

Water use efficiency at Alcoa's Fusina facility



Alcoa's European Milling Products (EMP) business in Fusina, Italy, exemplifies the company's goal of zero water discharge. The operation includes a cast house and an aluminium rolling mill.

Historically the plant used around 750 cubic metres of water per hour, that was drawn from a local river. Most of this process water would eventually also need to be discharged, with an average discharge rate of approximately 730 cubic metres per hour.

To reduce this impact, the Fusina operation installed a closed-loop system for their process water in 2007. The system recycles and re-circulates the process water so effectively that it has reduced water consumption by 95% for the EMP facility.

Discharges of about 40 cubic metres per hour still occur, but only as a result of evaporation from the facility's cooling towers. While some discharges are still necessary periodically to maintain water quality in the system, under normal operation the facility achieves zero process water emissions.

Annual savings of approximately US\$70,000 have been made possible by avoiding water use and discharge costs

In recent years, Alcoa has moved its focus on water management away from conventional end-of-pipe water treatment technologies, in favour of developing lower cost sustainable water management technologies.

Before implementing a new technology, Alcoa works to create a detailed water budget not only for the operation, but also for the surrounding plant property.

This allows the company to gain an understanding of all aspects of the system including: inputs, flows, volumes, quality and outputs. Once this detailed analysis is complete, Alcoa is

able to focus on key areas within the system that can be improved, to achieve the highest efficiency of water use.



Eco-efficiency benefits

The work at Fusina achieved the company's 2020 Framework target of zero process emissions 13 years before the deadline for such improvements. It had a direct impact on water consumption and discharge to the local community, as well as making good business sense for Alcoa.

Although the system's initial cost was approximately US\$4 million the facility is set to find savings in several ways. Annual savings of approximately US\$70,000 will be possible for the facility by avoiding water use and discharge costs, with possible increases as maintenance savings are calculated.

A secondary benefit is that by using recycled process water, they reduce the amount of sand in the system, which helps reduce the amount of cleaning and the number of filter changes required, thus decreasing the cost of operation.

By reducing the amount of water needed for processing materials without reducing product output, Alcoa has in effect greatly improved their product's eco-efficiency with respect to water use at the Fusina facility.