



## Lamella packs (tube settle) Introduction document KHN Water Treatment Co., Ltd.



Hexagonal honeycomb inclined tube precipitator is mainly used for water treatment in water plant sedimentation tanks, sewage treatment plant sedimentation tanks and clarification tanks. This product has fast sedimentation speed, reduces sedimentation time, improves water production and water purification efficiency, and has good water quality. It is an effective sedimentation equipment for water plants and sewage treatment plants.

The material of the inclined tube precipitator is ethylene-propylene copolymer, which is characterized by light weight and pressure resistance, compact structure, regular pore size, stable size, large specific surface area, high porosity, non-toxic and odorless, acid and alkali resistance, aging resistance, smooth surface and easy to discharge mud , The

transportation group is convenient and durable.

The inclined length of the inclined pipe is  $L=1\text{m}$ , and the plane size is  $1\text{m} \times 1\text{m}$  as the unit group. The installation angle is  $60^\circ$ , the inclined pipe adopts a hexagonal pipe hole, and the diameter of the hole is determined by the inscribed circle diameter.

The material density of the inclined tube is  $0.92 \text{ tons/m}^3$ , and different specifications have different unit weights and tube thicknesses to ensure sufficient strength and rigidity. Special specifications can be customized individually.

The horizontal pressure-bearing strength of a single set of inclined tube settler is not less than  $1.4\text{Kpa}$ , and the load-bearing load is not less than  $250\text{Kg/m}^2$ .

### Conditions of Use

Equipment Type: Inclined Tube Precipitator

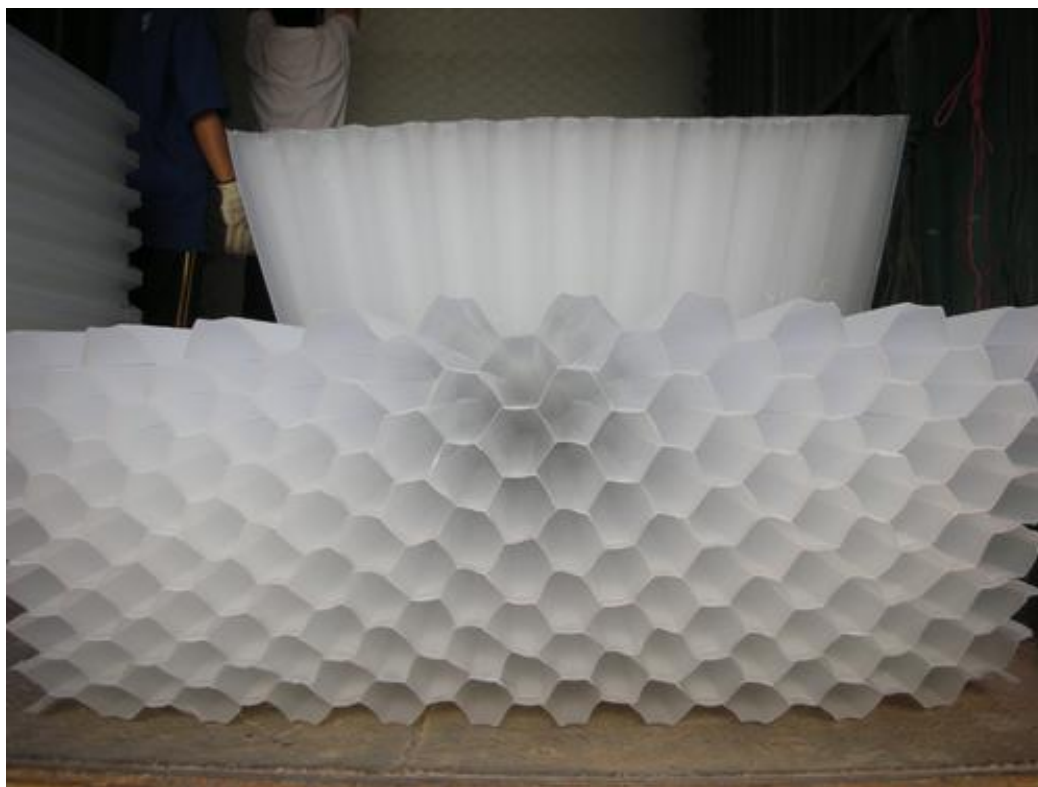
Material: ethylene propylene copolymer(PP)

