



YINGNAI
河北盈耐

全球 FRP 定制化解决方案领导者

Global Leader In Customized FRP Solutions

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TECHNOLOGY

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Global Leader In Customized FRP Solutions

河北盈耐环保科技有限公司

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卓越性能 塑造未来

Exceptional Performance, Shaping the Future



YINGNAI
河北盈耐

卓越性能 塑造未来 与创新材料共舞

Exceptional Performance, Shaping the Future
Dancing with Innovative Materials

在追求卓越性能与持久耐用的工业世界里，玻璃钢（FRP）以其轻质高强、耐腐蚀、绝缘绝热、设计灵活的卓越特性，正成为传统材料的卓越替代者。我们专注于这种非凡材料，致力于为各行各业提供领先的玻璃钢解决方案。

我们产品的多样性印证着我们对工艺的专注，无论是标准产品还是特殊定制，我们都以严谨的工程设计和精湛的制造工艺，确保每一件产品都能应对苛刻环境，承载客户的重托。

我们不仅是产品的制造商，更是您值得信赖的合作伙伴。选择我们，即是选择了一份持久的安全、显著的成本效益与无限的应用可能。让我们携手，以创新材料，塑造更加稳健可靠的未来。

In the industrial world that pursues exceptional performance and long-lasting durability, Fiberglass Reinforced Plastic (FRP), with its outstanding properties of being lightweight and high-strength, corrosion-resistant, insulation and heat insulation, and flexible in design, is emerging as an excellent alternative to traditional materials. We focus on this remarkable material and are committed to providing leading FRP solutions for various industries.

The diversity of our products reflects our dedication to craftsmanship. Whether it's standard products or custom-made solutions, we adhere to rigorous engineering design and exquisite manufacturing techniques to ensure every product can withstand harsh environments and fulfill the expectations of our customers.

We are not only the manufacturers of products, but also your reliable partners. Choosing us means choosing long-term safety, significant cost-effectiveness, and endless application possibilities. Let us join hands to shape a more stable and reliable future with innovative materials.

全球 FRP 定制化解决方案领导者

——按需设计，精准制造

河北盈耐环保科技有限公司坐落于美丽的衡水湖畔，紧邻 106 国道，注册资本 6060 万元，员工 120 人，公司占地 33000 m²，前身为玻璃钢龙头企业于 2019 年正式更名。河北盈耐环保科技有限公司专业致力于各类玻璃钢制品、生物降解材料制品的研发、生产以及销售。主要产品有玻璃钢管道、玻璃钢容器、玻璃钢塔器、玻璃钢管道、玻璃钢拉挤产品、净化槽、双层油罐、电解槽等以及生物降解材料制成的一次性可降解圆碗、多格餐盒、餐具等等。

公司以人为本、科技为主导。公司非常重视产品质量和企业信誉，以质量求生存、以信誉求发展，我公司生产的玻璃钢系列产品覆盖全国各个省、市、自治区以及海外的美洲、欧洲、非洲、亚洲市场。

我们将继续通过开拓创新、坚持不懈的努力，将企业快速、创新、健康发展。

我们承诺：

- ① 精准定制：以 FRP 产品需求为核心，严格按图纸生产，确保产品与设计一致。
- ② 品质保障：CNAS 实验室全流程检测，关键部件提供 10 年质保，支持售后快速响应。
- ③ 全球交付：英语、俄语、西班牙语团队无缝对接，72 小时紧急订单响应，技术专家全球驻场支持。



Global Leader in Customized FRP Solutions

—— Design on Demand, Precision Manufacturing

Hebei Yingnai Environmental Protection Technology Co., Ltd. locates in the beautiful Hengshui Lake, adjacent to 106 national road, with registered capital of CNY 60.6 million. The company covers an area of 33,000m² and it has 120 employees. The company was formerly a leading FRP enterprise and officially renamed in 2019. Hebei Yingnai Environmental Protection Technology Co., Ltd. is specialized in the R&D, production and sales of various FRP products and biodegradable material products. Its main products include FRP pipes, FRP containers, FRP tower vessels, FRP septic tanks, FRP pultruded profiles, purification tanks, double-layer oil tanks, electrolytic cells, as well as disposable biodegradable round bowls, multi-compartment lunch boxes and tableware made of biodegradable materials.

The company prioritizes people and takes technology as the core. It attaches great importance to product quality and corporate reputation, adhering to the principle of "surviving by quality and developing by reputation". The FRP series products manufactured by our company are sold across all provinces, municipalities and autonomous regions in China, as well as in overseas markets including America, Europe, Africa and Asia.

Our company will continue to pursue rapid, innovative and healthy development through pioneering innovation and unremitting efforts.

We promise:

- ① Precision Customization: Centering on FRP product requirements, we strictly produce in accordance with drawings to ensure products are consistent with the design.
- ② Quality Assurance: Full-process testing is conducted in CNAS-accredited laboratories; key components come with a 10-year warranty, and we provide rapid after-sales response.
- ③ Global Delivery: Our teams proficient in English, Russian and Spanish offer seamless communication; we provide 72-hour emergency order response and on-site support from technical experts worldwide.



匠心质造 质量为先

我们的严苛检验承诺

Craftsmanship in Manufacturing, Quality as the Priority
Our Commitment to Rigorous Inspection

品质，是企业的生命线。我们深知玻璃钢产品的性能与安全至关重要。因此，我们将质量检验贯穿于生产的每一环节。

工厂聘请了经验丰富的专业质检团队，并配备了先进的检测仪器与实验室。从原材料入库的严谨筛查，到生产过程的实时监控，直至成品终检，我们执行远高于行业标准的检测流程。我们专注检验产品的巴氏硬度、抗压抗弯强度、树脂含量及外观细节等关键指标，确保每一件出厂产品都性能稳定、安全耐用。

对质量的极致追求，是我们对客户最真诚的承诺。选择我们，您获得的不仅是产品，更是百分百的安心。

Quality is the lifeline of an enterprise. We are well aware that the performance and safety of fiberglass-reinforced plastic (FRP) products are of crucial importance. Therefore, we integrate quality inspection into every stage of the production process.

Our factory has engaged an experienced team of professional quality inspectors, and is equipped with advanced testing instruments and laboratories. From the rigorous screening of raw materials upon warehouse entry, to the real-time monitoring during the production process, and up to the final inspection of finished products, we implement a testing procedure that far exceeds industry standards. We focus on inspecting key indicators of our products, such as Barcol hardness, compressive and flexural strength, resin content, and appearance details, to ensure that every product leaving our factory boasts stable performance, safety and durability.

The relentless pursuit of quality is our most sincere commitment to customers. When you choose us, you gain not only products, but also 100% peace of mind.





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Vertical FRP Storage Tank

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05 大型玻璃钢容器
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07 玻璃钢工艺管道
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FRP Mortar Pipe

11 玻璃钢烟囱
FRP Stack

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19 玻璃钢酸雾净化塔
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20 玻璃钢尾气吸收塔
FRP Tail Gas Absorption Tower

21 玻璃钢拉挤型材
FRP Pultruded Profiles

23 模塑玻璃钢格栅
FRP Molded Grating

25 玻璃钢钢筋
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27 玻璃钢电缆桥架
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33 玻璃钢电解槽
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Vertical FRP Storage Tank

立式 FRP 储罐

产品概述 Product Overview

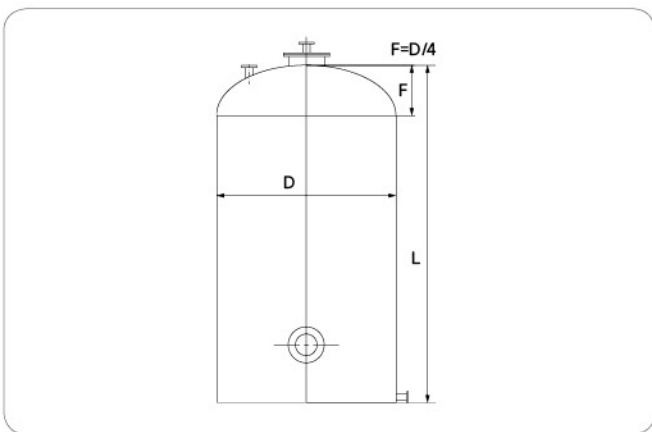
玻璃钢耐腐蚀储罐具有机械强度高、耐腐蚀性能好、使用寿命长、重量轻、内壁光滑易清洗、耐低温性好、隔热性能好、绝缘性能好等系列特点，成型容易，维修方便：特别适合于结构复杂的设备，大型容器可现场整体缠绕。

广泛应用于化工、石油、造纸、食品、电子、制药、包装运输等领域，还适合于各种酸、碱、盐及有机溶剂等腐蚀环境。

FRP corrosion-resistant storage tanks feature high mechanical strength, excellent corrosion resistance, long service life, light weight, smooth inner walls for easy cleaning, good low-temperature resistance, good heat insulation performance, and good insulation performance. They are easy to form and convenient to maintain: especially suitable for equipment with complex structures, and large-scale vessels can be integrally wound on-site.

They are widely used in chemical industry, petroleum, papermaking, food, electronics, pharmaceutical, packaging and transportation industries, and also suitable for various corrosive environments such as acids, alkalis, salts and organic solvents.

参数图 Parameter Diagram



规格参数 Specification Parameters

单位 Unit (mm)

M³ L D	400	600	800	1000	1200	1400	1500	1600	1800	2000	2200
0.1	850	430									
0.2	1650	780	490								
0.5		1840	1090	740							
1			2080	1380							
2				2650	1890	1440					
3					2780	2090	1850				
4					3660	2980	2410	2150			
5						3550	2980	2650			
6							3550	3140			
7								3640	2930		
8								4100	3320		
9								4630	3710	3060	
10								5130	4100	3370	
11								5630	4500	3690	3100
12									4890	4010	3370
15									6090	4970	4150
18									7250	5920	4940
20									8030	6560	5470
25										8150	6790

M³ L D	2200	2400	2500	2600	2800	3000	3200	3400	3500	3600	3800	4000	4200	4500
30	8100	6860	6340	5890	5130	4530	4030	3620						
35		7960	7360	6830	5940	5240	4650	4170	3980	3770				
40		9070	8380	7780	6750	5940	5280	4720	4480	4260	3880			
45			9400	8720	7570	6650	5900	5270	5000	4760	4320			
50				9660	8380	7360	6520	5830	5520	5250	4760	4320		
55					9190	8070	7140	6380	6040	5740	5200	4750		
60					10000	8770	7760	6930	6560	6230	5640	5140		
65						9480	8380	7480	7080	6720	6080	5540		
70						10190	9010	8030	7600	7210	6520	5940		
75							9630	8580	8120	7700	6960	6340		
80							10252	9130	8640	8190	7410	6730	6100	5410
90								9680	9680	9180	8090	7530	6830	6040
95								10230	10200	9670	8730	7930	7190	6360
100										10161	9170	8330	7550	6670
110											10050	9120	8280	7300
120												9920	9000	7930
130												10710	9720	8560
140												11510	10440	9190
150												12310	11160	9820
160													11900	10440

Horizontal FRP Storage Tank

卧式 FRP 储罐

● 产品概述 Product Overview

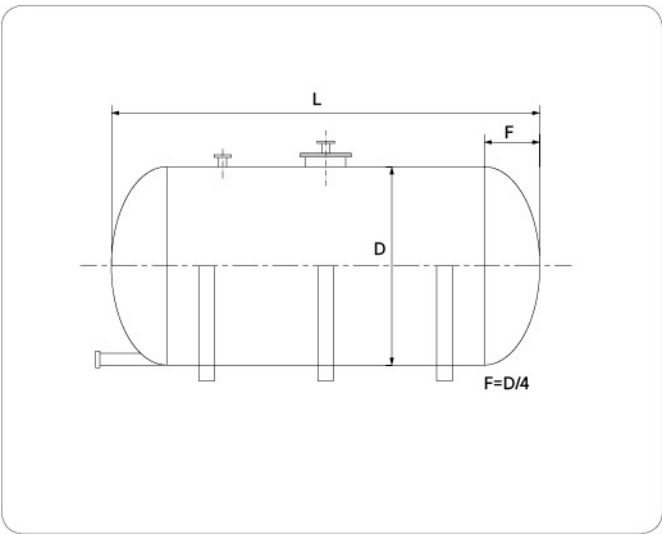
玻璃钢耐腐蚀储罐具有机械强度高、耐腐蚀性能好、使用寿命长、重量轻、内壁光滑易清洗、耐低温性好、隔热性能好、绝缘性能好等系列特点，成型容易，维修方便：特别适合于结构复杂的设备，大型容器可现场整体缠绕。
广泛应用于化工、石油、造纸、食品、电子、制药、包装运输等领域，还适合于各种酸、碱、盐及有机溶剂等腐蚀环境。

FRP corrosion-resistant storage tanks feature high mechanical strength, excellent corrosion resistance, long service life, light weight, smooth inner walls for easy cleaning, good low-temperature resistance, good heat insulation performance, and good insulation performance. They are easy to form and convenient to maintain: especially suitable for equipment with complex structures, and large-scale vessels can be integrally wound on-site.

They are widely used in chemical industry, petroleum, papermaking, food, electronics, pharmaceutical, packaging and transportation industries, and also suitable for various corrosive environments such as acids, alkalis, salts and organic solvents.



