



Customised Membrane Filtration Systems and Solutions

**Design, build and commissioning
of customised membrane filtration plants**



MICROFILTRATION • ULTRAFILTRATION • NANOFILTRATION • REVERSE OSMOSIS MEMBRANE TECHNOLOGIES

Customised Membrane Filtration **Systems and Solutions**

Axiom Process is one of the UK's leading process system manufacturers specialising in crossflow filtration and separation technology.

With our proven track record in technical solutions, we design and build bespoke commercial filtration systems utilising Microfiltration, Ultrafiltration, Nanofiltration and Reverse Osmosis technology.

- Comprehensive pilot plant trials and testing facilities
- Product and process development
- Recommendations for plant design and evaluation of operating costs
- Design, build, testing, qualification and validation to the highest levels
- Tailored maintenance, support and training packages

FROM MOBILE PILOT PLANTS TO FULLY SCALABLE AUTOMATED SYSTEMS

Axiom Process offers a complete and integrated engineering service from conception through to commissioning



Why Use **Membrane Filtration Technology?**

Microfiltration • Ultrafiltration • Nanofiltration • Reverse Osmosis

Membrane technology is able to increase process performance, reduce costs, save energy and water, improve or create new sustainable revenue streams from By-products.

- Separation without chemicals
- Selective cut off
- Small footprint
- Wide range of applications
- A physical separation process without the sensitivities of biological processing

Controlled separation takes place when pressure and velocity is applied to liquid flowing across a membrane surface.

Depending on the “molecular weight cut off” (MWCO) of a membrane, it is possible to isolate a wide range of constituents in a feed stream including suspended solids, fibres, particles, protein, bacteria, virus, colour, dissolved salts and metal ions.

The technique produces a consistent, stable output which is ideal for quality sensitive and water recycling applications. The physical simplicity of the process offers considerable environmental and operational advantages.



TECHNOLOGY	TYPICAL OPERATING PRESSURE (BAR)	TYPICAL MEMBRANE PORE SIZE	TYPICAL SEPARATION
Microfiltration	0.5 – 6	0.1 – 1.0µm	Proteins, fats, suspended particles
Ultrafiltration	1 – 10	0.01 – 0.1µm	Sugars, proteins, macromolecules
Nanofiltration	7 – 40	0.001 – 0.01µm	Divalent salts, dissociated acids, sugars
Reverse Osmosis	20 – 68	0.0001µm	Monovalent salts, organics, undissociated acids

Mobile Pilot Plant and Trials

Our comprehensive range of mobile membrane filtration pilot plants and in-house laboratory services are offered as a research facility for manufacturers wishing to develop and optimise their processes.



Trials can be carried out by experienced engineers on customers' feed materials either at Axium's dedicated test facility or at customers' premises.

PILOT TRIALS

Pilot plant trials are essential to obtain real data for quoting a commercial plant.



WE CAN PROVIDE:

- Transport of pilot plants to and from your site
- The selection and supply of the required membrane (or membranes, if a comparative trial is to be undertaken)
- The services of an experienced trials engineer for the duration of the trial
- Detailed operating and maintenance instructions, together with operator training
- Operation of the plant, recording of data and production of samples during the trial for independent analysis
- A detailed report on the trial, indicating realistic limitations and conclusions

System Design

Pilot • Batch • Continuous • Semi & Fully Automated • Mobile

Optimising a membrane system design is determined by a number of factors including membrane material, energy input, flow, channel size, risks of fouling and ease of membrane cleaning.

Working closely with our customers we establish a clear understanding of their process requirements, feed streams, characteristics and chemistry as well their anticipated output.



Mobile ATEX ZONE 1 rated membrane filtration system for pharmaceutical application



Containerised systems provide flexibility of location, easy transportation and low-cost installation

Customised Membrane Filtration **Systems & Solutions**

Axium Process has earned its reputation as a specialist hygienic engineering company that understands and delivers what the customer really wants.

FROM IDEA TO COMMERCIAL PRODUCTION

Each stage of a project from the initial concept, through to design, manufacturing, commissioning and training is assigned to a dedicated engineer holding responsibility for on budget and on time delivery.

RELIABLE AND FLEXIBLE TRAINING AND SUPPORT PACKAGES

Our **CUSTOMER SUPPORT AND TRAINING** packages can be tailored to any level to accommodate customer requirements. We also offer a **REAL-TIME SUPPORT** package to customers purchasing fully automatic filtration plants, enabling Axium Process engineers to provide full scale live data logging and monitoring as well as remote access.

THERE IS AN APPLICATION FOR MEMBRANE FILTRATION IN ALMOST EVERY INDUSTRY

Dairy / Food

- Casein recovery
- Quarg cheese production
- Sugar stream separation and concentration
- Whey protein separation and concentration
- Yoghurt production

Neutraceuticals

- Bioactive product recovery
- Collagen separation and concentration
- Desalting of process streams
- Organic compounds purification and concentration
- Protein purification
- Volume reduction prior to evaporation

Pharmaceutical

- Collagen separation and concentration
- Enzyme concentration and purification
- Fermentation broth clarification
- Organism concentration
- Precursor purification
- Solvent and Aqueous phases

Beverage

- Cider and beer recovery and clarification
- Clarification and purification of fruit juice
- Final filtration of bottled water
- Fruit juice concentration

Chemical / Textile

- Commercial laundry effluent recovery and recycling
- Dyehouse effluent separation and recycling
- Recovery of cleaning chemicals
- Separation of produced and oily waters

Waste Water Recovery and Treatment

- Animal and vegetable processing waste
- Condensate upgrade for reuse
- Heavy metal removal from process streams
- Leachate separation and concentration
- Potential product recovery
- Recovery and reuse of waste water
- Separation of suspended solids

CHOOSING THE RIGHT MEMBRANE FOR A GIVEN APPLICATION

Axium Process does not manufacture membranes and is independent of any supplier which means our engineers will always choose the optimum membrane for a given application based on extensive trial and process experience.



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