Ultrafiltration (UF) is a low-pressure driven membrane separation process. It separates particulate matters from soluble components in the carrier fluid (such as water). Unlike microfiltration and reverse osmosis applications, UF technologies continue to evolve rapidly in many fronts. While it has fast been becoming widely acceptable in water industries, the wide spectrum of membrane materials and specifications available today, and the continual evolvement of which, have made optimisation of UF systems less than a straightforward affair.
There are many types of separation or filtration technologies available for liquid-solid separation purposes. But UF process offers an increasingly wider and more versatile range of applications especially in water industries. It has increasingly been a popular alternative to conventional water and wastewater treatment methods, not only for treating natural water to potable standards, but also for processing water for industrial use, reclamation of wastewater and as a pre-treatment process for Reverse Osmosis (RO) process downstream etc.

UF’s physical separation process of solids from liquid, and its membrane’s fixed pore sizes, offers effective and consistent removal of undesired contaminants from water, and hence produces water with consistent qualities. Whereas the product water qualities through many conventional treatment methods may vary, especially when feed water parameters change.

- Less land space required.
- Less infrastructure needed.
- Little chemical usage.
- Modular design for easy expansion.
- Skid-based systems highly portable.
- Minimum manpower/human attendance.
- Consistency in product water qualities.
- Effective removal of bacteria/viruses and more.
- Versatile for a wide range of applications.
- Lower capital and operating costs (subject to other conditions).
UF membranes generally have average pore sizes ranging from 0.0001 to 0.1 microns (or defined as having Molecular Weight Cut-off - MWCO-rate of 50,000 to 200,000 Daltons) and are capable of removing most suspended solids, pathogens (bacteria and viruses) and other contaminants if with 0.01 micron or less pore sizes. The nature of mechanical pressure-driven filtration process helps produce consistent permeate qualities regardless of feed water qualities.

Proprietary Ø10” UF modules.
Ideal module diameter for most applications.

Our Ø10”-UF modules come in 3 different lengths of 48” (2), 60” (2) and 72” (2). Most of our standard and custom-designed-built UF systems are fitted with either 48” or 60” modules, taking into consideration the treatment capacity required, project’s site space and layout, portability issues etc. Our 72” modules, though relatively more onerous for handling and replacements, are suitable for large treatment plants with space issues or constraints.

<table>
<thead>
<tr>
<th>Model</th>
<th>M FLUX-1048</th>
<th>M FLUX-1060</th>
<th>M FLUX-1072</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Length (mm) – OL</td>
<td>1420</td>
<td>1740</td>
<td>2108</td>
</tr>
<tr>
<td>Inlet–Outlet Length (mm) – IOL</td>
<td>1275</td>
<td>1600</td>
<td>1963</td>
</tr>
</tbody>
</table>

Note: modules of other diameters and lengths are available.
Fitted with either Ø10”x48” or Ø10”x60” modules, our plug-and-play standard UF systems start with one- and two-module systems. Subject to feed water qualities, they are capable of producing 2 m³/hr to 6 m³/hr of filtrate respectively. What’s more is we do not short-change what a high-performing 24/7 plug-and-play UF system should be, in terms of quality components and instrumentation. These systems are suitable for small but vast range of applications.
Beginning with careful selection of membrane and modules, completing with all essential equipment, parts and components for a truly standard, modular and packaged UF system. All on the same skid for a truly plug-and-play water purification plant. Selection of all other quality items integral to the optimal performance of the membrane and modules is as important. Be they skid’s materials and finishings, pumps, valves, pipes and fittings, control panel and instrument, cables and wiring works, there is no compromise on selecting the best available for a fail-proof packaged UF system.

**Fully integrated standard systems.**

**Packed with amazing components and features.**
Sophisticated operating features.

A high-performing and lasting UF system requires fusion of many sophisticated operating cycles and features. To support these, the system also needs many integral equipment and high-quality parts and components, well integrated to achieve optimal results of what UF technologies can offer. What more about making the eventual UF system simple and user-friendly to operate and maintain. It takes a great deal of the deep understanding of UF technologies, established process experiences and innovative expertise to make it. We make it. For you and the industries.

Yet simple to operate.

1. Hot-dipped galvanised steel skid.
2. Feed pump (c/w VFD).
3. Backflush pump (c/w VFD).
4. Ø10" UF modules.
5. Victaulic coupling.
6. Pipe and fitting.
7. Air release valve.
8. Filtrate flow transmitter.
9. HMI touch screen display.
10. Control panel and instrument.

(11) Clean-in-place (CIP) pump.
(12) Butterfly valve.
(13) Product water sampling valve.
(14) Acrylic clear pipe.
(15) Rotameter.
(16) Pressure gauge.
(17) Screen filter.
(18) Chemical dosing pumps.
(19) PE tanks (for chemicals).
(20) Stainless steel pipes & fittings.

No ordinary UF systems.
Amazing modular UF skids unlike others.

