

Recycling

Sunlight Service Group reduce costs by water recycling

Earlier this year Broadbent Laundry Systems completed the installation of its Water Recycling System as part of a close co-operation initiative with Sunlight Service Group.

Senior business teams from both organisations, led by Julian Carr (Sunlight Group operations director) and Simon Broadbent (managing director of Broadbent) consulted and agreed the key objectives of this pioneering project in August 2005.

A working party consisting of Sunlight Group personnel, with Peter McCabe (plant manager), Peter O'Connor (Christeys), and Sunlight Engineering

and Microbiological teams worked closely with the Broadbent team to ensure a successful project implementation.

Modifications to the site, combined with site operations have ensured a safe and efficient installation exceeding the original project targets.

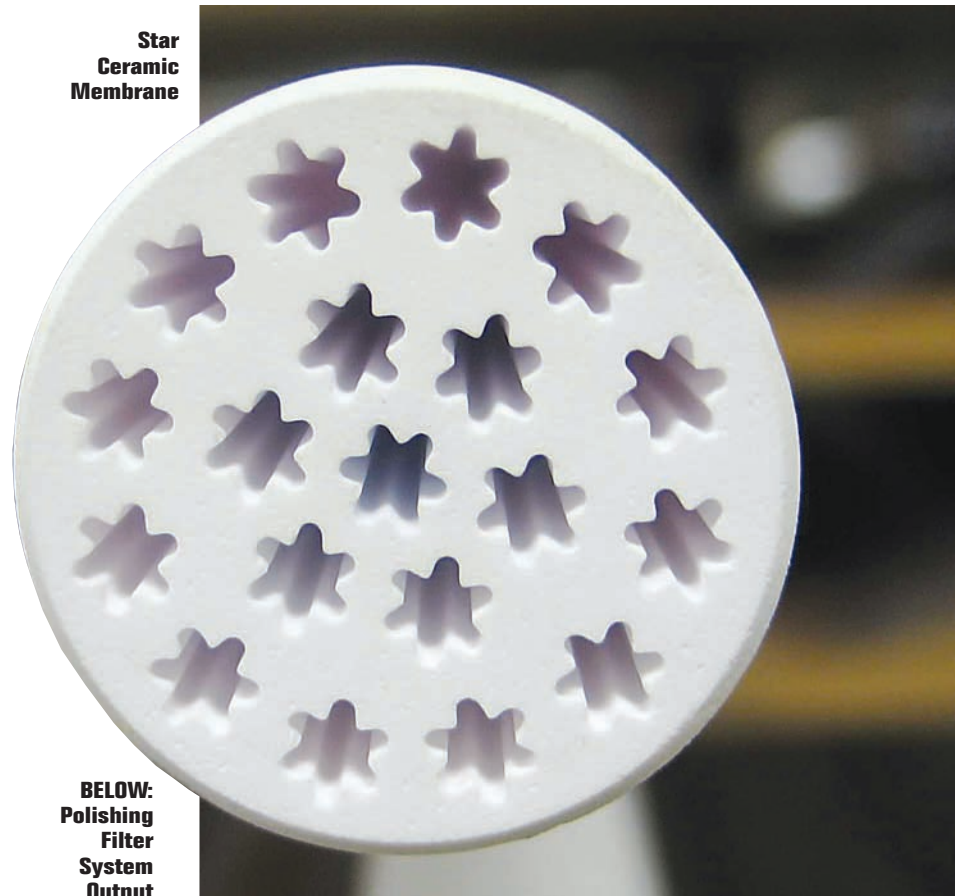
The Broadbent system, designed to recover the discharged effluent from the laundry utilising a system of membrane filtration technology, produces a high quality of recovered laundry water which exceeds the Textile Services Association's (TSA) minimum requirements for water quality, as well as being at a quality suitable for processing hospital linen.

