

IMSDesign Desktop Hydranautics RO/NF Projection Software

The latest update to the IMSDesign Desktop projection software includes all minor bug fixes through January 2020. This version of IMSDesign Desktop will run all prior .des and .desx design files dating back to 2008.

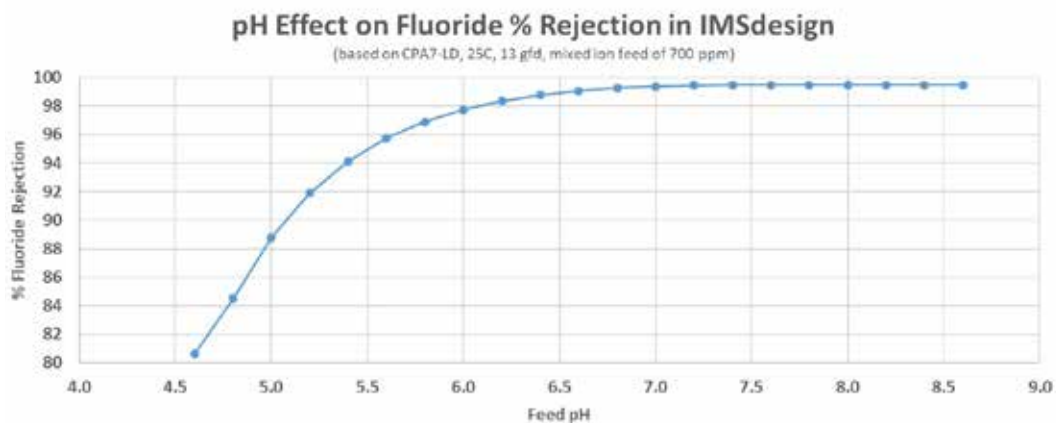
The update can be found on the Hydranautics website at membranes.com/solutions/software/ and then click on the Download IMSDesign Desktop hyperlink. For proper installation one must uninstall any previous version of IMSDesign Desktop.

New Features in IMSDesign Desktop

- ▶ **New ESNA4-LD:** The new, nanofiltration membrane, ESNA4-LD, is now available. This is our highest rejecting NF element with 400 ft² of membrane area, 34 mil feed spacer, and is rated for 8,000 gpd and 99.0% NaCl rejection at standard test conditions of 75 psi and 500 ppm NaCl.
- ▶ **Improved Accuracy in IMSDesign for all RO elements based on lab and field testing over the years:**
 - ▶ All CPA7 membranes will project Silica passage 20% lower than the previous permeate levels
 - ▶ All CPA, ESPA (except for ESPA4 which had been updated in 2018), and LFC brackish water RO elements will project Total Hardness (Ca and Mg ions only) passage 90% lower than the previous permeate levels
 - ▶ All CPA, ESPA (except for ESPA4), and LFC RO elements will project Sodium (Na) passage at 10% higher than previous permeate levels
 - ▶ All SWC Seawater RO elements will project Boron (B) passage at 10% higher than previous permeate levels
- ▶ **Performance improvements for lower energy requirements and feed pressure with equivalent permeate quality have been made to the ESNA1-LF and ESNA1-LF2 NF elements:**
 - ▶ The ESNA1-LF-LD-4040 4-inch element is now rated at 1,900 gpd and 93% CaCl₂ rejection (it was 1,600 gpd and 92%).
 - ▶ The ESNA1-LF-LD 8-inch element is now rated at 9,500 gpd and 93% CaCl₂ rejection (it was 8,400 gpd and 92%).
 - ▶ The ESNA1-LF2-LD-4040 4-inch element is now rated at 2,400 gpd and 91% CaCl₂ rejection (it was 2,000 gpd and 89.5%).
 - ▶ The ESNA1-LF2-LD 8-inch element is now rated at 12,000 gpd and 91% CaCl₂ rejection (it was 10,500 gpd and 90%).
- ▶ **Ammonia Gas:** Ammonia gas (NH₃) is now calculated in all streams. This can be important to any system which has NH₄⁺ ion present. When one enters the cation ammonium NH₄⁺ ion the mg/l NH₃ gas level is calculated based on NH₄⁺ ion level, temperature and pH. NH₃ gas also contributes conductivity and this is added to all conductivity calculations which is important in projecting a more accurate estimate of µS and in troubleshooting with a conductivity monitor on site.

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- ▶ Improved Fluoride (F) rejection accuracy which more accurately projects higher fluoride passage as feed pH decreases from 7.6.



- ▶ Arsenic (As-V) and Mercury (Hg-2) have been added to Custom Ions along with the following existing cations:
 - ▶ Cadmium (Cd), Copper (Cu), Chromium (Cr), Iron (Fe), Cobalt (Co), Nickel (Ni), Molybdenum (Mo), Silver (Ag), Aluminum (Al), Lead (Pb), Zinc (Zn), Radium (Ra), Uranium (U), and Manganese (Mn)

If you have any issues installing or running this software, please send an e-mail to support@imsdesign.com