



Your Reliable Screw Pump Expert



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**HUANGSHAN RSP MANUFACTURING CO.,LTD.**

**Head Office**

**Address:** JiuLong Industry Park, Huangshan city, Anhui Province , P.R.China  
**Tel:** +86-559-2586880    **Fax:** +86-559-2568248  
**Email:** sales@rsppump.com  
**Web:** www.rsppump.com

**Sales Office**

**Address:** Room 1305, XingDi Building, YiShan Road No.1698, Shanghai City  
**Tel:** +86-21-54337892    **Fax:** +86-21-54337893

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Version number is year number. When the differences exist in the contents of different version numbers, the standard is in reference to the latest version number.  
Materials of this manual are only for reference, and the concrete types and parameters are based on the products.  
If the product specification and design have any changes, it will be informed without prior notice.  
The pictures of products may have tiny differences from the real objects, the standard is in reference to the real objects.



# TWIN-SCREW PUMP

Product Description  
Technical and Application Field (Version 2013)



# 2013

Product Description,  
Technical and Application Field

ROYAL SERVICE

INTERNATIONAL QUALITY

TECHNOLOGY PIONEER

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# BRIEF INTRODUCTION

Huangshan RSP Manufacturing Co., Ltd. was founded in 1996, with a registered capital of 12 million RMB, which is a high-tech enterprise specialized in the R&D, design, manufacture, sales and service of screw pumps. At present, our company is mainly engaged in providing the three namely categories of products single-screw pumps, twin-screw pumps and three-screw pumps, which include over 20 series and more than 500 varieties, and has also established the “RSP” and “Huangshan Royal Pump” professional brands of screw pumps. Our products cover metallurgy, electric power, petroleum, chemical, building materials, vessels, machinery and other industries, and our partial products are exported the international market. Our company complies with the management philosophy “Specialty, Quality, Service and Mutual Benefits” , and makes every effort to build the first-class enterprise specialized in the field of scerw pumps!





# Qualification and Equipment

Adhering to the philosophy that “quality is company’s life, quality is customers’ value, and quality is social responsibility” , RSP has always been strengthening quality control to improve product quality as per international quality management system standard.



API SPEC Q1



BV ISO9001



CE



CUC ISO9001



CCS Quality System Certification



CCS Type Approval Certificate

RSP owns a series of high-tech screw pump manufacturing/test equipments and is at the top machining level in China, which provides great insurance for screw pump quality



**CNC Rotor Grinding Machine:**  
the employment of international advanced CNC rotor grinding machine signifies RSP has reached to the top level in China for rotor profile machining precision with the precision to 0.005mm.



**Horizontal machining center:**  
employs machining center for key parts processing (stator) with the FTQ to 99.9%, which greatly improves stator machining precision.



Grade Three Welder Qualification (at Present highest Level) from CCS.



**Comprehensive Test Center:**  
intelligent screw pump comprehensive test center which is self-developed and the most advanced domestically.



**CNC Rotor Milling Machine:**  
accurate indexing and stable root diameter due to self-developed knives specifically for rotor machining.

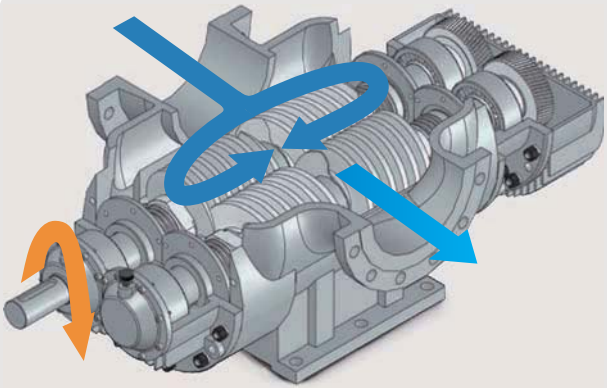


**Three Coordinate Measurement Machine:**  
for key parts precision test of screw pumps, with the accuracy to 1.4 μm.

# Double-entry Twin-screw Pump




## General Description

Double-entry twin-screw pump is composed of a power rotor and an idler rotor, whose inter-meshing helix will work with pump casing or housing to form constant-volume sealing chamber. With the rotating of the rotors, medium will enter the casing before being pumped to the pump outlet. Thus the medium delivery is achieved. This product is with compact structure, stable flow rate without pulsation, reliable operation, available for high speed, low noise, small vibration, high efficiency, long-service life, strong self-priming ability and so on, and can be widely applied in metallurgy, petroleum, chemical, power, transportation, building materials, marine, etc.



Double-entry twin-screw pump is a kind of rotary positive displacement pump with reliable operation, strong self-priming ability and are applicable for wide range of medium.

## Application

Medium Feature	Descriptions
Viscosity	 2...100000 mm <sup>2</sup> /s
Temperature	 -20 450 °C
Oil-gas mixture	 Gas content up to 98% Two phase flow
Flow range	10...1500m <sup>3</sup> /h
Pressure range	0 ... 6.3MPa



Double symmetric non-sealed profile



Single non-symmetric sealed profile



① HW Standard Series



③ HWG Derivation Series



② HM Standard Series



④ HMG Derivation Series

③ ④ is welding structure



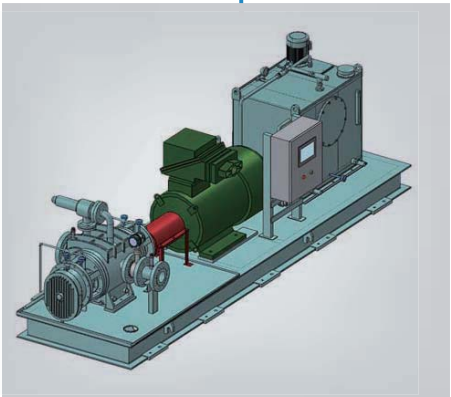
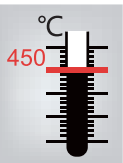
Applicable for various materials

Various mounting types

① ③ are applicable for oil-gas mixture transferring  
① — ④ are all available for skid-mounting system

Overall heating

Max. medium temperature



Product design standard: GB/T 11035 、 API 676  
Product safety standard: CE  
Product performance standard: JB/T 8091、 EN14343



# Application Fields

1

## Petroleum Industry

Oil-gas mixture transfer, high viscosity crude oil, polymer, various product oils, etc.

