



**ATAL Cross-flow  
Sedimentation Tank**  
橫流式周進周出沉淀池  
(ACROSS)

## Introduction 简介

# ATAL Cross-flow Sedimentation Tank (ACROSS) 横流式周进周出沉淀池

**ATAL Cross-flow Sedimentation Tank (ACROSS)** is a patented technology (patent number: ZL2004 1 0002171.9) developed by ATAL Engineering Limited. Our Group has accumulated rich experience and good performance in the process design, equipment integration and "turnkey" project. We have a team of engineers with strong technical capabilities and rich experience in project management. In the process design, equipment supply, installation, commissioning and operation of the process package, it is practical to achieve safety, reliability, economical application, advanced technology, and ensure that the effluent meets the standards.

ATAL Engineering Limited. has obtained a Chinese invention patent for ACROSS developed through long-term research and analysis of the sludge/water flow regime in the traditional sedimentation tank.

The design of the inlet and outlet from long side of ACROSS can greatly reduce the influent flow rate of sewage, strengthen the sedimentation effect, and effectively reduce the area required for the sedimentation tank, civil construction, and equipment investment costs.

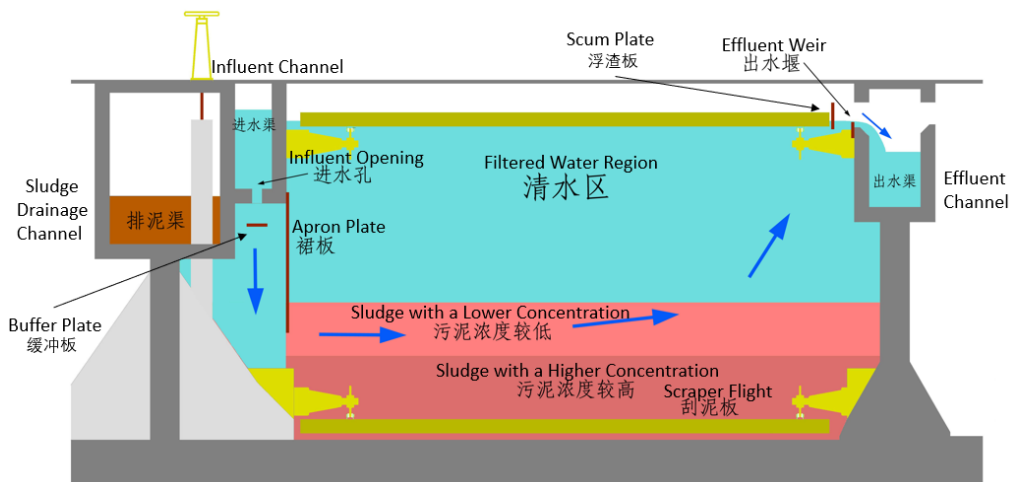
Through years of research, we have found that the mechanism of the sludge sedimentation tank in the sewage plant is different from the traditional cognition. These differences are correctly understood, applied, and verified; the result is our invention – ACROSS.

**横流式周进周出沉淀池 ( ACROSS )** 是安乐工程有限公司研发的专利工艺 ( 专利号 : ZL2005 1 0002171.9 ) 。我在此工艺的设计、成套设备集成和“交钥匙”工程上积累了丰富的经验和良好的业绩，并拥有一支专业技术能力强、工程管理经验丰富的工程师队伍。在工艺包的工艺设计、设备选购、施工、安装、调试和运营中，切实做到安全可靠、经济适用、技术先进、确保出水达标。

安乐工程有限公司通过长时间对传统沉淀池内泥/水流态的研究及分析，并具此研发的ACROSS沉淀池获得了中国发明专利。

ACROSS沉淀池的矩形池长边进水/长边出水设计，除了能大幅降低污水的进水流速，强化沉淀效果外，也能有效减少沉淀池所需的占地面积及土建以致设备的投资费用。

通过我们多年的研究发现，污水厂沉淀池内的污泥沉淀机理与传统上的认知有一定的差异，把这些差异正正确理解并加以应用及验证；结果就是我们发明成果——ACROSS沉淀池。



Schematic diagram of ACROSS process  
横流式周进周出沉淀池工艺示意图

## Major Features 主要特点

### Long-Side Inflow Mechanism 长边入水原理

Different from traditional rectangular sedimentation tank, the inflow of ACROSS occurs along the long-side of the rectangular tank, while sludge-water mixture settles along the width of tank. Under the same inflow rate, inflow from long-side direction can reduce the flow rate to 1/5-1/8 compared with traditional ones. The low flow rate coupled with our patented energy-dissipation structure, anti-vortex apron plate, and other design and process calculations, enhance the sedimentation performance of ACROSS by 30%-60% higher than that of the traditional rectangular sedimentation tank.

