



*The optimal
process solutions*

EEDB
EURODIA ENGENHARIA DO BRASIL

AMERIDIA
THE OPTIMAL PROCESS SOLUTIONS

OENODIA
ADDITIVE FREE SOLUTIONS

CHEMISTRIN
SUSTAINABLE PROCESS SOLUTIONS



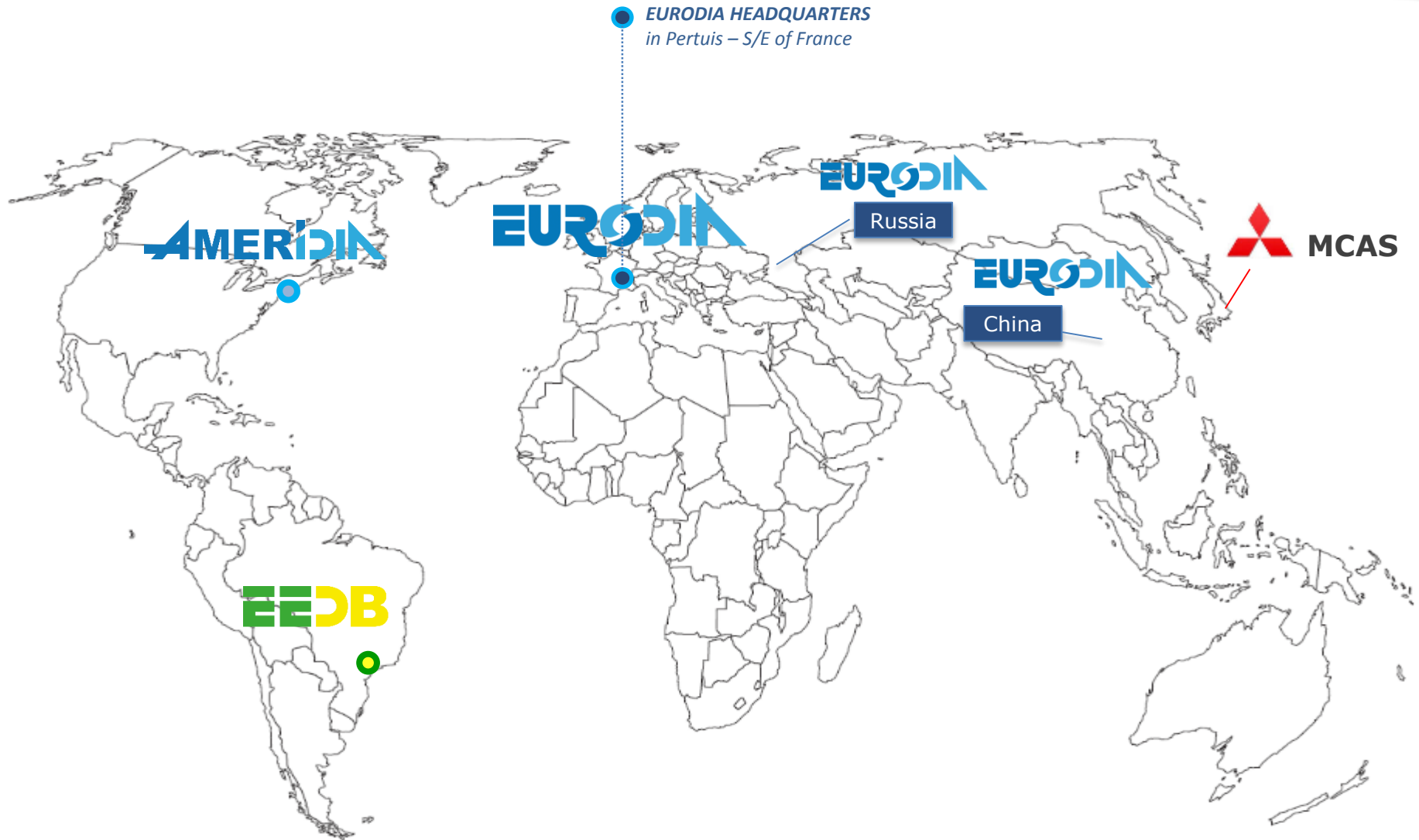
*Eurodia designs and realizes complete process solutions,
in the field of purification and fractionation.*

