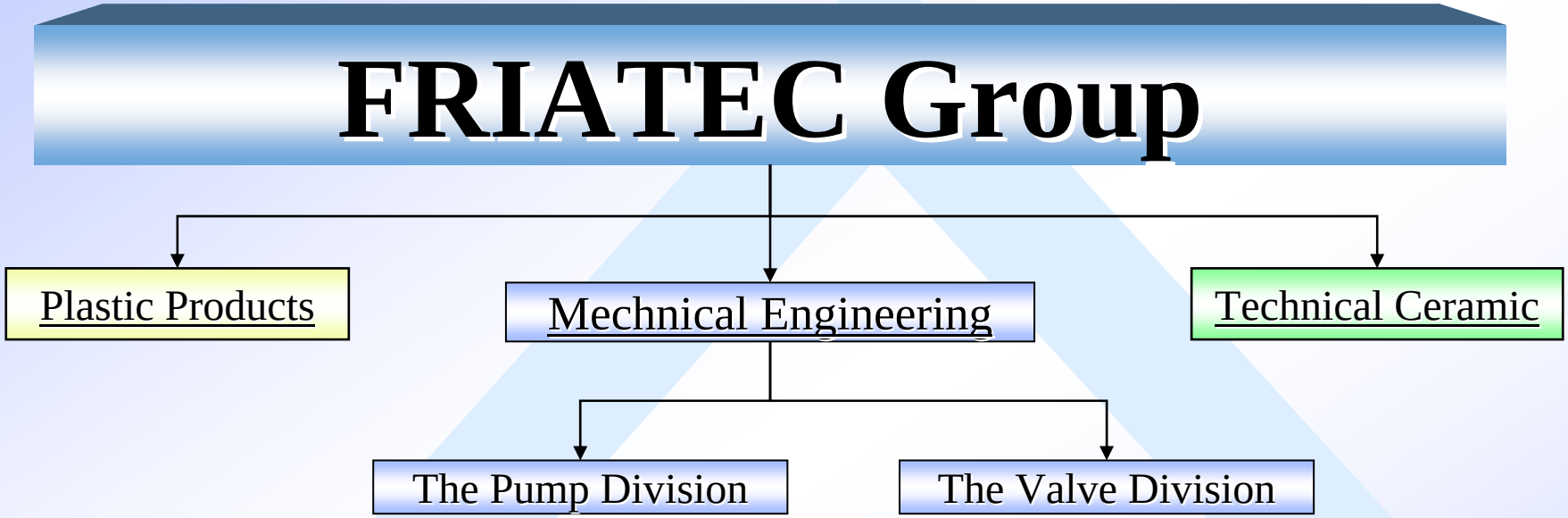
德国费亚泰克 —耐腐专家

RHEINHÜTTE PUMPS

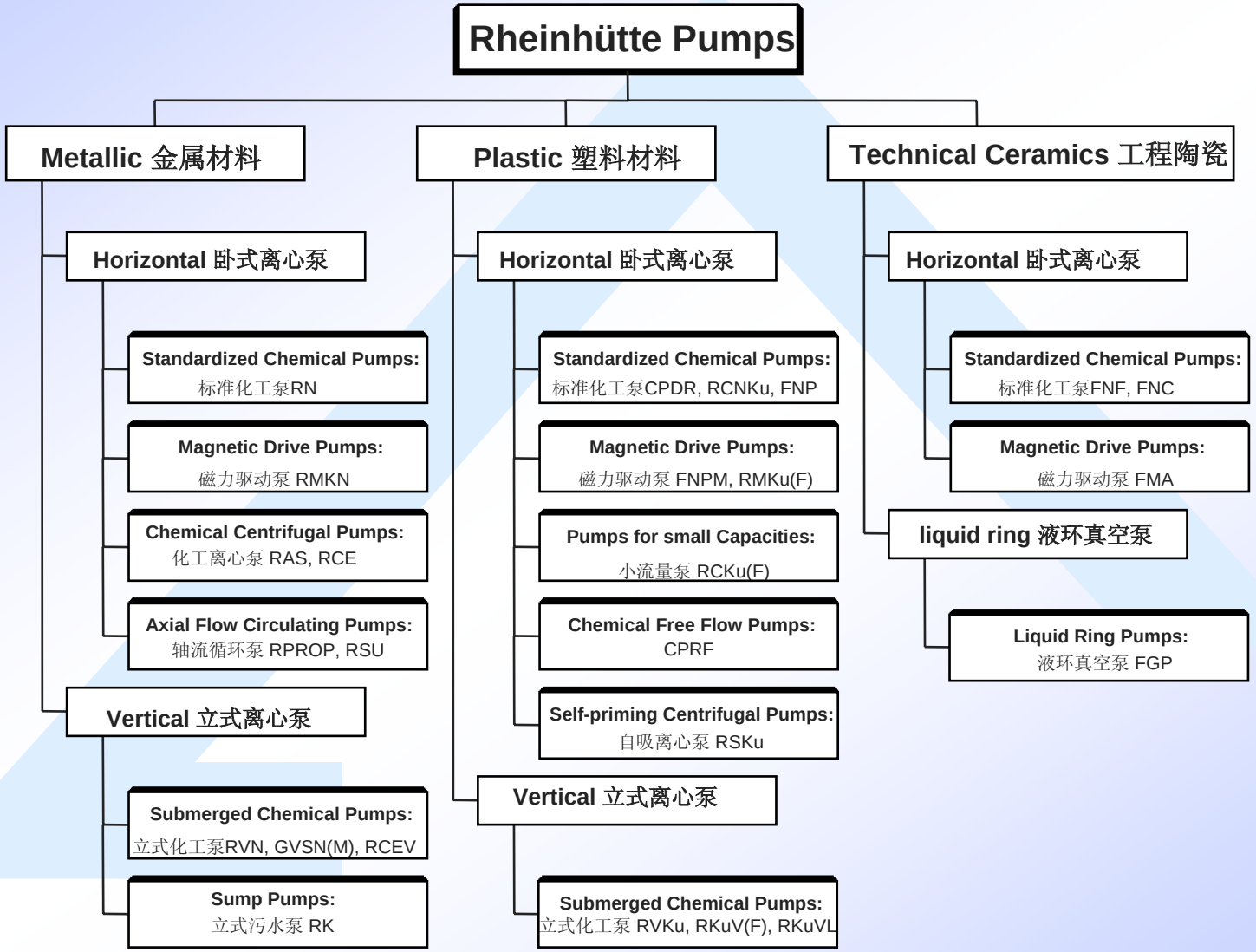


- **Founded in 1860 , Germany Mannheim 建于1860年，德国Mannheim**
- **3 operational sections, More than 35 subsidiaries and contact offices, of which 17 are manufacturing plants 集团3大部门，35个子公司及联络办事处，全球17个工厂**
- **Employer 1200 Turnover € 200 Million全球员工1200人，年销售额2亿欧元**

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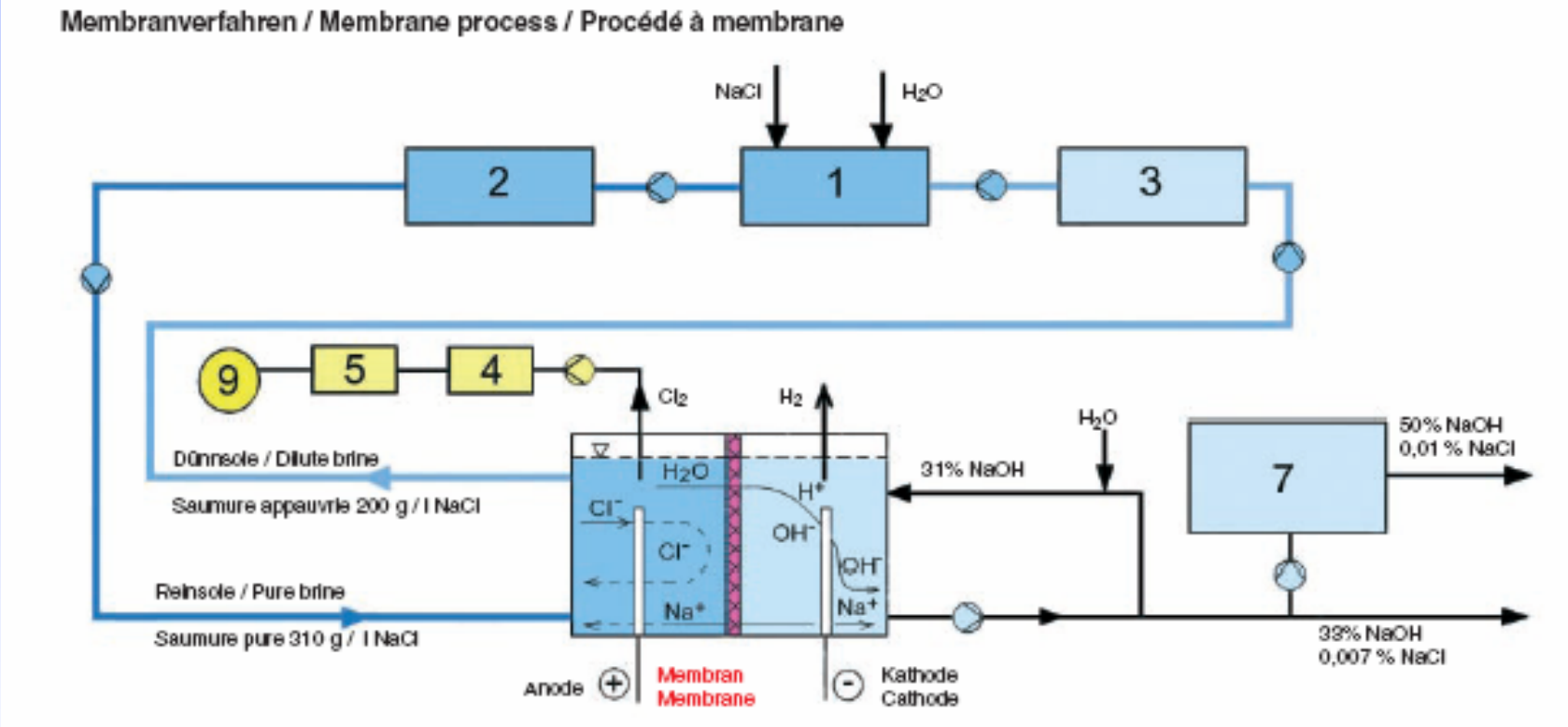
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Range of Products —耐腐蚀耐磨损离心泵



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Chlor-Alkali Electrolysis Application 一氯碱应用



Important pumped media in chloralkali electrolysis. 离子膜烧碱工业中典型离心泵应用：

- Raw brine: contaminated NaCl solution 初盐水：含固NaCl溶液
- Pure brine: purified 26% NaCl solution 纯盐水: 纯度26%的NaCl溶液
- Dilute brine: 19 - 23% NaCl solution 稀盐水: 19%-23% 的NaCl溶液
- Caustic soda: 30 - 50% NaOH 烧碱: 30-50%的NaOH
- Moist chlorine 湿氯气
- Desiccator acid 80 - 98% H2SO4 saturated with 湿Cl2（含饱和氯气的80-98%硫酸）
- Sodium hypochlorite, 12 - 15% NaOCl 次氯酸钠溶液