● 参数图 Parameter Diagram



● 规格参数 Specification Parameters

单位 Unit (mm)

$\begin{matrix} L \\ D \\ M^3 \end{matrix}$	1000	1200	1400	1500	1600	1800	2000	2200	2400	2500
1	1450									
2	2730	1990	1560							
3	4010	2870	2200	1950						
4		3760	2850	2520	2300					
5			3500	3080	2800					
6				3650	3300					
7				4220	3800	3470				
8				4780	4300	3860				
9				4350	4780	4250	3540			
10				5910	5300	4640	3850			
11					5800	5040	4170	3540		
12					6280	6220	5130	4330		
15						7400	6080	5120	3750	3500
18						8190	6720	5650	4410	4100
20							8310	6960	4850	4500
25								8280	5960	5540
30									7060	6550
35									8170	7560
40									9270	8580

$\begin{matrix} L \\ D \\ M^3 \end{matrix}$	2800	3000	3200	3400	3500	3600	3800	4000	4200	4500
20	3740									
25	4560	4060								
30	5370	4770								
35	6180	5480	4900							
40	6990	6200	5550	5000						
50	8620	7600	6780	6100	5800	5540				
60	10240	9010	8020	7200	6840	6520	5950			
70		10430	9260	8300	7880	7500	6820	6250		
80		11850	10500	9400	8950	8480	7700	7050	6500	
90				10500	9980	9480	8600	7850	7240	6450
100					11000	10460	9480	8650	7950	7050
110							10380	9450	8680	7700
120								10250	9400	8320
130								11050	10100	8950
140									10850	9600
150									11550	10200
160										10850

Large FRP Vessels

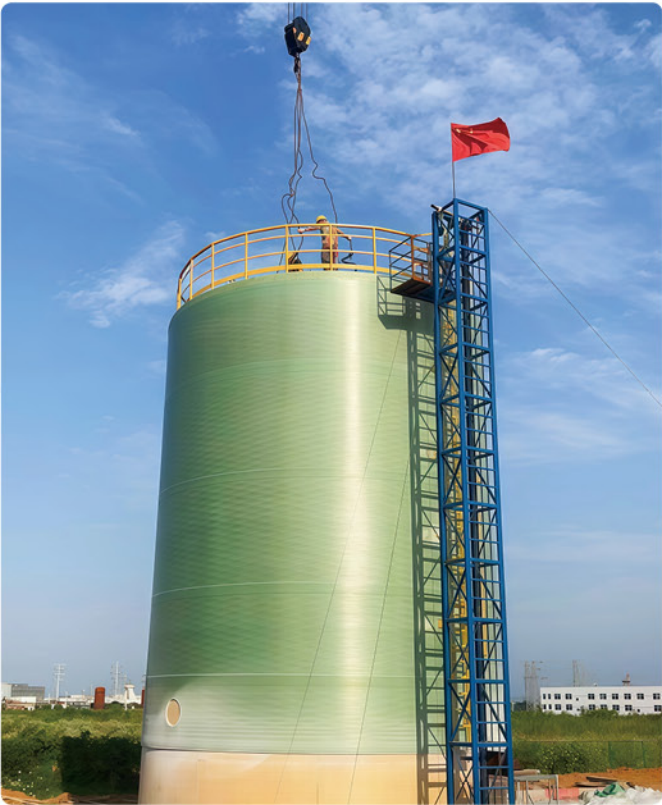
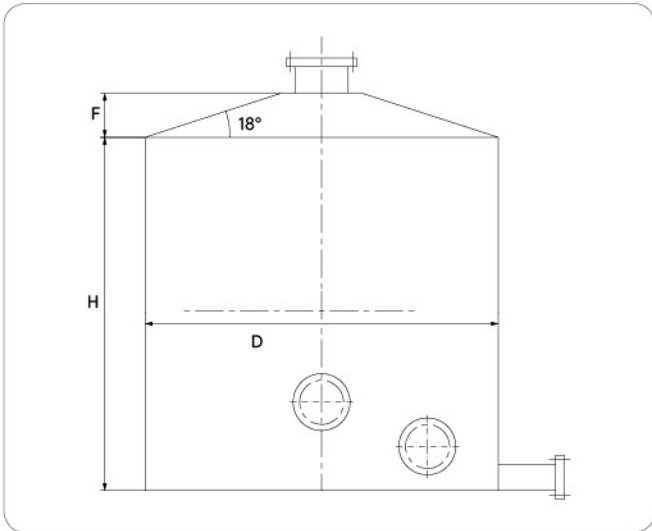
大型玻璃钢容器

产品概述 Product Overview

现场缠绕大型玻璃钢容器是有现场缠绕设备，采用最新工艺缠绕成型的大型储罐及各类容器。该产品具有轻质、强度高、耐腐蚀、容积大、占地小、无需运输、安装方便、维修费用低等优点，主要用于石油、化工、食品酿造、医药等领域。传统的大型容器一般采用钢板焊接而成，内部贴敷环氧玻璃钢防腐衬里或者防腐材料，施工困难、效果不好、易脱落、穿孔。而现场缠绕制作的玻璃钢大型容器以热固性树脂为基本，玻璃纤维为增强材料，采用连续纤维缠绕加喷射纱和环向缠绕，工艺先进，结构合理，制品力学性能好。

Large FRP vessels manufactured by on-site filament winding are large storage tanks and various types of vessels formed by filament winding with the latest technology using on-site winding equipment. This product has the advantages of light weight, high strength, corrosion resistance, large capacity, small floor space, no need for transportation, convenient installation and low maintenance costs, and is mainly used in petroleum, chemical industry, food brewing, pharmaceutical and other fields. Traditional large vessels are generally made of welded steel plates, with epoxy FRP anti-corrosion linings or anti-corrosion materials applied inside, which are difficult to construct, have poor anti-corrosion effect, and are prone to falling off and perforation. In contrast, large FRP vessels made by on-site winding are based on thermosetting resins and reinforced with glass fibers. They adopt continuous fiber winding combined with spray yarn and circumferential winding, featuring advanced technology, reasonable structure and excellent mechanical properties of the product.

参数图 Parameter Diagram



规格参数 Specification Parameters

单位 Unit (mm)

D	4500	5000	5500	6000	6500	7000	7500	8000	8500
M³	H	H	H	H	H	H	H	H	H
150	9460	7660	6340	5330	4550				
200	12600	10210	8440	7100	6050	5220	4550	4000	
300			12650	10640	9070	7820	6820	5990	5310
400				14170	12080	10420	9080	7980	7070
500					15090	13020	11340	9970	8840
600							13610	11960	10600
700								13950	12360
800									14120

D	9000	9500	10000	11000	12000	13000	14000	15000
M³	H	H	H	H	H	H	H	H
300	4740							
400	6310	5670						
500	7880	7080	6390					
600	9460	8490	7660	6340				
700	11030	9900	8940	7390				
800	12600	11310	10210	8440	7100			
900	14170	12720	11480	9500	7980			
1000		14130	12760	10550	8870	7560		
1200			15300	12650	10640	9070	7820	
1400				14760	12400	10570	9120	7950
1600					14170	12080	10420	9080
1800					15940	13590	11720	10220
2000						15090	13020	11350
2200							14320	12480
2400							15620	13610
2500								14180

FRP Process Pipe

玻璃钢工艺管道

● 产品概述 Product Overview

我公司可生产直径4500mm以下，耐酸、耐碱、耐高温等性能的各种工艺管道，设计刚度可定制。整个缠绕过程由微机数控一体化缠绕成型，具有线型美观、精确度高、操作方便等特点。

Our company can produce various process pipes with acid resistance, alkali resistance, high-temperature resistance and other properties, with a diameter of less than 4500mm, and the design stiffness can be customized. The entire winding process is formed by computer numerical control (CNC) integrated winding, featuring elegant linear appearance, high precision and convenient operation.

● 产品特点 Product Features

耐腐蚀：在纵横交错、网罗棋布的环境下，可根据介质的要求选择不同的耐腐蚀管道。

耐压：按工艺要求的压力、设计、制造管道和管件、以工艺要求的1.5倍数压力进行充压实验耐热、耐低温为负70℃，耐高温为250℃。

绝缘性能与阻燃性能好：绝缘性能优良，经过改良后可消除静电，不会自燃、阻燃、拒燃性能好，可自熄。

颜色多样：透明性能好、改良后可呈现多种颜色。

保温性能好：改良后可提高高热传导能力。

Corrosion Resistance: In complex and extensive application environments, different corrosion-resistant pipes can be selected according to the requirements of the medium.

Pressure Resistance: Pipes and pipe fittings are designed and manufactured in accordance with the pressure specified by the process, and a pressure test is carried out at 1.5 times the process-required pressure. The product also features heat resistance and low-temperature resistance, with a low-temperature tolerance of -70°C and a high-temperature tolerance of 250°C.

Good Insulation & Flame Retardancy: It has excellent insulation performance; after modification, it can eliminate static electricity, will not self-ignite, and has good flame retardancy and anti-ignition performance, and is self-extinguishing.

Diverse Colors: It has good transparency; after modification, it can present a variety of colors.

Good Thermal Insulation Performance: After modification, its high heat conduction capacity can be improved.



● 管道厚度参数 Pipe Pipe Thickness Parameter

单位 Unit (mm)

DN (mm)	L (mm)	A (mm)	0.6MPa	1.0MPa	1.6MPa
			TH(mm)	TH(mm)	TH(mm)
10	1800	1500	4.6	4.6	4.6
15	1800	1500	4.6	4.6	4.6
20	1800	1500	4.6	4.6	4.6
25	1800	1500	4.6	4.6	4.6
32	1800	1500	4.6	4.6	4.6
40	1800	1500	4.6	4.6	4.6
50	6000	2000	4.6	4.6	4.6
65	6000	2000	4.6	4.6	4.6
80	6000	2000	4.6	4.6	4.6
100	6000	2000	4.6	4.6	4.6
125	6000	3000	4.6	4.6	5.9
150	6000	3000	4.6	4.6	5.9
200	6000	3000	4.6	5.9	7.2
250	12000	4000	4.6	5.9	8.5
300	12000	4000	5.9	7.2	9.8
350	12000	4000	5.9	8.5	11.1
400	12000	4000	5.9	8.5	12.4
450	12000	4000	7.2	9.8	13.7
500	12000	4000	7.2	9.8	15.0
600	12000	6000	8.5	12.4	17.6
700	12000	6000	9.8	13.7	20.2
800	12000	6000	9.8	15.0	22.8
900	12000	6000	11.1	16.3	25.4
1000	12000	6000	12.4	17.3	28.0
1200	12000	6000	13.7		
1400	12000	6000	16.3		
1500	12000	6000	16.3		
1600	12000	6000	17.6		
1800	12000	6000	18.9		
2000	12000	6000	21.5		
2100	12000	6000	22.8		
2200	12000	6000	24.1		
2400	12000	6000	25.4		
2600	12000	6000	26.7		
3000	12000	6000	30.6		
3300	12000	6000	33.2		
3600	12000	6000	35.8		
4000	12000	6000	39.7		

FRP Mortar Pipe

玻璃钢夹砂管道

● 产品概述 Product Overview

玻璃钢夹砂管道是多年科研开发与成功制造的结果，应用于大型流体输送工程的新材料，主要用于地理管、架空管、具有重量轻、高强度、耐腐蚀、使用寿命长、运行和维修成本低，可为建设工程节约大量资金。

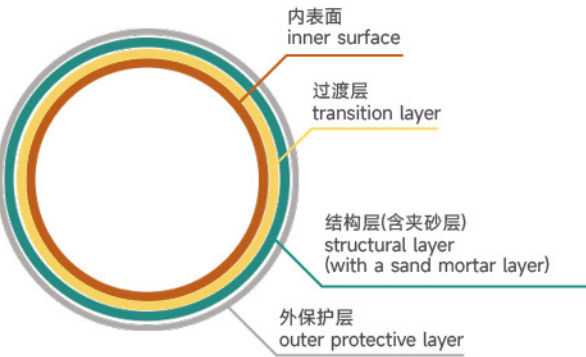
主要成型工艺由计算机控制，在芯模上按规定的程序制作内衬(与纤维缠绕玻璃钢管内衬制作工艺相同)，凝胶后按设计好的线型和厚度缠绕结构层，并将石英砂与树脂混合的砂浆缠在结构层中，最后缠绕外保护层。

FRPM pipe are the result of years of R&D and successful manufacturing. As a new material for large-scale fluid transportation projects, they are mainly used for underground pipes and overhead pipes. They feature light weight, high strength, corrosion resistance, long service life, and low operation and maintenance costs, which can save a large amount of funds for construction projects.

The main forming process is controlled by a computer: first, the inner lining is made on the mandrel according to the specified procedure (same as the inner lining manufacturing process of filament-wound FRP pipes). After gelling, the structural layer is wound according to the designed winding pattern and thickness, with mortar (a mixture of quartz sand and resin) wrapped in the structural layer. Finally, the outer protective layer is wound.

玻璃钢夹砂管道的结构由内衬层、过渡层、结构层(含夹砂层)、保护层四部分组成

The structure of FRP mortar pipe consists of four parts: inner surface, transition layer, structural layer (with a sand mortar layer), and protective layer.



内衬层:亦称防渗防腐层。在管道中防渗防腐方面起关键作用。内表面层由90%的树脂，10%表面毡成型。根据管道直径大小和压力的高低内衬层厚为1.5-2.5mm。

过渡层:由二层短切毡和75±5%的树脂成型。作用是防止毛细管现象的发生。

结构层:该层为纤维缠绕层，它是产品强度的关键。树脂含量为30±5%。为了提高管道刚度而加入的石英砂在该层中，其厚度根据受外力情况而定。

保护层:又称外保护层。该层是管道的最外层，由100%的树脂组成，其作用是防止埋在地下的管道受土壤中腐蚀性介质的侵蚀，另外，该层中加有增韧剂，抗老化剂，对管道起到抗老化，增加使用寿命的作用。其厚度一般为0.25-0.5mm。

Inner Surface:Also known as the anti-seepage and anti-corrosion layer, it plays a key role in anti-seepage and anti-corrosion of the pipe. The inner surface layer is formed with 90% resin and 10% surface veil. The thickness of the inner lining layer ranges from 1.5mm to 2.5mm, depending on the pipe diameter and pressure.

Transition Layer: Formed with two layers of chopped strand mat and 75±5% resin. Its function is to prevent capillary action.

Structural Layer: This layer is a fiber-wound layer and the key to the product's strength, with a resin content of 30±5%. Quartz sand, added to enhance the pipe's rigidity, is incorporated in this layer, and its thickness is determined by the external forces the pipe endures.

Protective Layer: Also referred to as the outer protective layer. As the outermost layer of the pipe, it is composed of 100% resin. Its role is to protect underground pipes from erosion by corrosive media in the soil. Additionally, toughening agents and anti-aging agents are added to this layer, which provides anti-aging protection for the pipe and extends its service life. Its thickness is generally 0.25-0.5mm.



