials is abundant and easy to get  
 Convenient for the construction of large-scale project  
**Low cost**, strong competitive.

Most popular process of the world. Several large-scale DMF plants in Zhejiang Jiangshan, Anhui Huainan Fertilizer Plant and Yangzi-Basf used this process.



# Mini LNG

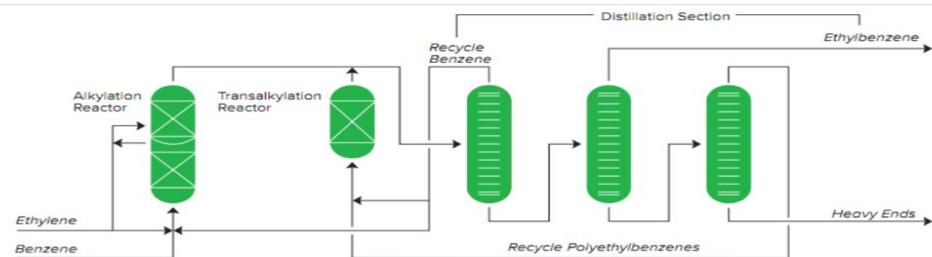
- VFD compressor, low energy cost
- External circulation refrigeration, low HC loss
- Variety products **LNG/LPG**
- Strong adaptability, flexibility
- **Modular design**, factory pre-support, skid-mounted installation
- **Capacity : 50,000 Nm<sup>3</sup>/D – 1 MNm<sup>3</sup>/D**



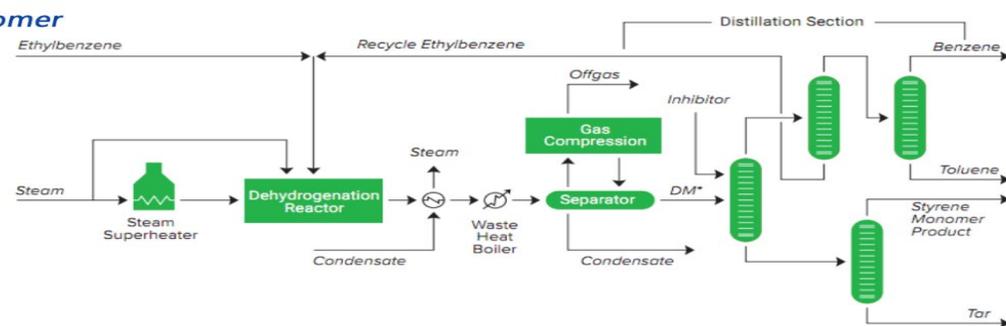
# EB/SM

- **Advanced reactor design**, Higher single conversion rate, high selectivity.
- EB/SM energy engagement, **reduce the energy cost**
- Advanced catalyst, reduce the steam/oil ratio
- High reliability, stable operating and less maintenance
- **Low investment, rich experiences**

Ethylbenzene Process Flow Diagram



Styrene Monomer Process Flow Diagram



- **Fixed bed** process
- High tolerant to raw material
- Operational flexibility: 60-110%
- Annual operation time: 8000H
- Easy operating, stable and mature process
- **Low investment**, low energy consumption





## Advantages:

- The catalyst developed by Beijing Keyscin shows good stability and high selectivity of propylene.
- Developed fixed bed reactor for the SMTP-1 process. The combination of layered feeding and quenching technology can control the temperature of the MTP reactor well.
- Using a fixed bed reactor, it is easy to increase the capacity and the investment cost is low.

A red square containing the text 'PART 03' in white. The 'P' is large and stylized, with 'ART 03' in a smaller font to its right.

