Good quality water plays an important role in the manufacture of glass and glass products. With the development of Low-E-Soft Coat Glass, the right wash and rinse water can have a huge impact on surface finish and product quality. This article gives a brief introduction to the subject of water treatment, looking at: typical water quality; why and how to treat water; the applications within the glass industry; and a novel new way to handle glass fines produced by arrissing machines. By Chris Birch, Lubron Water Treatment Technology.

Waste water issues

Water treatment systems can be designed to give whatever water quality is needed for the process, from softened water for general use right down to deionised water for demanding applications. Typically deionised water is required to be <20 microsiemen*, and a system normally produces between 100 litres and 1,000 litres per hour.

Why treat water and how?

Raw water naturally contains dissolved salts and dissolved solids which can form a scale, such as that found in the average kettle. During the glass manufacturing process, if untreated water is used, this scale will affect the surface finish quality of the end product. By removing the salts to create process water, the problem is solved.

The traditional method of water treatment had been chemically regenerated Deionisation**, but in recent years reverse osmosis (RO) is now exclusively used. RO does not use harsh chemicals to regenerate, and as such is much better for the environment and much easier and safer to operate, a typical RO system would comprise:

- raw water break tank and pump – to create an air gap between the system and the mains – UK Water Authority Regulation
- carbon filter – to remove chlorine which will damage the equipment downstream
- softeners – to remove hardness ions, calcium and magnesium
- reverse osmosis (RO) – to remove the vast majority (97%), of all other dissolved species
- storage tank, pump and pipework – to distribute water to the various glass processing machines

Often it is more efficient and cost effective to operate and maintain a 'central' water treatment system which feeds the water to the user points via plastic pipe work.

Example of Similar Lisec Feed System with 1,100-litre break tank and 3,000-litre treated water storage.

Lubron Water treatment has recently introduced a new self-contained process – the Sprinkler – a proven self-contained unit which separates the fines, producing a harmless 'sludge' that can be easily disposed of.

Glass industry applications.

Traditionally treated water would be used by washing machines, cutting machines and arrissing machines. A new application is the use of treated water in low emission glass coating machines which, especially the soft coat variety, produce a water sensitive product. Boiler feed water systems are also used within the industry to significantly reduce boiler blow down. Arrissing machines also produce problematic waste water which can now be treated.

Discharging of arrissing waste water.

During the arrissing process, rinse water becomes contaminated with a very fine glass powder. This waste water can be very difficult to handle; in pipework the powder can agglomerate and form rock-hard deposits which eventually block the pipe completely.

Lubron Water treatment has recently introduced a new self-contained process – the Sprinkler – a proven self-contained unit which separates the fines, producing a harmless 'sludge' that can be easily disposed of. The treated water can then be safely put to drain or reused.

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* "Microsiemen" is a unit of measure of the conductivity of water, which represents how many Ion's of whatever type are dissolved or suspended in that water.

** Chemically regenerated Deionisation uses Hydrochloric Acid and Caustic Soda to regenerate two types of "resin", Anion and Cation, which when exposed to water remove impurities.