● 规格参数 Specification Parameters

单位 Unit (mm)

公称刚度 (N/m²) Nominal Stiffness	SN2500			SN3750			SN5000				SN7500				SN10000			
	0.25	0.6	1.0	0.25	0.6	1.0	0.25	0.6	1.0	1.6	0.25	0.6	1.0	1.6	0.25	0.6	1.0	1.6
厚度 (mm) Thickness																		
直径 (mm) Diameter																		
300	5.0	5.0	5.0	5.0	5.0	5.0	5.4	5.3	5.3		6.1	6.1	6.0	5.8	6.7	6.7	6.5	6.3
400	5.7	5.7	5.5	6.3	6.3	6.3	6.8	6.8	6.6		8.0	8.0	7.5	7.4	8.5	8.7	8.3	8.1
500	6.9	6.7	6.6	7.7	7.7	7.5	8.5	8.4	8.0		9.7	9.5	9.1	8.8	10.7	10.5	10.1	9.8
600	8.2	7.7	7.7	9.2	9.1	8.5	10.2	9.7	9.3		11.5	11.4	10.7	10.5	13.0	12.4	11.7	11.5
700	9.5	8.8	8.6	10.8	10.3	10.0	12.0	11.3	10.7		13.6	13.0	12.4	11.9	15.2	14.5	13.5	13.1
800	10.9	10.2	9.9	12.4	11.5	11.0	13.7	13.2	12.1		15.8	14.7	14.0	13.5	17.5	17.0	15.2	14.8
900	12.2	11.4	10.8	14.0	12.9	12.3	15.5	14.4	13.5		17.9	16.9	15.6	15.1	19.8	18.6	17.1	16.6
1000	13.5	12.4	11.9	15.6	14.2	13.5	17.3	16.0	14.9		20.0	18.5	17.3	16.5	22.2	21.0	18.8	18.2
1200	16.0	14.7	14.0	18.5	16.8	16.2	21.0	19.1	17.8		23.7	22.0	20.3	19.7	26.3	23.6	22.4	21.6
1400	18.2	17.0	16.0	21.5	19.6	18.5	24.0	22.0	20.3		27.4	25.4	23.4	22.6	30.5	27.5	26.4	25.2
1600	21.3	19.2	18.3	24.1	22.2	21.0	27.6	24.8	23.0	22.4	31.3	29.0	26.6	25.8	34.6	31.2	29.8	28.4
1800	23.3	21.5	20.5	27.2	25.0	23.5	30.8	27.6	25.8	25.2	35.0	32.4	29.9	29.0	39.0	35.0	33.1	31.4
2000	25.9	24.0	22.5	30.0	27.5	26.0	34.0	30.5	28.5	27.7	38.7	36.0	33.0	31.8	43.0	38.6	36.6	34.8
2200	28.5	26.1	24.7	32.8	30.0	28.5	37.0	33.5	31.2	30.4	43.0	39.3	36.2	35.0	47.1	42.3	40.2	38.1
2400	31.1	28.4	26.8	36.0	32.8	30.9	40.3	36.4	34.0	33.2	46.2	42.8	39.2	38.0	51.5	46.2	44.0	51.5
2600	34.0	30.7	29.0	39.0	35.2	33.4	44.0	39.4	36.5	35.8	50.4	48.0	42.4	41.2	55.7	50.0	47.5	45.5
2800	38.0	34.0	32.0	43.0	39.0	37.0	49.0	44.0	41.0	40.0	55.0	50.0	47.5	46.5	62.0	57.0	53.0	52.0
3000	39.0	36.0	35.0	45.0	42.0	40.0	50.0	44.0	44.0	43.0	60.0	59.0	58.0	55.0	65.5	60.5	57.0	55.0
3200	42.0	39.0	38.0	50.0	50.0	42.5	55.0	50.0	48.0	47.0	61.0	58.0	57.0	56.0	67.0	64.0	63.0	61.0
3400	52.0	49.0	47.0	57.0	52.0	50.0	63.0	58.0	54.0	53.0	67.0	62.0	59.0	57.0	73.0	68.0	64.0	62.0
3500	53.0	50.0	48.0	58.0	53.0	49.0	64.0	59.0	55.0	54.0	69.0	63.5	60.0	59.0	75.0	70.0	62.5	61.0

FRP Stack

玻璃钢烟囱

● 产品概述 Product Overview

玻璃钢烟囱克服传统混凝土结构衬里、砌砖、土材质的烟囱不耐腐蚀、使用寿命短等问题，具有质轻高强、不需维修、施工简便、使用寿命长等优点。

FRP stacks solve the problems of poor corrosion resistance and short service life of traditional stacks made of concrete-steel structure with lining, brickwork or earthen materials. They have the advantages of light weight, high strength, no maintenance requirement, simple construction and long service life.

● 产品形式 Product Types

- 自立式玻璃钢烟囱，高度不超过30m，H/D比不大于10；
- 拉索式玻璃钢烟囱，高度不超过45m，H/D比不大于20；
- 塔架式，H/D比不大于10；
- 套筒式，H/D比不大于10；
- 多管式玻璃钢烟囱，H/D比不大于10。

- Self-supporting FRP stacks: Height $\leq 30\text{m}$, H/D ratio ≤ 10 ;
- Guyed FRP stacks: Height $\leq 45\text{m}$, H/D ratio ≤ 20 ;
- Tower-supported FRP stacks: H/D ratio ≤ 10 ;
- Sleeve-type FRP stacks: H/D ratio ≤ 10 ;
- Multi-tube FRP stacks: H/D ratio ≤ 10 .

● 产品特点 Product Features

- 优异的耐腐蚀性、阻燃性、耐高温；
 - 性价比高，使用寿命长，成本低；
 - 整体结构，耐腐蚀；
 - 产品可设计性强；
 - 有产品标准可依免维护。
- Excellent corrosion resistance, flame retardancy, and high-temperature resistance;
 - High cost-effectiveness, long service life, and low cost;
 - Integral structure with corrosion resistance;
 - Strong design flexibility;
 - Compliant with product standards and maintenance-free.



FRP Flue

玻璃钢烟道

● 产品概述 Product Overview

烟塔合一技术是利用冷却塔巨大热量和热空气量对脱硫后湿烟气进行抬升，大多数情况下，其混合气体的抬升高度远高于比冷却塔高几十至上百米的烟囱，从而促进烟气内污染物的扩散。热电厂“烟塔合一”工程中的烟道之所以选择玻璃钢复合材质制作，是因为其耐腐蚀性和耐久效行非常好，使用寿命长，节省成本。玻璃钢烟道使用寿命长达30年，与火力发电厂的生命周期吻合，避免了更换管材停产带来的经济损失和麻烦，更节省了防腐成本。同时玻璃钢本身比重较轻，支持跨度大，吊装成本低，节省施工费用。

主要应用于热电厂、化工厂等烟塔合一工程中。

The integrated flue gas stack and cooling tower technology uses the substantial heat and large volume of hot air from the cooling tower to lift the desulfurized wet flue gas; in most cases, the lifting height of the mixed gas is far higher than that of stacks which are tens to hundreds of meters taller than the cooling tower, thereby promoting the diffusion of pollutants in the flue gas. The reason why FRP composite materials are selected for manufacturing the flue in the "integrated stack and cooling tower" project of thermal power plants lies in their excellent corrosion resistance, good durability, long service life and cost-saving advantage. The service life of FRP flues can be as long as 30 years, which matches the life cycle of thermal power plants, avoiding economic losses and troubles caused by production shutdown due to pipe replacement while further saving anti-corrosion costs. Meanwhile, FRP itself has a relatively low specific gravity, supports large spans and requires low hoisting costs, thus helping save construction expenses.

It is primarily used in combined stack and tower systems for thermal power plants and chemical plants.

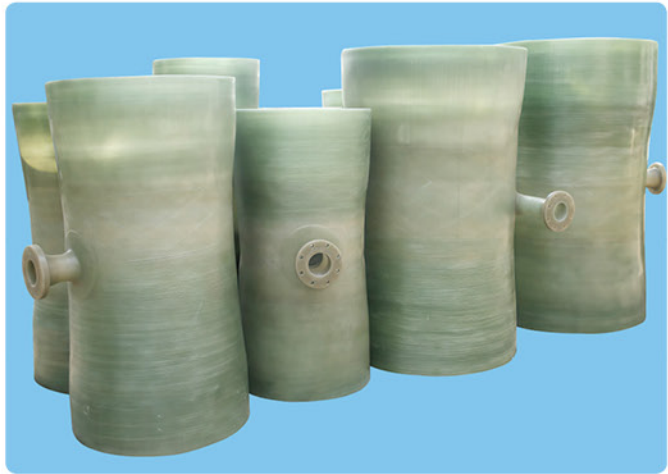
● 产品特点 Product Features

- 使用寿命长
 - 可设计直径大
 - 耐腐蚀
 - 可设计跨度大
 - 质轻高强
- Long service life
 - Large designable diameter
 - Corrosion resistance
 - Large designable span
 - Light weight and high strength



FRP Pipe Fittings

玻璃钢管件



FRP Tower Vessels

玻璃钢塔器

● 产品概述 Product Overview

玻璃钢以其重量轻、强度高、耐腐蚀范围广，可设计性好等特点在氯碱、冶金、制药、发酵和酿造、钾肥和复合肥（NPK）等行业得到广泛应用。塔器设备在设计时通过改变内衬层和内件的材质或者树脂和纤维类满足不同腐蚀介质的要求；而通过有限元分析，改变结构层的树脂和纤维类型，调整铺层的方法，即可满足相应温度和压力下的强度要求。PVC/PP内衬和内件的制作、检验及验收严格执行HG20640-1997《塑料设备》标准，外加强FRP则严格执行HG/T20696-2018《纤维增强塑料化工设备技术规范》标准。

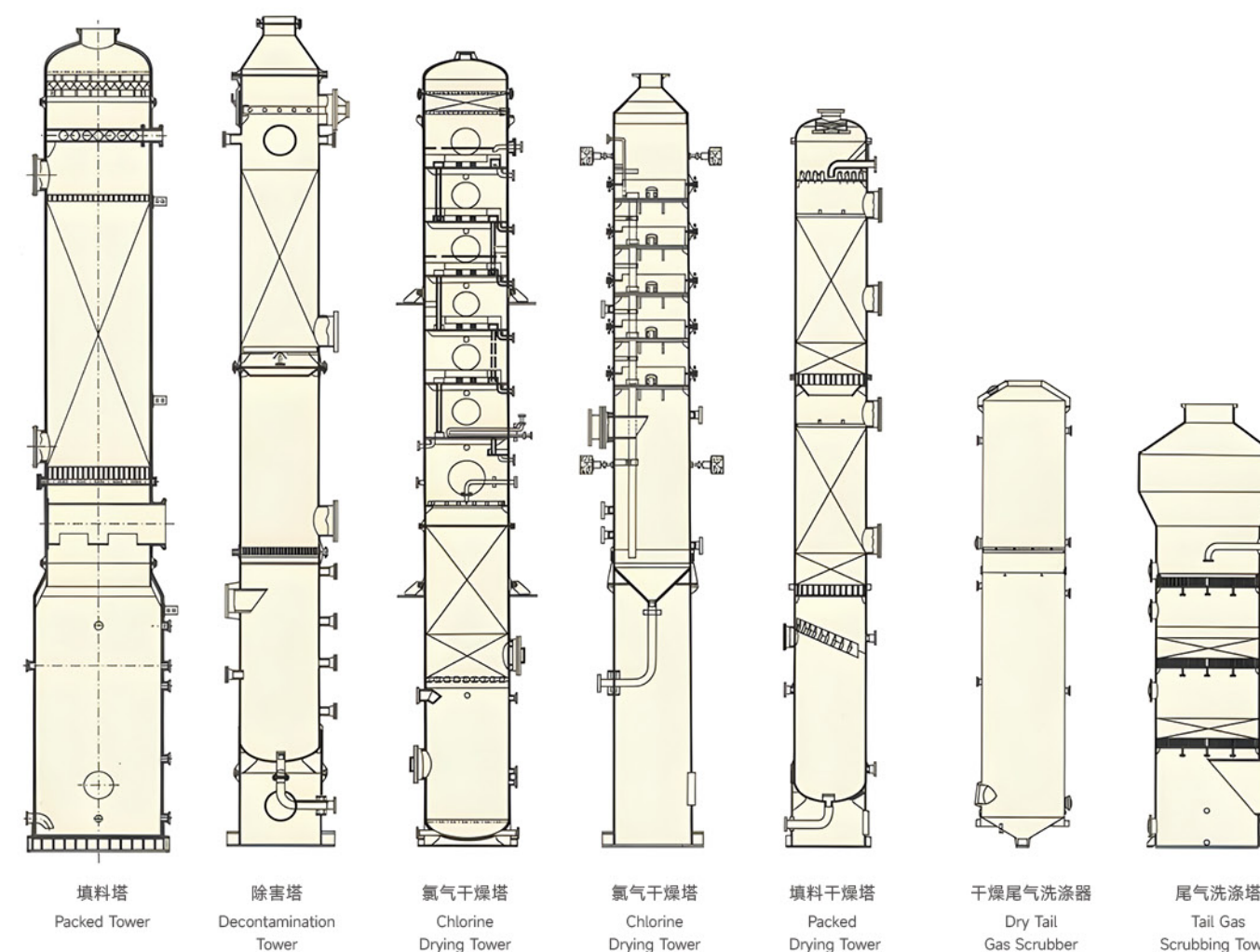
FRP (Fiberglass Reinforced Plastics) is widely used in industries such as chlor-alkali, metallurgy, pharmaceuticals, fermentation and brewing, potassium fertilizer, and compound fertilizer (NPK) due to its advantages of light weight, high strength, wide corrosion resistance range, and excellent design flexibility.

During the design of tower equipment, requirements for different corrosive media can be met by changing the materials of the inner lining and internal components, or adjusting the types of resins and fibers. Meanwhile, through finite element analysis, modifying the resin and fiber types of the structural layer and adjusting the lay-up method can ensure the equipment meets the strength requirements under corresponding temperature and pressure conditions.

The manufacturing, inspection, and acceptance of PVC/PP inner linings and internal components strictly comply with the standard HG20640-1997 Plastic Equipment. For the externally reinforced FRP, the standard HG/T20696-2018 Technical Specification for Fiber Reinforced Plastic Chemical Equipment is strictly followed.



● 产品结构示意图 Product Structure Diagram



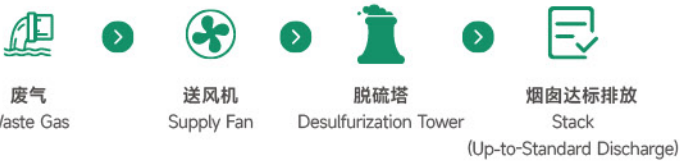
FRP Desulfurization Tower

玻璃钢脱硫塔

● 产品概述 Product Overview

烟气脱硫塔适用于燃煤、燃油锅炉、窑炉的烟气除尘消烟脱硫，具有阻力低、安装布置灵活脱硫效率高，使用寿命长等特点。

The flue gas desulfurization tower is suitable for flue gas dust removal, smoke elimination, and desulfurization of coal-fired boilers, oil-fired boilers, and kilns. It features low resistance, flexible installation and layout, high desulfurization efficiency, and a long service life.



