Water recovery simplicity with Iso-Disc® technology

Amadori Cesena, Italy **Case Story**

The company
Amadori is one of the leading companies in the Italian agro-food sector. Founded in San Vittore di Cesena in 1969 by the Amadori brothers, the Group celebrates its 50th anniversary in 2019. This innovative company is now active across Italy and a specialist in the poultry market, with 7 hatcheries, 6 feed mills, 6 food processing plants, 19 branches and agencies, 3 primary logistics platforms, over 800 farms and more than 7,600 employees.

The roots of Amadori success lie in the company's decision to directly manage the entire integrated production cycle. This choice allows for thorough, certified control of all phases of production – the selection of raw materials, rearing units, hatcheries, feed facilities, food processing, packaging and distribution.

The challenge
Amadori's management focus also extends to the safe governance of the natural resources used by each site, as well as the impact on the local environment. One such consideration is the conservation of water, by reducing, reusing and recycling wherever possible.

At the Cesena site, there was a multi-stage filtration and car bon treatment process for water purification so this water could be re-used for general site cleaning and vehicle washing. This was beneficial to the local environment, but the high quality needed was proving to be operationally complicated and costly.

When Alfa Laval introduced the Iso-Disc® filter during a technology portfolio presentation, Amadori technical staff quickly realized that this tertiary filtration technology could provide them with a simple, low-cost solution for the water purification stage.

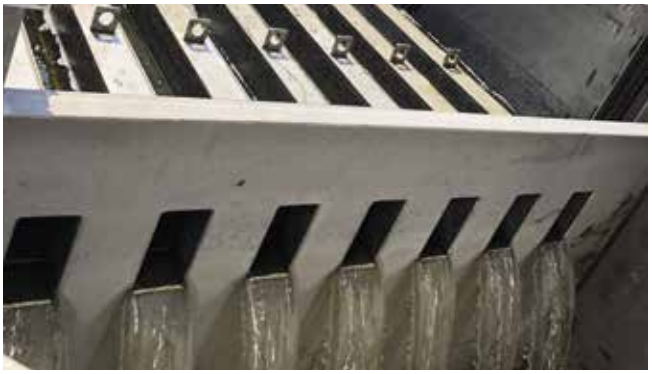
Iso-Disc technology
Iso-Disc is a compact, cost-effective tertiary filtration technology. The standard Iso-Disc 'pile cloth' media is designed to remove solids of less than 10 microns, with the advantage of outside-in depth filtration for enhanced solids capture and improved operation during high solids loadings and load variations.

A single Iso-Disc filter unit can treat from 100 up to 20,000 m^3 of wastewater per day. Unlike other tertiary filters, it uses 100% of the available filtration surface at all times, thus maximising unit effectiveness and providing a very small 'footprint-to-flow' ratio.

The unique Iso-Disc design enables very simple monitoring of the individual filter elements by visual inspection or sample analysis (e.g. NTU). And, as the name suggests, one individual filter element can be isolated whilst the other elements remain in operation – a single filter element may even be removed, cleaned/changed and replaced. This provides flexibility of operation whilst mitigating any risk associated with site upsets, thereby greatly improving 'single duty' plant availability.

The simple nature of the Iso-Disc, with very few moving parts, ensures that operation and maintenance requirements are kept to a minimum. There is no need for specialist maintenance tasks or upskilling of local operating teams, making Iso-Disc solutions ideally suited to remote/unmanned site locations.

Cleaning the Iso-Disc elements is also a straightforward, automated procedure. Initiated by a rising water level, a horizontal suction manifold travels up and down each element whilst a centrifugal pump gently removes the solids, resulting in an even clean over the entire surface of the filter media. Typical backwash frequency is less than 1–2 times per hour during design peak (FFT), with much lower backwash throughout the day. During normal operation, the average backwash waters are less than 2% of total feed flow.



The solution
A single, tank-mounted Alfa Laval Iso-Disc cloth media filter unit was installed at the Cesena site. The fully automatic Iso-Disc unit comprises seven 1.5 m square filter elements and is sized to filter an average flow of 200 m^3/hour and an average TSS (total suspended solids) concentration of 35 mg/litre. The ability to isolate individual filter elements did away with any need for a standby unit, and therefore significantly reduced the investment needed.

The Iso-Disc unit was installed by the Amadori engineering team, with pumps, valves and control panels all located at ground level for easy access during operation and maintenance.

Since being commissioned in 2018, the Iso-Disc unit has continually delivered a high-quality filtrate for re-use, with suspended solids of <5 mg/litre (95%ile).

Emanuele Costa, Program Manager - Ufficio Tecnico Gesco - at Amadori, is pleased with the Iso-Disc filter installation and operation:

"We are very satisfied with the new Iso-Disc machine, especially for the simplicity of the system, the quality of the outgoing water, its low maintenance and the high working capacity. With this system we were able to double the flow of recovery water from our sewage water treatment with great advantages and also a significant energy saving."

How to contact Alfa Laval
Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com

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