有别于传统的矩形沉淀池，我们利用矩形池的长边进水，池的宽度对泥水混合液进行沉淀；在同一进水量下，长边进水能使进入水池的水流速度减少至传统方式的1/5-1/8。低流速配合我司专利设计的消能结构、抗涡流裙板等设计及工艺计算，使ACROSS沉淀池的沉淀效果比传统的矩形沉淀池高出30%-60%。



Long-side inflow of the rectangular tank  
矩形沉淀池长边进水

### Anti-vortex Skirt 抗涡流裙板设计

The design of ACROSS can properly control the vortex, and the water inlet is introduced according to the characteristics of the sewage, the inflow can directly go to the sludge bed with a low speed after energy dissipation. It can exert the effect of sludge blanket that quickly captures the particles in the inflow sludge and slows down to the final sedimentation. Moreover, the sludge area is relatively stable, and the sludge in the area is also well-concentrated. The actual operation shows that it is better than various traditional water inlet methods.

ACROSS沉淀池的设计能妥善地控制涡流，并把进水口按污水特性导入，将进流水经过消能后以很低的流速直接进入污泥层，能充分发挥污泥毯的效应，迅速把进流污泥中的颗粒捕获，减慢至最终沉淀。而且这个污泥区比较稳定，区内污泥浓缩得很好。实际运行经验显示要比各种传统的进水方式效果更好。

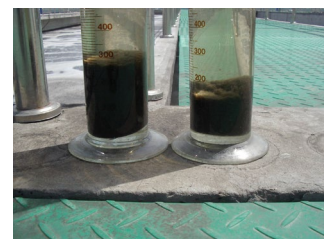


Vortex control design  
涡流控制设计

### Sludge Sedimentation 污泥沉淀

The sludge-water mixture of inflow moves horizontally along the specific sludge concentration line from the width of the tank. During the process, the heavier sludge settles down to tank bottom while the effluent is clarified to the clean water zone. The clarified effluent flows through the weir on the other side of the tank, and then flows to the drain.

进流的泥水混合液沿池的宽度方向沿特定的污泥浓度线水平前进，过程中，较重的污泥沉淀到池底而清水释出进入清水区，清水经池另一边的堰板流进入出水渠。



Sludge sedimentation effect  
污泥沉淀效果

### Chain Scraper 链条刮泥机

ACROSS is generally equipped with chain scrapers. The slow-moving speed of the scraper avoids vortex and sludge that disturbs in the sludge-water separation zone. The sludge discharge valves are set at several distances along the length of the tank, and the sludge is scraped to the inlet of the sludge discharge valve, and the sludge is also concentrated during the process. Therefore, the concentration of discharged sludge is higher in concentration and better in activity.

ACROSS沉淀池一般配套使用链条刮泥机。刮泥机缓缓的移动速度可保证在泥水分离区不产生涡流和扰动污泥，沿池长每隔若干距离设置排泥阀，污泥在刮至排泥阀入口的过程中同时也在浓缩，因此排出的污泥浓度更高，活性更好。



Chain scraper  
链条刮泥机

## Advantages 优点

### Advanced Patented Technology 先进的专利技术

- Surface loads up to 1.5-2.0 m/h
- High SS removal rate
- Sludge return with high concentration and activity
- Even sludge sedimentation
- Strong shock load resistance
- 高达1.5-2.0 m/h的表面负荷
- SS去除率高
- 回流污泥浓度高、活性高
- 污泥沉淀均匀
- 抗冲击负荷能力强

## Job Reference 案例

### Secondary Sedimentation Tank in Qige Wastewater Treatment Plant, Zhejiang Province, China 中国浙江省七格污水处理厂的二沉池



#### Application 用途

Removal of suspended solid (SS)  
该工艺主要用于降低出水悬浮物

#### Effluent Quality 出水水质

The following is the effluent quality using ACROSS:  
以下是使用ACROSS的出水水质：

Parameter 指标	Unit 单位	S1 样本1	S2 样本2	S3 样本3	S4 样本4	S5 样本5
COD	mg/L	43.0	42.9	41.0	43.2	43.0
TP	mg/L	1.1	1.0	1.0	1.0	1.1
NH <sub>3</sub> -N	mg/L	7.2	6.9	6.9	6.4	6.3
DO	mg/L	0.2	0.2	0.2	0.2	0.2
SS	mg/L	8.0	9.0	8.0	6.0	5.0
pH	/	7.2	7.7	7.2	7.25	7.2



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