2

## Petrochemical Industry

Lubrication oil, crude oil, heavy oil, residual oil, asphalt, fuel oil, Light hydrocarbon, butadiene, gasoline, kerosene, phenol, etc.

3

## Chemical Industry

Acid, alkali, salt solution, resin, glycerol, paraffin, rubber solution, high polymer, cosmetics emulsion medium, etc.

4

## Food Industry

Honey, syrup, animal oil, vegetable oil, etc.

5

## Storage and Transfer Industry

Wharf product oil transfer pump, oil ship pump, departing pump, uploading pump, backflow pump, oil reservoir uploading and transfer pump, etc.

6

## Shipbuilding Industry

Delivery pump of refined oil, fuel oil, refined asphalt, waste oil, sump oil, etc, cargo oil pump, booster pump, stripping pump, pipeline blow pump, etc.

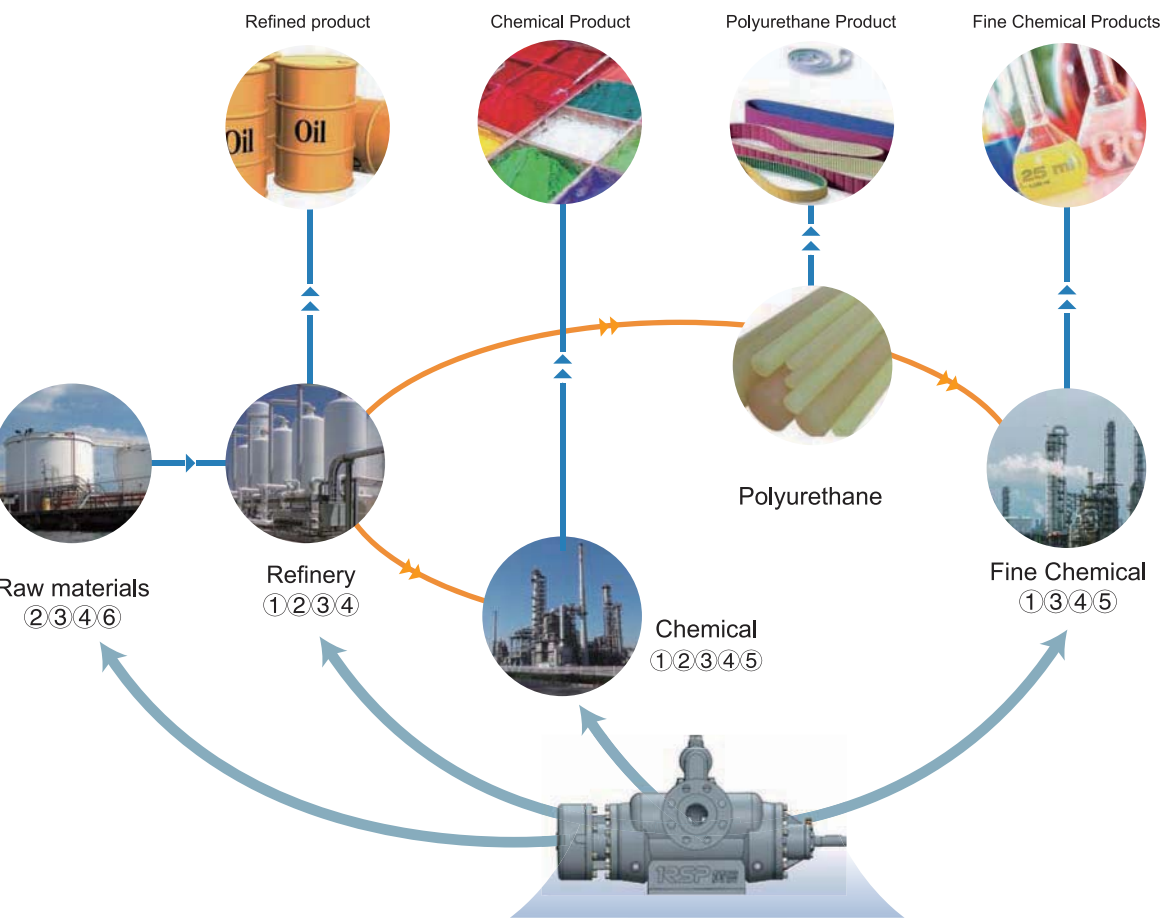
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## Energy Industry

Heavy oil, fuel oil transportation, lubrication oil, coal water slurry, coal tar, residual oil, etc.