# Reference List

---



# REFERENCE

No.	Construction unit	Plant capacity (10,000 tons/year)	Product Type	Project Status	Remark
Polypropylene					
1	Zibo Haiyi Fine Chemical Co., Ltd. (Phase I)	15	Homopolymer/Powder	Completed	SPG-II
2	Ningxia Runfeng New Material Technology Co., Ltd.	30	Homopolymer-Random-Impact/Grit	Completed	SPG-II
3	A Middle Eastern company, 1st	3	Homopolymer/granules	Completed	Ontology aggregation
4	A Middle Eastern company 2nd	15	Homopolymer-Random/Grit	under construction	SPG-II
5	Daqing Haiding New Material Technology Co., Ltd.	10	Homopolymer-Random-Impact/Grit	Completed	SPG-III
6	Haiwei Petrochemical Co., Ltd.	30	Homopolymer-Random/Powder	Completed	SPG-II
7	Weifang Shufukang New Material Technology Co., Ltd.	30	Homopolymer-Random-Impact/Grit	Completed	SPG-II
8	Sanjiang Haojia Polymer Materials Technology Co., Ltd.	30	Homopolymer/Powder	Completed	SPG-II
9	Zhejiang Dushan New Material Technology Co., Ltd.	30	Homopolymer/Powder	under construction	SPG-II
10	Zibo Haiyi Fine Chemical Co., Ltd. (Phase II)	15	Homopolymer-Random-Impact/Grit	under construction	SPG-II
11	Zhidan Green Energy Petrochemical Technology Co., Ltd.	40	Homopolymer-Random-Impact/Grit	under construction	SPG-II
12	Huizhou Lito New Materials Co., Ltd.	30	Homopolymer-Random-Impact/Grit	Completed	SPG-M
13	Zhongda China Petroleum Corporation (Designer: Hualu Engineering)	5	Homopolymer-Random-Impact/Grit	under construction	SPG-III
14	Heilongjiang Zhongfei Petrochemical Co., Ltd.	60	Homopolymer-Random-Impact/Grit	under construction	SPG-II
15	A Middle Eastern company 4th	45	Homopolymer-Random-Impact/Grit	under construction	Ontology aggregation
	Total	388			

# REFERENCE

No.	Construction unit	Project Name	Project Status
Water Treatment			
1	Guizhou Jinchi Chemical Co., Ltd.	Water treatment package	
		Cooling water station: 80000m <sup>3</sup> /h	Completed
		Raw water treatment station: 2500m <sup>3</sup> /h	Completed
		Wastewater treatment station: 1000m <sup>3</sup> /h	Completed
		Fire pump station: 1800m <sup>3</sup> /h	Completed
		Desalination Water Station: 400m <sup>3</sup> /h	Completed
2	Shanxi Yangmeitai Chemical Co., Ltd.	200KT/a Caprolactam Plant	
		Cooling water station: 40000m <sup>3</sup> /h	Completed
		Raw water treatment station: 1500m <sup>3</sup> /h	Completed
		Wastewater treatment station: 600m <sup>3</sup> /h	Completed
3	Inner Mongolia Qing Chemical Co., Ltd.	200KT/a Caprolactam Plant	
		Cooling water station: 50000m <sup>3</sup> /h	Completed
		Raw water treatment station: 1800m <sup>3</sup> /h	Completed
		Wastewater treatment station: 600m <sup>3</sup> /h	Completed
4	A Middle Eastern company	12KMTA Meltblown Project	
		Cooling water station: 3000m <sup>3</sup> /h	Completed
		Wastewater treatment station: 30m <sup>3</sup> /h	Completed
		Fire pump station: 1080m <sup>3</sup> /h	Completed
5	A Middle Eastern company	PDH&PP Project	
		Cooling water station: 30000m <sup>3</sup> /h	Completed