注：先开启水泵，运行正常后再开启风机。

Note: Start the water pump first, and start the fan only after the water pump operates normally.

性能指标 Performance Indicators	
项目 Item	指标 Indicator
脱硫效率 (%) Desulfurization Efficiency (%)	≥ 88
除尘效率 (%) Dust Removal Efficiency (%)	≥ 98
处理烟气量 (m³/h) Flue Gas Treatment Capacity (m³/h)	3000-600000
设备阻力 (Pa) Equipment Resistance (Pa)	< 1000
入口温度 (°C) Inlet Temperature (°C)	< 300
使用寿命 (年) Service Life (Years)	≥ 8

● 工作原理 Working Principle

烟气由塔底进风口进入脱硫塔，由于塔板叶片的导向作用而旋转上升，并在塔板上将逐板下流的浆液喷成几十微米的细雾滴，使气液间接触面积急剧增大(比水膜除尘器的气液面积增大几百至上千倍)。液滴被气流带动旋转，产生的离心力强化气液间的接触，最后甩到壁上，沿壁流下。由于塔内提供了良好的气液接触条件，气体中的SO₂被碱性液体吸收(脱硫)的效果好。

旋流板塔由于特殊的内部结构设计，决定了它是一种高效通用型传质设备，具有通量大、压降低、操作弹性宽、不易堵、效率高等优点，其综合性能优于国内外普遍使用的湿法烟气双碱法脱硫塔除尘装置。为了保证本设备的耐腐蚀性，我公司采取了玻璃钢材料做主材(内部配件选用玻璃钢或不锈钢制作)。

Flue gas enters the desulfurization tower through the air inlet at the bottom of the tower. Guided by the blades of the tower plates, it rotates and rises. On the tower plates, the slurry flowing down plate by plate is atomized into fine droplets of several tens of micrometers, which drastically increases the gas-liquid contact area (this area is several hundred to a thousand times larger than that of a water film dust collector). The droplets are driven to rotate by the gas flow, and the centrifugal force generated enhances the gas-liquid contact. Finally, the droplets are thrown onto the tower wall and flow down along the wall. Thanks to the excellent gas-liquid contact conditions provided inside the tower, the absorption (desulfurization) effect of SO₂ in the gas by the alkaline liquid is excellent.

Due to its special internal structure design, the swirling plate tower is an efficient and versatile mass transfer device. It has the advantages of large throughput, low pressure drop, wide operating flexibility, resistance to clogging, and high efficiency. Its comprehensive performance is superior to the wet flue gas double-alkali desulfurization and dust removal devices commonly used at home and abroad. To ensure the corrosion resistance of this equipment, our company uses fiberglass reinforced plastic (FRP) as the main material (internal accessories are made of FRP or stainless steel).



● 产品特点 Product Features

工业锅炉量大面广，耗煤量多，其燃烧后的烟尘排入大气后所形成的污染是非常严重的。燃料燃烧后产生的二氧化硫有害气体，排入大气中与空气中的氧结合氧化成三氧化硫，再与空气中的水蒸气化合成硫酸烟雾或与烟气结合生成硫化物。这些物质比空气重1-2倍，常浮在大气下部，造成大气污染。给人类的健康造成危害，使农作物大面积减产，工业产品质量下降。我国一贯重视环境保护工作，对工作锅炉的烟尘治理、排放标准都作了具体规定。近年来对烟气中的微小尘粒回收有了一定进展，但对烟气脱硫收效甚微。

我公司生产的锅炉脱硫塔已为国内多家锅炉厂提供了脱硫解决方案。

- ① **经久耐用:** 脱硫塔采用玻璃钢材质制造，确保了脱硫塔本体不受腐蚀。
 - ② **脱硫除尘效率高:** 烟气通过传质层，增加了烟气与水溶液的接触面，加速了烟气与喷淋水的充分溶解中和，提高了脱硫塔的除尘脱硫效率。除尘效率达98%以上，脱硫效率达到89%以上。这在国内湿法除尘中是少有的。在使用该脱硫塔后，燃煤锅炉完全有条件在一类地区使用。
 - ③ **气水分离效果好:** 经脱硫除尘的废气通过高速旋风分离器，烟气水雾经高速旋风分离，烟气含湿量极低，运行时看不到任何水蒸汽，不至于对引风机及烟道造成腐蚀。
 - ④ **节约用水:** 水在系统中循环使用，不排放污水，既消除了排放的二氧化硫，又处理了排放的污水。在内陆缺水的城市也能得到广泛应用。
- 设计风量 >30000m³/h由现场设计而定，除尘效率>98%，烟尘排放浓度<100mg/m³，脱硫效率>88%，SO₂排放浓度<200mg/m³，林格黑度<1，烟气含湿量<6%，进口烟温150-300°C，排烟温度60-70°C，脱硫塔运行阻力<1000Pa。

Industrial boilers are used in large quantities and wide ranges, with high coal consumption. The pollution caused by the smoke and dust emitted into the atmosphere after combustion is extremely severe. Harmful sulfur dioxide (SO₂) gas generated after fuel combustion is discharged into the atmosphere, where it combines with oxygen in the air to oxidize into sulfur trioxide (SO₃). Then, it reacts with water vapor in the air to form sulfuric acid fumes or combines with flue gas to produce sulfides. These substances are 1-2 times heavier than air and often float in the lower part of the atmosphere, causing air pollution. This endangers human health, leads to a large-scale reduction in crop yields, and lowers the quality of industrial products. China has always attached great importance to environmental protection and has formulated specific regulations on the smoke and dust control and emission standards for industrial boilers. In recent years, progress has been made in the recovery of fine dust particles in flue gas, but little effect has been achieved in flue gas desulfurization.

Our company's boiler desulfurization towers have provided desulfurization solutions for many domestic boiler manufacturers.

- ① **Durable:** The desulfurization tower is made of FRP, which ensures that the tower body is not corroded.
- ② **High desulfurization and dust removal efficiency:** Flue gas passes through the mass transfer layer, which increases the contact area between the flue gas and the aqueous solution, accelerates the full dissolution and neutralization of the flue gas and spray water, and improves the dust removal and desulfurization efficiency of the tower. The dust removal efficiency reaches over 98%, and the desulfurization efficiency reaches over 89%. This is rare in domestic wet dust removal technologies. After using this desulfurization tower, coal-fired boilers can be fully qualified for use in Class I areas.
- ③ **Good gas-water separation effect:** The waste gas after desulfurization and dust removal passes through a high-speed cyclone separator. The water mist in the flue gas is separated by high-speed cyclone action, resulting in extremely low moisture content in the flue gas. No water vapor is visible during operation, which prevents corrosion to the induced draft fan and flue.
- ④ **Water conservation:** Water is recycled in the system without sewage discharge. This not only eliminates the discharged sulfur dioxide but also treats the sewage that would otherwise be discharged. Therefore, it can also be widely used in water-scarce inland cities.

Design air volume: >30,000 m³/h (determined by on-site design), Dust removal efficiency: >98%, Dust emission concentration: <100 mg/m³, Desulfurization efficiency: >88%, SO₂ emission concentration: <200 mg/m³, Ringelmann blackness: <1, Flue gas moisture content: <6%, Inlet flue gas temperature: 150-300°C, Exhaust gas temperature: 60-70°C, Operating resistance of the desulfurization tower: <1,000 Pa

● 规格参数 Specification Parameters

序号 Serial Number	设备型号 Equipment Model	配套锅炉 (t/h) Supporting Boiler	处理烟气量 (m³/h) Flue Gas Treatment Volume	主塔内径 (mm) Inner Diameter of Main Tower	主塔高度 (mm) Height of Main Tower	进口 Inlet	出口 outlet
1	TL-1	1	3000	800	4890	350	300
2	TL-2	2	6000	1000	5280	400	350
3	TL-4	4	12000	1200	6790	500	500
4	TL-6	6	16000	1400	7240	600	600
5	TL-10	10	30000	1800	9280	800	800
6	TL-20	20	60000	2400	11700	1200	1200
7	TL-35	35	105000	3000	12200	1500	1500
8	TL-65	65	180000	3600	14900	1800	1800
9	TL-75	75	200000	4000	19800	2000	2000
10	TL-130	130	360000	1x5100	20100	2400	2400
11	TL-220	220	480000	2x4200	22700	2000	2000
12	TL-410	410	600000	2x5800	23800	2800	2800

锅炉脱硫塔是烟气脱硫和产生硫酸铵盐的中间装置。烟气中的有害气体在脱硫塔中背出去，脱硫塔中的是PH值控制为5.0-5.9的饱和硫酸铵/亚硫酸铵溶液，SO₂的反应，按照下列反应生成亚硫酸氢氨和硫酸氢盐：

The boiler desulfurization tower is an intermediate device for flue gas desulfurization and ammonium sulfate salt production. Harmful gases in the flue gas are removed in the desulfurization tower. The tower contains a saturated ammonium sulfate/ammonium sulfite solution with a controlled pH value of 5.0-5.9. Sulfur dioxide (SO₂) undergoes reactions to generate ammonium bisulfite and bisulfate, following the reactions below:

- 1) SO₂+H₂O→H₂SO₃
- 2) H₂SO₃+(NH₄)₂SO₄→NH₄HSO₄+NH₄HSO₃
- 3) H₂SO₃+(NH₄)₂SO₃→2NH₄HSO₃

FRP Acid Mist Purification Tower

玻璃钢酸雾净化塔

● 产品概述 Product Overview

净化效率可靠：在制作过程中，为验证产品性能，我公司多次对该系列中具有代表性的DGS-5型DGS-7.5型、DGS-20型三种规格的净化塔进行了模拟性生产测试，取得了大量数据，经析整理，氯化氢气体的平均净化率在95%以上，硫酸雾达90%-95%。

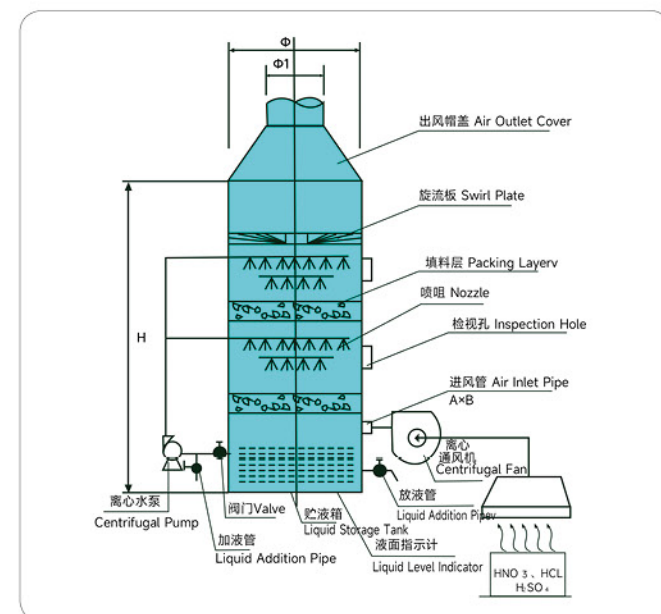
Reliable Purification Efficiency: During the manufacturing process, to verify product performance, our company has conducted simulated production tests on three representative models of this series: DGS-5, DGS-7.5, and DGS-20. A large amount of data has been obtained, after analysis and collation, the average purification rate of hydrogen chloride (HCl) gas is over 95%, and that of sulfuric acid mist ranges from 90% to 95%.

结构设计合理：DGS系列酸雾净化塔采用氢氧化钠(NaOH)溶液作为吸收中和液。酸雾废气由风机净化塔中段内筒形成压力室，再由压力室均配给各根鼓泡管，废气通过鼓泡管进入贮液吸收中和液中产生鼓泡，气泡通过滤料环层，使气液再次得到充分接触后，经脱液网脱然后排入大气。

Reasonable Structural Design: The DGS series acid mist purification tower uses sodium hydroxide (NaOH) solution as the absorption and neutralization liquid. The acid mist waste gas is pushed by a fan into the inner cylinder at the middle section of the scrubber, forming a pressure chamber. The pressure chamber then distributes the gas evenly to each bubbling pipe. The exhaust gas enters the liquid storage (containing the absorption and neutralization liquid) through the bubbling pipes, generating bubbles. The bubbles pass through the filter ring layer to achieve full gas-liquid contact again, and after being dehumidified by the demisting mesh, the gas is discharged into the atmosphere.



● 原理示意图 Schematic Diagram Of The Principle



FRP Tail Gas Absorption Tower

玻璃钢尾气吸收塔

● 产品概述 Product Overview

玻璃钢酸性气体吸收塔，塔内气体由风机送入，气体由下向上。吸收液由耐酸泵打入塔顶，通过布液装置均匀向下喷淋。形成逆流吸收，中和后的气体经塔内除雾段后，经烟筒排入大气。不同的酸性气体采用不同的吸收液体吸收。

采用氢氧化钠(NaOH)溶液作吸收中和液，当溶液浓度2-6%时，净化盐酸(HCL)酸雾(初始浓度<400mg/m³)效率可达98%以上；净化硫酸(H2SO4)酸雾(初始浓度为<300mg/m³)效率可达97%以上；净化硝酸(HNO3)酸雾(初始浓度<100mg/m³)效率可达90%以上。

采用次氯酸钠(NaClO)溶液作吸收中和液净化含氰废气效率达95%以上。

The FRP acid gas absorption tower operates by having contaminated gas pushed by a fan into the bottom, where it then flows upward. The absorption liquid is pumped by a corrosion-resistant pump to the top of the tower and is uniformly sprayed downward through a liquid distribution device. This creates a counter-current absorption process. The neutralized gas passes through an internal demister section before being discharged into the atmosphere via a stack. Different absorption liquids are used for different acidic gases.

When using a sodium hydroxide (NaOH) solution (2-6% concentration) as the absorption and neutralization agent:

The purification efficiency for hydrochloric acid (HCl) mist (initial concentration < 400 mg/m³) can exceed 98%.

The purification efficiency for sulfuric acid (H₂SO₄) mist (initial concentration < 300 mg/m³) can exceed 97%.