TSA Parameters	Target Spec	Actual
pH	6.5 - 8.0	7.25
TDS	750 ppm max	322
Alkalinity	260 ppm max	121
Turbidity	10 ntu max	0.7
Colour	None	None
Iron	0.2 ppm max	ND
Manganese	0.2ppm max	ND
Copper	0.5ppm max	ND
Aluminium	10 ppm max	ND

ND = None detected



Star Ceramic Membrane

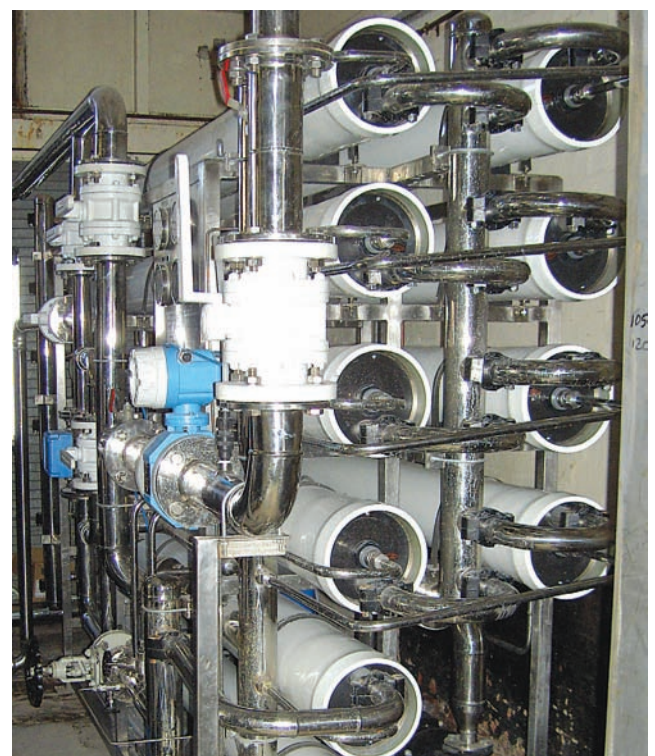


BELOW: Polishing Filter System Output



Broadbent Laundry Systems Process Water Recycling

RIGHT: Polishing Filter Housings



The system currently operates producing water flow rates of around 15 to 16 cubic metres per hour and has recovered over 32,000 cubic metres since its installation, at a quality exceeding the required TSA specification as shown here.

An additional benefit to the customer, besides the obvious reduction in fresh water and effluent costs, are energy savings. From an average recovery temperature of 55°C there has been a substantial reduction in gas consumption, less salt required in the water

softening process and lower electrical consumption.

These benefits have been verified by Sunlight Services Group's energy manager, who confirms the payback for the investment in this laundry water recycling system is around 1.8 years.

The Broadbent recycling package utilises a simple wedge wire screen pre filter, a patented ceramic micro filtration system together with a RO membrane polishing filter in order to achieve the high quality results that currently are well within the TSA's specification. The system

has reduced the total dissolved solids levels to less than 350 parts per million with a turbidity of less than one NTU.

The total water recovery plant utilises an energy of less

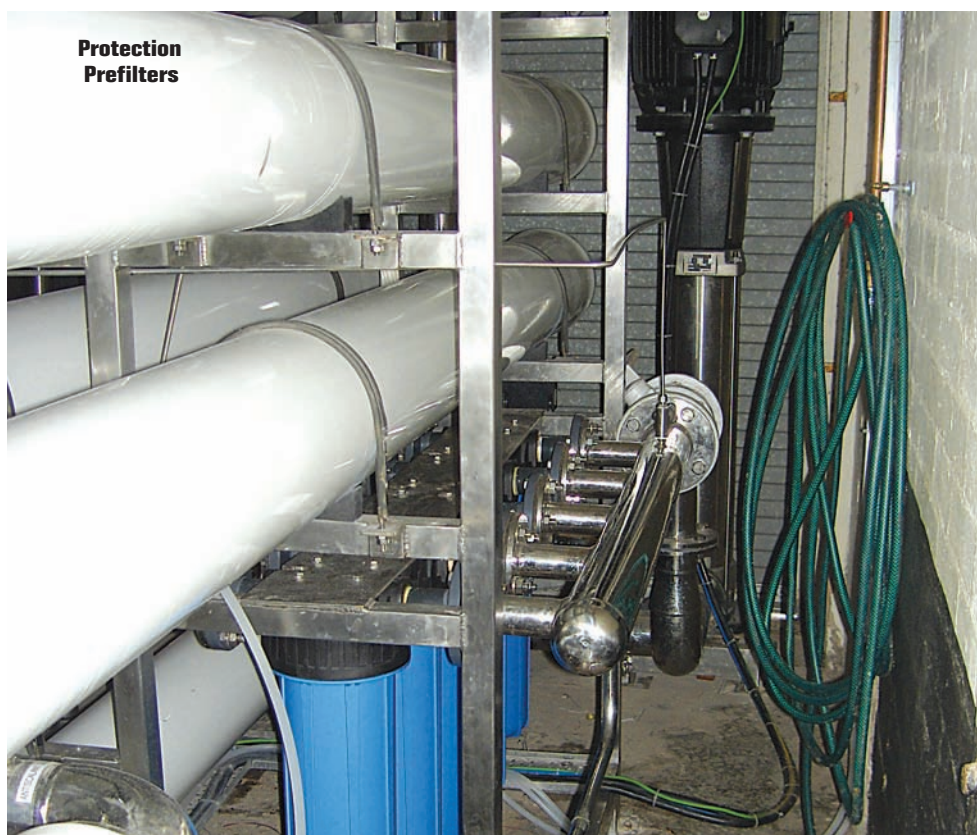
than 1.9 kWh per cubic metre of recovered to operate, which is offset by the reduction in operation of the raw water feed pumps and softener plant. The energy in the hot recovered



