

# AXIUM PROCESS: Helping Textile Manufacturers Recycle Water, Save Energy And Reduce Waste Volumes.



**Membrane technology, which was first developed back in the 1960's, offers textile manufacturers enormous potential for cost savings in terms of reduced water and energy costs, recovery of chemicals, reduced effluent volumes and disposal costs as well as providing processing benefits such as a consistent supply of pure water compared to the varying qualities of natural waters.**

## Membrane applications in the textile industry.

- Dyestuff Water
- Wool Scouring
- Size Recovery
- Water Softening
- Printing
- Latex Recovery
- Indigo Dye



*This filtration plant for Axminster Carpets, which was designed, built and commissioned by Axiom Process, is part of what is believed to be the UK's first sizeable (400m<sup>3</sup>/day) wastewater recycling plant (WRP) that has almost a closed loop system and target "zero discharge" to sewer.*

Based in Swansea, South Wales, Axiom Process has earned a reputation as a major player in the field of membrane and filtration technologies, as well as one of the UK's leading hygienic stainless steel fabricators. Utilising combinations of microfiltration, ultrafiltration, nanofiltration and reverse osmosis membrane technology, Axiom Process can supply custom built manual and automatic membrane filtration systems that can often provide payback times of less than 2-3 years.

### Pilot Plants

In order to determine the suitability of membrane technology for a particular process, as well as establish the best membrane for the application, Axiom Process will conduct a series of trials on a customer's feed material using one of the company's mobile, trials pilot plants.

### Membrane Trials

Membranes are tested objectively since the company does not manufacture its own membranes preferring to offer a wider choice from a number of membrane manufacturers.

### System Design

Choosing the right membrane system is determined by a number of factors including capital costs, energy input, flow channel size, risks of fouling and membrane packing density. Axiom Process has a wealth of membrane technology experience and by ensuring that a clear understanding of the process requirements, feed stream characteristics, chemistry and anticipated outputs is known, the company can provide the best system to meet its customers' needs as well as provide technical and training support together with plant operating optimisation.



T. Forsell

## CASE STUDY: Dyehouse Effluent Treatment

T. Forsell was a dyehouse in Wigston, who published their operating costs and savings on a 20m<sup>3</sup>/hr effluent flow membrane system (Reverse Osmosis only).

The RO permeate was used on site for washing and dyeing while the concentrate (containing all the colour) was treated with chlorine dioxide to oxidise and neutralise the colour and meet consent. The main drivers on this plant were the cost of discharging a dilute coloured effluent, the loss of thermal energy in the effluent, and the requirement to standardise on the quality of water for dyeing. The operating costs and savings have been updated to account for inflation since the plant was installed.

### OPERATING COSTS (£/YEAR)

Power	44,770
Membrane replacement	40,300
Pre-filter	2,000
Operating labour	5,800
Cleaning chemicals	1,480
Mechanical maintenance	4,890
Concentrate disposal/treatment	60,200
<b>TOTAL (£/year)</b>	<b>159,440</b>

### SAVINGS (£/YEAR)

Effluent disposal	118,000
Feed water	121,700
Water softening	14,700
Colour charge	68,850
Energy/water heating	89,550
<b>TOTAL (£/year)</b>	<b>412,800</b>

Net savings, taking into account operating costs (£/year) = **£253,360**

Updated capital cost for the plant, installed = **£380,000**

**PAYBACK, MONTHS = 380,000/253,360\*12 = 18.0 MONTHS**

Contact Axiom Process Ltd on: +44 (0)1792 883882

[www.axiumprocess.com](http://www.axiumprocess.com)