The purification efficiency for nitric acid (HNO₃) mist (initial concentration < 100 mg/m³) can exceed 90%.

When using a sodium hypochlorite (NaClO) solution as the absorption and neutralization agent, the purification efficiency for cyanide-containing waste gas can exceed 95%.



FRP Pultruded Profiles

玻璃钢拉挤型材

● 产品概述 Product Overview

玻璃钢拉挤型材是由连续玻璃纤维粗纱、玻璃纤维连续毡及表面毡在拉挤成型机的牵引下，浸胶后经模具定型加热成型为各种截面形状和尺寸的型材、棒材和管材。其拉伸强度高于普通钢材。表面的富树脂层又使其具有良好的防腐性、耐候性，故在具有腐蚀性和露天的环境中是取代钢材的最佳产品。

FRP pultruded profiles are manufactured through the following process: continuous glass fiber rovings, continuous glass fiber mats, and surface mats are drawn by a pultrusion machine, impregnated with resin, then shaped by a mold and heated to form profiles, rods, and tubes of various cross-sectional shapes and sizes. Their tensile strength is higher than that of ordinary steel. The resin-rich layer on the surface also endows them with excellent corrosion resistance and weather resistance, making them the optimal alternative to steel in corrosive and outdoor environments.

● 产品分类 Product Classification

方管、矩形管、槽钢、工字钢、伸梯帮、圆管、齿轮管、圆棒、带钢、角钢、甲板等各种型号的拉挤型材。

Pultruded profiles of various models, including square tubes, rectangular tubes, channel steel, I-beams, ladder extension side rail, round tubes, gear tubes, round rods, strip steel, angle steel, and decks.

● 产品应用 Product Applications

石油化工、纺织印染、食品加工、电子工业、医药制造、电力工程、金属冶炼、污水处理交通运输、机械制造、水厂养殖、饮料生产、造纸业、造船业、机械制造、民用建筑。

操作平台、检修走道、钻井平台、地坪、楼梯踏步、设备走道、地沟盖板、步行天桥、填料支架、船甲板、脚手架、通风栅、围栏、防腐货架。

Petrochemical engineering, textile printing and dyeing, food processing, electronics industry, pharmaceutical manufacturing, power engineering, metal smelting, sewage treatment, transportation, machinery manufacturing, water plant breeding, beverage production, papermaking industry, shipbuilding industry, and civil construction. Operating platforms, maintenance walkways, drilling platforms, floor surfaces, stair treads, equipment walkways, trench covers, pedestrian overpasses, packing supports, ship decks, scaffolding, ventilation grilles, fences, and corrosion-resistant shelves.



● 规格参数 Specification Parameters

产品名称 Product Name	规格型号 Specifications	重量 (kg/m) Weight (kg/m)
方管 Square Tube	120*120*5	4.1
	100*100*5	3.7
	100*100*2.7	2.2
	80*80*3.5	2
	70*70*4	1.95
	60*60*5	2.05
	50*50*5	1.62
	50*50*4	1.4
	40*40*4	1.04
	40*40*3.5	1
	40*40*2.7	0.83
	30*30*3.1	0.653
	25*25*5	0.76
	180*60*4	3.6
	160*60*4	3.16
矩形管 Rectangular Tube	140*60*3	2.16
	120*60*5	3.33
	120*3.5*60*3	2.3
	100*50*5	2.7
	90*4*40*7	2.236
	90*4*40*5	1.9
	86*32*3	1.51
	75*3*35*6	1.58
	63.5*37*3.5	1.274
	60*35*3	1
	95*35	1.4
	60*30*3	1.07
	60*30*2.7	0.87
	58*26	0.76
	48*32*3	0.88
伸梯帮 Ladder Extension Side Rail	40*20*2.5	0.555
	带翅矩形管 50*50*5 Finned Rectangular Tube 50×50×5	2.7
	70*3*30*3	1.4
	39*36*26	0.67
	200*100*3	1.7
	250*250*10	18.2
	100*200*300	8.53
	Φ90*76.6*6.7	3.55
	Φ80*70*5	2.3
	Φ65*57*4	1.45
	Φ60*48*6	1.88
	Φ60*50*5	1.66
	Φ50*40*5	1.3
	Φ50*42*4	1.06
	Φ55	
方管 Square Tube	Φ51*43*4	1.09
	Φ48*38*5	1.26
	Φ47*39*4	1
	Φ46*38*4	0.97
	Φ46*42*2	0.53
	Φ40*32*4	0.82
	Φ38*31.8*3.1	0.62
	Φ32*28*2	0.33
	Φ31*25*3	0.51
	Φ25*20*2.5	0.38
	Φ21.5*16.5*2.5	0.285
	Φ19*12.5*3.25	0.295

产品名称 Product Name	规格型号 Specifications	重量 (kg/m) Weight (kg/m)
槽钢 Channel Steel	200*100*9	6.4
	180*50*8	4.05
	160*70*9	4.8
	150*60*8	3.86
	120*60*6	2.8
	100*50*6	2.16
	80*42.5*5	1.35
	80*40*4	1.21
	70*30*4.5	1
	U60*50*5	1.4
	平 60*50*5	1.4
	50*40*3.5	1
	200*100*10	7.4
	150*150*7.2	6
	150*100*6.5	4.5
工字钢 I-Beam	125*125*9.4	6.5
	110*50*6	2.12
	70*25*4	0.85
	65*25*3	0.64
	58*15*4.5	0.67
	38*15*4	0.5
	33*20*4	0.48
	30*20*10*4	0.41
	25*40*15*4	0.57
	50*25*15*4	0.64
	25*15*4	0.37
	Φ25	1.05
	Φ20	0.58
	Φ16	0.4
	Φ14.5	0.3883/0.318
圆棒 Round Rod	Φ14	0.28
	Φ12	0.22
	Φ10	0.15
	100*2.5	0.51
	100*8	1.5
	50*8	0.74
	50*5	0.48
	40*4	0.31
	50*50*5	0.89
	40*40*4	0.6
	30*30*3	0.3
	卡条插条 Clamp Strip	0.38
	齿轮管 Gear Tube	25*36 0.853
	拉杆 Tie Rod	0.76
	甲板 Deck	500 宽 500Width 4.7
带钢 Strip Steel	甲板 Deck	38*300 0.72
	踢脚板 100 Kick Plate 100	1.36
	踢脚板 200 Kick Plate 200	4.5kg/m²
		3.7kg/m²
	托架 Bracket	58 7.44kg/m²
		38 5.7kg/m²
		200*200*70 0.37
		300*250*70 0.37
	围栏底 Railing Base	35*12 0.228
	围栏盖 Railing Cap	35*12 0.235
	玻璃钢标志牌 FRP Signboard	400 宽 *5mm 厚 3.7
		400Width × 5mm Thickness

FRP Molded Grating

模塑玻璃钢格栅

● 产品概述 Product Overview

模塑玻璃钢格栅是一种以不饱和聚酯树脂(包括间苯型、邻苯型、乙烯基型和酚醛型、双酚A型等)为基体,以玻璃纤维粗纱为骨架。在金属模具上经过编织模压而成或手糊制作再经加热整体成型,产品外观平整、美观,内在质量高、玻璃纤维含量达30%以上(重量百分比)。

玻璃钢模塑格栅应用于化工、石油、冶炼、电力、电镀、蓄电池、机械、制药、印染矿业、污水处理、房屋装修、市政工程、洗车房等领域;
具体适用:操作平台、地沟盖板、双层地面、栈道、过道、楼梯踏板、吊顶、护树板洗车房地板等

FRP molded grating uses unsaturated polyester resin (including isophthalic, orthophthalic, vinyl, phenolic, and bisphenol A types, etc.) as the matrix and glass fiber roving as the framework. It is manufactured by weaving and compression molding in a metal mold, or by hand lay-up followed by heated curing for integral molding. The product features a smooth and attractive appearance, high internal quality, and a glass fiber content of over 30% (by weight).

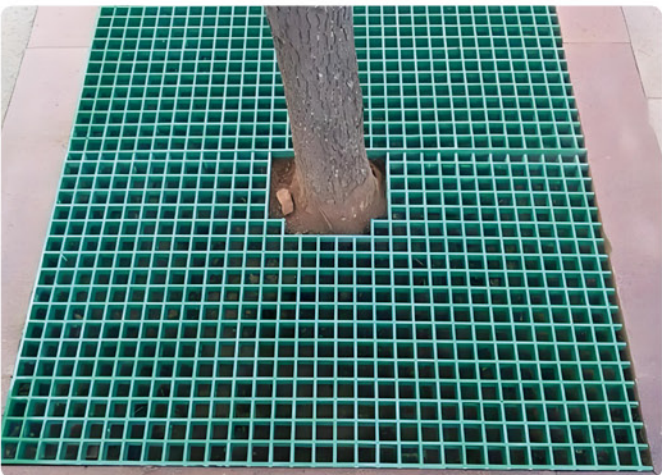
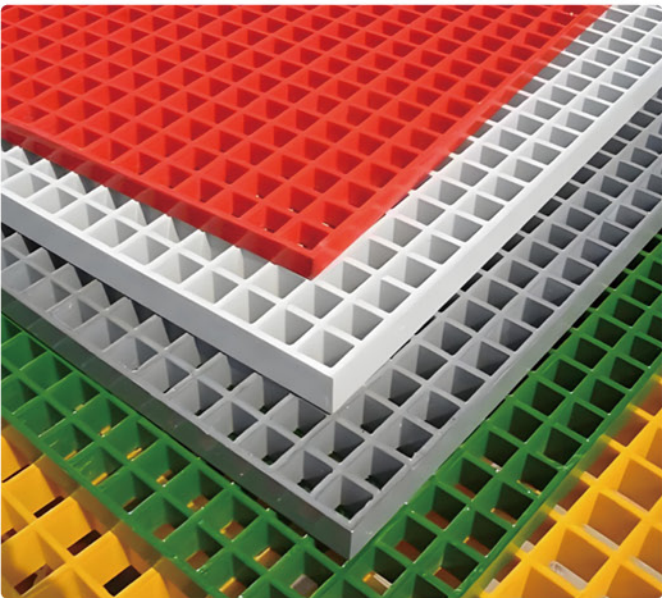
FRP molded grating is applied in fields such as chemical, petroleum, metallurgy, electric power, electroplating, storage batteries, machinery, pharmaceuticals, printing and dyeing, mining, sewage treatment, house decoration, municipal engineering, and car wash facilities.

Specific applications include: operating platforms, trench covers, double-layer floors, walkways, gangways, stair treads, suspended ceilings, tree guards, and car wash facility floors.

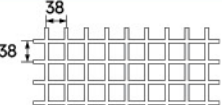
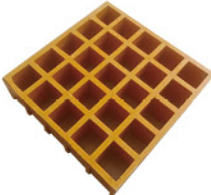
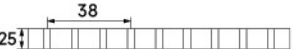
● 产品特点 Product Features

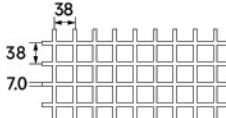
- 耐多种化学介质的腐蚀,永不生锈,使用周期长,免于维护。
- 阻燃。
- 绝缘、无磁性。
- 具有轻微弹性,可减少人员的疲劳感、增强舒适感,提高工作效率。
- 轻质、高强,且便于切割、安装。
- 内外均一的颜色可任意选择。能根据客户的要求定制颜色,改善生产场所的环境。
- 具有较好的综合经济效益。
- 可设计性强,尺寸灵活多样。

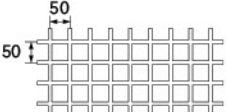
- Resistant to corrosion by various chemical media, non-rusting, long service life, and maintenance-free.
- Flame-retardant.
- Insulating and non-magnetic.
- Slightly elastic, which can reduce personnel fatigue, enhance comfort, and improve work efficiency.
- Lightweight yet high-strength, and easy to cut and install.
- Uniform color (both internal and external) with a wide range of options. Custom colors can be provided according to customer requirements to improve the environment of the production facilities.
- Excellent overall economic efficiency
- High design flexibility with diverse and flexible dimensions.

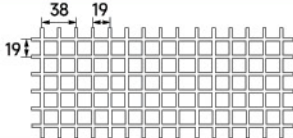
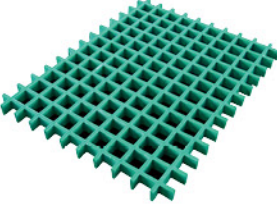


● 产品详细尺寸(单位: mm) Detailed Product Dimensions (Unit: mm)

25×38 正方格 Gulī Brand 25x38 Square Grid		
方格型号 Square Model	俯视图 Plan view	实例 Example
25×38 SM		
承载杆厚度 Thickness of Load-Bearing Bar		
6.4		
承载杆中心间距 Center Spacing of Load-Bearing Bars		
38		
开孔率 Open Area Ratio		
68%		
每平方米大约重量 Approximate Weight per Square Meter		
12.3 千克 / 平方米 12.3 kilograms/square meter		
双向受力 Bidirectional Load-Bearing		
可选尺寸: 1220×3660,1220×2440,915×3050 Optional Sizes: 1220×3660, 1220×2440, 915×3030		

38×38 正方格 Guli Brand 50×50 Square Grid			
方格型号 Square Model	俯视图 Plan view	实例 Example	
38×38 SM			
承载杆厚度 Thickness of Load-Bearing Bar			
7.0			
承载杆中心间距 Center Spacing of Load-Bearing Bars			
38	主视图 Front view		
开孔率 Open Area Ratio			
68%			
每平方米大约重量 Approximate Weight per Square Meter			
18.5 千克 / 平方米 18.5 kilograms/square meter			
双向受力 Bidirectional Load-Bearing			
可选尺寸: 1220×3660,915×3050,1525×3660 Optional Sizes:1220×3660,915×3050,1525×3660			

50×50 正方格 Guli Brand 25x38 Square Grid			
方格型号 Square Model	俯视图 Plan view	实例 Example	
50×50 SM			
承载杆厚度 Thickness of Load-Bearing Bar			
8.0	主视图 Front view		
承载杆中心间距 Center Spacing of Load-Bearing Bars			
50			
开孔率 Open Area Ratio			
71%			
每平方米大约重量 Approximate Weight per Square Meter			
23.51 千克 / 平方米 23.51 kilograms/square meter			
双向受力 Bidirectional Load-Bearing			
可选尺寸: 1007×2007 Optional Sizes: 1007×2007			

38×19 正方格 Guli Brand 38×19 Square Gridt			
方格型号 Square Model	俯视图 Plan view	实例 Example	
38×19 SM			
承载杆厚度 Thickness of Load-Bearing Bar			
6.4	主视图 Front view		
承载杆中心间距 Center Spacing of Load-Bearing Bars			
19			
开孔率 Open Area Ratio			
42%			
每平方米大约重量 Approximate Weight per Square Meter			
23.51 千克 / 平方米 23.51 kilograms/square meter			
双向受力 Bidirectional Load-Bearing			
可选尺寸: 1220×3660 双层 Optional Sizes:1220×3660 double-layer			

FRP Rebar

玻璃钢钢筋

● 产品概述 Product Overview

玻璃钢钢筋是一种由纤维增强材料（如玻璃纤维）与基体材料（如环氧树脂、乙烯基酯树脂等）经过拉挤成型工艺制成的复合材料筋材。它作为传统钢铁筋材的替代品，主要应用于需要高耐腐蚀性的混凝土结构中。

其核心原理是利用连续玻璃纤维的高强度承担荷载，同时利用耐腐蚀的树脂基体保护纤维并将外力传递到纤维上。这使得玻璃钢钢筋在保持高强度的同时，从根本上解决了钢筋锈蚀的难题。

玻璃钢钢筋是一种高性能的新型复合材料，其耐腐蚀、高强度、轻质的核心特点，使其在传统钢筋难以胜任的苛刻腐蚀环境中具有不可替代的优势。尽管存在弹性模量低和成本较高等挑战，但随着技术的进步和对基础设施长效安全的日益重视，玻璃钢钢筋的市场前景非常广阔。

FRP rebar is a type of composite material reinforcement bar made from fiber-reinforced materials (such as glass fibers) and matrix materials (such as epoxy resin, vinyl ester resin, etc.) through a pultrusion process. As an alternative to traditional steel reinforcement, it is mainly used in concrete structures that require high corrosion resistance.

