Case Study

Hydro International

Storm King® cleans up Chaohu's polluted lake

Project profile

Objective

The waters of Chaohu's landmark Xi Er lake had been turned black and hazardous by pollution; the local government wanted to test CSO treatment technologies as part of a water quality improvement project.

Solution

The project team selected the Storm King® separator, situating it on the Xiao Wang Zhuang drainage channel to protect the lake from overflows during wet weather and storm conditions.

Product profile

Storm King® advanced hydrodynamic vortex separator.

- Prevents floatables, gross solids, grit and sediment from reaching the environment
- Removes TSS, BOD and other CSO pollutants
- Unpowered with no moving parts
- Can cut project costs by up to 50% when compared to conventional technologies

Situation

China's economy has expanded at breakneck speed in recent decades, with GDP growing by over 7% a year from 1991 to 2014, and its industrial infrastructure has grown in parallel to meet this economic demand.

Unfortunately, one of the results of this boom in industry has been increased pollution, and China's rivers and lakes have been hit particularly hard.

Heavy metals and other damaging pollutants have been discharged by industrial facilities, while agriculture generates large amounts of nutrient pollution, and for some businesses it has simply been cheaper to pay pollution fines than to treat effluent.

Under pressure from a growing middle class, however, the Chinese government has identified an urgent need to improve water quality, and has instigated a number of national strategies—such as river remediation, and the **Sponge Cities initiative**—designed to clean up the country's waterways.

Within this national environmental improvement framework, as part of the Chaohu City Urban Water Environment Quality Improvement Research & Demonstration Project, Xi Er lake was identified by the local government as a trial site for a new combined sewer overflow (CSO) treatment strategy.

Problem

Xi Er lake, in the centre of Chaohu City, Anhui Province, is a famous local landmark and represents part of the city's cultural heritage.

In recent years the lake had become extremely polluted, however, with water quality rated at worse than Grade V—classed by the authorities as "unfit for human contact".

High levels of surface runoff and agricultural organic pollution had caused eutrophication and silting, turning the waters black and highly odorous.

For the trial to succeed, research engineers needed a high-performing primary treatment solution that could reduce Biochemical Oxygen Demand (BOD), as well as preventing grit, sediment and trash from entering the watercourse during peak storm events.

Xi Er lake had become highly polluted

Solution

The Chaohu Housing & Urban Construction Bureau engaged the Shanghai Urban Construction, Design & Research Institute to design a treatment system for the trial, and the project team identified two candidate technologies.

Following an assessment process the team selected the **Storm King®** hydrodynamic separator, basing their decision on its compact nature, unpowered operation with no moving parts, and the fact that it represented a 50% cost saving over the original budget estimate.

They were also keen to work with a proven technology that was already successfully helping to protect the environment in countries all over the world.

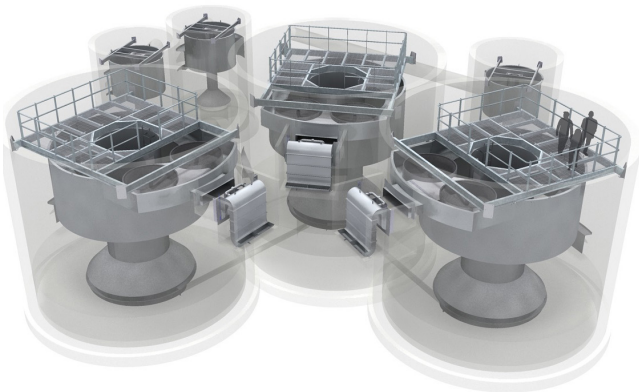
During the design phase Hydro International's Technical Support Engineer Rong Sun provided guidance to the project team, supplying drawings and technical expertise to enable effective system design.

How it works

The Storm King® separator uses hydrodynamic vortex technology to separate pollutants from CSO flows, meaning that it has no moving parts and requires no power.

At Xi Er lake, during dry weather, the flow from the Xiao Wang Zhuang drainage channel flows into a sewage interception well and is pumped into Gangling sewage treatment plant.

During storm conditions, any overflow is treated by the Storm King® to prevent sewage passing into the Xi Er lake, while underflow continues to pass to the Gangling plant.



An example of a multiple Storm King® system

Outcome

The installation was carried out by Anhui Zhong Cheng Construction Engineering Co. Ltd., and trials began in 2015. In order to raise public awareness of the water improvement project, the system was installed above ground in a public park and made highly visible.

Trial data indicated that under storm conditions the Storm King® could reduce BOD by up to 93% and total settled solids (TSS) by up to 87%.

Water quality in the lake has already improved, having been assessed as being no higher than Grade IV.

While protecting the lake from hazardous pollutants, the Storm King® also captures the trash and gross solids that act as an unsightly indication of poor water quality, helping to improve the public aesthetic of the waters.

Unusually, the Storm King® system was installed above ground in a public park, to raise awareness of the water quality improvement project

Following installation local water quality has been drastically improved

Learn more

To learn more about how Storm King® can help you to improve CSO water quality, visit **hydro-int.com**, search **Storm King** online or contact us:

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