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Chlor-Alkali Electrolysis Application 一氯碱应用

RHEINHÜTTE PUMPS

Pump selection Guide: 选泵推荐

Pump 泵类型	**TYPE** 泵型	**Materials** 常用材料
Chemical pump 化工泵	RCE	Titan钛材, HA 28 5
Standardized chemical pump 标准化工泵	RN	Titan, Titan-PD, 1.4408 Siguß 高硅铸铁(G-X 90 SiCr 15 5), Nickel镍材 HA 28 5 (G-X5 CrNiMoCu 28 5) R 70 C1 (2.4686), R 70C2 (2.4602)
Vertical chemical pump 立式泵	RVHg	GG - 25 (0.6025)
Vertical chemical pump 立式泵	GVSN	1.4408 不锈钢
Magnetic drive pump 磁力泵	RMKN	1.4408, Nickel, titan, Titan-PD
	GIP FNPM RNP	ETFE, PFA
Liquid ring vacuum pump 液环泵	FGP	Keramik FRIKORUND®, 特种陶瓷
Standardized chemical pumps 塑料化工泵	CPDR RCNKu	PVDF

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Chlor-Alkali Electrolysis Application
一氯碱泵应用

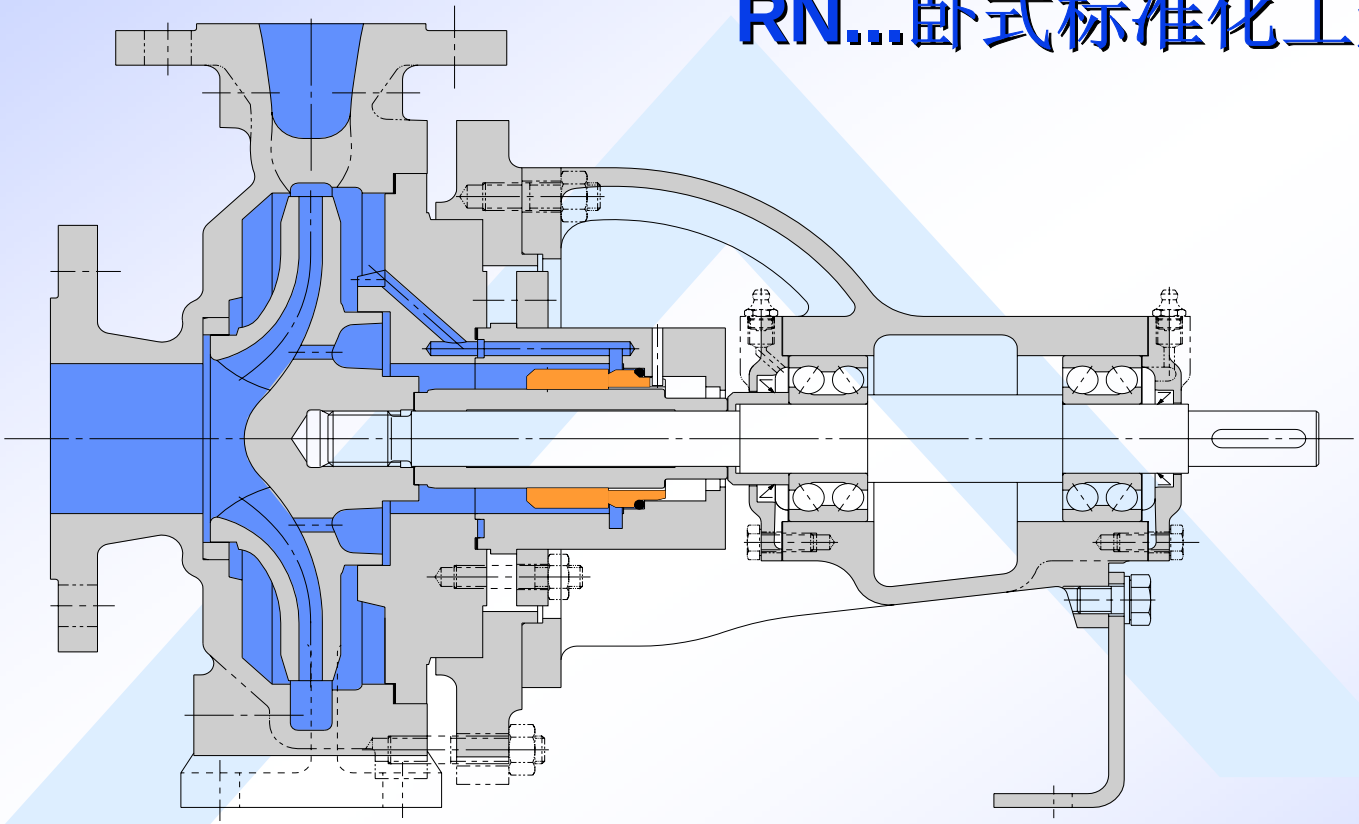
RHEINHÜTTE PUMPS

RN..	卧式标准离心泵	：酸性盐水、氯水、盐酸、盐泥、烧碱等
RMKN	卧式磁力泵	：不同浓度的烧碱
GVSN	熔盐液下泵	：可达550C熔盐
RK	化工废水泵	；化工废水
FGP	液环真空泵、压缩机	：99.5%湿氯气、HCl,等
RSU、R PROP	蒸发循环泵	：含盐烧碱24-44%
CPDR	塑料化工泵	：低浓度烧碱