Workplace: Outdoor

Environment temperature ( $^\circ\text{C}$ ):  $-15 \sim 40$

Medium temperature ( $^\circ\text{C}$ ):  $5 \sim 25$

Working system (hr/d): 24



### Specification

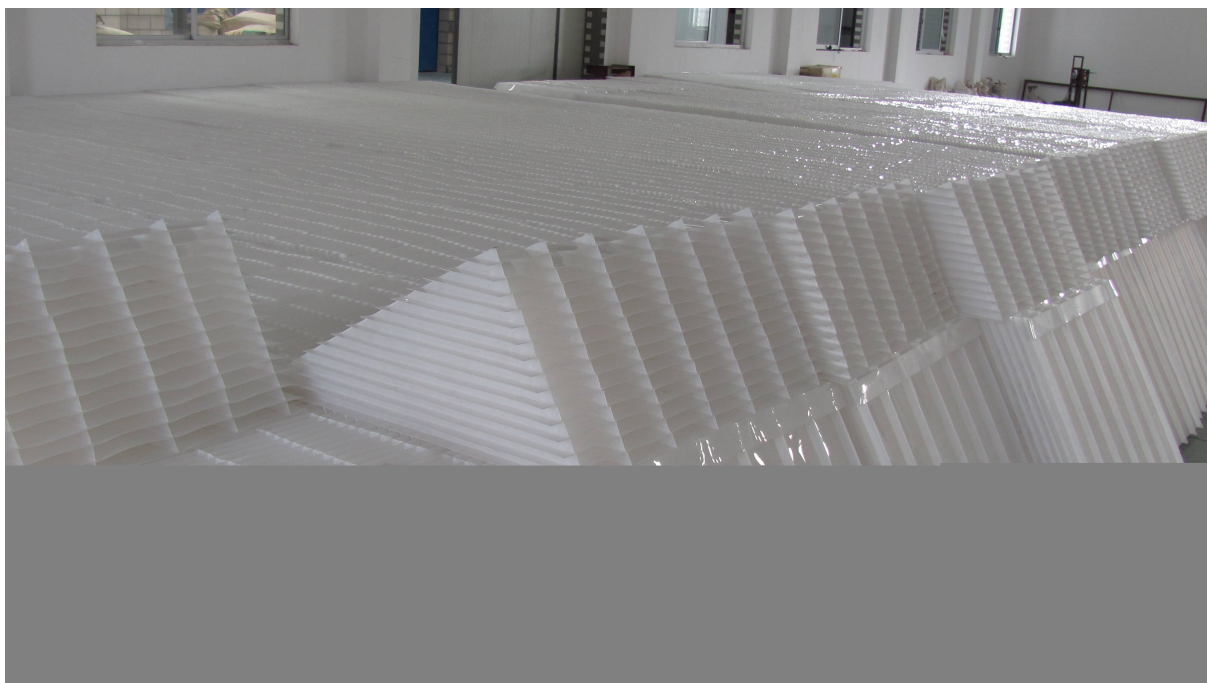
Introduction document of KHN lamella inclined plate clarifier

