

Leading Evaporation & Crystallization

Zero Liquid Discharge (ZLD)



Sustainable Development

Zero Liquid Discharge, a primary necessity for our environment.

With only 2.5% of the Earth's water being non saltwater and a strong world population growth, Human Beings today are faced with the tough challenge of managing a valuable and scarce resource: Water.

International water protection has resulted in very strong environmental awareness and as a direct consequence, there are more regulations on the use and discharge of industrial water.

In the meantime, heavy industry Greenfield projects (primary metals industries, power plants, synfuels generation,...) are carried out in areas where there are water shortages even though a huge quantity of water is needed.

In other places the boom in seawater desalination has lead to a significant impact on sealife due to brine drain near sea border. In developed countries, it's the high level of standards for natural water quality protection which leads to a continuous and dramatic increase in the cost of water.

In light of this, new creative technological solutions combined with a water pinch approach should bring great benefits to customers in the whole water cycle management of industrial processes. These benefits mainly refer to water recycling and/or the recovery of high added value by-products.

Member of the GEA Group, worldwide leader in heat and mass transfer, GEA Crystallization has continuously developed new evaporation and crystallization solutions; with more than 1 000 referenced products, laboratory and pilot testing facilities, GEA Crystallization has over 4 500 references worldwide.

GEA Kestner boasts over 100 years of innovative and creative solutions. With the support of GEA Crystallization, GEA Kestner offers a wide range of tailor made integrated evaporation and crystallization solutions.

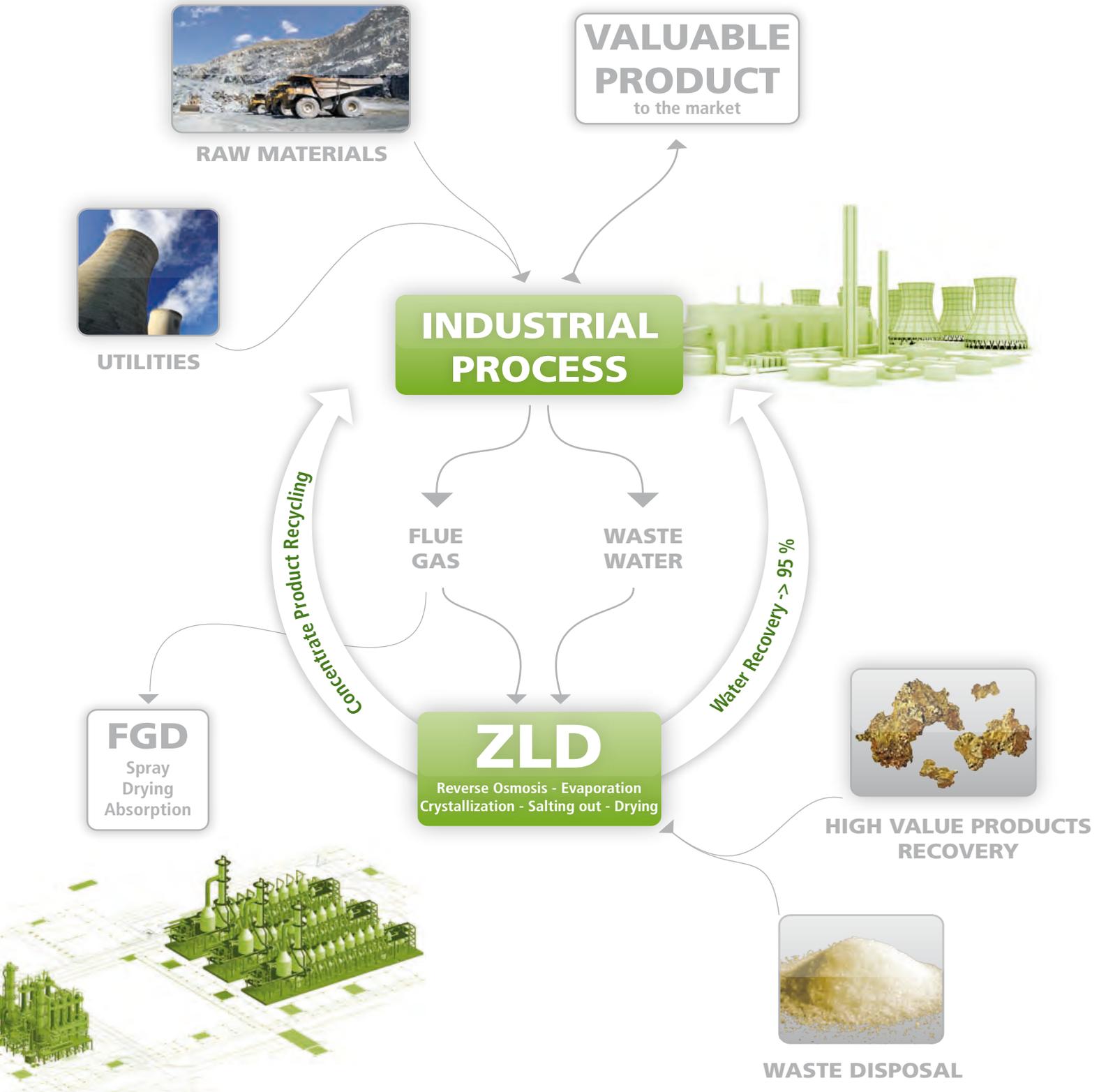
Strong synergies allow us to provide the inorganic and organic process industries a complete portfolio of evaporators and crystallizers:

