Loch Turret WTW

Drinking Water | Case Study

The Client

Scottish Water is the UK's fourth largest water utility, responsible for the whole of Scotland and islands around the Scottish coast, including the major cities of Glasgow, Edinburgh and Aberdeen. The Loch Turret upgrade was the largest drinking water project for Scottish Water in the latest investment period.

Key Figures

- Capacity: (85million litres/day)
- Start-up year: 2010
- Operated by: Scottish Water

The Client's Needs

Loch Turret Water Treatment Works is the highest water works in Scotland at 1,178 feet above sea level and located 2.2 miles north of Crieff, home to the Glenturret distillery &'The Famous Grouse Experience' which has its dedicated water supply from the plant

The Solution

Among the largest drinking water plants in Scotland, Loch Turret Water Treatment Works was a direct filtration plant first put in operation in 1967 and designed to deliver water to a population of 70,000. The main purpose of Scottish Water's upgrade was to install a new Actiflo® clarification pre treatment process upstream of the existing rapid gravity filters to address the increasingly high peaks of raw water turbidity and colour in the loch. These raw water quality degradations adversely affected the operation of the rapid gravity filters and were unable to deliver the required throughput as they operated well below their design filter run time.

In addition to the new pre-treatment, further work was carried out to provide a new energy recovery turbine, Multiflo® lamella sludge thickening, dewatering facility, and chlorine contact tank and filtration media.

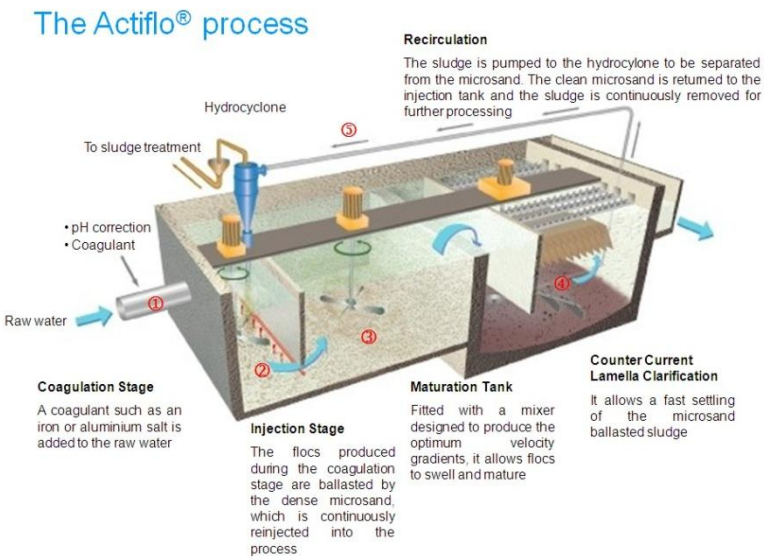
Loch Turret WTW

Process Description

The Veolia technical solution centers upon the Actiflo® process, which is ideally suited for difficult-to-treat sources with sudden variations of variable loads of Colour and Turbidity.

Actiflo® is a patented extremely versatile, high-rate, sand ballasted clarification system that effectively removes suspended solids and organic matter in surface water by coagulation / flocculation and lamella settling, achieving extremely low levels of outlet Turbidity and True Colour. Microsand (known as Actisand®) is utilised as a seed for floc formation, providing a surface area that enhances flocculation and acts as a ballast or weight. The resulting sand ballasted floc enables clarifier designs with high rise rates and short retention times, having a typical footprint between 5 and 20 times smaller than conventional clarification systems of a similar capacity.

To address the drivers for dissolved aluminium, true colour and turbidity, Veolia Water Solutions & Technologies provided the process design, construction, installation, testing and commissioning of 2 concrete classic Actiflo® high rate clarifiers and 2 Multiflo® Lamella Sludge Thickeners package plants. The Veolia scope of works included the sand storage and transfer system, polymer make up and dosing systems, coagulant, pH correction storage, associated dosing systems and software for the process.



Benefits

The Actiflo® process offers numerous benefits:

- **High treatment efficiency**: turbidity removal > 90%
- **Very small footprint** compared to conventional clarifiers -suited to restricted spaces and easy retrofit of existing plants
- Reduced civil engineering
- **Flexible**: reacts quickly to changing raw water quality -provides consistently high quality effluent
- **Very short start-up time** < 10 minutes
- The sludge produced can be thickened and dewatered easily
- Solution that can be entirely automated and remotely controlled
- Minimum equipment to maintain, easy to access
- 15 years of operating experience with **more than 300 Actiflo™ references** worldwide
- **Prefabricated package plants (1 000 to 10 000 m³/d per unit)** which can be combined for larger flow rates

Veolia Water Technologies
Tel: 0203 567 7400
www.veoliawatertechnologies.co.uk