

QUALITY ENABLES.



وحدة إزالة الأملاح
R.O. Unit

Case study about AlexFert fertilizer production, Egypt

QUALITY WORKS.

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Efficient process water treatment

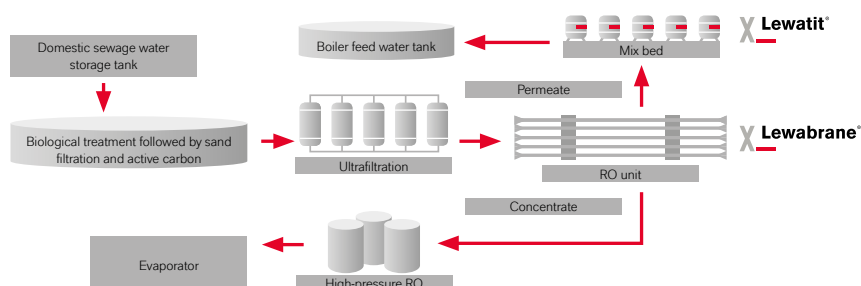
Application and system design

Lewabrane® B400 FR elements are installed in the new BWRO plant of Egyptian fertilizer producer AlexFert in Alexandria, Egypt. The water treatment plant is fed with canal water (Nile river as origin) of seasonally variable TDS (300–550 mg/l). The water is pre-treated by coagulation, cold lime softening, and filtration. The RO plant consists of two trains, each of 120 m³/h feed stream and 74% recovery. A single train is composed of two stages in a 13:6 array with six elements per vessel. The RO units were placed into an existing water treatment plant, upstream of ion exchange full demineralization trains (SAC – WBA/SBA – MB, with Lewatit® MonoPlus resins).

At a glance

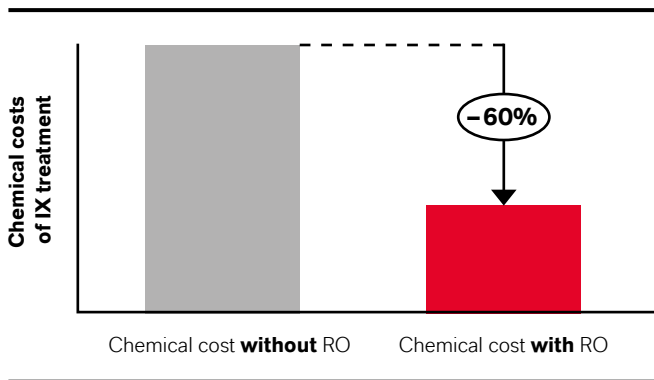
| | |
|---------------------|-----------------------------------------------------------------------------------|
| Industry | Chemical industry |
| Application | Process water |
| Location | Egypt |
| RO product | Lewabrane® RO B400 FR |
| Number of elements | 228 pieces |
| IX product | Lewatit® MonoPlus SP 112 H Lewatit® MonoPlus MP 68 Lewatit® MonoPlus MP 500 |
| Production capacity | 5,750 m ³ /day |
| Water type | Surface water (Nile river) |
| Installation | February 2016 |

Water treatment process at AlexFert: combination of RO and IX



Membrane performance

From the beginning of their use, the **Lewabrane**[®] RO elements demonstrated their excellent salt rejection with up to 99.76% (at 20 °C). This rejection leads to a permeate conductivity in the order of 3 to 5 µS/cm, which significantly reduces ionic load for the resins at the demineralization unit. While maintaining the demanded parameters of demineralized water, the cycle times of the demineralization trains are increased by up to four times (depending on season and with a possibility for further increase). Thus, the customer can reduce consumption of specific chemicals for resin bed regeneration by approx. 60%.



Conclusion

Lewabrane[®] B400 FR exhibits an excellent performance with the difficult Nile surface water. The measured rejection is above expectations. The combination of **Lewabrane**[®] B400 FR membranes and **Lewatit**[®] MonoPlus resins for demineralization leads not only to the requested final demineralized water conductivity below 0.08 µS/cm/2 ppb SiO₂, but also to a stable and reliable process. Furthermore, the new RO plant allows a reduction of specific chemical consumption of the resin bed due to less frequent regenerations.

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