# REFERENCE

No.	Construction unit	Project Name	Project Status
<b>Methylamine/DMF</b>			
1	Guangxi Xintiande Energy Co., Ltd.	An integrated project for 120,000 tons/year of methylamine and its derivatives, including a 20,000-ton/year NMF unit and a 100,000-ton/year DMF unit (units + overall design).	Completed
2	Shanxi Yaxin Chemical Technology Co., Ltd.	The new material project for reducing carbon emissions from coke oven gas includes a 100,000-ton/year methylamine and a 100,000-ton/year dimethylformamide unit (PDP package).	Completed
3	Zhidan Green Energy New Materials Technology Co., Ltd.	100,000 tons/year high-end organic amine project (PDP package + design)	Completed
4	Jinchang Yongzhihe New Material Technology Co., Ltd.	A 100,000-ton/year methylamine and a 100,000-ton/year dimethylformamide plant (PDP package + design)	Design in progress
5	Hebei HNA Petrochemical New Materials Co., Ltd.	100,000 tons/year methylamine (PDP package + design)	Design in progress
6	Qujing Dawei Coking Gas Supply Co., Ltd.	Revitalizing the Methylamine/DMF Project: Methylamine Unit Project (Feasibility Study)	Completed
7	Inner Mongolia Donghua Energy Co., Ltd.	Industrial Transformation and Restructuring Plan - Methylamine/GBL/NMP/DMAC Unit (Feasibility Study)	Completed
8	Fujian Yongrong Holding Group Co., Ltd.	50,000 tons/year methylamine and 60,000 tons/year DMF project (Feasibility study)	Completed
9	Xinjiang Rongyi Technology Co., Ltd.	Xinjiang Rongyi's 50,000-ton methylamine and 50,000-ton DMF (PDP package)	Design in progress
10	Sichuan Yongying New Materials Co., Ltd.	Contract for the preparation of feasibility study report (Feasibility study) for a 5,000-ton-per-year PVP project.	Completed
<b>HIPS/ABS</b>			
1	Zhejiang Saige Energy Co., Ltd.	220,000 tons/year ABS/HIPS unit (PDP package + design)	Design in progress
2	PetroChina Jilin Petrochemical Branch	200,000 tons/year ABS unit (PDP package)	Completed
3	Shandong Yike Chemical Co., Ltd.	200,000 tons/year ABS unit (design)	Completed
4	North Huajin Chemical Industry Co., Ltd.	Ontology ABS Device and product upgrade	Completed
5	A Middle Eastern company's 5th	200,000 tons/year ABS unit (design)	Design in progress

# REFERENCE

No.	Construction unit	Project Name	Device type	Project Status
EB/SM				
1	A Middle Eastern company, 1st	100,000 tons/year EB/SM project (EPS)	New	Design in progress
Mini LNG				
1	Inner Mongolia Jiutai New Material Technology Co., Ltd.	Comprehensive recovery and utilization of flare gas	New	Completed
2	Zhidan Green Energy Oil & Gas Technology Service Co., Ltd.	10x10 <sup>4</sup> Nm <sup>3</sup> /D LNG、LPG Project	New	Completed
3	Shaanxi Green Energy Oil & Gas Technology Co., Ltd.	10x10 <sup>4</sup> Nm <sup>3</sup> /D LNG、LPG Project	New	Completed
4	Anse Luyuan Oil & Gas Technology Service Co., Ltd.	5x10 <sup>4</sup> Nm <sup>3</sup> /D LNG、LPG Project	New	Completed
5	Shaanxi Luyuan Oil & Gas Technology Service Co., Ltd.	8x10 <sup>5</sup> Nm <sup>3</sup> /D LNG、LPG Project	New	Completed
6	Beijing Zhidan International Energy Technology Co., Ltd.	20×10 <sup>4</sup> Sm <sup>3</sup> /d Natural Gas Purification and Liquefaction Project in Ogun State, Federal Republic of Nigeria	New	Design in progress
7	A company in the Middle East	AHVAZ Flare Gas Recory Project for CNG, LPG, and NGL Production	New	Design in progress
Coal gasification technology				
1	Wanhua Chemical Group Co., Ltd.	Energy-saving technology transformation of coal-water slurry gasification	Renovation Project	Completed
2	Hubei Xinyi Chemical Co., Ltd.	Energy-saving technology transformation of coal-water slurry gasification	Renovation Project	Completed
4	Inner Mongolia Donghua Energy Co., Ltd.	Energy-saving technology upgrade of the 600,000-ton/year methanol plant using water-coal slurry gasification.	New	Completed
5	Yantai Wanhua Polyurethane Co., Ltd.	Phase II Project of Energy-Saving Technology Upgrade for Coal-Water Slurry Gasification	New	Design in progress
6	Shanxi Tiandi Wangpo Coal Industry Co., Ltd.	20t/d Flexible Fluidized Bed Test Device	New	Completed
7	Lanzhou New Area Xineng Kezhixin Energy Co., Ltd.	Comprehensive utilization of hazardous waste resources in Lanzhou New Area	New	Design in progress