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RN...卧式标准化工泵



Design features 设计特性

process design 根据流程设计

⇨ closed or semi-open impeller with wear plate
闭式或半开式叶轮，带耐磨板

Application 应用

⇨10％,33％,48%,50% NaOH

Material 材质

⇨ Ti 钛材,Ni 镍材

⇨ R30.20 (60-65%NaOH)

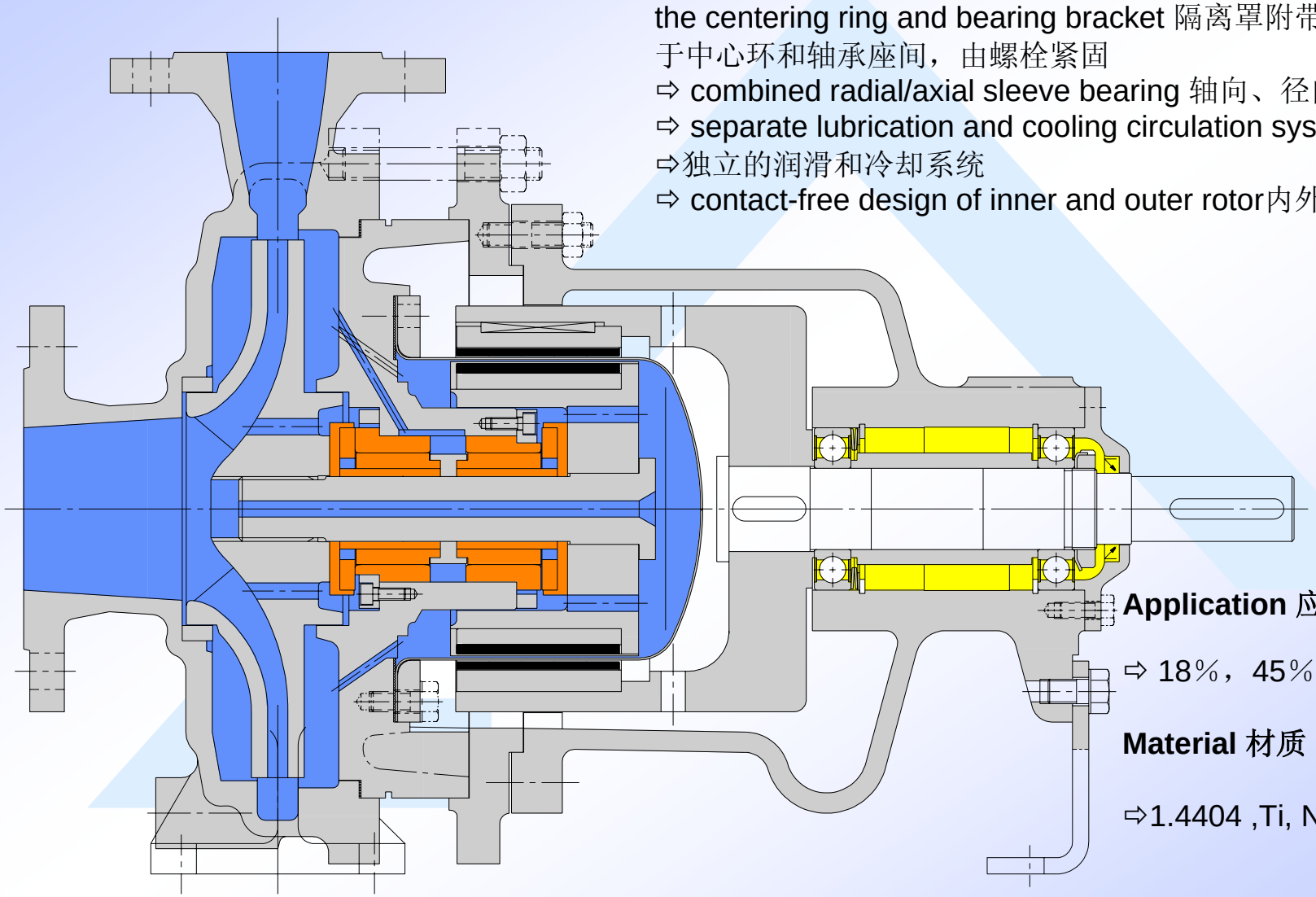
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RMKN 磁力泵

RHEINHÜTTE PUMPS

Design features 设计特性

⇨spacer-can with flange manufactured in one piece and bolted to the centering ring and bearing bracket 隔离罩附带有一片法兰，夹于中心环和轴承座间，由螺栓紧固
⇨ combined radial/axial sleeve bearing 轴向、径向滑动轴承组
⇨ separate lubrication and cooling circulation system
⇨独立的润滑和冷却系统
⇨ contact-free design of inner and outer rotor内外运动部件不接触