Our modular UF skids are made for installation at the project sites requiring large flux rate. They are designed and configured for ease of shipments with 20’/40’ containers. Multiple skids can be installed with hassle-free inter-skid connections to be carried at project sites.

Containerised UF systems.

Fitting all into a box, by thinking out of the box.

Integrating all the UF modules and other integral equipment, parts and components into a constrained space of a container to produce the greatest flux possible, and still making sure that the space is optimised for service and maintenance, is harder than you think. It requires not only versatile expertise in UF technologies and established engineering experiences, it needs also out-of-the-box creativity and innovative strife. We are capable of doing just that - compact containerised UF systems that take raw water in from one end, and churn out filtrate of your desired qualities from the other.
Pretreatment for F&B’s ingredient water.

**Compliant with international sanitary/hygienic standards.**

**For F&B and other industries.**

Food and beverage, pharmaceutical sectors etc are some of the most demanding ones requiring equipment and machinery to meet international sanitary/hygienic standards. In designing UF systems as parts of the pre-treatment for down-stream purification stages such as RO processes, all UF media and materials and parts and components used are to be carefully selected to meet food-grade compliances as well as sanitary designs and practices. Established expertise would be crucial to meet the most stringent specifications.

River to taps.

**Natural water to potable water.**

**Consistent water quality. Everyday.**

We have a comprehensive range of standard and modular UF systems pre-designed and pre-engineered to purify many types of natural waters to meet WHO’s (World Health Organization) standards for potable use. Whether it is from underground, wells, lakes, rivers, reservoirs, rain collections, our UF systems are designed for up to Log-6 removals of bacteria and viruses, and a whole host of other impurities and contaminants. They are well suitable for municipal water supply, or for business operations such as mines’ camps, industrial and residential townships, resorts, hotels, theme parks etc.

Potable water for mining camp.

**Australian-Mining-Standards-compliant UF systems for the mining industries.**

**Mining more. Minding less.**

In the mining industries, the miners would want to mine most and mind the utility facilities least. Water treatment and supply infrastructures and plants, among others, shall be relatively hassle-free on a day-to-day basis. However far or remotely located the mining sites and men-camps are from the urban areas. Over the years, we have learned and built user-friendly and hassle-free UF systems that meet the Australian Mining Standards to purify natural water for potable use by the mining operators. Whether they are open skid-based or containerised systems, we have supplied to established and reputable mining companies in the region, especially in Australia.
Recycling domestic wastewater.

Recycling grey water.

**Pioneer in applying UF technologies.**

We are the pioneer in applying UF technologies to recycle grey water for residential and commercial buildings in Singapore. We have innovated and developed standard and packaged UF systems to recycle such establishments' grey water for non-potable use (toilet flushing, irrigation/gardening, floor washing etc). Our systems have been parts of many Platinum-Green-Mark-Award winning buildings and estates in Singapore. Apart from grey water recycling, we supply UF systems for rainwater harvesting applications of some of such green developments.

![UF system to recycle chilled wastewater for reuse at livestock slaughter factory. Saving water and energy.](image)

From wastewater to process water.

**Saving resources. Saving costs.**

With adequate wastewater treatment processes for sewage or industrial effluent upfront, our UF systems can be used to purify the effluent further for non-potable or industrial use (subject to product water qualities desired). Subject to a certain content of impurities and contaminants of industrial wastewater, our A-series UF membrane and system are capable of recycling some of such industrial wastewater for reuse on a standalone basis. Our team will evaluate and determine such applications of yours on a case-by-case basis.

Pre-treatment to RO system.

**Membrane + membrane. Numerous applications.**

UF process has increasingly been used as an effective pre-treatment step before RO systems. Using UF systems to remove/reduce solids as alternatives to conventional multimedia filters, sand filters etc has proven to be more cost-effective and efficient especially where larger treatment capacities are concerned. With RO processes downstream, UF technologies have been used as pre-treatment steps for recycling sewage to potable standards, recycling industrial effluent for reuse by the industrial processing or production, purifying seawater for potable use, and for many other applications.
Disclaimer

All information contained in or accessed through this presentation is subject to change without notice at the discretion of MattenPlant Pte Ltd. No warranty, statement or representation with the use of this content or with respect to the accuracy, completeness, or usefulness of the information, materials and other items contained herein.

Except for clear misrepresentation or fraudulent information, MattenPlant Pte Ltd shall in no event be liable for any damages, losses, expenses or other liabilities whatsoever arising in connection with the use of, or inability to use, this content by any party, or in connection with any failure of performance, error, omission, interruption, defect, suspension, delay in operations or transmission in the use of this content, or in connection with any computer virus, trojan, worm or other destructive element or system problems, whether or not MattenPlant Pte Ltd has been advised of the possibility of such damages, losses, expenses or liabilities as a result of electronic transmission of this content.

Copyrights©2018 MattenPlant Pte Ltd. All rights reserved.
www.mattenplant.com