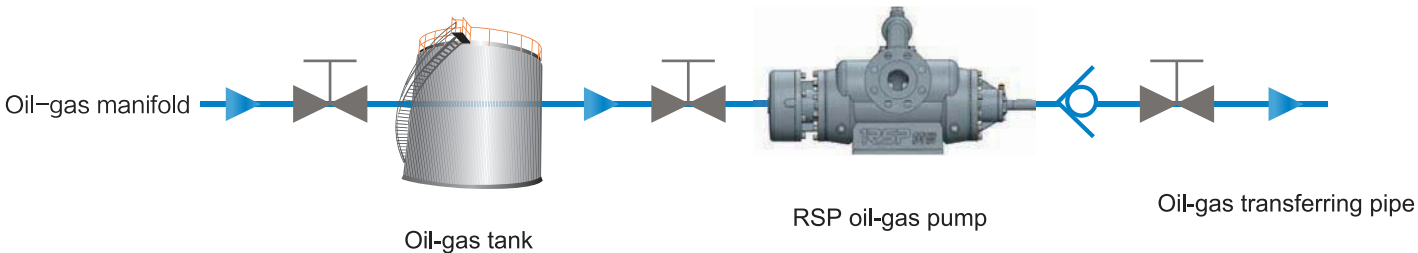


# Application Advantages



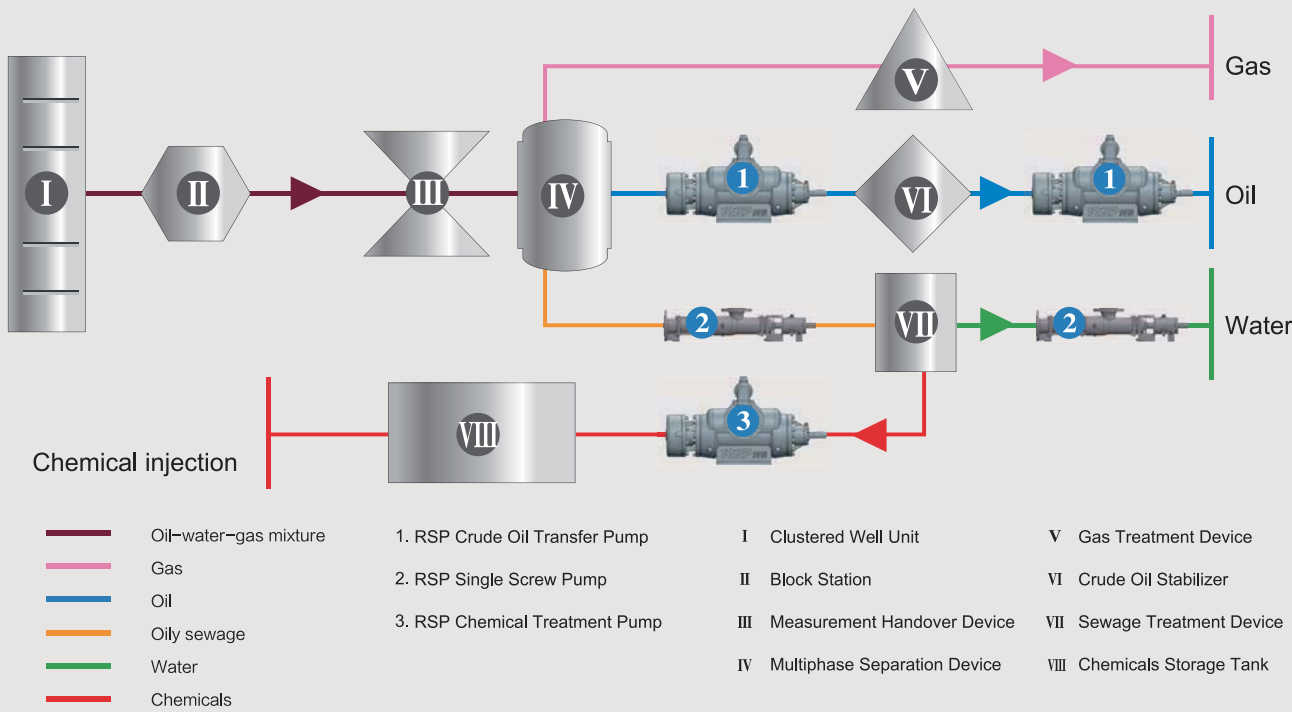
Applicable for complicated fluid medium with following properties:  
① high temperature; ② high viscosity; ③ high pressure;  
④ large flow; ⑤ corrosive; ⑥ oil-gas mixture

# Oil-gas transfer pump

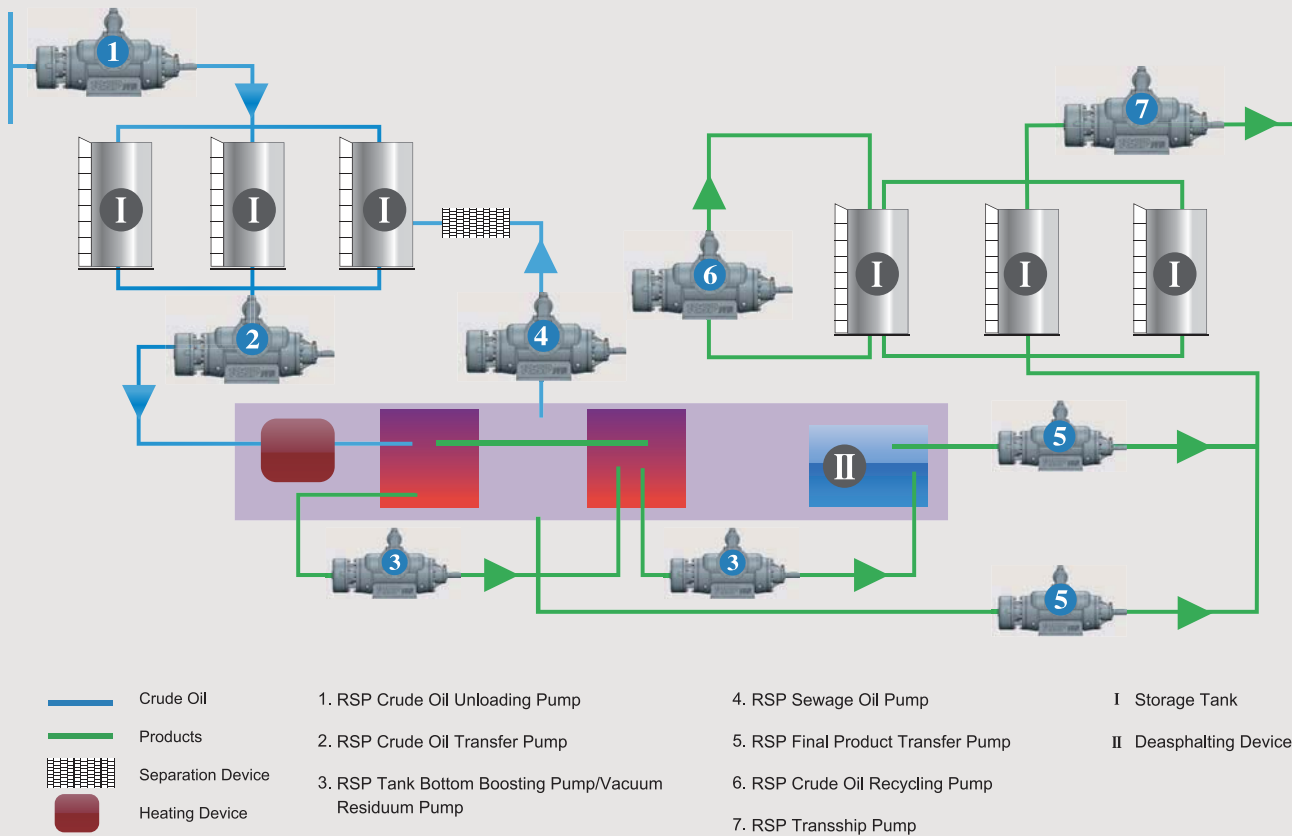


# Application Flow Diagram

Oil Field Production Flow Diagram (simplified version)