Item	Hexagonal honeycomb inclined tube packing									Inclined plate packing								
	PP			PVC			FRP			PP			PVC			FRP		
Specification mm	φ35	φ50	φ80	φ35	φ50	φ80	φ35	φ50	φ80	35	50	80	35	50	80	35	50	80
Sheets/m <sup>2</sup>	40	30	20	40	30	20	40	30	20	27	19	12	27	19	12	27	19	12
Sheet thickness mm	0.40	0.45	0.60	0.35	0.45	0.65	0.3	0.5	0.7	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2
kg/m <sup>2</sup>	18	15	15	31	23	23	41	31	31	33-66	23-46	15-30	50-100	35-70	23-46	65-130	45-90	30-60
Sheet size mm	1000×1000×δ			1000×1000×δ			1000×1000×δ			Customer-defined			Customer-defined			Customer-defined		
Settler size mm	1000×1000×866			1000×1000×866			1000×1000×866			Customer-defined			Customer-defined			Customer-defined		
Applications	WTP/WWTP			WWTP			WTP/WWTP			WTP/WWTP			WWTP			WTP/WWTP		
Color	Milky white/black			Sky blue/black			Customized			Milky white/black			Sky blue/black			Customized		
Molding method	Electric soldering iron			Glue			Glue			Plastic welding			Plastic welding			Glue		
Installation angle	60°			60°			60°			60°			60°			60°		
Cost	Low			Medium			High			Medium			Low			High		
Service life	Long			Short			Long			Long			Short			Long		
Usage frequency	Commonly used			Rarely			less			less			less			less		
Operating temperature	5 ~ 50℃			5 ~ 50℃			5 ~ 70℃			5 ~ 50℃			5 ~ 50℃			5 ~ 70℃		
Proportion g/cm <sup>3</sup>	0.92			1.35 ~ 1.46			1.8			0.92			1.35 ~ 1.46			1.8		
Features	Flexible and easy to float			Easy to age, brittle, slightly poisonous			Acid and alkali resistance			Acid-resistant, alkali-resistant, beautiful			Slightly poisonous			Acid and alkali resistance		
Produce way	Factory prefab			Factory prefab			Factory prefab			production on spot			production on spot			Factory prefab		
standard packaging	Packing strap/wooden box			Packing strap/wooden box			Packing strap/wooden box			Packing strap/wooden box			Packing strap/wooden box			Packing strap/wooden box		
Special specifications	Customer-defined			Customer-defined			Customer-defined			Customer-defined			Customer-defined			Customer-defined		

**Features of lamella packings (tube settler):**

- 1. Large wet circumference and small hydraulic radius.
- 2. The laminar flow state is good, and the particle settling is not disturbed by flocculation.

- 3. When the length of the inclined pipe is 1 meter, the effective load is designed at 3-5 tons/m<sup>2</sup>•hour. V<sub>0</sub> is controlled within the range of 2.5-3.0 mm/sec, and the quality of the effluent water.
- 4. The honeycomb inclined pipe is used at the water intake. When the pipe length is 2.0-3.0 meters, it can be safely operated and processed in the high turbidity of 50-100 kg/m<sup>3</sup> of sand content.
- 5. Adopting inclined tube sedimentation tank, its processing capacity is 3-5 times that of advection sedimentation tank, and 2-3 times that of accelerated clarification tank and pulse clarification tank.



### **Lamella packings (tube settler) installation procedure**

#### **1. Installation of the mud pipe at the bottom of the sedimentation tank**

The installation sequence of the inclined pipe sedimentation tank generally starts from the bottom. The installation of the sludge drainage piping system of the department is completed first to ensure that the opening of the sludge drainage pipe meets the design requirements and is firmly fixed. After the inspection is correct, the next installation process is allowed.

#### **2. Complete the installation of the settler bracket**

According to the installation drawings of the filler support of the inclined pipe sedimentation tank, first install the filler support in place, check that all welding joints are firm, the support strength is sufficient to bear the weight of the filler, and complete the anti-corrosion treatment on the support surface;

### 3. Complete the precipitator hot connection

According to the hot splicing method of the inclined tube packing, each inclined tube packing is used as two separate splicing units. The two units are 1m<sup>2</sup> after the completion of the splicing. After the splicing is completed, they are neatly stacked on the field (reserve a small amount of loose pieces for use) .

### 4. Assembly in the settler tank

Assemble the hot-bonded packing unit on the upper part of the packing bracket from left to right. Always keep the 60° angle unchanged, and each unit should be properly compressed when assembled in sequence. If the size is not right when assembled to the right, it needs to be assembled with scattered piece diagonal tube packing according to the size and then assembled until it is all in place.