- **Evaporators:** climbing film, falling film, climbing and falling film, forced circulation and flash evaporator solutions
- **Crystallizers:** FC, DTB, and Oslo-type crystallizers



ZLD Overview

Innovation and Service, our long term commitment.



Leading Solutions

GEA Kestner is your most reliable worldwide partner for the best technology in comprehensive applications.

With a proven record in evaporation and crystallization technologies, GEA Kestner offers a complete portfolio of the best suitable technological solutions, either for evaporation & crystallization systems or for energy recovery systems.

With a high level of expertise in material and corrosion, and an industrial pilot facility, GEA Kestner will bring you the most efficient customized technical solution.

Our experience in worldwide project management, the reliability of our supply chain and our commitment to delivering to our customers the best service at the best price make GEA Kestner a long term partner for your business

POWER GENERATION

- Cooling tower blowdowns
- Ion exchange eluates from make-up water & condensates polishing
- CCPP and IGCC wastewater
- Flue Gas Cleaning
- Radwastes



OIL & GAS

- Oil & Gas refining
- Synfuel production (GTL, CTL, BTL)
- SAGD produced water

ENVIRONMENT

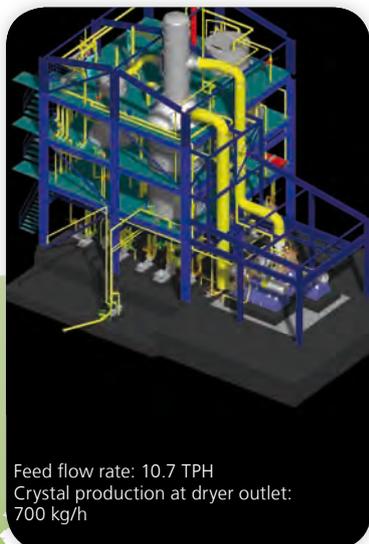
- Drinking water plants brines
- Industrial liquid wastes
- Household waste burning
- Landfill leachates
- Biomethanisation digestates
- Ion exchange eluates

CHEMICAL & PRIMARY METAL PROCESSING

- Waste acids
- Alumina processing wastewater
- Steel processing wastewater
- Non ferrous metal processing wastewater
- Organic loaded wastewater
- Scubber blowdowns

Zoom on some References

Our customer's satisfaction is our best reward.



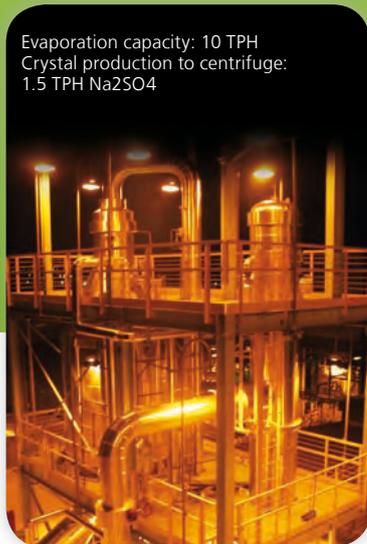
Feed flow rate: 10.7 TPH
Crystal production at dryer outlet:
700 kg/h

POTASSIUM NITRATE CRYSTALLIZATION UNIT

United Kingdom

GEA Kestner designed a crystallization unit to treat effluent from base metal catalyst production. One pre-concentration section uses falling film evaporator heated by MVR and a vacuum cooling crystallizer. The crystal separator system includes a centrifuge and dryer (fluid bed type).

P-Division network



Evaporation capacity: 10 TPH
Crystal production to centrifuge:
1.5 TPH Na₂SO₄

SODIUM SULFATE CRYSTALLIZATION UNIT

Brazil (Largest Brazilian nickel manufacturer)

GEA Kestner proposed a state of the art plant to treat effluents from nickel refinery plant. In order to save energy, MVR technology was integrated with an evaporator using falling film technology and crystallization using forced circulation technology.



SPENT LIQUOR EVAPORATION UNIT & SALTING OUT

China

Evaporation capacity: 260 TPH per line
Salt production rate out of super-concentrator: 7.5 TPH

GEA Kestner provided 2 evaporation lines consisting of a quintuple effect running in counter current and equipped with flash tanks. Each unit is equipped with a super-concentrator which allows the sulphates & carbonates to precipitate in order to purify the liquor.



Zero Liquid Discharge

A question, need for information, a new project...

Contact us

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