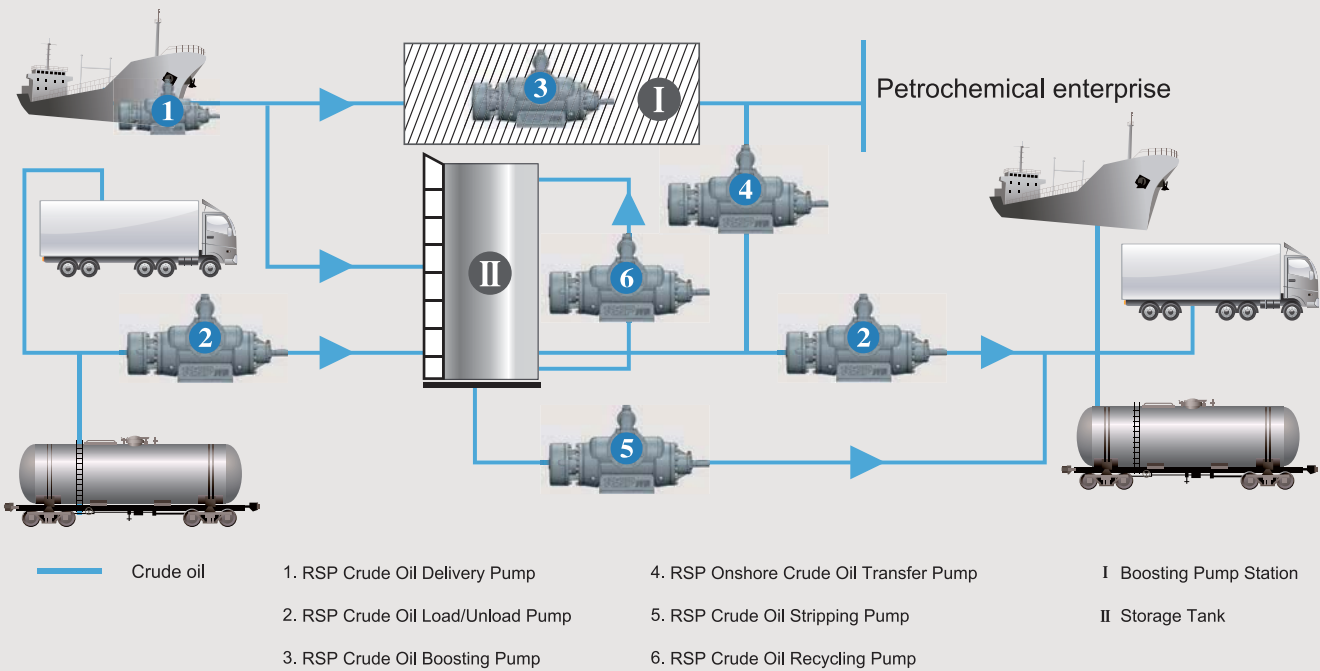
Refinery Shop General Process (simplified version)