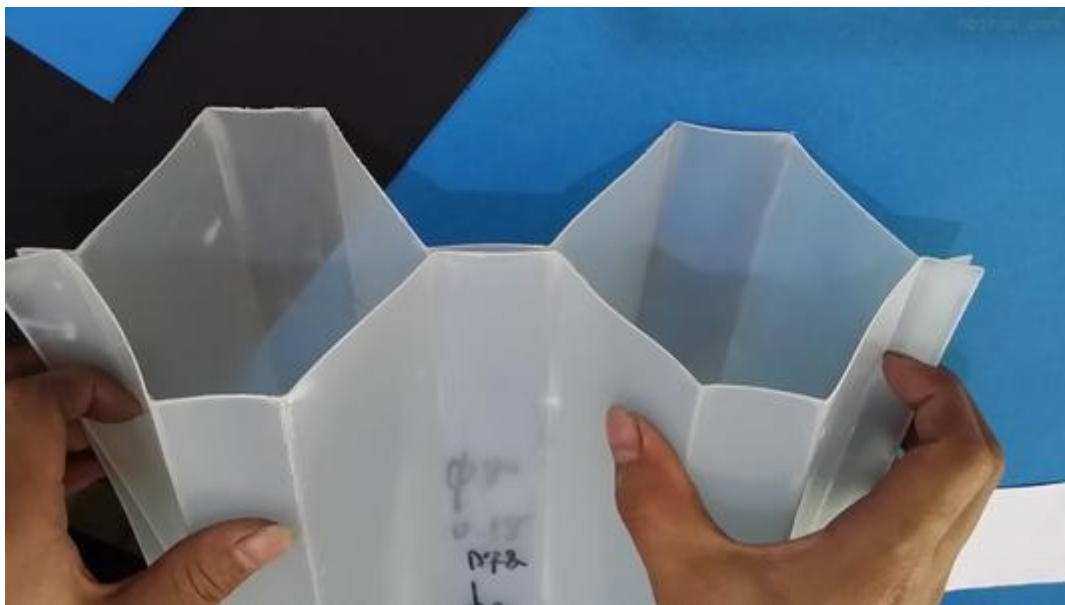
### 5. The upper part of the settler is fixed

Since the specific gravity of the inclined tube packing is 0.92 slightly less than that of water, after the inclined tube packing is assembled in place in the pool,  $\phi$ 10mm round steel must be pulled from left to right above the packing for reinforcement (two round steels are required to pass through the upper part of each unit packing) , The two ends of the round steel are reliably fixed on the wall of the sedimentation tank. After the installation of the round steel, it can well prevent the inclined pipe filler from loosening and floating during the initial use. The round steel uses epoxy coal pitch for corrosion.

### 6. Operation and debugging of inclined tube sedimentation tank.

- 6.1. Check whether the water inflow is even, and it must not impact the sedimentation tank and affect the sedimentation effect;
- 6.2. Adjust the height and level of the water outlet weir trough to the appropriate level to keep the water outlet uniform;
- 6.3. After the above construction process, the filler installation of the inclined pipe

sedimentation tank has been completed. After normal operation, the sludge discharge cycle needs to be determined according to the concentration of suspended solids in the influent water, and attention should be paid to timely sludge discharge to ensure that the inclined tube sedimentation tank always maintains good operating conditions and satisfactory effluent quality.



### **Lamella tube sheets piece-hot connection method**

#### **1. Site preparation**

- 1. Prepare for hot connection of power supply and cables;
- 2. Prepare a 200W electric soldering iron;
- 3. The operator is in place and the guardian is in place;
- 4. The volume of the inclined pipe filler will occupy a lot of space after the completion of the scalding, so reserve the stacking space in advance;

#### **2. Hot connection operation**

- 2.1. Open the packaging of the inclined tube packing, place the slice of the inclined tube packing flat on the ground, take the second slice of inclined tube packing and place it on the slice packing, check the incision of the inclined tube packing, it must be 60° angle and hexagonal honeycomb shape , After the inspection is correct, start to burn the bonding point;
- 2.2. All the flat joints at both ends of the hexagonal honeycomb must be hot-joined. The

joints of the two planes on both sides must be hot-joined at more than four points. The middle of the two inclined pipe filler planes must be welded at more than four points to ensure firm welding;

- 2.3. Pay attention to the rhythm of the operation, control the temperature, and do not miss the number of hot contacts;
- 2.4. Each oblique tube packing is used as two separate scalping units, which are neatly stacked on the field after scalping;
- 2.5. Be sure to cut off the power of the soldering iron during a break, and place it safely;

### **3. Hot connection requirements for lamella tube packs**

The total desoldering points of a single group of inclined pipes shall not be more than 15, and the welding points of the same welding line shall not be more than 2;

There should be no less than 5 welding points on the same welding line of the inclined pipe; no more than 5 welding points for a single group of inclined pipes, and no more than 2 welding points on the same welding line;

After a single set of inclined pipes bear a pressure of 0.6Kpa, the change rate of their dimensions is less than 1%;

When a single group of inclined pipes fall horizontally to the ground, when the drop height is 1.0 m, there are less than 6 welded joints;

