

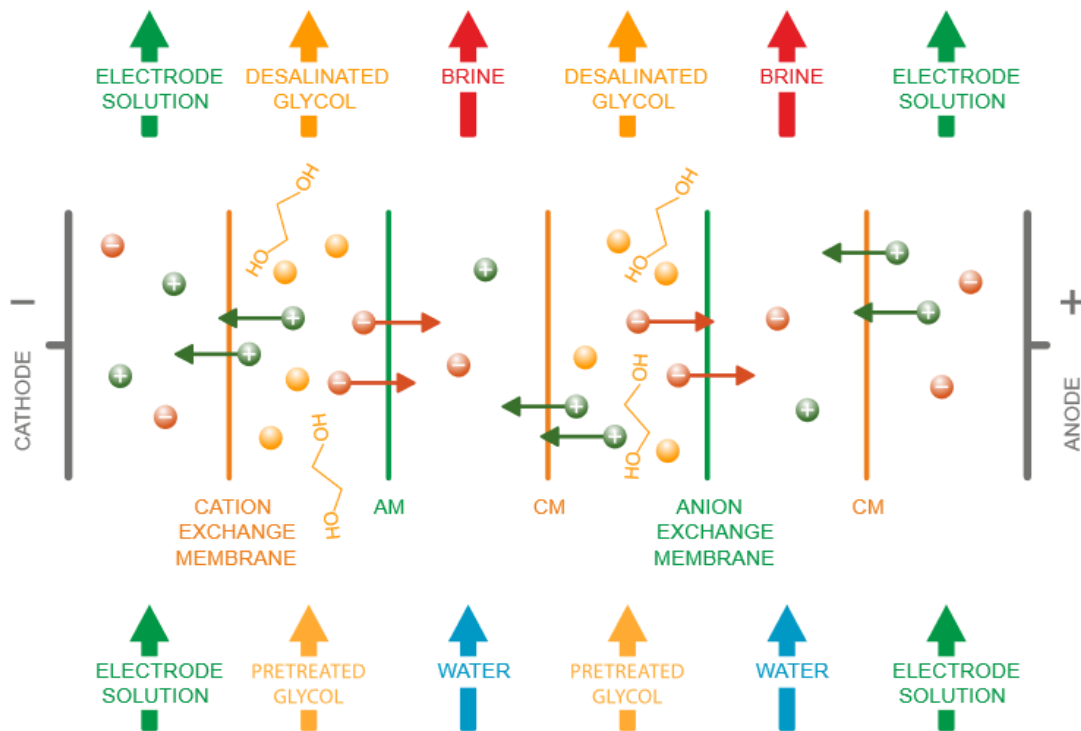
## RECYCLE ANTIFREEZE AND REFRIGERANT WITH RALEX® ART

### Basic principles of RALEX® ART (Antifreeze Reuse Technology)

- A unique and comprehensive solution for recycling of light and heavy-duty antifreeze and HVAC (Heating, Ventilation and Air Conditioning) refrigerants
- Electrodialysis-based process with integrated pre-treatment steps (sedimentation, coagulation, adsorption and filtration)
- Technology removing insolubles, heavy metals, oils, organic and inorganic salts and providing a high-quality product
- The product is an aqueous solution of glycols or glycerol with a significantly reduced content of impurities and original additives (conductivity less than 0.3 mS/cm)
- Concentration of Cl<sup>-</sup> meets ASTM D 3306-19 standard (< 25 ppm of Cl<sup>-</sup>)
- The final product can be reused in antifreeze mixtures production

### Principle of electrodialysis

- An electrochemical separation process in which ions from the treated liquid are transferred through ion-exchange membranes from one solution to another under the influence of DC voltage



## Typical feed composition

**15-50%** Ethylene glycol (MEG, DEG, TEG), propylene glycol (PG), glycerol

**50-85%** Water

**< 1.5%** Anticorrosion and buffering additives

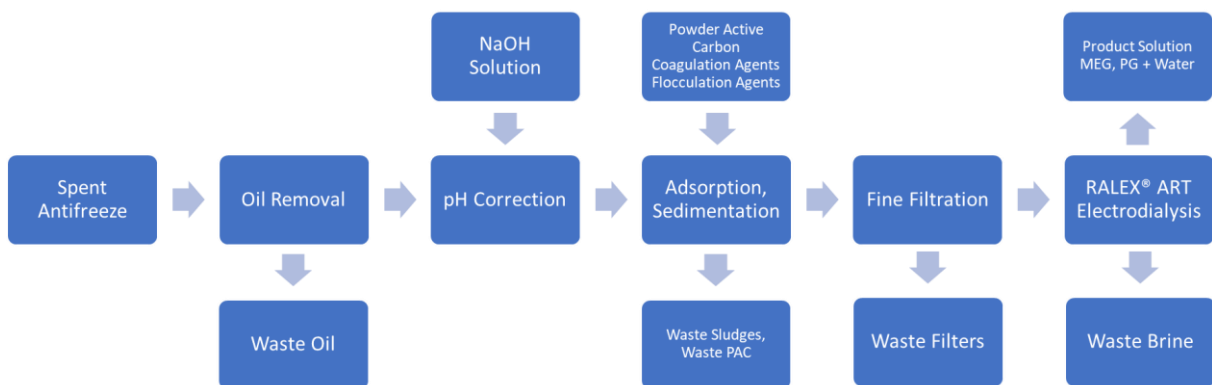
**< 0.1%** Decomposition products of glycols or glycerol

**< 1%** Inorganic ions ( $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{Ba}^{2+}$ ,  $\text{Sr}^{2+}$ ,  $\text{SO}_4^{2-}$ ,  $\text{F}^-$ ,  $\text{HPO}_4^{2-}$ )

**< 0.2%** Heavy metals (Fe, Mn, Pb, Cu, Zn, Cr, Sn, Al)

**< 0.2%** Oils and suspended solids

## RALEX® ART – Process flow diagram



## Why choose RALEX® ART?

- Complex tailor-made technology
- Economical and environmentally friendly process
- 30 years of proven industry experience of MEGA
- Aftersale service by MEGA Care



*From feed to product (glycol mixture in different phases of purification)*