GROUP
EURODIA

THE OPTIMAL PROCESS SOLUTIONS

EEDB AMERIDIA ENODIA CHEMISTRIN

- **Set up:** 1988
- **Capital:** Founder & Executive team
Shareholder : Mitsubishi Chemicals
- **Total Staff:** 75
- **R&D:** 15% of expenditures dedicated to R&D





DAIRY INDUSTRY

- Valorization of whey
- Proteins fractionation
- Milk standardization



WINE AND JUICE INDUSTRIES



- Tartaric stabilization of wines and juices
- pH adjustment of wines and juices
- Alcohol removal of wines



STARCH AND SUGAR INDUSTRIES

- Liquid sugar production
- Demineralization, clarification & decoloration of syrups
- Purification of specialty sugars and polyols
- Production of glucose & fructose and oligosaccharides

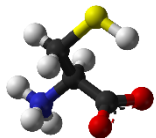




BIOTECH



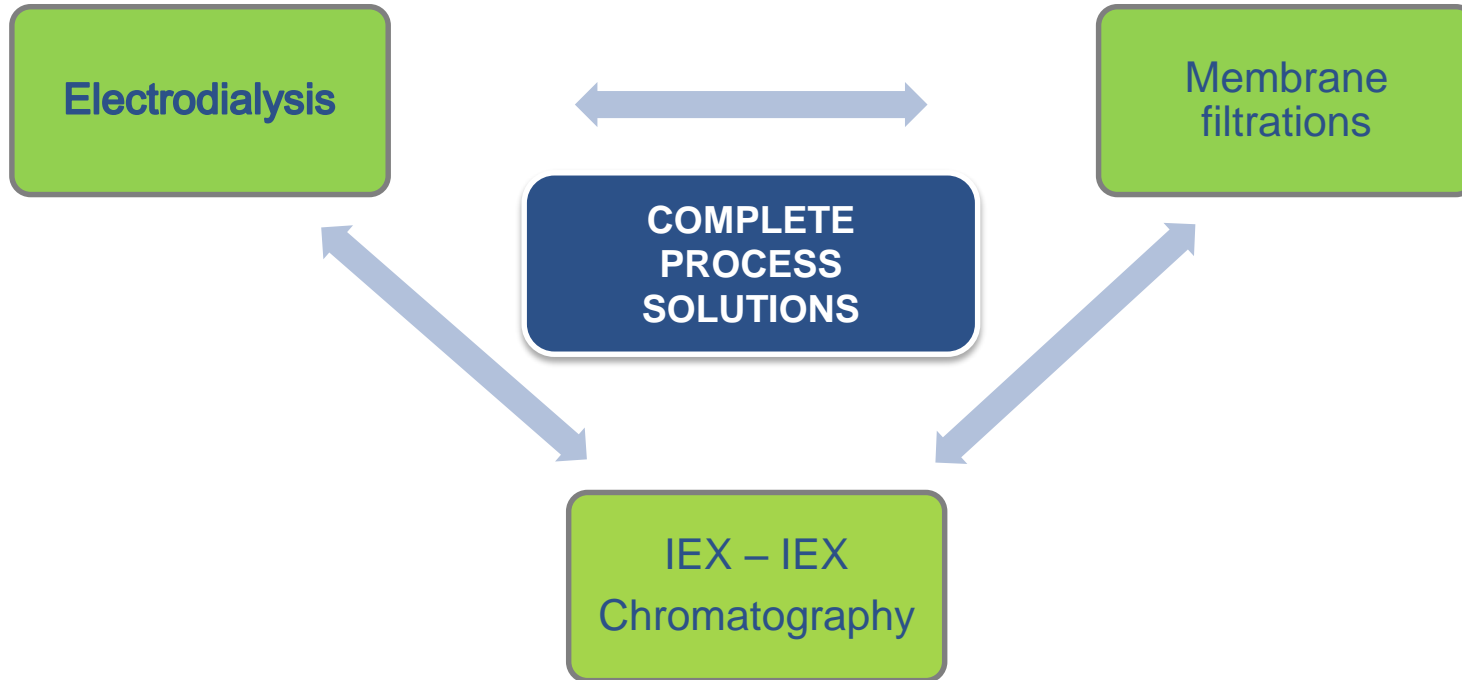
- Demineralization & separation of amino acids
- Purification & deacidification of organic streams
- Production of organic acids



CHEMICAL INDUSTRIES

- Petrochemistry
- Lithium production
- Purification of solvent
- Production of acid and base from salts
- Electroless nickel plating industry





Relying on 25 years of experience in process solutions for purification, EURODIA is launching its new trade name...

