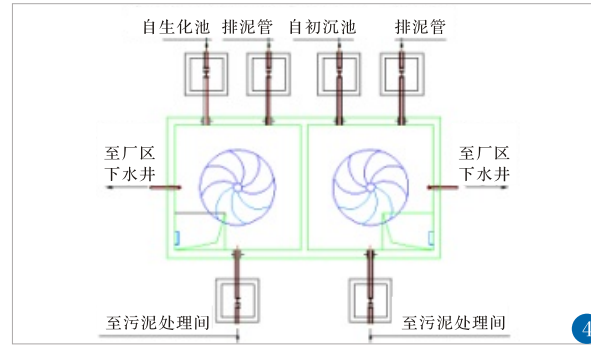4.污泥搅拌：用于污泥的厌氧消化搅拌及污泥均质池中的搅拌，典型的应用为污泥浓缩池，污泥厌氧消化池和污泥储存池等。

4. Sludge mixing: Mixing used for sludge digestion and sludge pool of homogeneous mixing, the typical application of the sludge thickener, sludge digestion tank and sludge storage pools.


5.厌氧搅拌：污水厌氧处理中的搅拌，用于厌氧池，池内需要良好地均质搅拌以确保良好的工艺效果。

5. Anaerobic mixing: mixing in anaerobic treatment of sewage for the anaerobic pond, pool needs a good stir to homogeneous process to ensure good results.
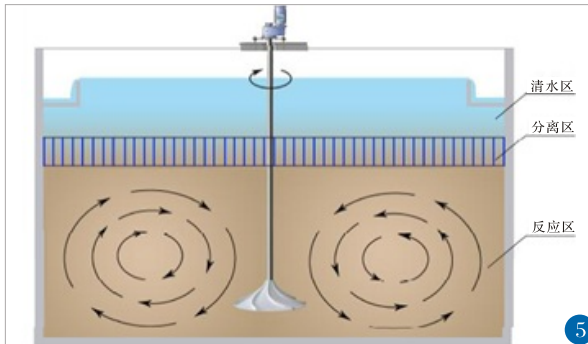

6.反硝化搅拌：污水脱氮处理时的反硝化时的搅拌；用于反硝化池，当需要除氮时，生物处理工艺中不可缺少的一部分以达到理想的脱硝效果。

6. Denitrification Mixing: nitrogen treatment of sewage denitrification when the mixing time; for denitrification tank, when required nitrogen removal, the biological treatment process, an integral part of the denitrification to achieve the desired effect.
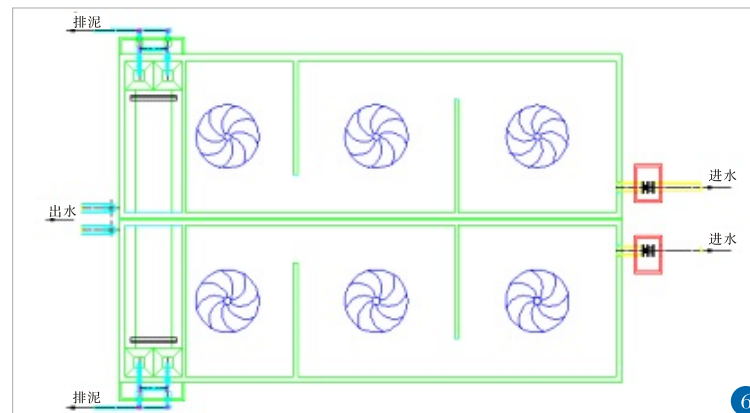
7. A²/O池的搅拌：用于污水及A²/O工艺中厌氧除磷及缺氧脱氮部分的搅拌。

