

Project Deliverable 4.1 Executive Summary



Market study of potential applications for the developed technologies and products

Grant Agreement number: 227004

Project acronym: New ED

Project title: Advanced bipolar membrane processes for highly saline waste streams

Authors: Andrea Ghermandi (BGU)
Rami Messalem (BGU)
Norbert Rischer (FUMA)
Tatjana Schiek (FUMA)
Said Abdu (RWTH)
Clemens Fritzmann (RWTH)
Erik Van de Ven (TWENTE)
Harmen Zwijnenberg (TWENTE)

Period covered: from 1 December 2009 to 30 March 2010

Date of issue: April 10, 2010

The report screens potential applications for the technologies and products developed in the framework of the European Project NEW ED (Grant Agreement number 227004) co-funded by the Research DG of the European Commission within the joint RTD activities of the Environment and NMP Thematic Priorities.

The report deals with large ecologically relevant process and wastewater streams from different sectors of the process industry as well as with smaller applications with higher value products in the food and pharmaceutical sector. It includes a plan for market penetration, identification of potential end-users, target problems to be solved and potential benefits for supplier and users from a marketing point of view. Four principal categories of applications have been identified and the remainder of this report is structured accordingly:

Section 2 deals with the **production of inorganic acids and bases** from salt solution (e.g., NaOH, HCl, H₂CO₃, HNO₃, H₂SO₄, H₃PO₄);

Section 3 discusses the **production of organic acids** (e.g., formic acid, acetic acid, propionic acid, lactic acid, citric acid, p-toluenesulfonic acid, salicylic acid, itaconic acid, vitamin C, amino acids and gluconic acid);

Section 4 focuses on **acid and/or base regeneration** with the purpose of reuse in upstream process (e.g., pickle liquor of stainless steel industry, dimethylisopropylamine sulfate in the sulfuric acid scrubber for the production of aluminum casting mold epoxy resins, Na₂SO₄ in the effluent of rayon spinning bath, etc.);

Section 5 discusses **acidification/alkalinization in agro-food and pharmaceutical industry** (e.g., production of soy protein isolates, whey proteins, whey lipids, skim milk, stabilization of cloudy apple juice, reduce the acidity of fruit juices, cyclodehydrogen-halogenation of halo alcohols in pharmaceutical applications) and **other novel processes** (e.g., applications in desalination, ultra pure water production, non-aqueous systems).