CHEMISTRIN
SUSTAINABLE PROCESS SOLUTIONS



First Generation
(Glucose / Saccharose)

Sugars
purification

Lignin
valorization
Cellulose
hydrolysis

Second Generation
(Cellulose)

FERMENTATION

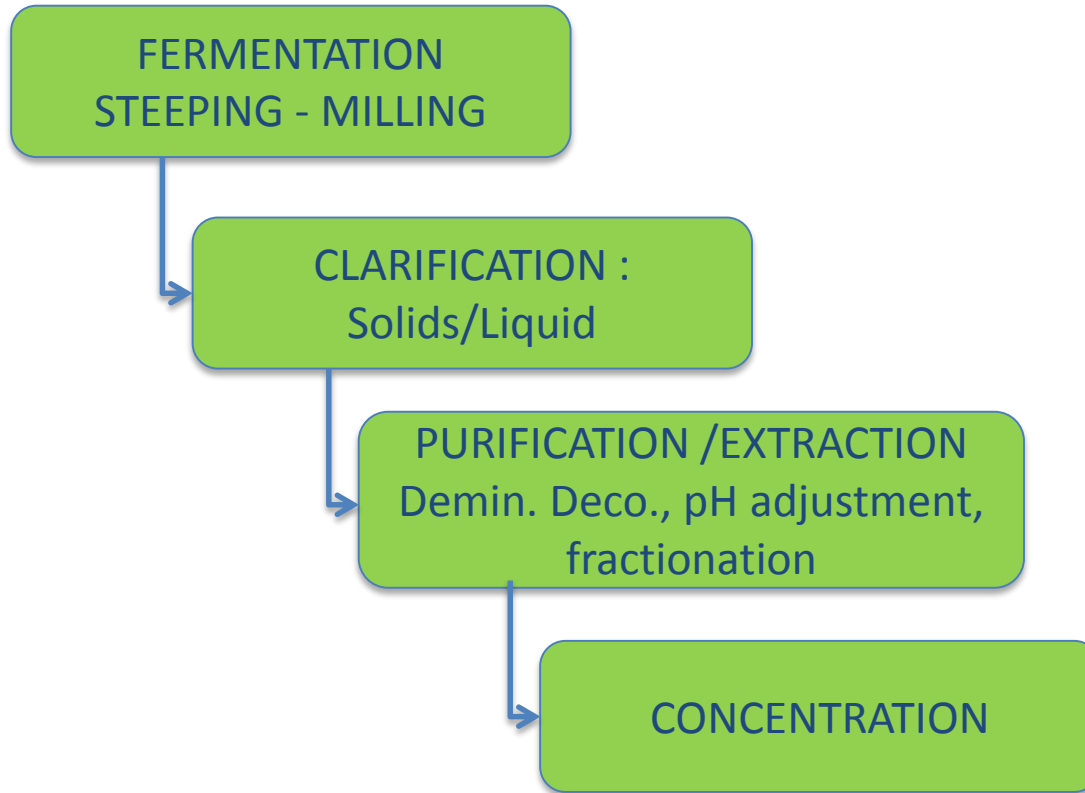
DSP
CONCENTRATION

IN GREEN CHEMISTRY

Food applications

Polymers (Plastics)

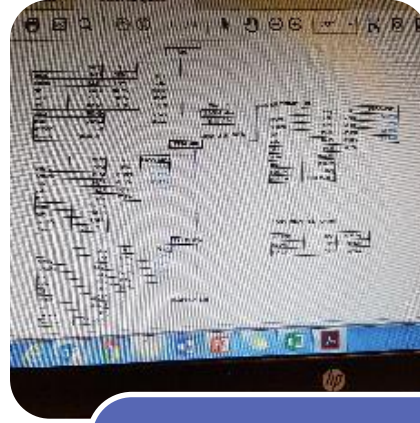
Bio-Chemistry
(solvents, detergents,
Etc...)