Its core principle is to utilize the high strength of continuous glass fibers to bear loads, while using the corrosion-resistant resin matrix to protect the fibers and transfer external forces to the fibers. This enables FRP rebar to maintain high strength while fundamentally solving the problem of steel reinforcement corrosion.

FRP rebar is a high-performance new composite material. Its core characteristics of corrosion resistance, high strength, and light weight give it irreplaceable advantages in harsh corrosive environments where traditional steel reinforcement is difficult to perform. Although there are challenges such as low elastic modulus and relatively high cost, with technological advancements and the growing emphasis on the long-term safety of infrastructure, the market prospect of FRP rebar is very broad.

● 主要应用领域 Main Application Fields

海工工程：码头、防波堤、跨海大桥、海水养殖设施。

水利工程：水库、大坝、水闸、输水管道。

公路交通：高速公路、桥梁桥面、护栏、隧道衬砌。

化工建筑：化工厂房、污水处理厂、地坪、防腐地坪。

军事工程：需要无磁性的军事设施。

其他：严寒地区的除冰盐环境、电磁屏蔽室等。

Marine Engineering: Wharves, breakwaters, cross-sea bridges, and marine aquaculture facilities.

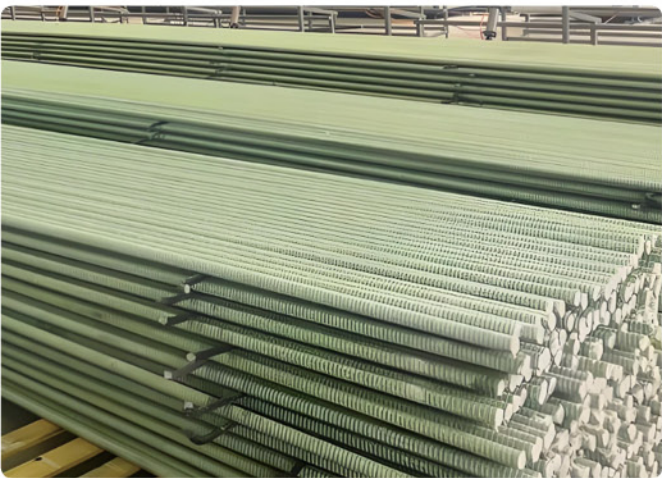
Water Conservancy Projects: Reservoirs, dams, sluices, and water conveyance pipelines.

Road and Transportation: Highways, bridge decks, guardrails, and tunnel linings.

Chemical Industry Construction: Chemical plant buildings, sewage treatment plants, floorings, and anti-corrosion floorings.

Military Engineering: Military facilities requiring non-magnetism.

Others: De-icing salt environments in frigid regions, electromagnetic shielding rooms, etc.



● 产品核心特点（与传统钢材对比）Core Product Features (Compared to Traditional Steel)

特点 Feature	描述 Description	带来的优势 Key Advantages
卓越的耐腐蚀性 Excellent Corrosion Resistance	不导电、不与酸、碱、盐发生电化学反应，从根本上杜绝锈蚀。 Non-conductive and does not undergo electrochemical reactions with acids, alkalis, or salts, fundamentally preventing rusting.	延长结构寿命（可达 100 年以上），大幅减少维护成本，特别适用于恶劣环境。 Extends structural service life (can exceed 100 years), significantly reduces maintenance costs, and is particularly suitable for harsh environments.
高强度、轻质 High Strength and Light Weight	抗拉强度是普通三级螺纹钢的 2 倍以上，密度仅为钢材的 1/4。 Tensile strength over twice that of ordinary Grade III steel rebar, and its density is only 1/4 of steel.	减轻结构自重，便于运输和施工，降低基础和结构的负荷，提高抗震性能。 Reduces the self-weight of structures, easier transportation and construction, lowers the load on foundations and structures, and improves seismic performance.
可设计性强 Strong Design Flexibility	通过改变纤维类型、含量和铺层方式，可以定向设计其力学性能。 By altering the type, content and laying pattern of the fibers, the mechanical properties of the material can be purposefully designed.	可根据具体工程需求定制不同强度、弹模和外观（如螺纹表面）的产品。 Products can be customized for specific project needs (e.g., different strength, modulus, surface texture like ribs).
优异的抗疲劳性 Superior Fatigue Resistance	在动态载荷下，性能衰减远低于钢材。 Under dynamic loads, performance degradation is much lower than that of steel.	更适合承受振动和反复载荷的桥梁、吊车梁等结构。 More suitable for structures such as bridges and crane beams that bear vibrations and repeated loads.
热膨胀系数低 Low Thermal Expansion Coefficient	热膨胀系数与混凝土接近。 Thermal expansion coefficient is close to that of concrete	温度变化时，与混凝土协同变形好，不易产生温度应力裂缝。 When the temperature changes, it deforms well in coordination with concrete, and is not prone to temperature stress cracks.
透波透磁、绝缘 Wave Transparency, Magnetic Permeability and Insulation	是非磁性材料，且不导电。 It is a non-magnetic material and non-conductive.	适用于医院 MRI 室、军事设施、通信基地等对电磁敏感的建筑。 Suitable for electromagnetic-sensitive buildings such as hospital MRI rooms, military facilities, and communication bases.
易切割、施工便捷 Easy Cutting and Installation	可使用普通砂轮锯或专用工具轻松切割，不产生火花。 Can be easily cut with ordinary abrasive saws or special tools without generating sparks.	施工效率高，安全性好，特别是在有防爆要求的场合。 High construction efficiency and good safety, especially in occasions with explosion-proof requirements.

● 产品主要性能参数 Main Product Performance Parameters

以下为常见玻璃钢钢筋（以玻璃纤维/环氧树脂体系为例）的典型性能指标：

The following are the typical performance indicators of common FRP rebars (taking the glass fiber/epoxy resin system as an example):

性能指标 Performance Indicator	典型数值 Typical Value	备注与对比 Notes & Comparisons
密度 Density	1.9 - 2.2 g/cm ³	约为钢材的 1/4。 Approximately 1/4 of steel.
抗拉强度 Tensile Strength	≥ 600	普通 HRB400 钢筋为 400 MPa。 Ordinary HRB400 steel rebar is 400 MPa.
弹性模量 Elastic Modulus	40 - 55 GPa	这是关键差异点，约为钢材（200 GPa）的 1/4-1/3。设计时需考虑更大的变形。 This is a key difference: it is approximately 1/4 to 1/3 of steel (200 GPa). Greater deformation must be considered during the design process.
伸长率 Elongation	1.5% - 2.5%	属于脆性材料，破坏前无明显屈服点，破坏形式为突然断裂。 Classified as a brittle material; lacks a distinct yield point and fails by sudden rupture.
热膨胀系数 Thermal Expansion Coefficient	6 - 10 x 10 ⁻⁶ /°C	与混凝土（~10 x 10 ⁻⁶ /°C）非常匹配。 Matches well with concrete (~10 x 10 ⁻⁶ /°C).
耐腐蚀性 Corrosion Resistance	优异 Excellent	在 pH 3-11 的宽范围化学介质中性能稳定。 Maintains stable performance in chemical media with a wide pH range of 3-11.
纵向剪切强度 Longitudinal Shear Strength	70 - 150 MPa	影响与混凝土的粘结性能。 Affects the bonding performance with concrete.
巴氏硬度 Barcol Hardness	≥ 50	表征表面抵抗压痕的能力。 Characterizes the material's ability to resist indentation on its surface.

FRP Cable Tray

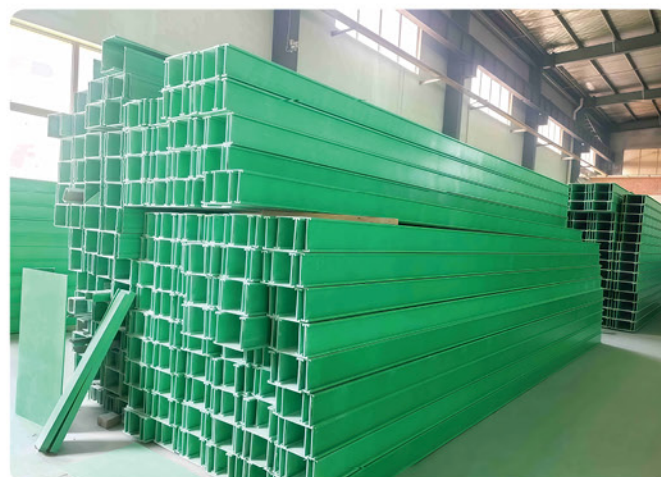
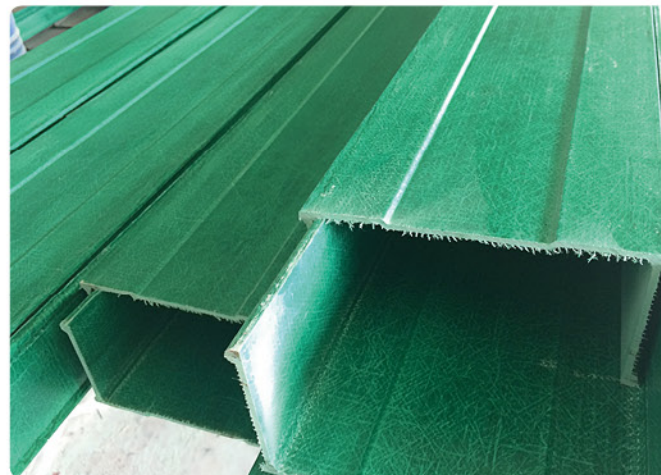
玻璃钢电缆桥架

● 产品概述 Product Overview

电缆桥架根据材质可分为:SMC铁路电缆槽、玻璃钢电缆桥架、高分子电缆桥架、环氧树脂复合桥、热浸锌电缆桥架、喷塑电缆桥架、镀锌电缆桥架。
玻璃钢电缆桥架机械强度高,既有金属桥架的刚性又有玻璃钢桥架的韧性,耐腐蚀性能好、抗老化性能强、造型美观、安装方便、使用寿命长。
环氧树脂及环氧树脂复合型电缆桥架适合在强腐蚀性环境、大跨距、重荷载条件下使用。

Cable trays can be classified by material into the following types: SMC railway cable troughs, FRP cable trays, polymer cable trays, epoxy resin composite trays, hot-dip galvanized cable trays, plastic-sprayed cable trays, and galvanized cable trays.
FRP cable trays feature high mechanical strength, combining the rigidity of metal trays with the toughness of FRP trays. They also offer excellent corrosion resistance, strong anti-aging performance, an attractive appearance, easy installation, and a long service life.

Epoxy resin and epoxy resin composite cable trays are suitable for use in harsh corrosive environments, as well as under conditions of large spans and heavy loads.



Square Counterflow Cooling Tower

方型逆流式冷却塔

● 产品概述 Product Overview

方型逆流式冷却塔分工业型/中高温冷却塔,水温降一般为10-25℃。它适合于水温降较高的工业用水的冷却。
单格水量为100-4000m³/h,广泛用于石油、化工、冶金、发电等企业大量水的循环系统。

The square counter-flow cooling tower is categorized into industrial/medium-high temperature cooling towers, typically designed for a water temperature drop range of 10-25°C. It is suitable for cooling industrial water requiring significant temperature reduction.
With a single-cell water capacity ranging from 100 to 4000 m³/h, it is widely used in large-capacity circulation systems across industries such as petroleum, chemical, metallurgy, and power generation.



