

Easymining Ash2Phos

Fosfaatterugwinning uit as, SNB ervaringen

Luc Sijstermans, Manager Innovatie & Technologie

Fosfaat in perspectief

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Inhoudsopgave



- SNB historie P terugwinning
- Easymining
- Ash2Phos technologie en rendement
- Planning Easymining

P-terugwinning uit as, ervaringen SNB

	Periode		Ton as/P2O5	Status bij SNB
Thermphos	2002-2012	Full scale	22.482/4.300	+ Faillissement Contract Fe-arme as/jr
ICL	2012-heden	Full scale	3.087/600	Contract 10kton as/jr, Geringe afname (400ton 2022)
Ecophos	2009-2020	Pilot/Haalbaarheidsstudie / Onderzoek/Ontwikkeling Full scale primair erts (Fr)	-	+ Faillissement Ontwerp 60kton as/jr
Easymining	2017-2021	Pilot/Haalbaarheidsstudie Full scale ontwerp (D)	-	Bottle Neck Vergunning Ontwerp 60kton as/jr
Remondis	2018-2022	Haalbaarheidsstudie / Onderzoek/Ontwikkeling Full scale-opstart problemen (D)	-	Bottle neck eerste full scale fabriek volledig in bedrijf Ontwerp 60kton as/jr
Susphos	2022-heden	Pilot/Haalbaarheidsstudie / Onderzoek/Ontwikkeling full scale	-	Lopend onderzoek/ontwikkeling
			25.569/4.900	