7. A² / O pool of mixing: for sewage and A² / O process in the anaerobic and anoxic phosphorus removal part of the mix.
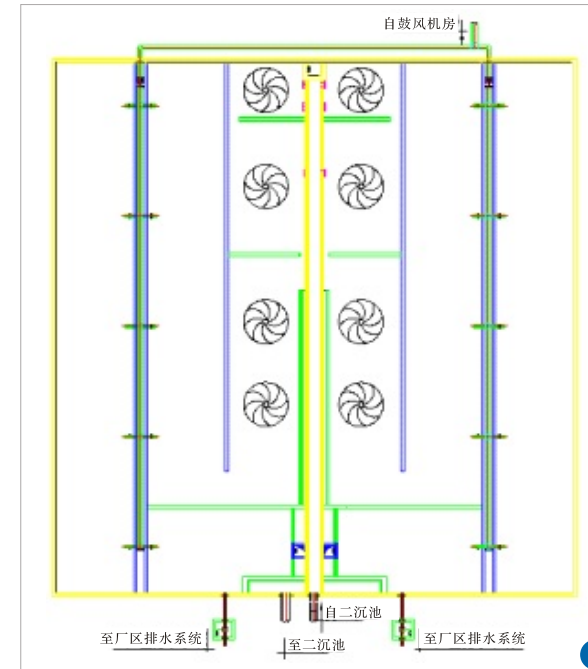
8.污泥热处理需要将污泥充分温和地搅拌，从而获得适宜的消化污泥。

8. Sludge treatment needs to be fully gently stirring the sludge, digested sludge to be appropriate.

9.SBR池的搅拌：用于SBR池处理工艺中脱氮时的反硝化搅拌，即交替生物反应池，由硝化工艺和反硝化工艺交替循环。

9. SBR tank mixing: pool treatment process for nitrogen removal SBR denitrification when mixing, or alternating bioreactor, the nitrification process and denitrification alternating cycle.
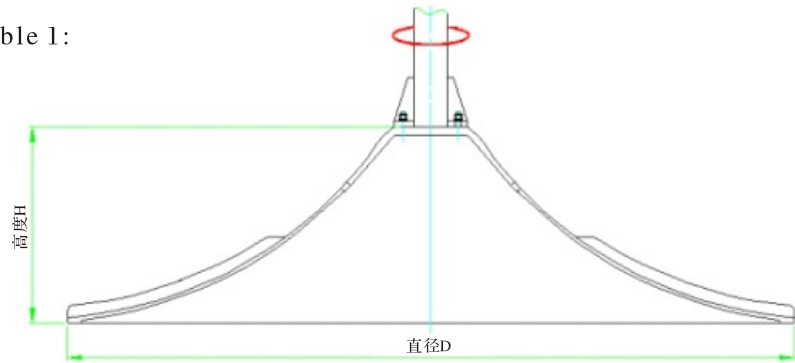
设备型号参数
Device Model Parameters

双曲面基本参数见表1：
Hyperbolic basic parameters shown in Table 1:

表 1

尺寸/直径D(mm) Size / Diameter D (mm)	高度H(mm) Height H (mm)
500	200
1000	400
1500	515
2000	630
2500	670

设备选型
Equipment Selection

为保证取得最佳效果，选型所需提供的基本条件如下：
To ensure the best results, the basic conditions required for selection are as follows:

1. 池形（尺寸和形状）

2. 搅拌目的（标准或参数要求）

3. 污水性质和污泥（絮凝物，砂土，纤维等）浓度

4. 池内障碍物（立柱、管道、曝气系统等）

5. 介质特性：包括粘度、密度和固体含量等

1. Pool shape (size and shape)

2. Mixing purpose (standard or parameters required)

3. The nature and sewage sludge (floc, sand, fiber, etc.) concentration

4. Pool obstacles (columns, pipes, aeration systems, etc.)

5. Medium features: including viscosity, density and solid content

搅拌机所需要的配套功率是按搅拌的介质体积大小、池形尺寸、搅拌介质的密度、粘度而确定的。根据应用情况，可采用一台或多台搅拌机。具体使用可根据以下选型步骤进行：

Mixer power is needed to complete the volume by mixing the medium size, pool-shaped sizes, mixing medium density, viscosity and determined. According to the application, can use one or more mixer. Selection of the specific use of the following steps:

步骤1：怎样计算搅拌器数量
Step 1: How to calculate the number of stirrer

一个搅拌单元的最大宽度/直径大约为20m。

A mixing unit of the maximum width / diameter of about 20m.

