

Krebs Mixer-Settlers

Technology for solvent extraction

The most compact Mixer-Settlers in the market.



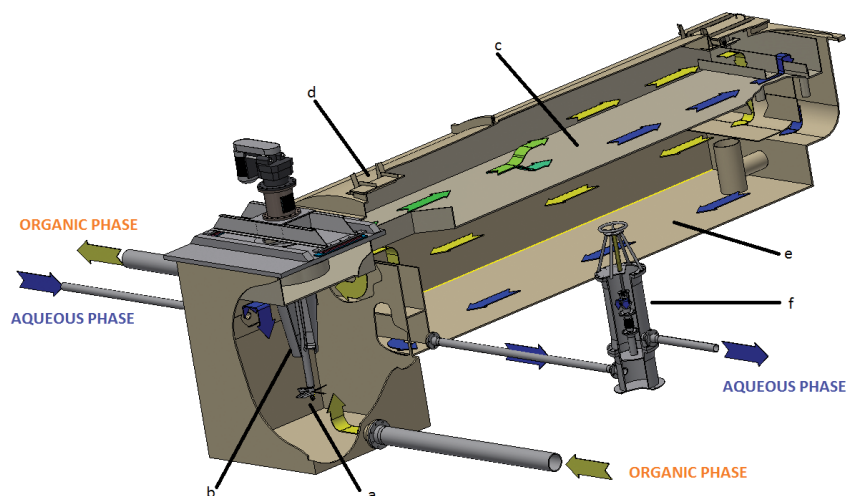
Cobalt SX Plant, Uganda

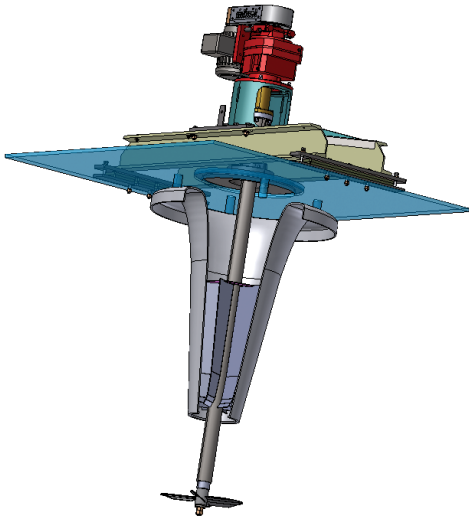
Technip Energies' proprietary Krebs Mixer-Settler technology has successfully operated in Solvent Extraction (SX) plants globally for 40 years. The Krebs Mixer-Settlers are used in the mining (uranium, cobalt, nickel, copper, REE, zinc, molybdenum, vanadium, etc.) and chemical (phosphoric acid, etc.) industries. The Krebs Mixer-Settlers are designed to handle flows from 10 m³/h to 3,000 m³/h.

Operation principle

The Krebs Mixer-Settler technology is unique as it uses a specific conical pump installed in the mixer tank. Mixing impeller and conical pump blades are installed on the same rotating shaft, forming the “rotor”. Conical pump blades are rotating into a fixed cone, forming the “stator”. This design and other features improve the mixing, liquid transfer, laundering and separation phases of solvent extraction. Specifically, this technology features:

- Low shear impeller for the organic phase and the aqueous phase mixing
- Conical Pump for liquid transfer (lifting) from the mixer to the launder and initial separation of these two phases
- Superposed launder to continue the separation of the two phases
- Removable covers to access launder and settler
- Settler for the final separation of the two phases
- Interphase regulator to control aqueous layer height in the settler





New conical pump reducing by 40% the organic entrainments compared to former design.

“

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Major advantages

The Krebs Mixer-Settlers provide many advantages compared to conventional technology. Some of these advantages include:

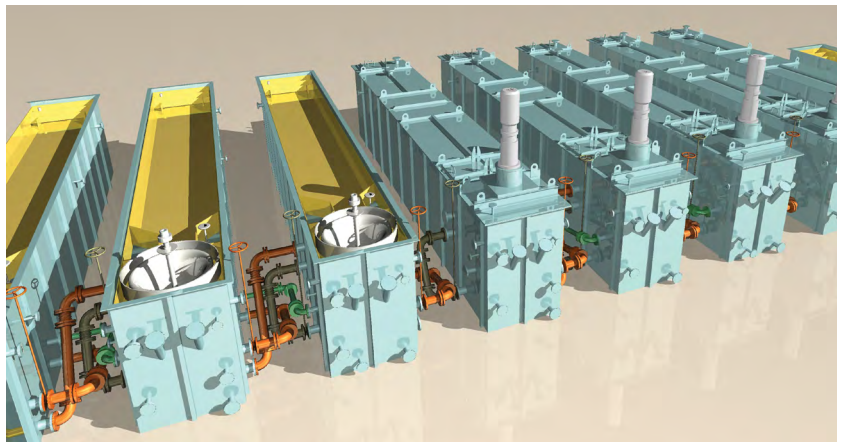
- Design reliability
 - High efficiency
 - Low shearing to reduce organic entrainment
- Low CAPEX and OPEX
 - Smaller settling area (reduced by 50 to 75%)
 - Substantial saving in solvent inventory
 - Smaller building
 - Easier transportation and reduced site work
- Simplified layout
 - All piping at one end
 - Head to head configuration
 - Reduced interstage and recycle piping
 - Reduced electrical and instrumentation cables runs
 - No flowrate control and regulation between stages
- Enhanced safety
 - Mixer-Settlers totally covered
 - Fire and static electricity protection

Ongoing Research and Development (R&D)

Our ongoing R&D program, including CFD simulations, 3D Model design, and pilot plant testing, allow us to support and improve the equipment design and process guarantees. For example, the new conical pump has resulted in a 40% reduction in organic entrainments compared to the former design.



Uranium SX Plant, Canada (Photo courtesy Orano Canada)



Nickel/Cobalt SX Plant, Japan



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