



ENVIRONMENTAL TECHNOLOGY

## Specialist paper producer saves almost 6.4 million litres of water per year

Arjowiggins has 12 refiners in operation at its Stonewood mill. The main purpose of refining in the pulp and paper industry is to improve the strength and density of the paper produced. The pulp fibres are stretched and delaminated to allow them to absorb more water, increasing both their flexibility and the surface area for bonding, and ensuring a strong, smooth paper sheet.

The refiners were sealed with traditional packing, which must be fitted tightly against the rotating shaft. This can present significant drawbacks.

The packing used on the Stonewood refiners required between five and ten litres of water every minute to prevent overheating caused by friction. This water then had to be treated at the end of the process before being drained off.

This inefficient sealing configuration was causing serious operational problems and mounting costs for Arjowiggins, including:

- Lost product due to leakage, which was estimated conservatively at £10,000 per year
- The cost of treating the high volumes of flush water, totalling £3,000 per year
- Operatives spending more than 40 hours a year carrying out routine packing adjustments and packing replacements
- Water ingress into the bearing housing, which was leading to costly bearing failure
- Large quantities of leaking water, which presented Health & Safety risks



Arjowiggins asked AESSEAL to install a new sealing system on one of the refiners to test its efficacy. AESSEAL replaced the traditional packing with CDSA double cartridge mechanical seals and a SWFF-TF seal support system.

All AESSEAL cartridge seals are assembled, pre-set at the factory, and tested, to minimise the risk of installation errors or damage to the seal faces during handling. They incorporate self-aligning seal faces, which ensure that both the inboard and outboard faces remain square at 90° to a rotating shaft, preventing leakage. A spring-loaded internal rotary centrifuges solids away from the seal faces. These seals enabled Arjowiggins to eliminate issues caused by clogging from the pulp content during the process.

The SWFF-TF system is a closed loop. Once hooked to the plant's water ring main the initial water charge is 10 litres, operations over an average year is estimated at about 3 litres. Being a closed loop the total water usage is as good as zero in comparison to 6.4million litres, none goes to drain unless the system is emptied for a planned long term shut down to prevent damage in heavy frosts.

The installation of the CDSA double cartridge mechanical seals and SWFF-TF support system removed the need for the packing flush water, conserving 6,350,400 litres of water per year and saving £3,000 annually on water treatment costs. The new system also eliminated leakage of sealing water or product from the refiner, creating a further annual saving of £10,000.

The refiner now functions without the need for constant packing readjustments, increasing efficiency and saving workforce time. Mean time between failure (MTBF) on the refiner had previously been as little as three months. The system has now been operating problem free for more than two years. Arjowiggins achieved a return on investment within seven months of the sealing upgrade. As a result of this success Arjowiggins has asked AESSEAL to upgrade other refiners on the plant to the CDSA seals and SWFF-TF support system.

### About Arjowiggins

Arjowiggins is an independently owned, international paper producer, with a history of producing fine and custom-made papers dating back to the 17th Century. It has four paper mills in Europe and China, including Arjowiggins Creative Papers in Stoneywood Mill, Aberdeen.

The Stoneywood mill pioneered the production of fine paper in the 1800s and now manufactures products for designers, printers and clients worldwide under brands such as Conqueror, Curious Collection and Keaykolour. Arjowiggins has a strong focus on sustainability and responsible manufacturing. All its papers are manufactured from Forest Stewardship Council certified forests and the company uses renewable resources, such as bamboo fibres, in product development and offers more than a hundred recycled product options.

Its Stoneywood Mill complies with international standards for both environmental management and energy management.

[Arjowigginscreativepapers.com](http://Arjowigginscreativepapers.com)

## 'Saving almost 6.4million litres of water per year'

Industry:	Pulp & Paper
Product:	CDSA and SWFF-TF
Application:	Refiner
Water Saving:	6,350,000 litres / year
Savings:	£13,000 per year
Reference N.O:	CS0001



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