1. 单边长度不超过20m且长宽比不大于2的方形池，可采用单台搅拌机。如长宽比大于2，或池单边长度超过20m，根据长宽比不大于2.0的原则，应将长方形池体分为2个或2个以上相等的搅拌单元。

1. Unilateral aspect ratio of the length of not more than 20m and not more than 2 square pool, can use a single mixer. Such as aspect ratio greater than 2, or pool unilateral longer than 20m, according to the principles of aspect ratio less than 2.0 should be divided into two rectangular cell body or more than 2 equal mixing unit.

2. 直径不超过20m的圆形池，可按上述性能参数表采用单台双曲面搅拌机。对于直径超过20m的圆形池，需根据搅拌要求设置多台搅拌机，搅拌机数量的确定请详询蓝深集团技术部。

2. Not more than 20m diameter circular pool table according to the performance parameters using a single hyperboloid mixer. The circular pool 20m in diameter than is necessary, stir more than required to set mixer, mixer with detailed exercise to determine the number of LANSHEN and Technology Group.

最大搅拌单元
Maximum mixing unit

□20m

Φ20m

搅拌单元的安排
Arrangements for mixing unit

≤2×L2   ≤2×L1

步骤2：确定双曲面搅拌机的直径
Step 2: Determine the diameter of the hyperboloid mixer
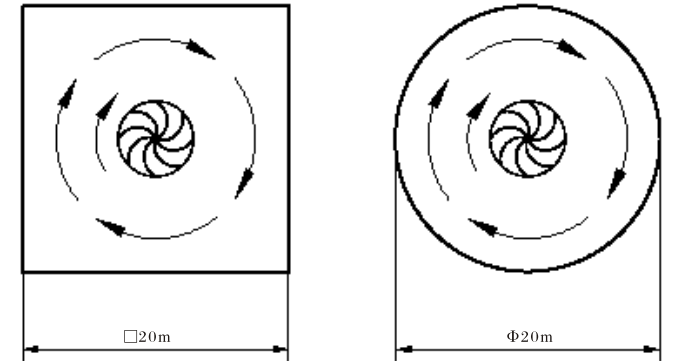
可按参数表进行选择。

对于大多数工程案例来说，可选的型号不一定是一种，而是多种，可由以下几点来做最终决定：

1. 搅拌器型号越小，价格越便宜。

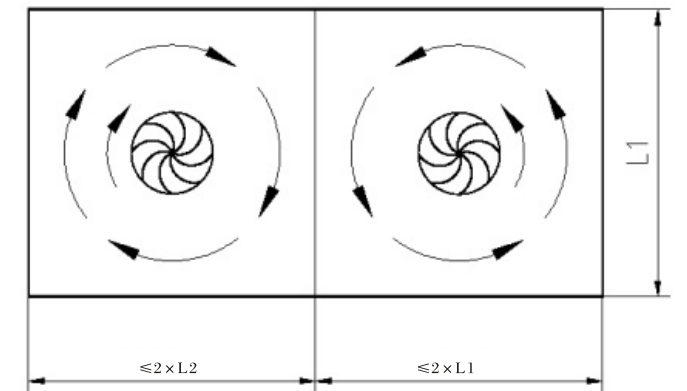2. 搅拌器型号越大，效率越高。投资成本高，但运行成本低。

Parameter table can be selected.