Application 应用

⇨ 18%，45%，50% NaOH

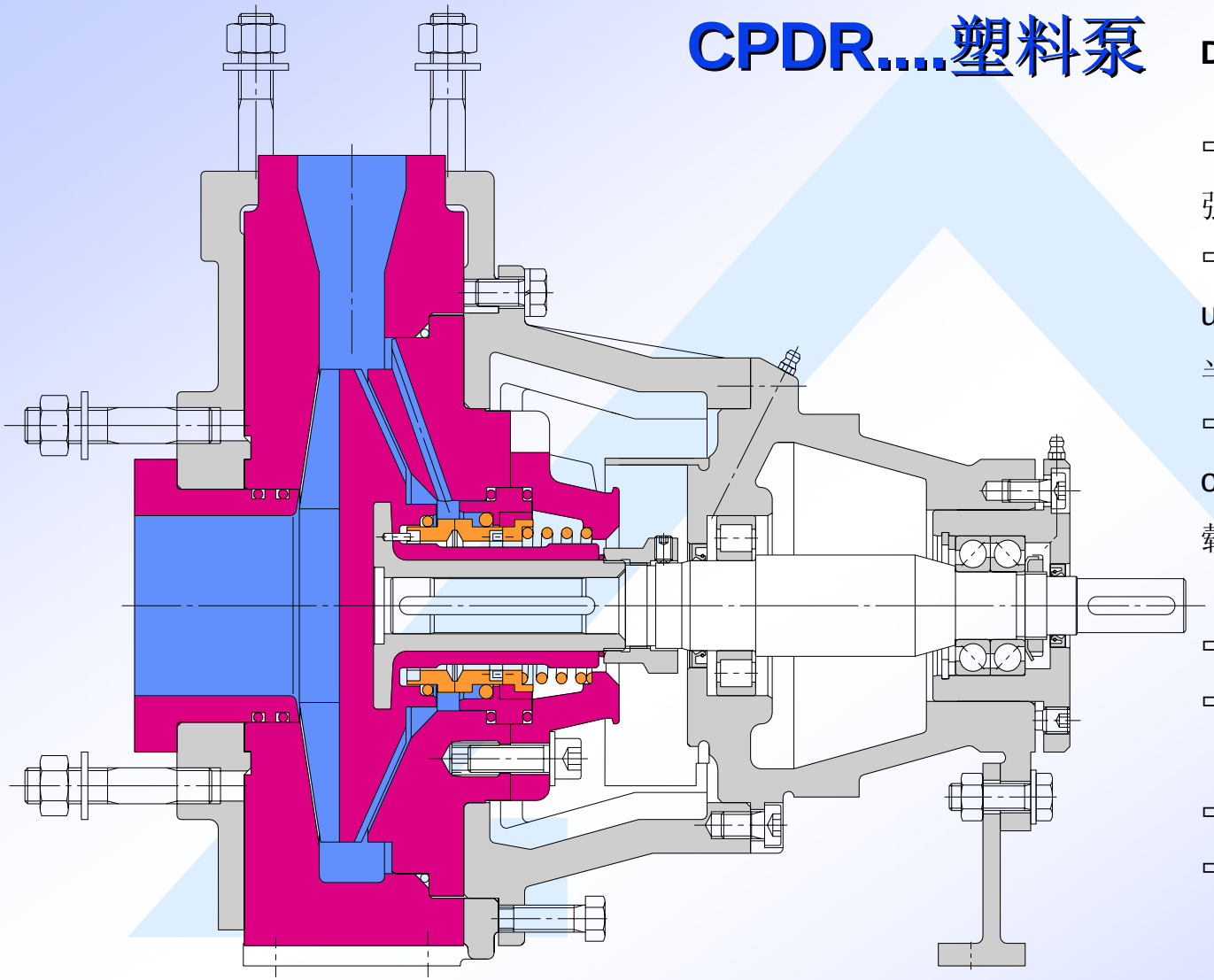
Material 材质

⇨1.4404 ,Ti, Ni

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CPDR....塑料泵



Design features 设计特点

⇨ robust metal armour of GGG 40.3
强劲金属加强罩

⇨ danger of clogging minimised by using semi-open impeller design
半开式叶轮设计把堵塞危险降至最低