● 方形逆流式低温降型DFN系列冷却塔主要参数表

Main Parameter Table of Square Counter - flow Low - Temperature - Drop Type DFN Series Cooling Towers

参数名 Parameter Name 型号 Model	Tw=28°C冷却水量 (m³/h) Cooling Water Volume at Tw=28°C (m³/h)		Tw=27°C冷却水量 (m³/h) Cooling Water Volume at Tw=27°C (m³/h)		主要尺寸 (mm) Main Dimensions (mm)	
	△ t=5°C	△ t=8°C	△ t=5°C	△ t=8°C	总高度 Total Height	宽度 B Width B
DFNL-100、DFNDP-100、DFNGP-100	100	74.4	118.7	86.0	3830、4390、4690	2600
DFNL-150、DFNDP-150、DFNGP-150	150	109.8	175.1	126.9	4050、4670、4970	3000
DFNL-200、DFNDP-200、DFNGP-200	200	148.9	237.4	172.1	4340、4960、5260	3600
DFNL-300、DFNDP-300、DFNGP-300	300	224.9	350.6	258.3	5010、5690、5990	4300
DFNL-400、DFNDP-400、DFNGP-400	400	299.9	467.4	344.4	5300、6040、6340	4800
DFNL-500、DFNDP-500、DFNGP-500	500	374.9	584.3	430.4	5900、6700、7000	5300
DFNL-600、DFNDP-600、DFNGP-600	600	448.5	698.9	514.9	6140、6980、7280	6000
DFNL-750、DFNDP-750、DFNGP-750	750	561.7	875.3	644.9	6640、7290、7590	6800
DFNL-900、DFNDP-900、DFNGP-900	900	673.4	1049.5	773.2	6950、7900、8200	7300
DFNL-1050、DFNDP-1050、DFNGP-1050	1050	786.6	1225.9	903.1	7150、8100、8400	7800

参数名 Parameter Name 型号 Model	风量 m³/h Air Volume (m³/h)	风机直径 (mm) Fan Diameter (mm)	电机功率 (kw) Motor Power (kw)	重量 (t) Weight (t)		进水压力 104Pa Inlet Water Pressure (10 ⁴ Pa)	噪声 dB (A) Noise dB (A)			当量直径 Dm(m) Equivalent Diameter Dm(mm)
				自重 Dead Weight	运转重 Operating Weight		Dm	10m	16m	
DFNL-100、DFNDP-100、DFNGP-100	62000	1800	3.0/1.5	1.9 2.16 2.46	2.44 3.78 5.7	6.2	59.0	52.0	47.0	3.02
DFNL-150、DFNDP-150、DFNGP-150	84000	2400	4.0/2.0	2.6 2.91 3.31	3.32 5.07 7.63	6.3	60.5	54.0	50.6	3.47
DFNL-200、DFNDP-200、DFNGP-200	115000	2800	5.5/2.8	3.1 3.55 4.44	4.13 6.66 10.56	6.5	62.0	55.6	52.3	4.15
DFNL-300、DFNDP-300、DFNGP-300	158600	3400	7.5/3.8	4.4 5.04 5.91	5.88 9.48 14.79	5.8	62.0	57.8	54.5	4.94
DFNL-400、DFNDP-400、DFNGP-400	213000	3800	11/5.5	5.3 6.1 6.96	7.14 10.57 18.02	6.0	62.5	58.8	55.7	5.51
DFNL-500、DFNDP-500、DFNGP-500	265000	3800	15/7.5	6.6 7.58 8.64	8.85 13.11 19.7	6.4	62.5	59.3	56.2	6.08
DFNL-600、DFNDP-600、DFNGP-600	317500	4200	15/7.5	8.42 9.68 10.85	11.3 34.56 28.13	6.5	62.5	60.5	57.4	6.88
DFNL-750、DFNDP-750、DFNGP-750	400000	4200	22/11	10.8 12.41 13.84	14.5 23.51 36.04	6.8	63.0	61.4	58.4	7.79
DFNL-900、DFNDP-900、DFNGP-900	490000	4700	30/15	12.5 14.36 15.93	16.76 25.46 38.13	7.0	63.8	62.9	60.0	8.36
DFNL-1050、DFNDP-1050、DFNGP-1050	556000	4700	30/15	15.1 17.22 18.94	19.97 31.82 48.14	7.0	64.6	63.1	53.9	8.93

1、表中所列为湿球温度 Tw=28°C ,Tw=27°C工况下, △ t=5°C时, t1=37°C,t2=32°C; △ t=8°C 时, t1=40°C,t2=32°C 的冷却水量。

2、表中噪声值为夜间电机低速运转, 并设有滴水吸声垫的数值, 不设滴水吸声垫将比表中数值高 5dB(A)。

1.The values listed in the table represent the cooling water flow rates under the operating conditions of wet-bulb temperatures Tw=28°C and Tw=27°C , specifically: when the temperature difference △ t=5°C , the inlet water temperature t1=37°C and outlet water temperature t2=32°C ; when △ t=8°C , t1=40°C and t2=32°C .

2.The noise values in the table are measured when the motor operates at low speed at night and drip sound-absorbing pads are installed. Without drip sound-absorbing pads, the noise level will be 5 dB(A) higher than the values listed in the table.

● 方形逆流式中高温降工业型GFN系列冷却塔主要参数表

Main Parameter Table of Square Counter - flow Medium - High Temperature - Drop Industrial Type GFN Series Cooling Towers

参数名 Parameter Name 型号 Model	T=28°C冷却水量 (m³/h) Cooling Water Volume at Tw=28°C (m³/h)			T=27°C冷却水量 (m³/h) Cooling Water Volume at Tw=27°C (m³/h)			主要尺寸 (mm) Main Dimensions (mm)	
	△ t=10°C	△ t=20°C	△ t=25°C	△ t=10°C	△ t=20°C	△ t=25°C	总高度 Total Height	宽度 B Width B
GFNL-75、GFNDP-75、GFNGP-75	75	66.9	65.8	86.3	73.6	71.8	3830、4390、4690	2600
GFNL-100、GFNDP-100、GFNGP-100	100	89.2	87.7	115.0	98.1	95.7	4050、4670、4970	3000
GFNL-150、GFNDP-150、GFNGP-150	150	137.4	136.2	172.2	150.2	147.7	4840、5460、5760	3600
GFNL-200、GFNDP-200、GFNGP-200	200	182.8	181.3	229.1	199.8	196.5	5010、5690、5990	4300
GFNL-250、GFNDP-250、GFNGP-250	250	228.2	226.3	286.0	249.4	245.3	5300、6040、6340	4800
GFNL-300、GFNDP-300、GFNGP-300	300	273.6	271.3	342.9	299.1	294.1	5900、6700、7000	5300
GFNL-400、GFNDP-400、GFNGP-400	400	364.4	361.4	456.7	398.3	391.8	6140、6980、7280	6000
GFNL-500、GFNDP-500、GFNGP-500	500	455.2	451.5	570.5	497.6	489.4	6440、7290、7590	6800
GFNL-600、GFNDP-600、GFNGP-600	600	546.0	541.5	684.3	596.9	587.1	6950、7900、8200	7300
GFNL-700、GFNDP-700、GFNGP-700	700	638.0	632.7	799.6	697.4	685.9	7150、8100、8400	7800

参数名 Parameter Name 型号 Model	风量 m³/h Air Volume (m³/h)	风机直径 (mm) Fan Diameter (mm)	电机功率 (kw) Motor Power (kw)	重量 (t) Weight (t)		进水压力 104Pa Inlet Water Pressure (10 ⁴ Pa)	噪声 dB (A) Dm Noise dB (A)	当量直径 Dm(m) Equivalent Diameter Dm (m)
				自重 Dead Weight	运转重 Operating Weight			
GFNL-75、GFNDP-75、GFNGP-75	68000	1800	3.0/1.5	1.9 2.16 2.46	2.44 3.78 5.7	6.2	59.0	3.02
GFNL-100、GFNDP-100、GFNGP-100	88000	2400	4.0/2.0	2.4 2.71 3.21	3.12 4.87 7.53	6.3	60.5	3.47
GFNL-150、GFNDP-150、GFNGP-150	121000	2800	5.5/2.7	3.1 3.55 4.44	4.13 6.66 10.66	6.5	62.0	4.15
GFNL-200、GFNDP-200、GFNGP-200	161000	3400	7.5/3.7	4.2 4.84 5.71	5.69 9.28 14.59	5.8	62.0	4.94
GFNL-250、GFNDP-250、GFNGP-250	201000	3800	11/5.5	5.1 5.9 6.76	6.94 11.43 17.82	6.0	62.5	5.51
GFNL-300、GFNDP-300、GFNGP-300	241000	3800	11/5.5	6.4 7.38 8.44	8.64 14.12 21.92	6.4	62.5	6.08
GFNL-400、GFNDP-400、GFNGP-400	321000	4200	15/7.5	8.22 9.48 10.65	11.1 18.12 27.93	6.5	62.5	6.88
GFNL-500、GFNDP-500、GFNGP-500	401000	4200	22/11	10.6 12.21 13.64	14.23 23.31 35.84	6.8	63.0	7.79
GFNL-600、GFNDP-600、GFNGP-600	481000	4700	30/15	12.3 14.16 15.73	16.56 26.95 41.31	7.0	63.8	8.36
GFNL-700、GFNDP-700、GFNGP-700	560000	4700	30/15	14.9 17.02 18.74	19.76 31.62 47.94	7.0	64.6	8.93

1、表中所列为湿球温度 Tw=28°C ,Tw=27°C工况下, △ t=10°C 时, t1=42°C、t2=32°C、△ t=20°C 时, t1=54°C、t2=34°C; △ t=25°C时, t1=60°C、t2=35°C 的冷却水量。

2、表中噪声值为夜间电机低速运转, 并设有滴水吸声垫的数值, 不设滴水吸声垫将比表中数值高 5dB(A)。

1.The values listed in the table represent the cooling water flow rates under the operating conditions of wet-bulb temperatures Tw=28°C and Tw=27°C , specifically: when the temperature difference △ t=10°C , the inlet water temperature t1=42°C and outlet water temperature t2=32°C ; when △ t=20°C , t1=54°C and t2=34°C ; and when △ t=25°C , t1=60°C and t2=35°C .

2.The noise values in the table are measured when the motor operates at low speed at night and drip sound-absorbing pads are installed. Without drip sound-absorbing pads, the noise level will be 5 dB(A) higher than the values listed in the table.

Round Counterflow Cooling Tower

圆型逆流式冷却塔

● 产品概述 Product Overview

圆型逆流式低噪声、超低噪声冷却塔，适用于空调制冷等水温降的冷却。水温降一般为3-8℃，适合于对噪声要求较严的地方，如宾馆、医院、公共建筑以及距居民较近的场所。

工业型/中高温冷却塔水温降一般为10-25℃。它适合于水温降较高的工业用水的冷却。

Round counter-flow cooling towers (low-noise and ultra-low-noise types) are suitable for cooling applications requiring water temperature reduction, such as air conditioning and refrigeration systems. The water temperature drop is generally 3-8℃, making them ideal for locations with strict noise requirements, including hotels, hospitals, public buildings, and areas close to residential neighborhoods.

For industrial-type and medium-high temperature cooling towers, the water temperature drop is typically 10-25℃. These towers are suitable for cooling industrial water that requires a relatively high temperature reduction.



● GBNL3系列工业型逆流式冷却塔主要参数表
Main Parameter Table of GBNL3 Series Industrial Counterflow Cooling Towers

参数 Parameter Name	Tw=28℃冷却水量 (m³/h) Cooling Water Volume at Tw=28℃ (m³/h)			Tw=27℃冷却水量 (m³/h) Cooling Water Volume at Tw=27℃ (m³/h)			主要尺寸 (mm) Main Dimensions (mm)		风量 m³/h Air Volume (m³/h)	风机 直径 (mm) Fan Diameter (mm)	电机 功率 (Kw) Motor Power (kw)	重量 (K g) Weight (K g)		进水 压力 104Pa Inlet Water Pressure (10 ⁴ Pa)
	Δ t=10℃	Δ t=20℃	Δ t=25℃	Δ t=10℃	Δ t=20℃	Δ t=25℃	总高度 Total Height	最大直径 Maximum diameter				自重 Dead Weight	运转重 Operating Weight	
型 号 Model														
GBNL3-70	70	64	56	77	68	60	3294	3134	40800	1800	2.2	943	3034	2.86
GBNL3-80	80	73	65	88	78	68	3544	3134	54000	1800	3	1003	3230	3.15
GBNL3-100	100	91	83	110	96	85	3553	3732	71300	2400	3	1695	4125	2.9
GBNL3-125	125	114	100	137	120	106	3803	3732	84000	2400	4	1835	4461	3.15
GBNL3-150	150	136	119	166	145	127	3835	4342	106000	2800	4	2132	5592	3.01
GBNL3-175	175	157	139	192	168	148	4085	4342	118000	2800	5.5	2344	6365	3.26
GBNL3-200	200	180	159	220	191	169	4223	5134	141300	3400	55	3408	9080	3.5
GBNL3-250	250	225	199	275	239	212	4473	5134	167900	3400	7.5	3697	9743	3.75
GBNL3-300	300	270	240	332	290	253	4618	6044	212000	3800	11	4180	12560	3.6
GBNL3-350	350	316	276	386	336	296	4868	6044	235300	3800	11	4526	13344	3.85
GBNL3-400	400	360	315	442	383	338	5219	6746	282800	4200	11	5588	16078	3.7
GBNL3-450	450	406	358	495	431	381	5719	6746	285000	4200	15	6390	18180	4.2
GBNL3-500	500	449	393	550	477	422	5589	7766	353200	5000	15	6430	22709	3.95
GBNL3-600	600	545	480	660	576	507	6089	7766	381400	5000	18.5	7566	25565	4.45
GBNL3-700	700	629	558	775	673	591	6040	8836	495500	6000	22	8574	32210	4.25
GBNL3-800	800	728	644	880	772	680	6540	8836	507500	6000	30	10200	36040	4.75

- 1、使用行星齿轮减速器时标准点噪声值 <72dB(A), 使用动力带减速器时标准点噪声值与等直径低噪声型冷却塔相同。
- 2、本表中所列出的湿球温度 Tw=28℃ 及 Tw=27℃ 的冷却水量，其工况如下：当水温降 Δ t=10℃ 时，其进水温度 t1=43℃，出水温度 t2=33℃。当水温降 Δ t=20℃ 及 25℃ 时，其进水温度 t1 分别为 55℃ 及 60℃，出水温度 t2=35℃。
- 3、进水压力指接管点处水压 1Kgf/cm²=9.8×104Pa，本系列塔水压在 0.3~0.5Kgf/cm² 之间。
1. When using a planetary gear reducer, the standard noise level at the measuring point is <72 dB(A). When using a power belt reducer, the standard noise level is the same as that of a low-noise cooling tower with the same diameter.
2. The cooling water flow rates listed in this table for wet-bulb temperatures Tw = 28℃ and Tw = 27℃ are based on the following operating conditions:
When the temperature drop Δt = 10℃, the inlet water temperature t1 = 43℃ and the outlet water temperature t2 = 33℃.
When the temperature drop Δt = 20℃ and 25℃, the inlet water temperatures t1 are 55℃ and 60℃ respectively, with the outlet water temperature t2 = 35℃.
3. The inlet water pressure refers to the pressure at the connection point. 1 kgf/cm² = 9.8 × 10⁴ Pa. The water pressure for this series of towers is between 0.3 and 0.5 kgf/cm².