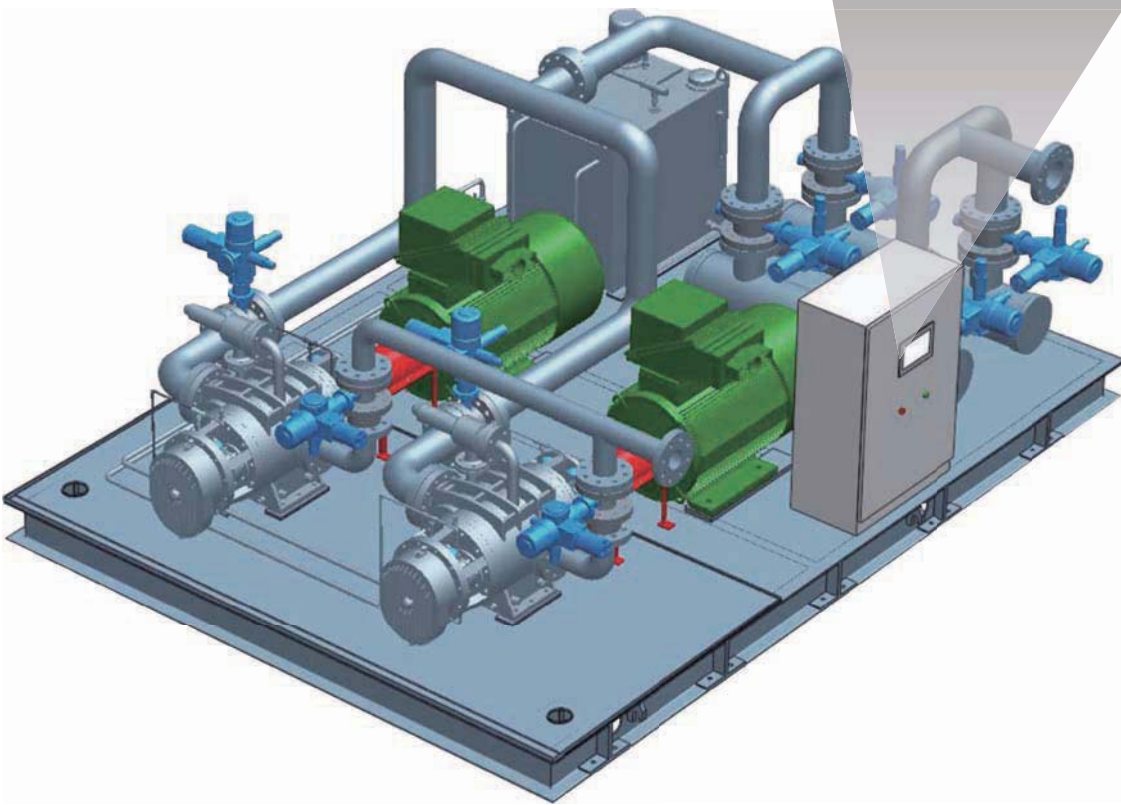
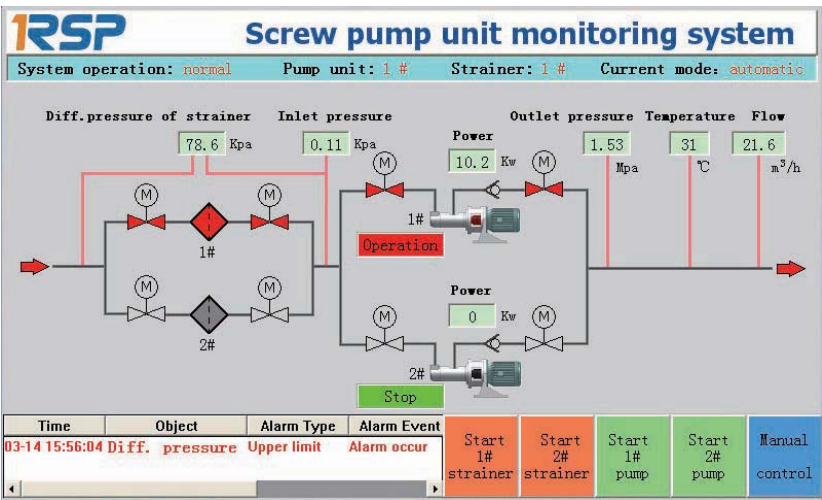
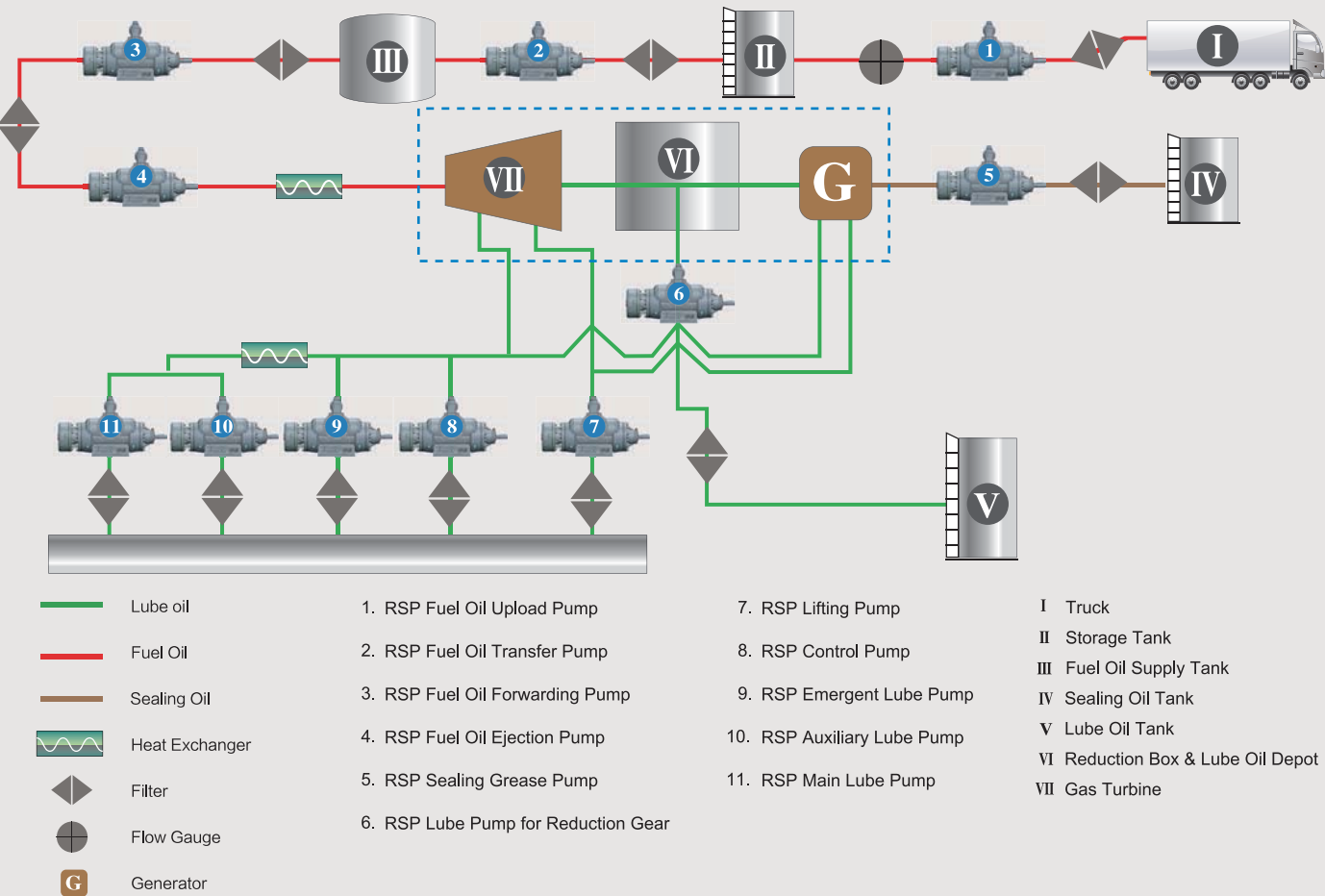


# Pump Skid-mounted System

Crude Oil Storage & Transfer General Process (simplified version)



Cycling Power Generation Flow Diagram--Oil Supply System(simplified version)



Above is the HMG pump unit, which combines the monitoring of bearing temperature, oil tank liquid level, inlet/outlet pressure and greatly improves the safety and operability of the whole system. This system can be modular designed and manufactured.



HWG Pump unit, whose design complies with API 676 & API 682.

