THE SPRAY NOZZLE PEOPLE
01273 400092
www.spray-nozzle.co.uk

Case Study

STORM TANK CLEANING

STORM TANK SCREEN WASHING SOLUTION

Stormwater attenuation, where run-off water is temporarily stored in tanks or chambers before being released back into the drainage system at a controlled rate, is an important tool for effective water and effluent management, protecting buildings, homes and land from flood water. The residues left behind in the storage vessels can cause odour pollution, and contamination of surrounding land if the tanks overspill, and water companies are increasingy seeking innovative automated tank cleaning solutions to mitigate these risks.

▶ PROBLEM:

A large UK water company asked SNP to provide an automated cleaning system for screens which sat on top of its stormwater attenuation tanks. The screens were in a wave form and made of metal mesh and were positoned on top of the tanks to prevent solid waste materials within the water from contaminating the surrounding area if the storm tank overflowed. However, solid material stuck to the bottom of the mesh and built up over time. If left uncleaned, this threatened to impede the required overspill ability of the tank system as well as cause odour pollution.

The cleaning was being performed manually with a pressure washer. The conditions were cramped, dark and noxious so not only did the manual cleaning represent a significant maintenance cost, it was a potential health and safety hazard.

▶ SITUATION:

There were two screens, each about 4 meters wide and running approximately 16 metres in length. This gave a total area to be cleaned of 128m2. Above the screens was an access walkway that ran the length of the screens and was positioned 2.3 metres above the screen height. The cleaning system had to:

- eliminate any potential shadowing (areas that are blocked caused by the wave
- nature of the screen)
- be powerful enough to dislodge the toughest residues and stuck-on solids
- be within sensible constraints of water consumption
- not damage any surrounding infrastructure
- be as simple and maintenance-free as possible
- be able to be monitored remotely for any failure

WHY CHOOSE SNP FOR YOUR STORM TANK CLEANING NEEDS?

- The ability to solve unique and complex process challenges
- ISO 9001:2015 Certified
- Custom nozzle design and manufacturing with consistent quality assurance

With SNP you get our world-class customer support from an industry pioneer who has been creatively solving problems for many decades.

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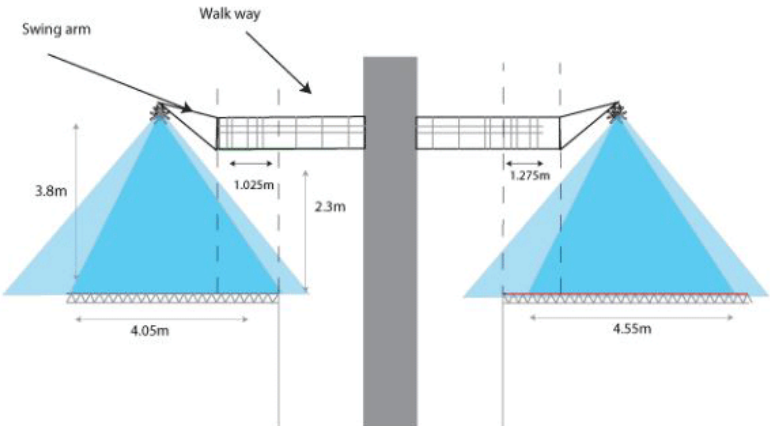
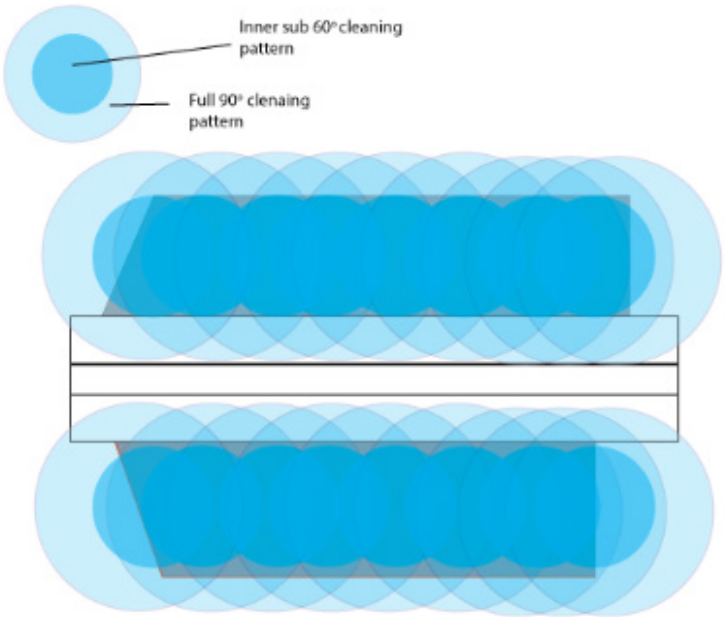
The Solution

SNP proposed the use of the Orbitor Dual, a rotary jet cleaner with a double head each with four nozzles meaning eight powerful cleaning jets per device. A total of 17 were installed along the lengths of the screens. Of these, 15 machines were held in position 3.6 metres over the screens by swing arms that attached to the rail of the walkway. The arms could be rotated so the Orbitors could be swung in over the walkway for maintenance.

At one part of one screen, the walkway needed to extend over the entire screen to accommodate an access ladder. This made it impossible to position cleaning heads above the walkway level. As the walkway was 2.3 metres above the screen, the effective cleaning radius of any under mounted Orbitors was reduced. To counter this, two Orbitor machines were proposed to cover the width of the screen.

In order to reduce shadowing due to the wave format, SNP designed the system such that the vast majority of the target screen fell within a 60° cone below the cleaning head. The cleaning heads were restricted to 90° but the coverage between 60-90° would still have some additional





CHALLENGES

- WAVE DESIGN OF SCREENS MEANT ANGLE OF INCIDENCE NEEDED TO BE BELOW 60° TO REDUCE SHADOWING
- THERE WAS A LIMIT OF 10 L/S (36M3 / HOUR) ON THE AVAILABLE POTABLE WATER SUPPLY
- REACHING ALL OF SCREEN DUE TO WALKWAY POSITIONING

ADVANTAGES OF THE ORBITOR DUAL

- Double head design means that the cleaning pattern can be restricted to as low as 85° without compromising the rotation of the machine.
- Powerful and quick
- Very low maintenance due to rugged, stainless steel design