HIGH PERFORMANCE

REVERSE OSMOSIS (HPRO)

Maximum water efficiency with minimum energy costs

MOOR FILTERTECHNIEK IMPROVING YOUR BUSINESS

EFFICIENT AND RESPONSIBLE USE OF WATER

The demand for clean water is increasing worldwide. At the same time, there is growing pressure on the available water sources, and water scarcity is now a common problem. Periods of drought are becoming longer and more frequent. This means we can no longer be sure of always having access to good quality water. The need to use water efficiently is clear to everyone, and legislation is also being introduced to enforce this.

There are various ways to use water efficiently and responsibly. Membrane and other filtration techniques offer excellent possibilities for re-using water, and desalination also helps to increase efficiency. For this purpose, Moor Filtertechniek has developed the High Performance Reverse Osmosis (HPRO) system: a water purification system for greenhouse horticulture and industry.

Advantages of HPRO

If your company is affected by water scarcity, or if you need more water than is currently available to you, then the HPRO offers several advantages:

- More efficient and cost-conscious use of your water source
- More responsible use of water
- Lower energy consumption
- Lower operating costs

The HPRO uses less energy and gives a higher recovery rate than a conventional RO system, which results in much lower operating costs. These savings mean that your investment in an HPRO (compared with a normal RO) will soon have paid for itself. The HPRO is available for different capacities and will be customised for your company.

Recovery	up to 95 %
Water saving	20 - 30 %
Reduction in waste water	60 - 75 %
Energy saving	30 %

* These figures are values that were actually measured in practice, but they will always depend on the specific situation.

Reverse osmosis

Reverse osmosis (RO) is often used in greenhouse horticulture. This technique ensures that enough fresh water is available in times of drought, for irrigation and other purposes. In many cases, the water source is groundwater, from which the unwanted ballast substances are removed by a reverse osmosis system. The water stream is separated by means of membrane technology into a clean water stream (permeate) and a contaminated water stream (concentrate).

The recovery rate of an RO system indicates the percentage of the untreated ('raw') water that is converted into clean water. With conventional RO systems, the recovery rate is not set too high, to avoid estimation problems; the rates are usually between 50% and 80%. Moor Filtertechniek developed the HPRO in order to achieve a higher recovery rate. Thanks to smart machining technology, for example, it can actually produce up to 95% clean water.

How the HPRO works

The HPRO has a modified hydraulic design. The systems also incorporate smart software of the e Meta brand. A conventional RO system will constantly discharge the concentrate, but this is not the case with the HPRO: it recycles the concentrate and repeats the process of extracting water. Sensors collect data, which e-Meta uses to determine the optimum moment for the HPRO to 'purge' the concentrate; that is to say: to open the valve for discharging the concentrate.

An algorithm in a computer module calculates a coefficient that indicates whether it is 'safe' to continue recirculation. In fact, the optimum moment for purging is just before the onset of scaling: the precipitation of elements onto the membranes, which causes their capacity to decline. The usual choice in a conventional RO system is therefore a safe recovery rate, in order to avoid scaling. The advantage of the HPRO system is that it continuously determines for itself the latest possible moment to purge. This will give you 10% to 45% more clean water than a conventional RO system.

e-Meta intelligence

The HPRO systems feature e-Meta intelligence, the brand under which Van der Ende Groep develops smart machining solutions to increase operating efficiency. e-Meta is applied in 'smart' products that are self-learning; special sensors (sensor-based intelligence) are used to collect data, which are analysed and then utilised to make optimum decisions.

The outcome is that the HPRO systems are self-modifying and self-learning. What this means for you is a higher recovery rate. And also that you don't need to do anything – the system controls itself.

Advantages of High Performance RO

The High Performance RO uses water, energy and chemicals more efficiently:

- Higher recovery rate
  - More yield in times of water scarcity
  - Lower consumption of raw water
  - Less waste water
- Lower energy consumption
- Helps to achieve CSR goals
- Less/no use of chemicals
- Lower operating costs

Ready for the future

When you buy a High Performance RO water purification system, you're ready for the future!

To find out more about this innovation, please contact our water treatment specialists at:
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