# REFERENCE

No.	Construction unit	Project Name	Device type	Project Status
MTBE/ETBE				
1	3rd company in the Middle East	200,000 tons/year MTBE/ETBE project	New	Design in progress
2	Xinjiang Sanbao Industrial Group Co., Ltd.	MTBE plant in Pavlodar, Kazakhstan, with an annual production capacity of 10,000 tons of epoxy resin	New	Completed
Methanol from natural gas				
1	Xinjiang Sanbao Industrial Group Co., Ltd.	Kazakhstan 130,000 tons/year natural gas to methanol project	New	Design in progress
Environmental protection and green energy projects				
1	Harbin Boiler Factory Co., Ltd.	Nanjing Future Energy Storage Design Project	New	Completed
2	China Storage & Energy (Beijing) Technology Co., Ltd.	Feicheng Air Energy Storage Design Project	New	Completed
3	Haixia Qingneng Chemical Co., Ltd.	300,000 tons/year SAF project	New	Design in progress
Storage and transportation facilities project				
1	Tongjiang Lianeng Energy Co., Ltd.	Clean Energy Storage and Transportation Park Project	New	Completed
2	Manzhouli Zhongfei Gas Co., Ltd.	Warehousing and logistics projects	New	Completed
3	Merck (Tianjin) Petroleum Equipment Co., Ltd.	Kirihi Refinery Railway Trench Project	New	Design in progress
Modular projects				
1	Hangzhou Zhongtai Cryogenic Technology Co., Ltd.	Kazakhstan SILLENO Cryogenic Package Project	New	Design in progress
2	Hangzhou Zhongtai Cryogenic Technology Co., Ltd.	World-Yard Liquid Nitrogen Washing (USA) Project	New	Design in progress

# REFERENCE

No.	Construction unit	Project Name	Device type	Project Status
Other projects				
1	Trading House Shchekinoazot Ltd., Heilongjiang Zhongfei Petrochemical Co., Ltd.	Feasibility study for 1.1 million tons/year MTO	New	Completed
2	Shaanxi Construction Engineering Installation Group Co., Ltd.	Lanzhou New Area 80,000-ton-per-year carbon-based new material resource utilization project	New	Design in progress
3	Xinjiang Sanbao Industrial Group Co., Ltd.	MTBE plant in Pavlodar, Kazakhstan, with an annual production capacity of 10,000 tons of epoxy resin	New	Completed
4	Maoming Petrochemical Dongcheng Chemical Co., Ltd.	Polypropylene Plant Technical Upgrading Project	Renovation Project	Completed
5	Mengzhou Huaxing Biochemical Co., Ltd.	600 tons/month aspartame hydrochloride expansion project and 30,000 tons/year sodium acetate project	Renovation Project	Completed
6	Mengzhou Huaxing Biochemical Co., Ltd.	2000 tons/year Beta-Cyclodextrin Technical Upgrading Project	Renovation Project	Completed
7	Inner Mongolia Tianrun Fertilizer Co., Ltd.	High flash venting and recovery retrofit project	Renovation Project	Completed
8	Shandong Jingbo Petrochemical Co., Ltd.	600,000 tons/year high-performance polypropylene resin and supporting powder packaging equipment project	Renovation Project	Completed
9	Shijiazhuang Shaanxi Blower Gas Co., Ltd.	40,000 cubic meter air separation unit	Renovation Project	Completed
10	Guizhou Aerospace Sky Industry Development Co., Ltd.	300,000 tons/year coal-to-methanol gasification unit	Renovation Project	Completed
11	Xinjiang Xinfeng Co., Ltd.	Feasibility Study and Technical Consulting Project for the Retrofitting of 100,000 Tons/Year SPGII Continuous Process	Feasibility study	Completed
12	Nanjing Jinling Plastics & Chemical Co., Ltd.	New Material Development and Upgrading Project for a 150,000-ton/year Continuous Polypropylene Production Line	Feasibility study	Completed
13	Xinjiang Tianli High-tech Petrochemical Co., Ltd.	80,000 tons/year continuous polypropylene project	Feasibility study	Completed
14	Dongguan Xindongxin Environmental Protection Investment Co., Ltd.	Dongguan Haixinsha Green Industrial Service Project Waste Mineral Oil Comprehensive Recycling and Utilization Project Design Review Service Project	Review	Completed
15	Inner Mongolia Yitai Coal Co., Ltd.	Inner Mongolia Yitai Coal Co., Ltd. Liquid Hydrocarbon Storage and Logistics Project	Feasibility study	Completed