Centrifugation,
Earth filters , **MF/UF**

Chemicals : solvents, Acids, Bases
IEX / CHROMATOGRAPHY
ED/ BIPOLAR ED / NF

**EVAPORATION /
CRISTALLIZATION**



R&D

- Laboratory trials
- Pilot trials
- Eurodia Platform
- Pilots on site

PROCESS

- Process calculation
- Scale up
- CAPEX/OPEX garanties

ENGINEERING

- PID
- Manufacturing
- Commissioning
- **Technical support**



Filtration

Ceramic membranes / UF: to optimize DSP
Organic membranes / NF: as part of polishing steps



Ion Exclusion Chromatography

Removal of salts, color, sugars, AA...
Organic acids Fractionation



Ion Exchange Resin systems

Conventional systems
Continuous IEX systems



Bipolar Electrodialysis

Conversion of Organic Acids Salts



Industrial references, development of high temperature (65°C) EDBM technology (lower energy footprint -25%), better control of bacteriological development, processing of viscous products)



- Multipurpose micro-pilot :
 - MF, UF, NF with ceramic tubes : 50 cm²
 - MF : 0,2 – 0,5 – 0,8 – 1,4 μm as cut off
 - UF : 20 – 50 – 100 nm
 - NF : 1000 – 5000 daltons
- UF/NF/RO pilot with spiral membranes : 2540 - 4040





- ED pilots :
 - feasibility trials with small scale EUR2 pilots 10 cells
 - 0,2 m²
 - Conventional ED :
 - » EUR2B : 2 cpts
 - » EUR2C : 3 cpts
 - » EUR2D : 4 cpts
 - Bipolar ED : 2 or 3 cpts





- Scale up validation with EUR6 pilot :
 - 50 cells maxi : 2,8 m²
 - Pilot on site : development program with customer.
 - Small production
 - Membrane life time evaluation.
 - Batch and Feed & bleed Pilots
 - 50 up to 1000 L processing





- Ion exchange resins :
 - Resins evaluation
 - Complete ion exchange resins process evaluation





- Chromatography :
 - Development of new applications
 - HPLC chromatogram
 - Pulse test with 300 ml resins
 - Simulation program – provide mass
 - Pulse test with 8 L chromato pilot
 - Pilot test with 8 L chromato. Pilot : ISMB – NMCI process
 - Validation of application : sampling production
 - Resins evaluation



- Analytical equipment : **HPLC Waters Breeze System**
 - Isocratic HPLC Pump : 0.01 mL /min to 10 mL/min
 - Injector with heater/cooler
 - Detector refractometer 2414
 - Column heater compartment
 - Breeze system as integrator
 - Column : Shodex SP0810



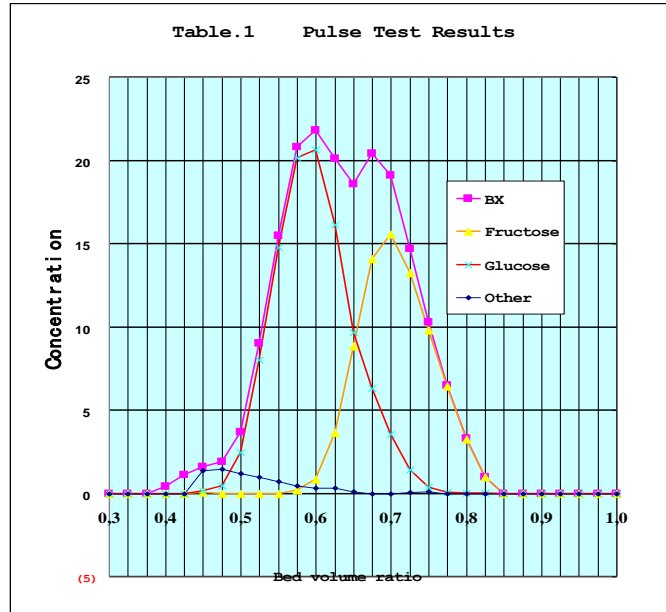


- Chromatography column :
 - To handle a pulse test with a small volume of product :
 - Column : 1 m length – 26 mm as diameter
 - Resin volume : 480 ml
 - Product volume : 24 ml
 - Flow rate : 240 ml/h
 - Sampling : 12 ml
 - Temperature : 65°C minimum