**Ceramic
Crossflow
Filter
Housing**



**Ceramic
Crossflow
Filter
System**



**Protection
Prefilters**



**Water Quality produced (left) from
discharged effluent flow (right)**

water is used directly in the rinsing and washing process. By increasing the rinse water temperature levels benefits in increased extraction efficiency and reduced tumbler dryer times provide further savings in energy and production.

package

The Broadbent installation package included all aspects of the design, installation, commissioning, monitoring and training and includes constant monitoring of equipment for the control of quality, flow rates, effluent sampling and flow monitoring. Online analytical instrumentation and bulk chemical dosing ensures that the quality requirements of the TSA specification are consistently realised.

The system also includes a PLC control with an active display screen that can provide downloaded performance indicators and trends recording

its performance of both temperature, pressures and flow rates, as well as maintenance and fault history information.

The cost of water and energy has reached a point where all laundry facilities should be looking to be more efficient and laundry water recycling certainly provides a level of savings in many areas which can substantially reduce processing costs for the future.

Broadbent's involvement in the separation industries for many years, together with a patented design of ceramic micro filtration elements, has provided a real solution to the problems associated with laundry water recycling.

The quality of water from the ceramic filter is extremely good with a micro filtration of less than 0.2 microns. This on its own provides a good clarity of water of less than 10 NTU, but depending on the residual TDS's levels of each plant

which on tests have measured between 450 and 1650 total dissolved solids, it is necessary to consider the use of RO polishing filters in order to reduce the final TDS's levels to within the TSA specification. Laundries with lower TDS levels in their discharge effluent will not require additional polishing filters but recovered water may require chemical adjustment.

filters

The use of ceramic filters for this application not only provides excellent quality and filtration, but being unaffected by the high temperature and chemical content of the laundry effluent and as a virtually indestructible substance, the ceramic provides good longevity in service, is easy to clean and maintains the performance levels well.

Some chemical elements such as silicones and silicates

can be detrimental to the ceramic filters and it is therefore good practice to ensure that the wash chemical suppliers are involved in the installation in order that they provide low silicate and silicone free products in order to maintain quality in the process, whilst meeting the requirements of the water recycling system. This has proved to be no problem at the Sunlight Coventry site which is supplied by Christyens.

Broadbent Laundry Systems is manufacturing the plant in the UK and have designs for 10 up to 75 cubic metres per hour for the discharge effluent and can provide systems suitable for operating between 70 per cent and 88 per cent recovery, depending on customers specific circumstances.

As the Broadbent Laundry Systems recycling plant is registered with the Water Technology List, enhanced

capital allowance (ECA) benefits are available, and have indeed been applied for by Sunlight as part of the installation of this equipment.

This scheme allows the purchaser to claim back up to 30 per cent in Corporation Tax for the full value of the installed system in the first 12 months, which equates to around about 5 to 7 per cent value of the total package price.

Small to medium size enterprises can also apply for a Carbon Trust Grant to assist with the capital purchase of the equipment where they could claim up to £100,000 interest

free loan over five years, as well as the ECA tax benefit.

Sunlight Services Group has tracked the energy savings of the recycling unit and has recorded substantial benefits in both water, gas and electricity and has calculated its own actual payback costings as being 1.8 years. These factors have given a clear benefit for the business and resulted in the consideration for implementation in several other facilities.

Further information regarding this equipment can be provided by contacting Broadbent on 01484 477243.