**RAGN-SELLS
GROUP FACTS 2020**



Sales: 6 582 MSEK

Employees: 2 303

Markets: Sweden, Norway, Denmark, Estonia

Sites: 96

Material treated: 6.3 million tonnes

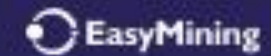
ABOUT EASYMINING

>40
Employees

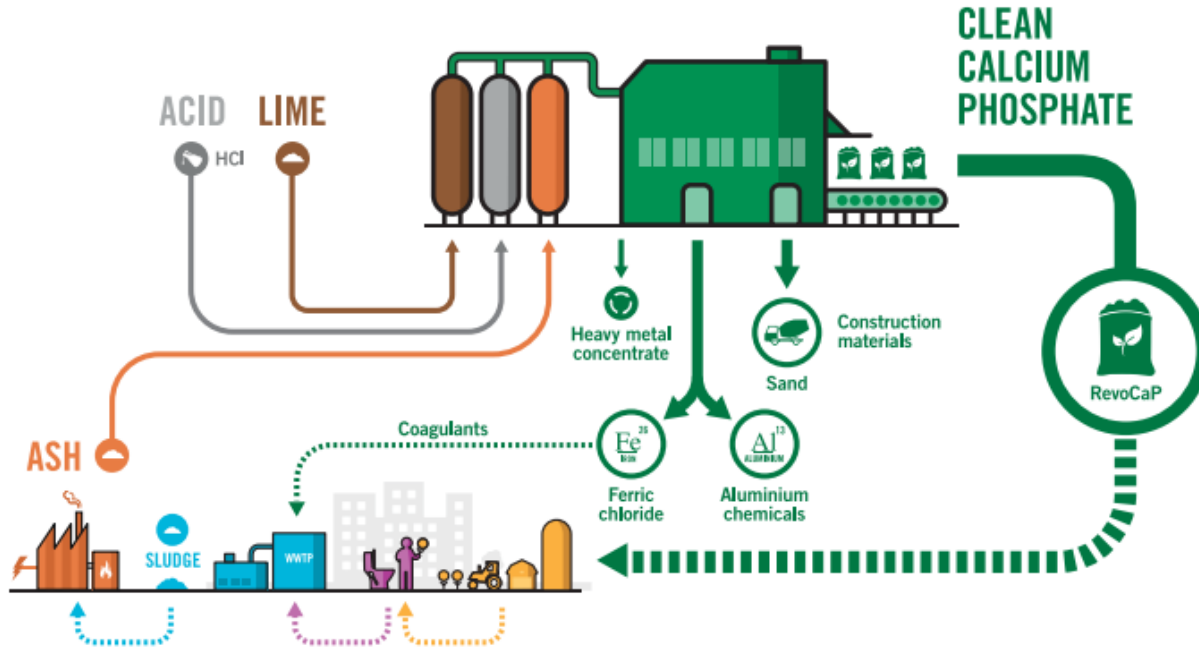
2007
Year of foundation

Uppsala, Gothenburg and Berlin
Sites

Fully owned by Ragn-Sells Group since 2014



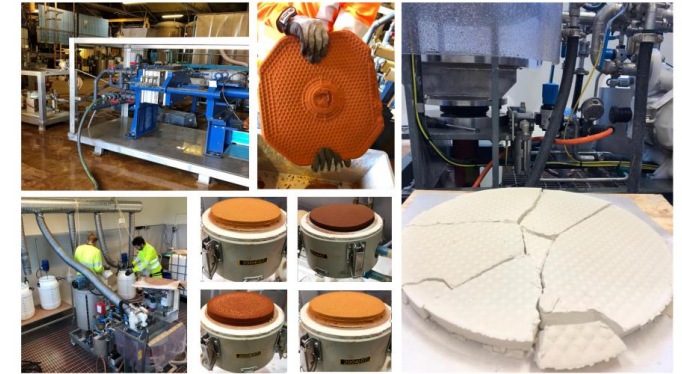
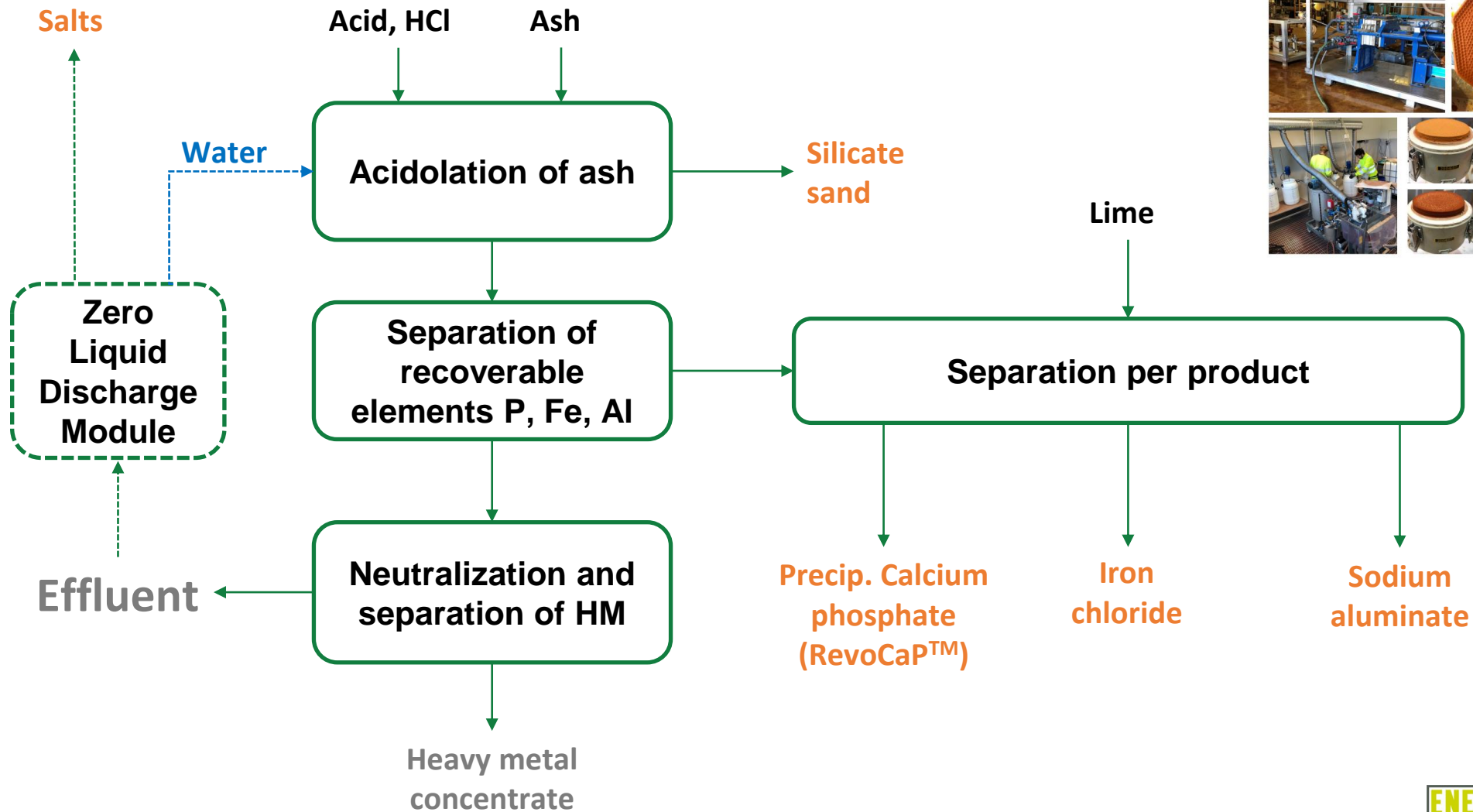
Ash2Phos – Process performance



- › High P recovery rate (> 80%)
- › High P product purity (>98%)
- › Efficient heavy metal separation (>96%)
- › Commercial co-products (i.e. FeCl_3)
- › Defineable product qualities independent from input ash
- › Real waste reduction (>95%)
- › Industrial symbioses in chemical industry parcs



Ash2Phos – PFD



Ash2phos – detoxifies circular flows

		Recovered P	Ash	% Reduction
As	mg/kg	1,5	34,6	96
Cd	mg/kg	0,1	5,5	98
Co	mg/kg	0,7	32,4	98
Cr	mg/kg	1,7	232	99
Cu	mg/kg	5,5	1756	100
Fe	mg/kg	1340	202826	99
Hg	mg/kg	-	0,0526	100
Pb	mg/kg	3,6	344	99
Zn	mg/kg	45,9	6780	99
Ni	mg/kg	2,6	164,6	98