- 8 Liters resins ISMB chromatography pilot :
 - Pulse test with 450 ml raw product



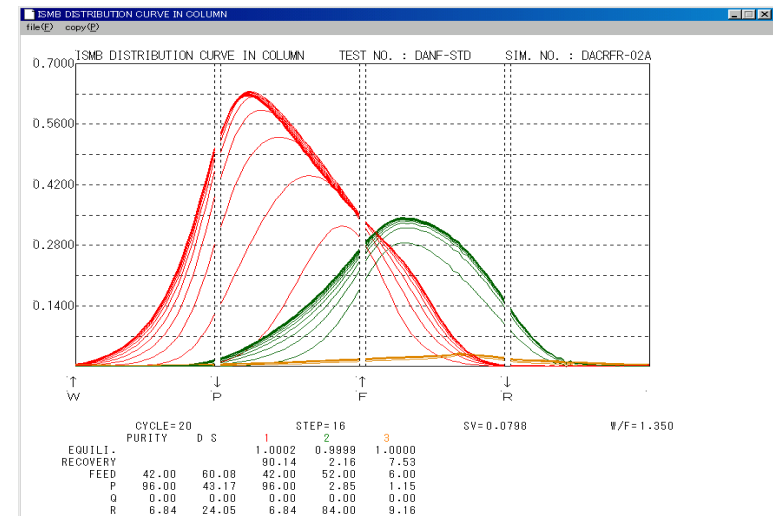
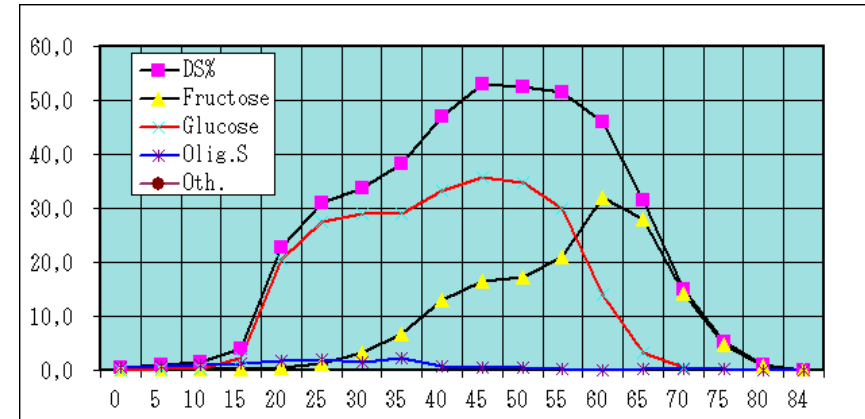


- chromatography pilot :
 - 8 columns to simulate 4 /6 ISMB & NMCI (8 liters resins)
 - 3 pumps : feed pump – water pump – recirculation pump
 - Water bath at right temperature
 - Multi-fractions collection





- Validation of separation
 - Feed columns with resins + Pulse test : One week
 - Optimization of separation : 3 weeks
 - Take fraction and make analysis
 - Tuning with simulation
 - Make a profile
 - Raw product volume :
 - 80 L – 100 L / week





DAIRY INDUSTRY: PRODUCTION OF DWP90





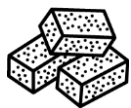
DAIRY INDUSTRY: PRODUCTION OF DWP90





STARCH & SUGAR INDUSTRIES: STARCH HYDROLYSATES PURIFICATION





STARCH & SUGAR INDUSTRIES: PURIFICATION OF SUGARS / POLYOLS





BIOTECH : PRODUCTION OF ORGANIC ACIDS





Thank you for your attention!!

www.eurodia.com

GROUP
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THE OPTIMAL PROCESS SOLUTIONS

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