For most engineering cases, the alternative model is not necessarily one but many, by the following points to make the final decision:

1. Stirrer model smaller, cheaper prices.

2. Stirrer larger models, the higher the efficiency. Investment costs are high, but low operating cost.

步骤3：确定搅拌机功率
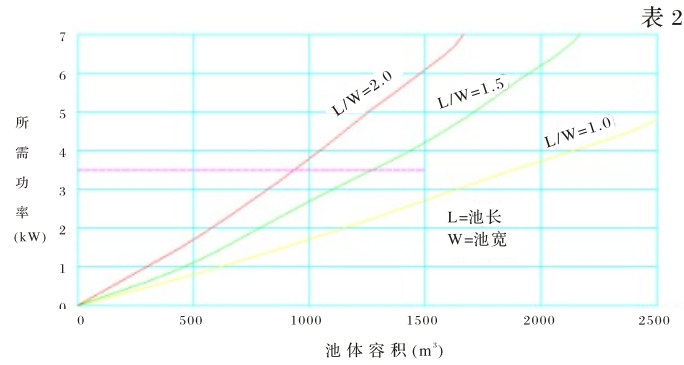Step 3: Determine the mixer power

搅拌机功率的选用与池形及液体含固率有关。

如果是圆形池或正方形池，液体一般为水，则搅拌机的功率选用如表2所示。

Mixer power selection and tank shape and rate of the liquid with solid.

If it is round or square pool pool, the liquid is usually water, the mixer's power use shown in Table 2.

搅拌机功率选型图表
Power Mixer Selection Chart

表2

蓝深双曲面搅拌器应用于特殊条件时（0.8%干质），所需的电机功率n2就必须根据表3增加。

LANSHEN hyperboloid stirrer used in special conditions (0.8% dry matter), the required electrical power n2 must be increased according to Table 3.

表3

污泥浓度（%） Sludge concentration (%)	0.8%~0.9%	1.0%~1.5%	1.6%~2.0%	2.1%~3.0%	3.1%~4.0%	4.1%~5.0%	5.1%~6.5%
额外的电机功率 Additional electrical power	×1.0	×1.5	×2.0	×3.0	×5.0	×7.0	×10.0

提示：由蓝深集团确认最终方案。
Tip: Deep Blue Group recognized by the final plan.

步骤4：怎样计算搅拌器的速度
Step 4: How to calculate the speed of agitator

蓝深双曲面搅拌机应用于标准条件时，转速可以根据表4来确定，表中显示了转速和标准rpm的范围。

LANSHEN hyperboloid mixer used in the standard conditions, speed can be determined according to Table 4, the table shows the standard speed and rpm range.

标准速度和蓝深搅拌机的速度范围
Standard mixer speed and speed range of LANSHEN

表4

型号（Φ） Model (Φ)	500	1000	1500	2000	2500
范围（rpm） Range (rpm)	60~120	30~70	22~40	18~38	16~36
标准（rpm） Standard (rpm)	90	50	36	28	26

步骤5：怎样选择容积流量
Step 5: How to Select volume flow

另外，有时池体的容积流量也相当重要。根据表5可以选定不同流速时的参数。

可以明显看出蓝深搅拌机的容积流量非常高，适用于很多需要快速搅拌和剧烈搅拌的工艺。

In addition, sometimes the volume of flow cell body is also important. Table 5 can be selected according to different parameters when the flow rate.

It is clear LANSHEN very high traffic volume mixer for mixing a lot of need for rapid and intense mixing process.

搅拌机的标准流速
Standard flow mixer

表5
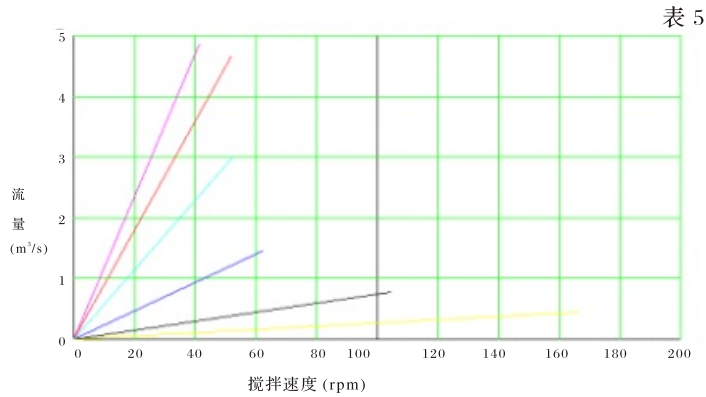
安装方式
Installation

双曲面搅拌机安装简便，对于有预制钢混平台的工作场合，可进行预埋钢板连接或采用膨胀螺栓固定。具体预留孔和预埋件尺寸见下图和表6。

Hyperboloid mixer ease of installation, mixed for a prefabricated steel platform in the workplace, can be embedded steel connection or use of expansion bolts. Specific reserve size holes and embedded items shown below and Table 6.