The bracket of the inclined pipe installation place has sufficient strength and rigidity;

The inclined pipe is guaranteed not to be blocked by sludge under any working conditions;

The strength of the inclined plate takes into account the factors of mud accumulation in the inclined pipe and the load of the maintenance personnel is not less than 250Kg/m<sup>2</sup>; Inclined pipes are crossed;

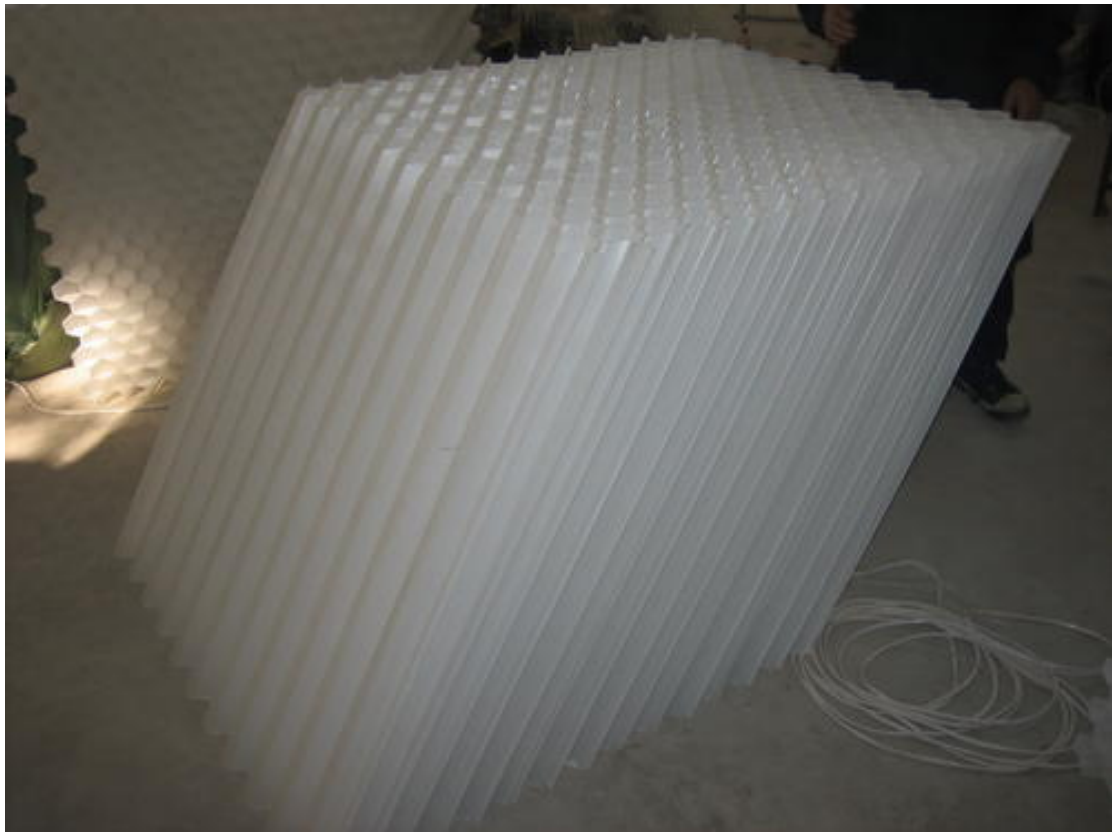
There is no "short flow" phenomenon and dead water area after installation of the inclined pipe;

The inclined pipe is installed and fixed firmly and has sufficient anti-buoyancy;

After the installation of the inclined pipe, the upper part (a zone or grid) of the inclined pipe should be flat.