⇨ impeller-shaft arrangement by use of pressed-in metal hub 轴采用金属毂嵌入塑料叶轮内

⇨**Application** 应用

⇨5％-33％NaOH，30%HCl

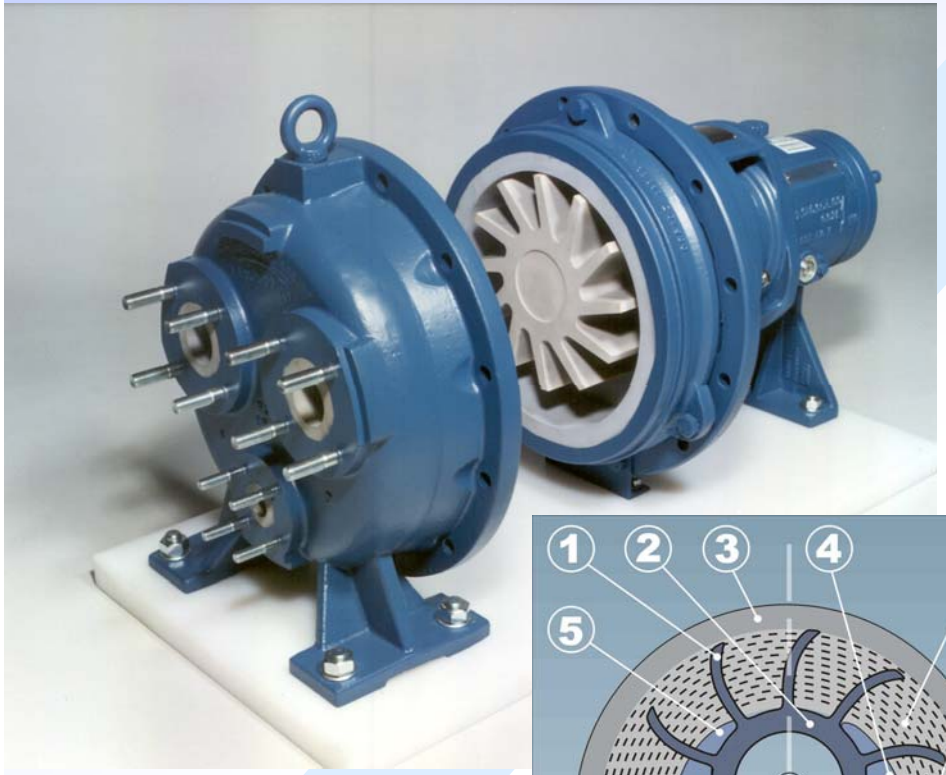
⇨**Material** 材料

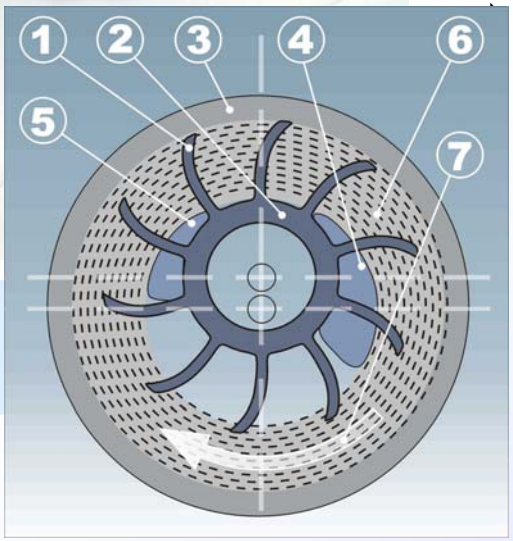
⇨PP,PE,PVDF

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Liquid ring gas pump in technical ceramic FRIKORUND®