# Project- Haiding 100 KTA PP

## *SPG-III Start-up & Product*



# Project - MIDDLE EAST 30 KTA PP



*Training and on-site service*

*Performance recognized by owners*

# Project- MIDDLE EAST 150 KTA PP



Masonry and Out-tiles For Laboratory Building



Substation Building in progress



Reinforcement & Concrete pouring of Extruder's Foundation



Reinforcement of Purification's Foundation



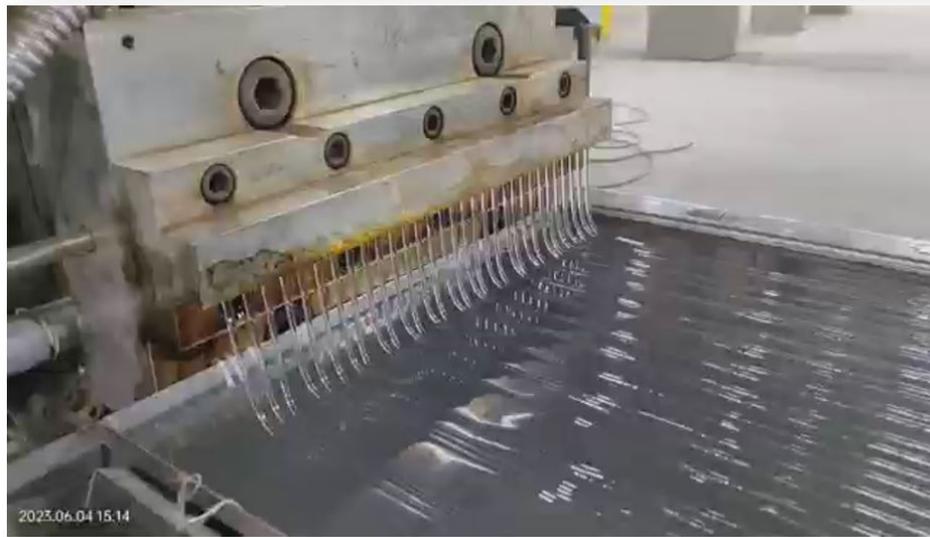
Concrete pouring of Flare's Wind Wall



Pipe rack C in progress

# Project- MIDDLE EAST PP MELT BLOWN MATERIAL

## *Successful Start-up and product*



# Project- 80,000 m<sup>3</sup>/h circulating water plant.



# Project- 1,800 m<sup>3</sup>/h raw water treatment plant



# Project-Lvneng 100KTA MA & Jinchang 100KTA MA/DMF



**Jinchang 100 KTA MA/DMF**



**Lvneng 100 KTA MA**

# Project- MIDDLE EAST 200 KTA ABS+RUBBER



# Project-MIDDLE EAST 100 KTA EB/SM-II



# Project- CAES Compressed Air Storage Energy



*Construction Site*

# EPC Project-20×100,000 Sm<sup>3</sup>/d Natural Gas Purification and Liquefaction Project in Ogun State, Federal Republic of Nigeria



# EPC Project-Ahvaz Flare Gas Processing Project for CNG, LPG and NGL Production





***THANK YOU***