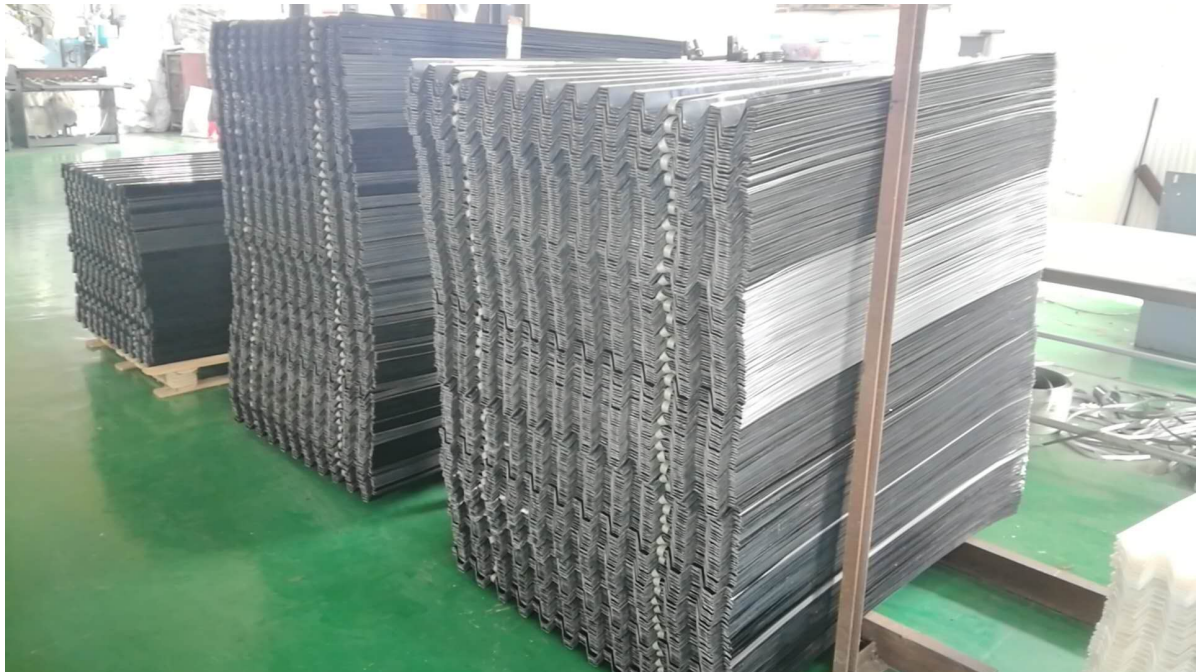
### **Safety Requirement**

- 1. It is required to pay attention to life safety when the contacts are hot to prevent burns and electric shocks;
- 2. The scorching operation requires at least two people to be present to assist each other and cooperate with the operation;
- 3. The scorching operation must be carried out in an open field, and there must be a guardian during the construction;
- 4. There must be no flammable materials on the hot-spotting site, and fire-fighting facilities must be present;
- 5. If an accident occurs, report it in time, and report an emergency in time.