FGP 液环真空泵/压缩机－特种陶瓷材质－湿氯气输送



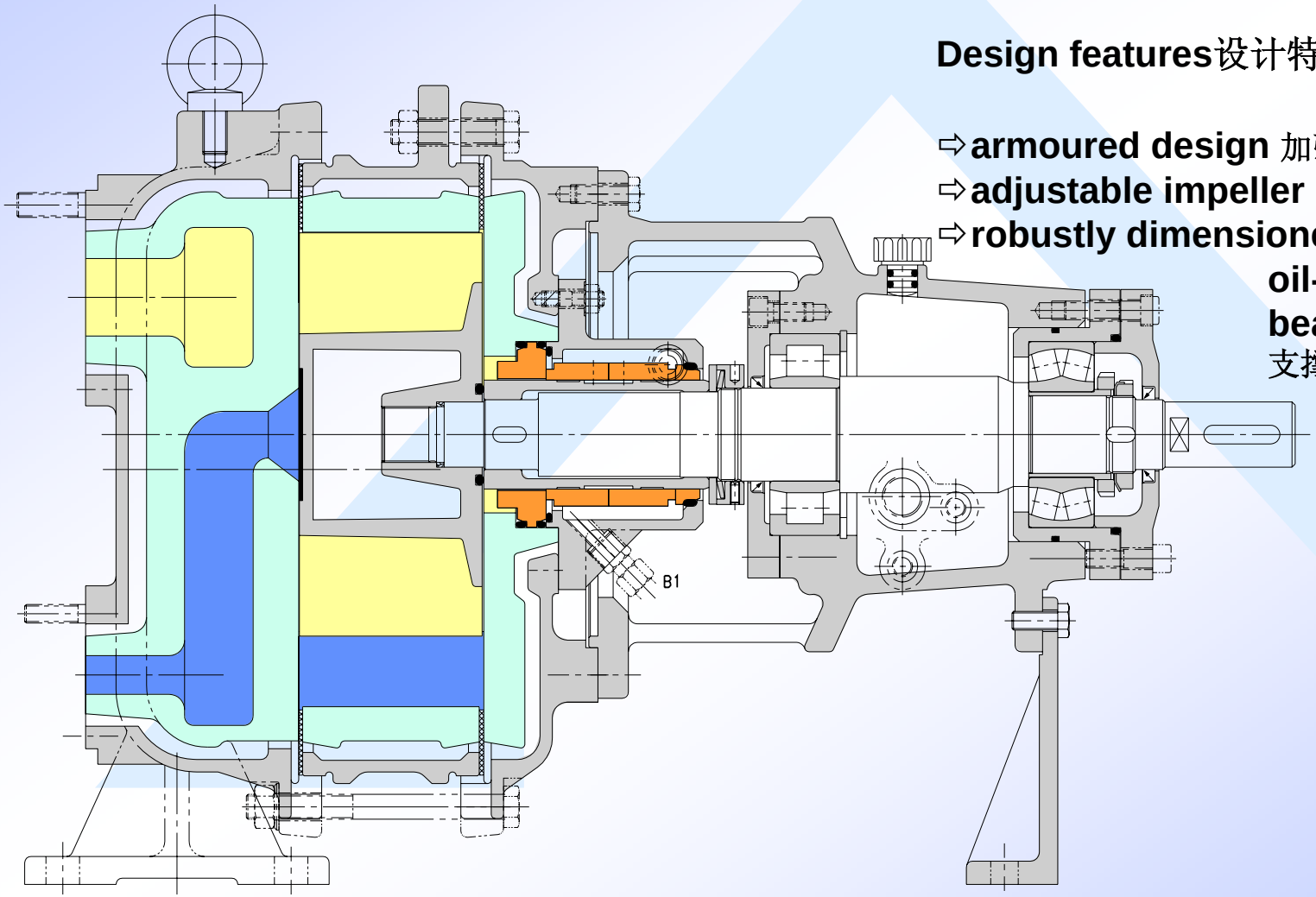


- **Horizontal liquid ring gas pump in vacuum or compressor operation for handling aggressive gases and vapours** 液环真空泵输送腐蚀性汽液
- **Standard size range: DN 50 - DN 100** 口径
- **Performance range: Compression up to 2 bar (29 P.S.I.) gauge pressure** 压缩出口压力：2Bar
- **Vacuum down to 100 mbar (1.45 P.S.I.) pressure** 真空操作至100mbar
- **Shaft sealing: stuffing box packing, various mechanical seals** 密封形式：填料或多种机封
- **Materials: hydraulic components made from FRIKORUND®, impeller also available in titanium, hastelloy, zirconium and PTFE** 材质：过流部件为特种FRIKORUND®, 叶轮可为钛材，哈氏合金，锆材或PTFE

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Liquid ring gas pump in technical ceramic FRIKORUND®

FGP...CN2 液环真空泵/ /压缩机－双机械密封



Design features设计特点

- ⇨**armoured design** 加强外壳设计
- ⇨**adjustable impeller clearance** 叶轮间隙可调
- ⇨**robustly dimensioned shaft supported by oil-lubricated ball bearings**油润滑滚珠轴承支撑强劲轴

德国费亚泰克。上海张扬路838号华都大厦21A,B座 王新 021-50815318 richard.wang@friatec.com.cn

Media	Material	Type				Quant.	Customer
NaOH 5%	PP-V	CPDR	32	160	C1	2	Fria-A/Andritz/
H2O+NaOH	PP-V	RCKuF	25	160	CS	1	TAM//Galvano-Mayer
NaOH 50%	PP-H	RMKu	25	160		1	Fria-B//FINA-Antwerpen
NaOH haltig	PP-H	CPDR	32	125	C1X	1	TAM//IC-Import
HCl+NaOH+H2O	PP	RVKu	80	200	Y	1	Techno Eng.//Israel Electric
HCl 6%,NaOH 5%	PP	RVKu	50	200	Y 3000	2	TAH/Wabag/BSL Schkopau
HCl 6%,NaOH 5%	PP-H	CPDR	65	160	C1	2	TAH/Wabag/BSL Schkopau
NaOH 33%	PVDF-M	CPDR	50	160	CN1	1	TBW/Uhde,Dtmd/
NaOH 50 %	1.4404	RMKN	65	160		1	Chem. GmbH, Bitterfeld
NaOH 50 %	1.4404	RMKN	65	160		1	Chem. GmbH, Bitterfeld
NaOH 50 %	1.4404	RMKN	65	160		1	Chem. GmbH, Bitterfeld
NaOH 20 %	GGG-40.3	RMKNF	32	160		2	Buna GmbH, Schkopau
NaOH 8%	Sicro5	RCE	40	200	B	1	Ciba Geigy, Monthey
NaOH 20%	Sicro5	RCE	125	260	B	2	Bayer AG, Krefeld
NaOH 20%	Sicro5	RCE	125	260	B	2	Bayer AG, Krefeld

Diese Liste stellt nur eine Auswahl der Lieferungen dar und erhebt keinen Anspruch auf Vollständigkeit; Garantieansprüche sind ebenfalls nicht daraus abzuleiten. Bei jeder Pumpenauswahl ist eine Werkstoffberatung durch FRIATEC-Rheinhütte erforderlich.

Media	Material	Type				Quant.	Customer
NaOH 50 %	1.4404	RMKN	32	200	H	2	Lurgi AG, Frankfurt/M
Natronlauge	GG-20	RWaT	25	160	C1	1	Faserwerk, Kehlheim
NaOH 3-9 %	1.4408	RSKa	142 01		W	1	Messo-Chem., Duisburg
NaOH 50%	R30.20	RMKN	40	160		1	Fria-B für Solvay
NAOH 50%	PE	FSK	40		G	2	Fria-CH, Hoffmann la Roche
NaOH 25...50 %	1.4404	RMKN	32	160		1	Fluor Daniel Leipzig
NaOH 40%	1.4404	RMKN	32	160		1	Elf Atochem Leimt., Leuna
NaOH 40%, Na2S 60%	R30.20	RN	40	200	B	1	Slovnaft, Bratislava
NaOH 50%	R30.20	RN	40	160	C2	2	Fria-CH f. Bertrams
Hg mit Spuren NaOH	GG-25	RVHG	40	160	A	2	Fria-I für De Nora
NaOH 20...30%	1.4404	GVSN	40	250	A	1	H.C. Stark GmbH, Goslar
NaOH 58%	R30.20	RN	32	160	CN2 H	2	Sitara Chemical, Pakistan

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Media	Material	Type	Quant.	Customer
Clarified Brine Pump	HA28.5	RN 65 / 125 B	2	UHDE BmbH,Dortmund
Lean Brine Pump	Titan	RN 80 / 400 CN2	2	UHDE BmbH,Dortmund
Polished Brine Pump	HA28.5	RN 65 / 200 B	2	UHDE BmbH,Dortmund
Filtered Brine Pump	HA28.5	RN 65 / 200 B	2	UHDE BmbH,Dortmund
Ca(NO3)2-Brine 42%	GGG-40.3	RCN 65 / 200 A	1	Ch. Dussling, Stuttgart
Ca(NO3)2-Brine 42%	GGG-40.4	RCN 150 / 400 A	1	Ch. Dussling, Stuttgart
Clear Brine	Titan	FNM 150 / 320 GD	2	RASIM Industries LM, Indien
Natriumchlorid-Sole	Titan	RN 80 / 200 B	1	BASF AG, Lu
Raw brine	HA28.5	RN 125 / 400 B	2	UHDE GmbH, Dortmund
Filtered brine	HA28.5	RN 125 / 400 B	2	UHDE GmbH, Dortmund
Polished brine	HA28.5	RN 150 / 400 B	2	UHDE GmbH, Dortmund
Polished brine	HA28.5	RN 125 / 315 B	1	UHDE GmbH, Dortmund