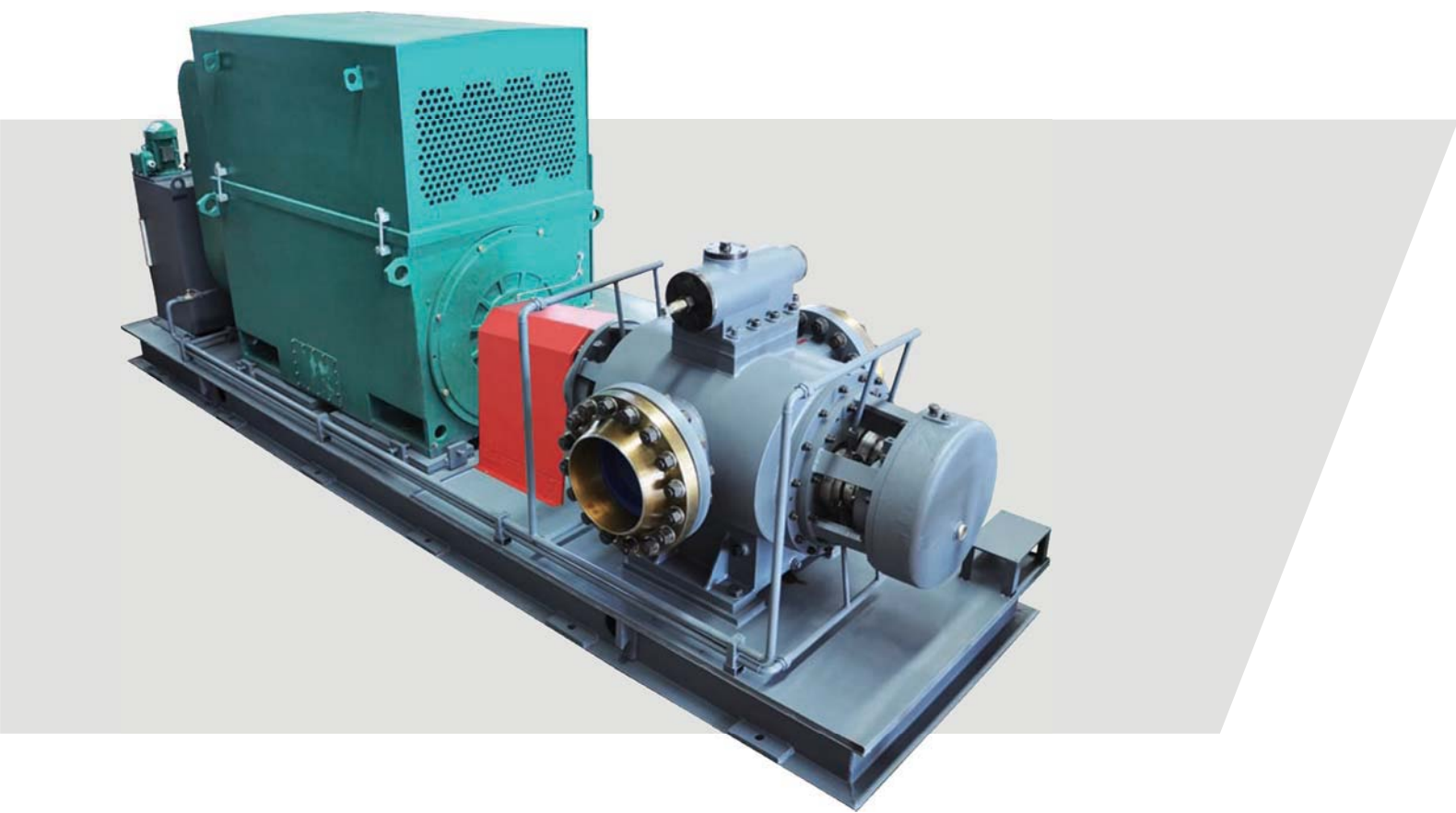


Table of Performance Data

performance pumpseries	Max. Flow		Max. Vis.	Max. Temperature		Max. Pressure ( MPa )	Suction Pressure ( MPa )
	m³/h	gpm	mm²/s	℃	℉		
HW	1500	6600	100000	180	356	2.5	-0.08~ +0.8
HWG	1500	6600	100000	450	842	2.5	
HM	300	1320	100000	180	356	6.3	
HMG	300	1320	100000	450	842	6.3	

Notes: If operation condition is out of the scope, contact us for customized solutions.

# Pump Material Options

## Standard Series

Series	Parts	Materials			Series	Parts	Materials		
		China	America	Germany			China	America	Germany
		GB	ASTM	DIN			GB	ASTM	DIN
HW	Rotors	40Cr	5140	41Cr4	HM	Rotors	38CrMoAl	—	41CrAlMo7
	Helix	40Cr	5140	41Cr4		34CrAlMo5			
	Casing	QT450-10	65-45-12	—		Casing	QT450-10	65-45-12	—
	Integrated structure of casing & housing					Integrated structure of casing & housing, rotors & helix			

## Derivation Series

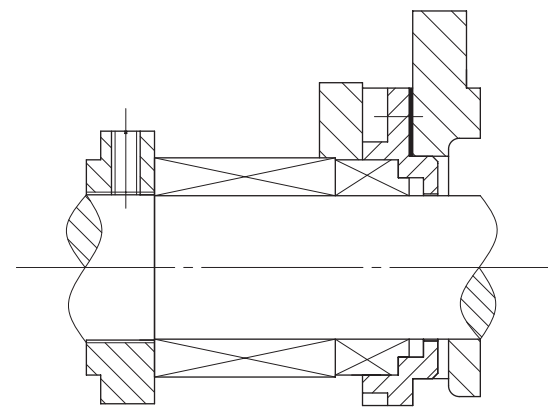
Series	Parts	Materials		
		China GB	America ASTM	Germany DIN
HWG/HMG	Rotors	40Cr	5140	41Cr4
		38CrMoAl	—	41CrAlMo7
				34CrAlMo5
		42CrMo	4140	42CrMo4
			4142	41CrMo4
	Housing	0Cr17Ni4Cu4Nb	630	X5CrNiCuNb16-4
		HWG series——helix and rotors are separated HMG series——helix and rotors are with integrated structure		
		QT450-10	65-45-12	—
		00Cr19Ni10	304L	X2CrNi189
		00Cr17Ni14Mo2	316L	X2CrNiMo1810
	Casing	20	1020	1C22
				CK22
				Cm22
		00Cr19Ni10	304L	X2CrNi189
		0Cr17Ni12Mo2	316	X5CrNiMo1810
				X5CrNiMo17122
		00Cr17Ni14Mo2	316L	X2CrNiMo1810

Remarks: above is the corresponding table of related materials marks. If your requirement is out of the scope, please contact us.

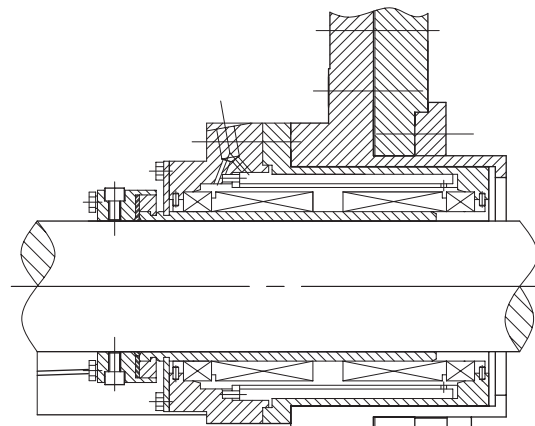


# Mechanical Seal type

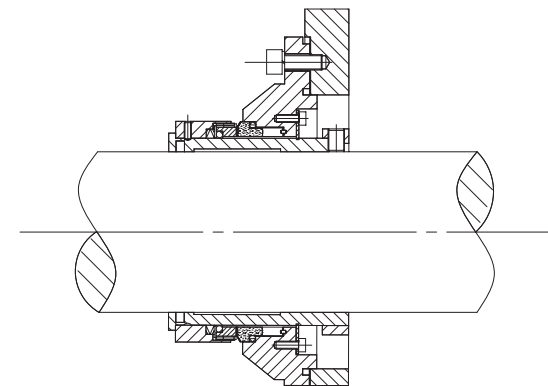
Single mechanical seal (W1)



