

understanding maintenance, consumables and service

**important factors that laboratories need to consider when
operating a reverse osmosis (RO) water based purification system**



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Choosing, operating and maintaining an RO system should be straightforward. So what are the specific problems that prevent the best results from being achieved?

It may be that the specification has failed to match the application, but in other cases it is simply that maintenance practice has not been followed.

As legislation tightens across the globe, an awareness of the latest technology is key, and obtaining advice and equipment from approved sources is often the only way to meet requirements. Water quality standards are stringent and it is vital that the pure water systems used meet these exacting standards consistently, and at the right volume required to function effectively and efficiently.

A series of key issues need to be considered by technicians and laboratory staff when choosing an appropriate water purification system. Armed with this knowledge, the latest technology can then be specified to help to improve water quality and laboratory productivity.

Maintenance

Once a water purification system has been specified and commissioned, it is then important to ensure that the system is regularly serviced and maintained. Without the necessary on-going maintenance, it is virtually impossible to pre-empt potential problems, resulting in the possibility of considerable downtime and cost.

Similarly, consideration should be given during the system design to when maintenance can be performed,

so that redundancy or storage capacity is included to minimise disruption to laboratory users.

Typical routine maintenance includes checking the RO, regularly changing the pre-treatment consumables, and replacing filter elements and other consumables as required. To maintain microbiological integrity, it is normal for the system to be chemically sanitised every 6 to 12 months.



Without these housekeeping and maintenance procedures the system will not operate at optimum performance, which will ultimately increase running costs and reduce water quality.

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Consumables

Pre-treatment cartridges generally need to be changed every six to twelve months as they remove chlorine and particulates, this helps maintain performance and extend the life of the RO membrane.

Deioniser cartridges have a finite life and are typically replaced at intervals of three to six months, these remove ions and minerals and thus maintain water quality. Since the quality of water reduces on a sliding scale as capacity depletes it may be better in some applications to replace more frequently.

Like the pre-treatment cartridges, a 0.2µm POU (Point Of Use) filter generally needs to be changed between six and twelve months to remove bacteria at the dispense point. Without replacing this consumable, the POU filter will become blocked and ultimately ineffective.

The same outcome will eventually occur with a 0.1µm UMF Internal Filter without at least annual replacement as these remove bacteria and endotoxins from the water supply. UV lamps used to destroy bacteria and/or break up organics must also be replaced at six to twelve month intervals as they have a finite life.

Even the best water purification systems will only perform at their peak when supported by routine cleaning and maintenance, and so to maximise efficiency consider specifying equipment that is quick and easy to maintain with easy to change consumable parts.

Similarly, the cost of consumables should be taken into account, as systems that use high volumes of resins, chemicals and cleaning solutions can quickly become uneconomical.



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Service

Increasingly, laboratories are turning to the system manufacturer or local approved distributors, to provide preventative maintenance on a planned basis. It is essential, however, that any organisation that provides maintenance cover for centralised plants offer a highly flexible service that meets the unique requirements of the system. For example, usage can significantly affect maintenance issues in terms of service intervals and the requirement for consumables.



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