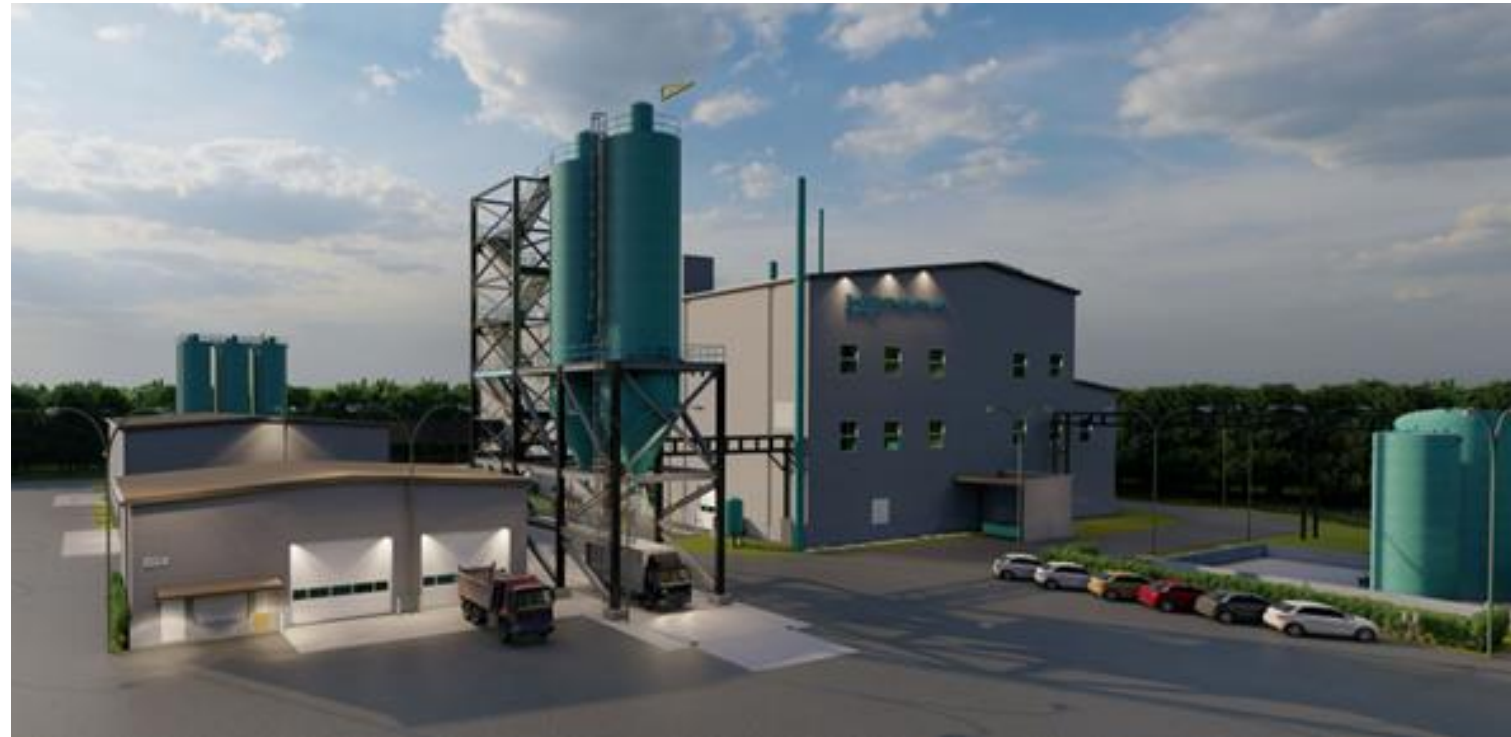
More than 96% reduction in heavy metals!
Silicate free and defluorinated high-grade Ca-phosphate

Ash2Phos GOALS AND TIMELINE

- **2018** Industrial pilot in Helsingborg (0.5 t SSA/d)
- **2022** Pilot demonstration 7: produced materials for market and tests
- **2025/26** First plant Germany/Schkopau: 30.000 t SSA/a; ~15 kt CaP
- **2026/27** Second plant Sweden/Helsingborg: 30.000 t SSA/a; ~15 kt CaP
- **2028** + 60-90.000 t SSA/a; +30 – 45 kt PCP
- **2030/35** more A2P plants (3-6) to process in total at least 300,000 t SSA/a yielding 150.000 t CaP/a
- **2030+** gradual growth ... starting in Europe, then going global

1ST ASH2PHOS PLANT IN DUITSLAND

- Partnership Gelsenwasser and EasyMining (okt. 2018)
- Capaciteit: 30 000 ton as/jaar
- Planning FID 2023
- Planning constructie 2024/25
- Planning startproductie 2026
- Status:
 - Vergunningaanvraag ingediend
 - FEED engineering gereed
 - Site company gevormd
 - Voorbereiding aanvraag doc. Planning Tendering 09/23





snb

de toekomst is circulair