表6

型号 Model	预留孔Φ（mm） Reserve hole Φ (mm)	预埋钢板（mm） Embedded steel plate (mm)
SQJB500~1500	300	500×500×12
SQJB2000~2500	400	600×600×12

对于无预制钢混平台的工作场合，可制作走道工作桥或钢支架操作平台，吊装安放在池内即可。

No prefabricated steel for mixed platform in the workplace, the work of the bridge or walkway can be made of steel stent platform, lifting can be placed in the pool.
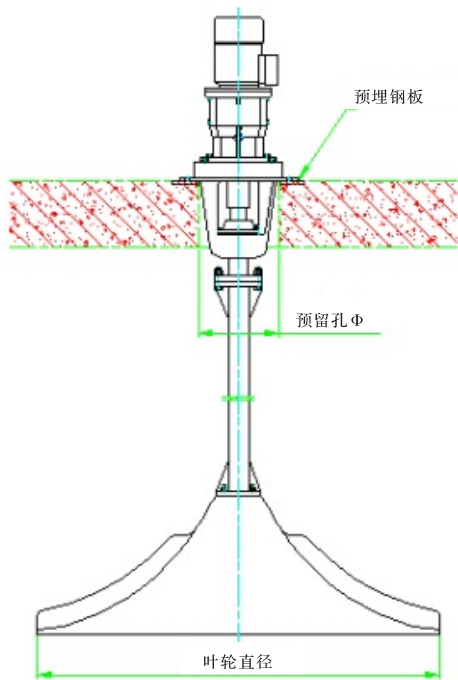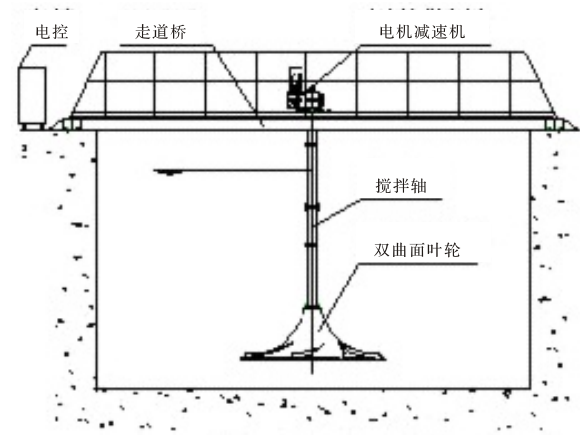
预埋件布置图
Embedded parts layout

电气控制
Electrical control

常规为普通就地按钮控制，带过载保护装置。

可根据用户需要设定设备的启、停及运行时间，可带PLC接口。

Orders for the common−place button control with overload protection device.
Users need to set equipment according to Kai, stop and run time for the interfaces with a PLC.

技术经济分析
Technical and economic analysis

投资分析
Investment Analysis

1.SQJB型双曲面搅拌机一般搅动$1m^3$污水只需3W，一台SQJB−3kW的搅拌机，可搅污水容积为$3÷0.003=1000m^3$

2.普通搅拌机若搅动$1m^3$污水需要6W，一台3kW普通的搅拌机，可搅污水容积为$3÷0.006=500m^3$

3.一台SQJB−3kW的双曲面搅拌相等于$1000÷500=2$台3kW的普通搅拌机

1. SQJB double surface water mixer generally stirred $1m^3$ only 3W, a SQJB−3kW of the mixer, can mix water volume of $3 ÷ 0.003 = 1000m^3$