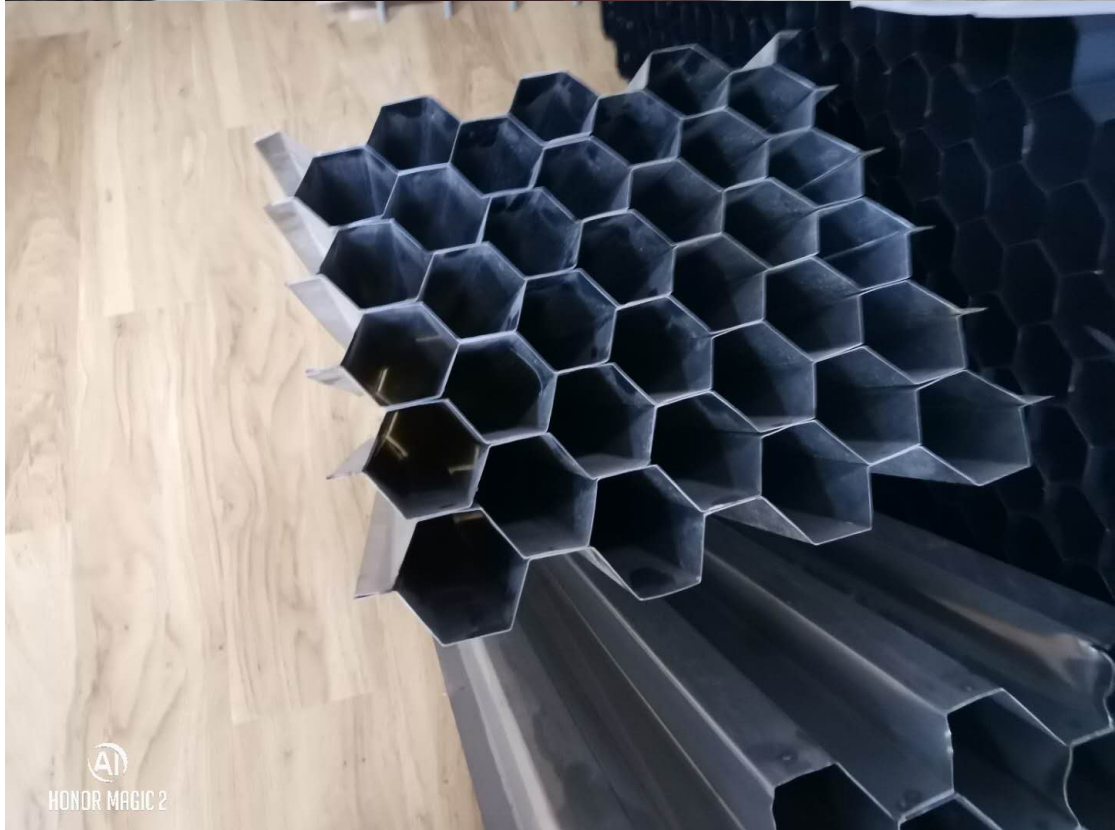






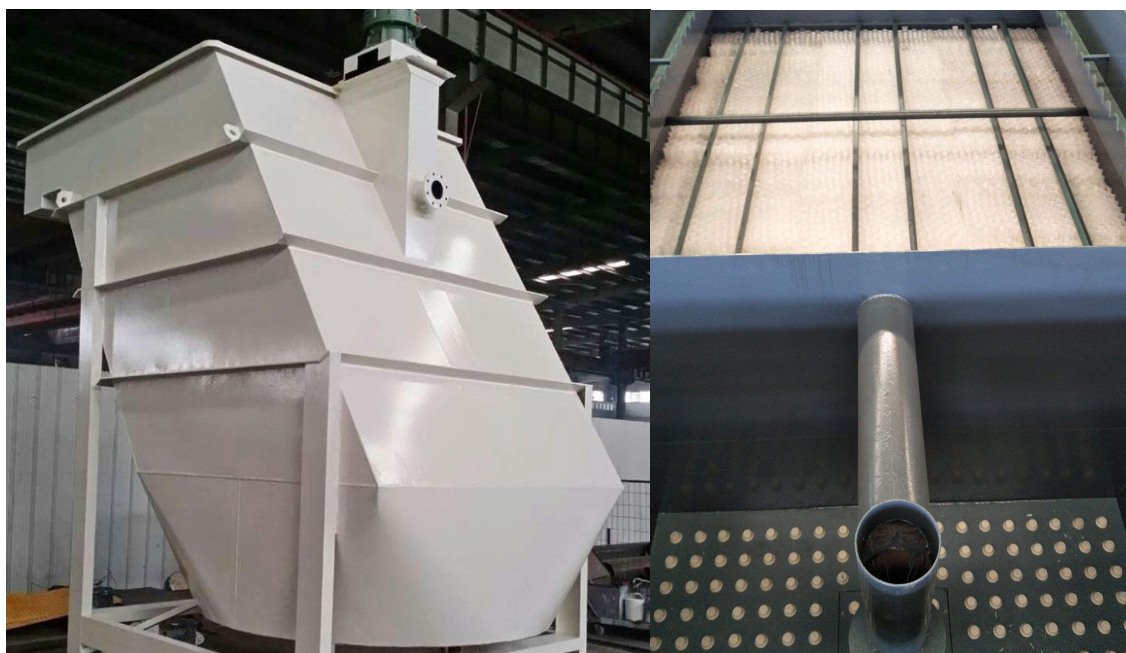






V、 The project site





Vietnam dyeing and printing plant

Rural water stations in Fujian, China



Jiangyin Waterworks in China

China Gansu Waterworks



Electroplating plant in Sichuan, China

Water treatment in Congo textile mill



Rural water stations in Zhejiang, China

China Jiangxi paper mill



Workshop production-FJ model

Special-shaped equipment (over sea)



Kyrgyzstan Waterworks



Taiwan mountain water station

Thanks

KHN water treatment equipment Co., Ltd.

[www.khnwatertreatment.com](http://www.khnwatertreatment.com)

[sales@khnwatertreatment.com](mailto:sales@khnwatertreatment.com)