

Low-cost, high-performance membranes

Jacopa is to launch an innovative new range of low-cost, high-performance flat sheet membrane panels. The company which has over 20 years' experience in designing and building MBR plant say the advanced panels incorporate very significant technical advances and are being offered at one of the most competitive price points available.

The Membrane bioreactor (MBR) has soared in popularity both in the UK and internationally since its introduction in the 1960s, particularly as on-going advances in technology have significantly improved their resistance to fouling and reduced the cost of membranes.

MBRs provide a number of major advantages over other solutions: they are a small footprint process, which produces a high quality effluent that can be safely discharged to the environment or reclaimed for irrigation or industrial uses. They are also easy to retrofit, and therefore provide a relatively simple

upgrade for existing wastewater treatment systems.

The small pore size of the membranes also means the treated effluent contains very few pathogens. The process additionally enables longer solids retention times, and thus provides enhanced treatment that can cope with high levels of MLSS (mixed liquor suspended solids). MBRs are particularly effective in the biological removal of ammonia.

As a result of these benefits, MBRs are increasingly becoming the technology of choice for water and wastewater applications where high quality treated wastewater is required, or where space is at a premium.

One critical element in the process is the membrane itself, and over the decades much research has been dedicated to improving durability, performance and the ability to resist fouling.

In recognition of the need for a robust, efficient and commercially attractive option,



Jacopa is introducing its new flat sheet membrane panel to the UK market. The new membrane has completed trials at operational treatment works in the UK, and has at least matched and often exceeds the performance of established flat sheet installations.

The panels are manufactured using PVDF with an asymmetric structure, which enables excellent flux rates and excep-

tional resistance to fouling. They can be cleaned using a simple chemical process, and maintenance and replacement have also proved easy to achieve.

The Jacopa membrane is firmly welded to a high intensity support frame, resulting in a stable membrane structure that is resistant to damage and tearing. As a result, the company is offering a three-year warranty against manufacturing defects.

With a pore diameter of less than 0.1µm, the membranes provide an excellent effluent turbidity of under 5mg/l SS or less than 0.1NTU. The membrane also has excellent flux characteristics, with pure water permeability (PWP) flow rates of 0.4m³/m²/day to 0.6m³/m²/day.

Two sizes are available, the model 80 (490Wx1000Hx7D) and the model 150 (490Wx1750Hx7D), which weigh just 3.2kg and 5.5kg respectively. These are designed to suit the vast majority of existing installations in the UK, and can simply be dropped in as replacement panels for any compatible existing flat sheet based MBR, in fact around 90% of the current plants in the UK are built to house membranes of these two popular sizes.

Jacopa has over 20 years' experience in designing and building MBR plant including the first municipal wastewater MBR plant in the UK which was constructed at Kingston Seymour in 1994. Since then the Company has designed and built MBR plants for numerous municipal and industrial customers and the largest, at Dunbar, has been treating 14,400m³/day of domestic wastewater to a high standard since 2008.

A plant for Northern Ireland Water at Dunloy WWTW was a solution installed to replace an existing wastewater treatment works in order to meet a demanding new discharge consent for BOD:SS:Ammonia of 10:15:3. The dual MBR tanks were designed to fully treat a 1200m³/d flow from a population equivalent of 2000. This plant is a good example of 16 smaller municipal plants that have been constructed to date in both Northern Ireland and the Republic of Ireland.

Further examples of earlier contracts include a plant at Kilkenny in Ireland for one of the country's major dairy companies, Glanbia, which needed an increased level of biological treatment capacity to allow the factory to expand. This plant has now been operating successfully for over 10 years, providing a high level of treatment for a 7100m³/d flow that is discharged to a salmon river.

Jacopa provided a number of additional services to the customer during the project, including help with design, inspections during installation, and help with start-up, commissioning and membrane cleaning.

Jacopa Operations Manager, Biological Products, Keith Wylie, says: "The dairy market is particularly buoyant with the relaxation of some EU constraints on milk production. This means that many producers are doubling and even trebling the size of their treatment plants and

our MBR is an ideal solution for these challenging wastewaters."

Teamed with the company's exceptional service Jacopa can design and build new plants, and refurbish, upgrade and extend existing plants to meet customer requirements.

Another plant at Swanage in Dorset for Wessex Water was the largest submerged MBR of its type in the world when constructed. Designed to treat wastewater from a summer population of 28,000 and a 12,700m³/d flow to full treatment, the plant won a Civic Trust Award for having reached the highest standards in both architectural design and contribution to the environment.

Keith Wylie notes: "With the AMP 6 emphasis on maintenance and refurbishment, we see our membranes as offering utilities a great option for their existing MBRs, a panel that is robust, simple to install and replace, provides excellent throughput and effluent quality, and is easy to clean, all at a really competitive price."

"Our trials and operational experience have proved that in terms of performance, maintenance and pricing our panels are able to match and even beat the competition. We're very excited to be able to offer such a fantastic solution at such a low figure."

Jacopa's highly-regarded support framework will also be an integral part of the offering: for the MBR solution this will include the provision of spare parts, including membrane panels, for both new and existing treatment works.

The company will also provide high-level technical and process support to help its customers to optimise the operational performance of their plant. Jacopa's highly experienced installation, service and commissioning teams are available to offer design and build, installation, upgrades, maintenance, service, extensions and refurbishment of plants.

The Company will also hold an extensive inventory of several thousand membrane panels in its central UK warehouse to enable it to respond swiftly to requests for replacement panels. The UK-based in-house team will work with customers to respond to all their membrane replacement needs.

Keith Wylie says: "A key part of our company's heritage is our commitment to working closely with clients to ensure they get the best possible all-round service and support. Our technologies are about much more than excellent value and superior performance: we also commit to ensuring clients are fully supported throughout the lifetime of our solutions."

We're cutting the cost of membranes



- Straightforward replacement
- Simple retrofit and upgrade
- Resistance to fouling
- Low maintenance
- Easy clean
- Large stocks
- Rapid delivery
- Three year warranty
- Competitive pricing

And still providing outstanding technical and process support and expert installation

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To celebrate 20 years at the forefront of the design and build of MBR plant we're launching our own range of low-cost, high-performance membranes

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