2. Ordinary mixer stir $1m^3$ water if necessary 6W, a 3kW ordinary mixer, can mix water volume of $3 ÷ 0.006 = 500m^3$

3. A SQJB−3kW dual−surface mixing equal to $1000 ÷ 500 = 2$ units of ordinary mixer 3kW

能耗分析
Energy analysis

1.一般污水处理厂，每处理1吨污水耗电量约为0.4kWh

2.其中搅拌机所占功率按8%测算

3.处理每吨污水耗电为0.4×8%=0.032kWh

4.蓝深SQJB型双曲面搅拌机的耗电为普通搅拌机的1/2，即0.016kWh

5.按市场价每kWh电量0.8元计算，处理每吨污水可节约运行电费为0.016×0.8=0.0128元

6.则对于50000吨/天的污水处理厂，若采用SQJB型双曲面搅拌机，每年可节约运行费用23万

1. General sewage treatment plant, water consumption for each treatment is about 1 ton 0.4kWh

2. Which share power mixer measured by 8%

3. Processing power per ton of sewage was 0.4 × 8% = 0.032kWh

4. SQJB double LANSHEN surface of the power consumption for the general mixer mixer 1 / 2, which is 0.016kWh

5. According to market price 0.8 yuan per kWh charge calculated per ton of sewage treatment can save electricity to run the 0.016 × 0.8 = 0.0128 元

6. Is for 50,000 tons / day sewage treatment plant, the use of a dual surface SQJB mixer, annual savings of operating costs 230 000

注意事项
Notes

1.安装前要有一名合格电工检查电机、电器并按设备箭头方向确定转向，叶轮离池底的最下工作距离不小于300mm，且池底应平整、结实，池内无杂物；

2.如果长时间不运行，重新启动时要防止污泥淤积而造成设备损坏；必要时需进行清理；

3.在封闭池内安装要考虑到搅拌机叶轮的进出口安装尺寸。

1. To have a qualified electrician before installation, check the motor and electrical equipment in accordance with established direction of the arrow turn the impeller to work from the bottom of most distance not less than 300 mm, and the bottom should be flat, solid, debris−free pool;

2. If time is not running, restart to prevent equipment damage caused by sludge deposition; necessary, in need of cleaning;

3. In a closed pool installation to take into account the import and export install mixer impeller size.

订货说明
Ordering Help

1.订货时应注明材质，未注明时：传动轴材质为碳钢重防腐，叶轮为强化玻璃钢，紧固件均为不锈钢。

2.订货时应说明设备运行的目的，且提供池型及池尺寸、水深，及液体的粘度、密度和固体含量等相关使用参数。

3.不注明所配的电控箱为普通就地控制，如有特殊要求应另行注明。

1. Ordering please indicate the material, when not specified: shaft is made of heavy duty steel, the impeller for the tempered glass steel, fasteners are stainless steel.

2. Order should be the purpose of the equipment running, and the provision of pool−type and pool size, water depth, and liquid viscosity, density and solid content and other related parameters.

3. Does not indicate the distribution of the electronic control box for the ordinary local control, if there are special requirements should be specified.

提 示
Prompt

液体搅拌与其它化工或污水处理工艺相比，似乎是一项简单的工作。但是，上千例工程的经验显示出只有良好的设计才能避免搅拌不够，能耗太大和搅拌设备使用寿命短等缺陷。

该样本提供了蓝深双曲面搅拌机的选型大纲，介绍了蓝深搅拌机的应用和设计，可作为用户或工程人员在作工程初步设计时的选型辅助资料。

为了确保给各项具体工程提供最好的设计，请与蓝深集团技术部联系并确认方案。

Liquid mixing with other chemicals or sewage treatment process than appears to be a simple task. However, the experience of thousands of cases of engineering design that only good enough to avoid mixing, power consumption and much shorter service life of mixing equipment defects.

The sample provides a LANSHEN selection outline hyperboloid mixer, mixer, introduced the application of LANSHEN and design, as users or engineers in the preliminary engineering design for the Selection of auxiliary data.

To ensure that the specific projects to provide the best design, please contact LANSHEN Group Technology and recognition programs.