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Media	Material	Type	Quant.	Customer
HCl-,Ethanol-,N2-Gas	Zirkonium	FGP 111 / GD	1	Degussa AG, Ffm
HCl-,Ethanol-,N2-Gas	Zirkonium	FGP 111 / GD	1	Degussa AG, Ffm
HCl, Toluol, Lösungsmittel		FGP 51 / GD	1	Ciba-Gagy, Basel
HCl, Toluol, Lösungsmittel	PTFE/Gl	FGP 51 / GD	1	Ciba-Geigy, Basel
Gase, verschiedene	PTFE/Glas	FGP 51 /	1	Dr. Th. Böhme KG
Gase	PTFE/Glas	FGP 51 / GD	1	Ciba GeigyAG, CH
Gase	PTFE/Gl	FGP 51 / GD	1	Ciba Geigy AG. Neuhausen
Gase	PTFE/Glas	FGP 51 / GD	1	Fria-CH f.Ciba-Geigy AG, Monthey
Essigsäure-Luft	PTFE/Gl	FGP 51 / GD	1	Hoechst AG, Gersthofen
Cl2-Gas, wet	Titan	FGP 50 / S	2	Egyptin Chem. Industry
Cl2-Gas, moist		FGP 50 / S	1	Uhde, Dortmund
Cl2-Gas, feucht	Titan	FGP 111 / GD	1	ERAMET, Le Havre
Cl2-Gas feucht	Titan	FGP 51 / GD	1	UHDE, Dortmund
Cl2-Gas feucht	Titan	FGP 51 / GD	1	UHDE, Dortmund
Cl2-Gas		FGP 50 / S	1	Uhde, Dortmund

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NEWSLETTER

RHEINHÜTTE PUMPEN

RHEINHÜTTE PUMPS

Up-to-date information from FRIATEC-Rheinhütte Issue 04/02

Corrosion resistant vacuum pumps

Environmentally friendly compact vacuum unit with operating liquid in a closed circuit

In chemical and process engineering, a large number of processes are best run under a vacuum. Corrosion damage on the vacuum systems for this often gives rise to repairs and operational breakdowns and thus incurs high costs. The liquid ring pumps of the FGP Series, made of ceramic material, provide a solution for this problem.

Friatec Rheinhütte builds complete pumping stations, in line with the operating requirements of the user, and these can also include several pumps, separator tanks and cooling. We would like to show you a completely special installation of this type today:

Vacuum system for absolute pressures up to 2 mbar (A).

The combination of liquid ring vacuum pumps and rotary piston lobe-type pumps is not unknown in the chemical industry. If however highly corrosive vapours (e.g. HCl and Cl_2) are present in the atmosphere to be evacuated, the problem of the choice of material comes to the fore.



In order to achieve the final vacuum of less than 2 mbar (A) required in this case, the chosen concept was that of a three-stage rotary piston lobe-type pump combination (Pfeiffer Vacuum) with a liquid ring vacuum pump (Friatec Rheinhütte) downstream.

From a continuous evaporation process, it is essential to evacuate vapours of HCl and organic components. In earlier corrosion trials only the materials PTFE, graphite and ceramics gave a satisfactory service life.

Due to this corrosion problem the rotary piston lobe-type pumps have a coating of nickel and PTFE. For the completely ceramic Type FGP liquid ring vacuum pump there is no possibility of a corrosion attack across the whole range of concentrations and temperatures of the agents involved.

For active protection of the rotary piston lobe-type pumps, these are precisely dimensioned so that the pressure and temperature in any stage exclude the formation of condensate, but on the other hand also prevent cracking products from the organic components.

Materials:

Rotary piston lobe-type pumps	GGG 70 / Ni-PTFE
Liquid ring vacuum pump	Ceramic Frikorund® Impeller PTFE-Cl
Separator / heat exchanger	Graphite
Pipe lines	Steel / PTFE

Technical data:

Suction pressure	1,5 – 3 mbar(A)
Volumetric suction flow	1100 - 2300 m³/h (frequency regulated)
Installed rating	23 kW

We shall be pleased to receive your enquires for these applications!

费亚泰克公司提供腐蚀汽液输送的液环真空泵整套设备：
该系统绝对真空度达2 mbar。输送介质：HCl，Cl2 腐蚀介质
系统包括：
3级旋转凸轮泵：
GGG 70 / Ni-PTFE
液环泵： 特种陶瓷Frikorund 叶轮为 PTFE
汽液分离器、换热器
石墨
管道部件 ： 不锈钢 / PTFE
技术参数：
吸入真空度： 1.5 – 3 mBar
抽气量：1100-2300m3/h
变频调节
功率： 23Kw

c. com. cn

FRIATEC

Chlor-Alkali Electrolysis Application
一氯碱应用 VCM阀门选用

RHEINHÜTTE PUMPS



1. TANK BOTTOM VALVES
DN 20 - 350
FOR GASES & LIQUIDS



2. RH WEDGE GATE VALVES
DN 50 - 600
FOR LIQUIDS & SLURRIES



3. RHEFLA-VALVES
DN 50 - 1500
FOR GASES & STEAMS

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