FRP Electrolytic Cell

玻璃钢电解槽

● 产品概述 Product Overview

- 1、使用寿命长，改变了过去普通电解槽因为碰撞等原因而损坏的现状，因为整体采用了优质耐腐蚀树脂，使用寿命可达30年以上；
- 2、强度高，该产品采用了乙烯树脂基和石英砂科学配比，搅拌混合而固化，强度可达100Mpa以上；
- 3、节约场地，因为高强度的产品尺寸精确，槽间距可以缩小，相同的面积可多摆放8%的电解槽，生产效率随之提高。

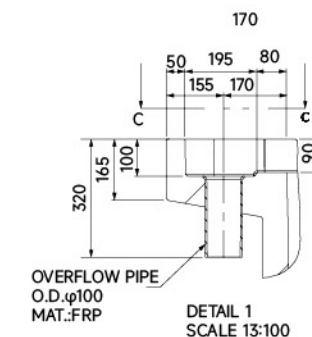
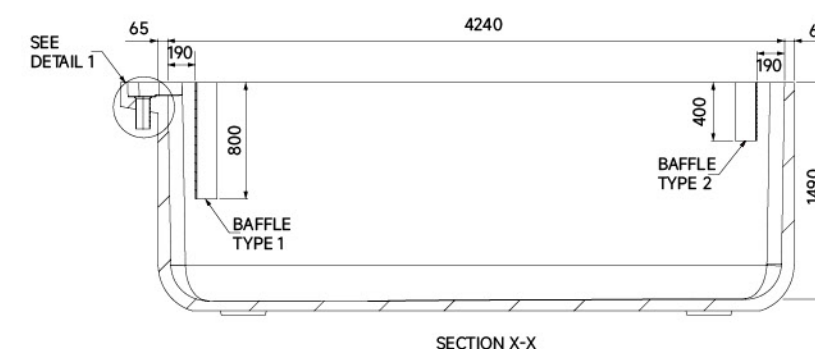
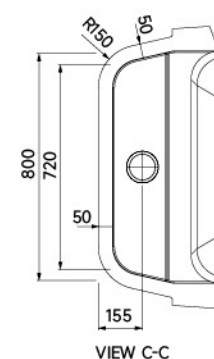
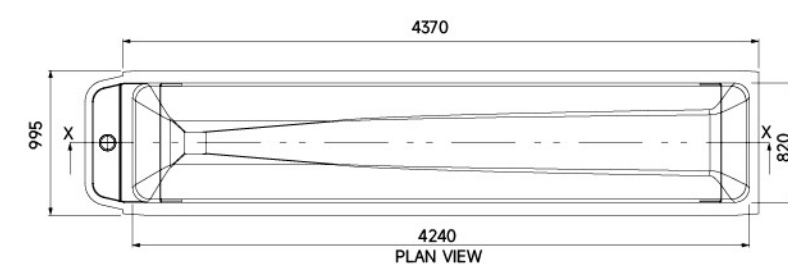
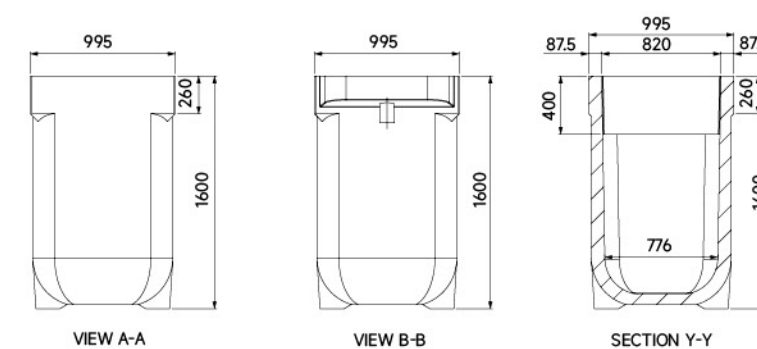
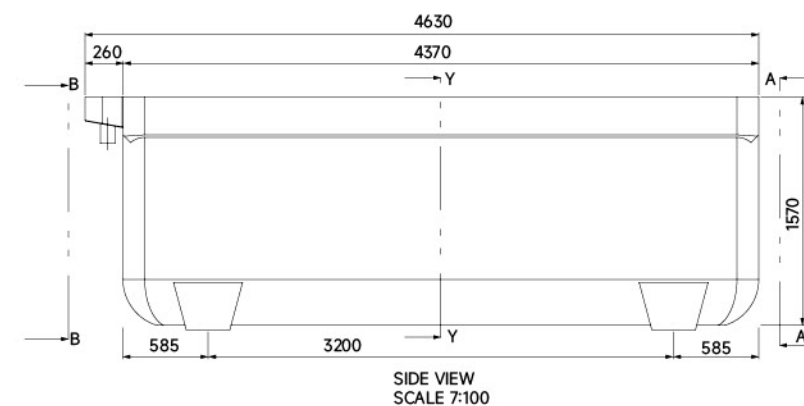
1.Long Service Life: It changes the issue where conventional electrolytic cells were prone to damage due to impacts or other factors. Thanks to the use of high-quality corrosion-resistant resin for the entire structure, its service life can reach over 30 years.

2.High Strength: The product is made by scientifically proportioning vinyl resin matrix and quartz sand, followed by mixing, stirring, and curing. Its strength can reach over 100MPa.

3.Space Saving: Owing to the high strength and precise dimensions of the product, the spacing between cells can be reduced. This allows 8% more electrolytic cells to be placed in the same area, thereby increasing production efficiency.



● 电解槽示意图 Schematic Diagram of Electrolytic Cell



Custom FRP Products

玻璃钢定制产品

非凡定制 因您而塑

释放玻璃钢的无限可能

Extraordinary Customization, Shaped for You
| Unleash the Infinite Possibilities of FRP

标准满足常规，而定制专为解决非凡挑战。我们深谙玻璃钢（FRP）的卓越特性——轻质高强、耐腐蚀、绝缘绝热、可设计性极强，这正是为您实现个性化定制的坚实基础。

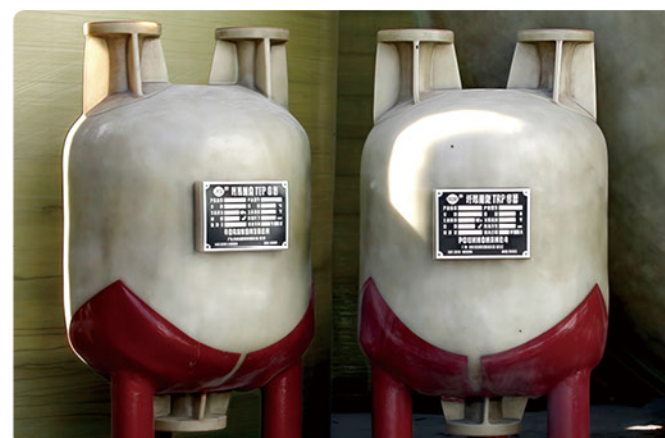
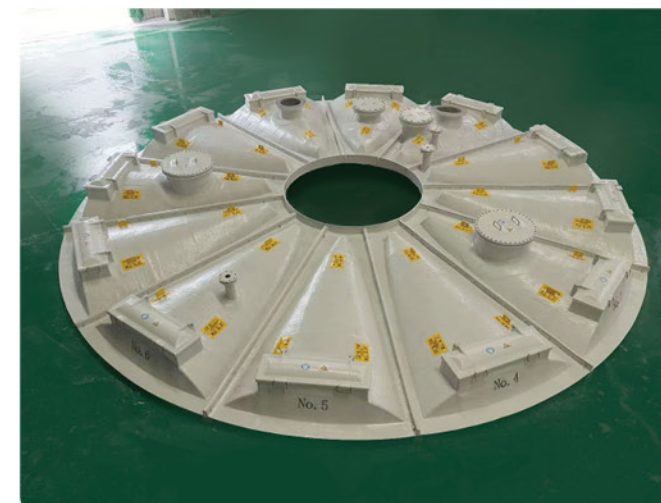
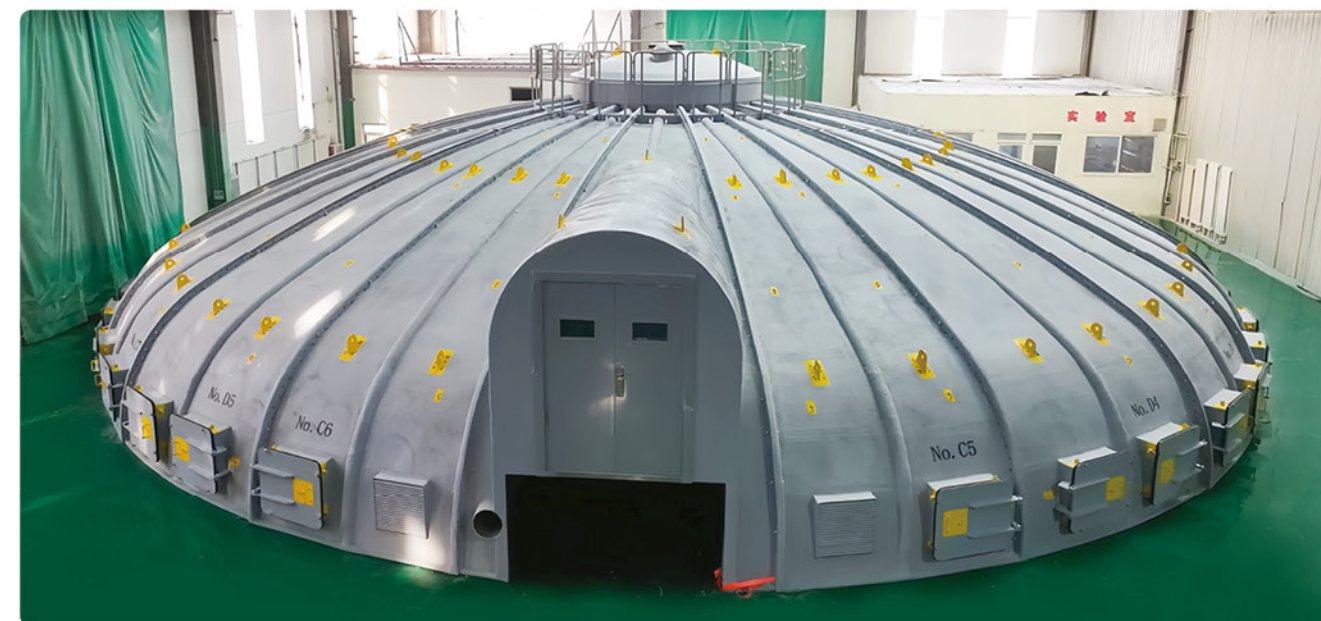
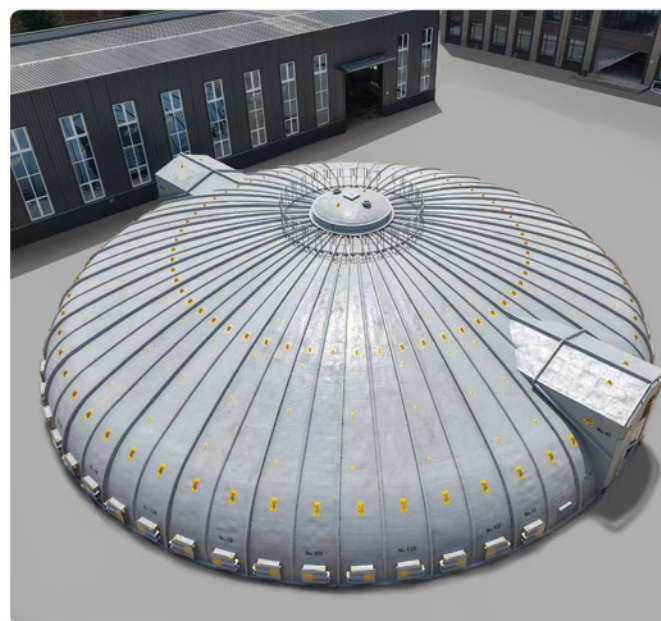
无论是异形结构、特殊尺寸，还是特定的耐酸碱、耐高温要求，我们都能通过灵活的设计与精湛的工艺（手糊/缠绕/真空导入等）为您精准实现。从航空航天部件到环保除尘设备，从个性化雕塑到特殊功能罐体，我们让材料潜能尽数释放。

选择定制，即是选择一份专属的可靠与高效。我们愿以材料科学为笔，聆听您的独特需求，共同勾勒出理想产品的完美形态，为您的项目提供一步到位的卓越解决方案。

Standards meet conventional needs, while customization is specifically tailored to tackle extraordinary challenges. We have a deep understanding of the outstanding properties of Fiberglass Reinforced Plastics (FRP)—lightweight and high-strength, corrosion-resistant, insulation and heat insulation, and flexible in design. This is precisely the solid foundation for achieving your personalized customization for you.

Whether it is irregular structures, special dimensions, or specific requirements for acid-alkali resistance and high-temperature resistance, we can accurately fulfill them for you through flexible design and exquisite craftsmanship (such as hand lay-up, filament winding, vacuum infusion, etc.). From aerospace components to environmental dust removal equipment, and from personalized sculptures to special-function tanks, we fully unleash the potential of FRP materials.

Choosing customization means choosing exclusive reliability and efficiency. We are ready to take material science as our tool, listen to your unique needs, and work with you to outline the perfect form of your ideal product—providing a one-stop, outstanding solution for your project.



Custom FRP Products

玻璃钢定制产品



运输与包装

精益于芯，安稳于行

Transportation & Packaging
Precision at the Core, Stable in Action

- 让距离，不再是品质的挑战。我们负责精心守护，您只需静待佳品。
 - 我们全程把控，只为将完美无瑕的产品，准时、安心地送达您的手中。
 - 内赋坚韧之材，外施周全之护。
 - 从生产线到现场，我们为安全护航。
 - 精工制造，更在于安全抵达。
 - 选择我们，选择的不仅是一件优质产品，更是一份安心的交付体验。
- Distance shall never challenge quality. We take care of meticulous protection, so you can simply await the flawless delivery.
 - We maintain full control throughout the process, ensuring perfect products reach you on time and with peace of mind.
 - Inside, we cultivate resilient qualities; outside, we provide comprehensive protection.
 - From production line to your site, we safeguard every step.
 - Exquisite manufacturing lies not only in craftsmanship, but more so in safe delivery.
 - Choosing us means choosing not only a high-quality product, but also a reassuring delivery experience.