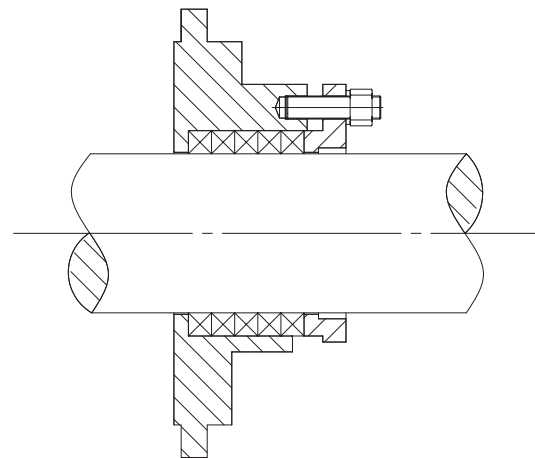
Double mechanical seal (W2)



Single cartridge seals (W3)



Packing seal (W4)

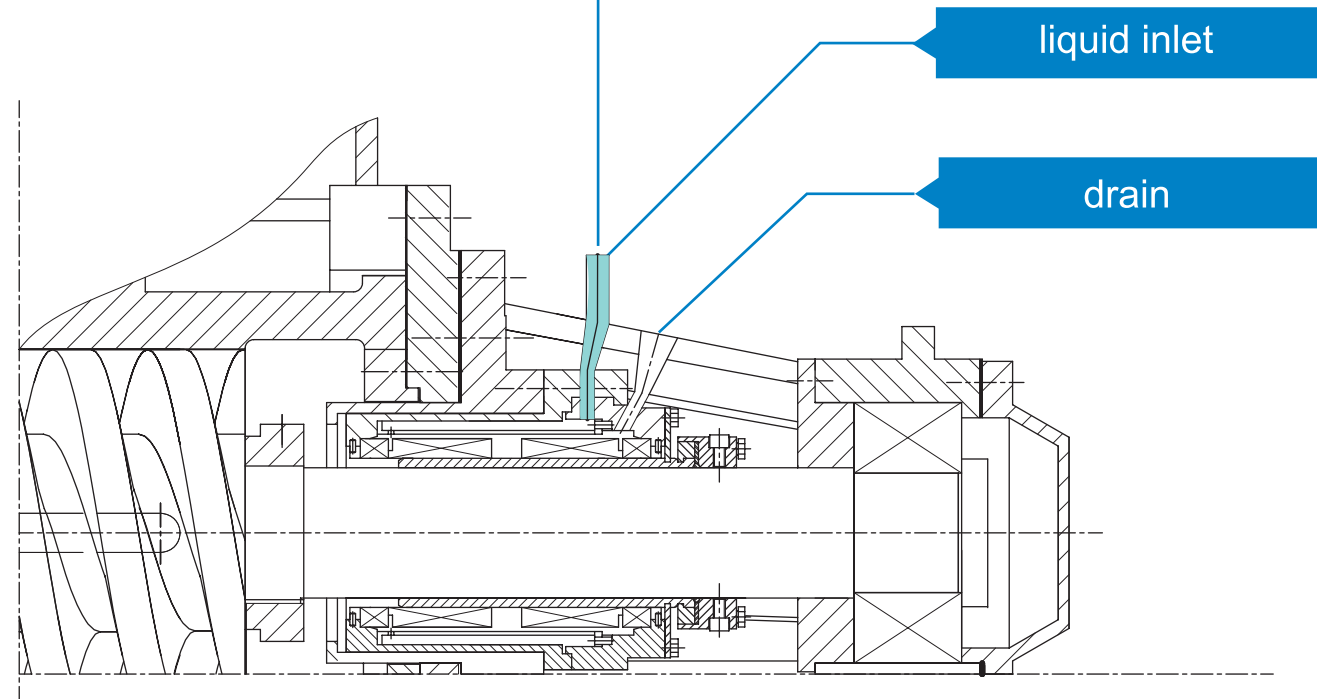


Remarks: The selection of mechanical seal type should be based on operation condition, customer requirement, pump type, etc. RSP will provide esteemed customers with the most appropriate mechanical seal type and flushing plan (if necessary) to ensure reliable pump operation and no-leakage of shaft seal.

# Mechanical Seal Flushing

The design of auxiliary flushing system should be taken into consideration when improving the operation environment, which will play a great part in the effectiveness of mechanical seal. Based on the operation requirement and pump type, RSP will choose a best flushing solution as per API 682 for our esteemed customers.

Mechanical seal flushing plan complies with API 682



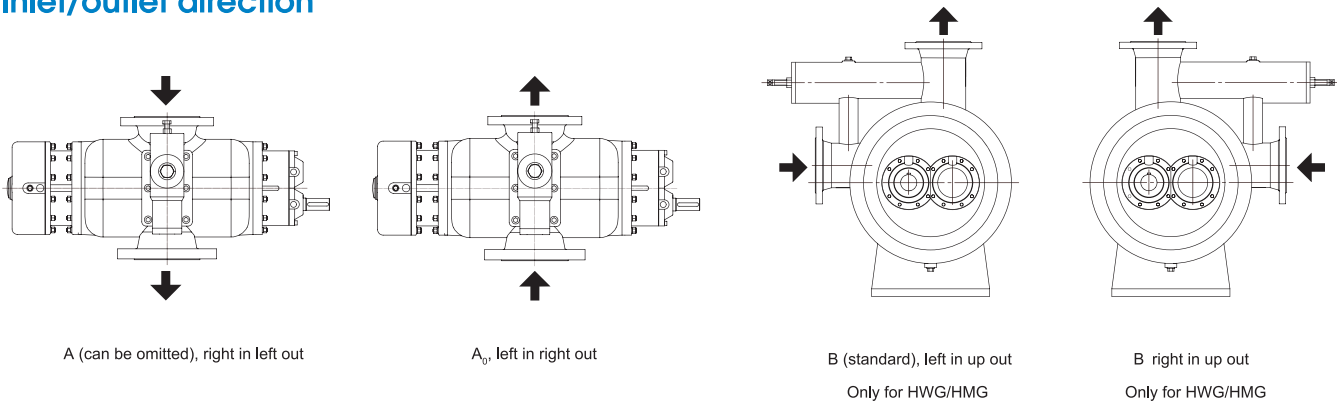


# Code Description

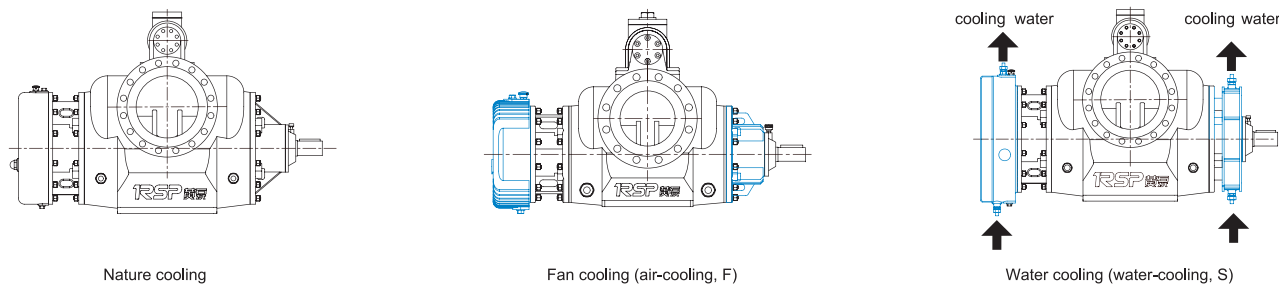
	HW(HWG) HM(HMG)	100 — 40	B	S	Y	T
Series Code						
Specification						
Inlet/outlet						
Bearing cooling method						
Medium heating method						
Special requirement						

Notes: no code (no special requirement), T1\T2\T3..(Special requirement)

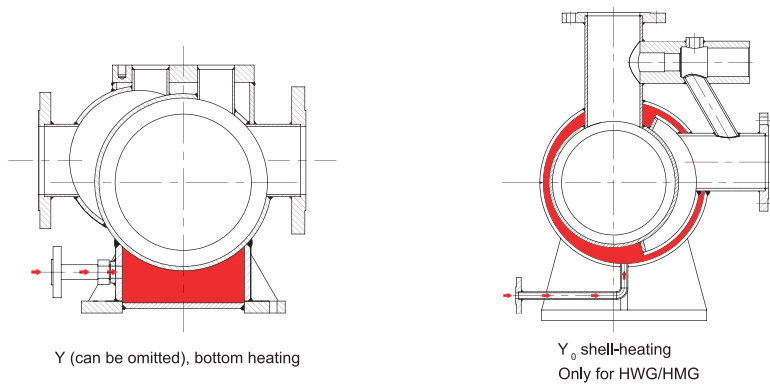
## Inlet/outlet direction



## Bearing cooling method



## Medium heating method

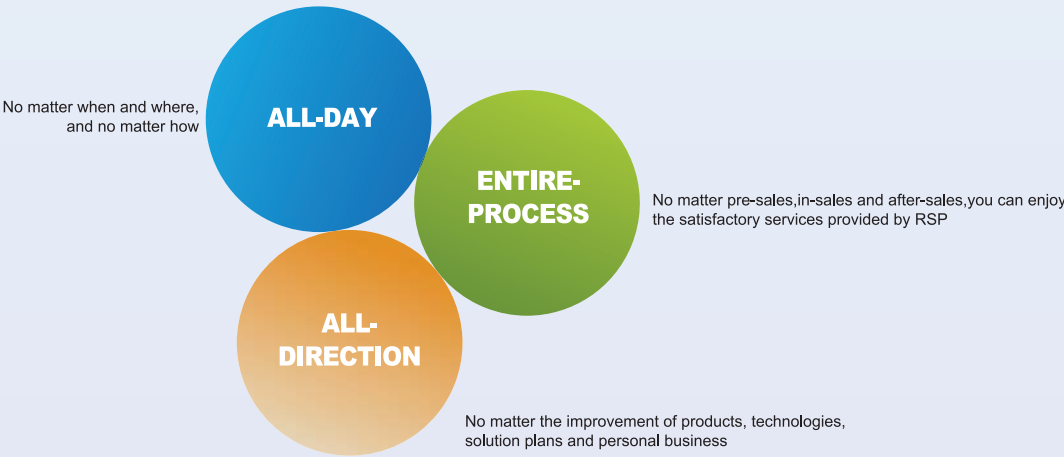


## Solution plan

Be able to provide the professional and all-aspect solution plan for the application of screw-pump system.

## Process service

Carry out “AAE” process service system,and concern about every detail more carefully and more thoughtfully.



## Plan control

Possess the systematic plan system, and achieve reminding in advance and tracking service as for the common problems in the process of application.



# Twin-Screw Pump Selection Data Form

Dear Customers:  
To ensure pump is suitable for your required conditions and operate safely and efficiently, please fill in below form for proper pump solutions.

Working Conditions

Liquid Name:\_\_\_\_\_

Liquid property

☐ Corrosion-PH Value(        )        ☐ abrasion        ☐ poisonous        ☐ flammable        ☐ explosive

Any particles in the liquid or not

Any gas in the liquid or not

Temperature	Normal (        ) ℃	Max. (        ) ℃	Min. (        ) ℃
Viscosity	Normal (        ) mm²/s	Max. (        ) mm²/s	Min. (        ) mm²/s
Flow Rate	Rated (        ) m³/h	Max. (        ) m³/h	Min. (        ) m³/h
Pressure	Discharge (        ) MPa	Max. (        ) MPa	Suction (        ) MPa
Working status	<input type="checkbox"/> intermittent	<input type="checkbox"/> continuous	

Pump Requirement

NPSHa (        ) m

Pressure Relief Valve    ☐ Yes        ☐ No

Anti-explosion motor    ☐ Yes        ☐ No

Motor Specification

Protection Class (        ) Explosive-proof grade (        ) Insulation Class (        )

Remarks

Customer's information

Company Name:\_\_\_\_\_

Company Address:\_\_\_\_\_

Tel:\_\_\_\_\_

Fax:\_\_\_\_\_

Contact: \_\_\_\_\_