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Edward Someus

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Place of birth: BUDAPEST, Hungary | **Nationality:** Swedish | **Gender:** Male | **Phone number:** (+36) 208054727 (Work) | **Email address:** biochar@3ragrocarbon.com | **Website:** https://biophosphate.net | **Website:** https://3rbiofarm.com |

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ABOUT ME

Senior Specialist in Zero-Emission Industrialisation & Circular Bioeconomy
Accomplished Swedish upcycling engineer with more than two decades of experience in advancing sustainable industrial processes, particularly the zero-emission industrialisation of refined carbon pyrolysis and the development of high-value valorised products. I bring deep technical expertise in transforming underutilised agricultural and food industry biomass into advanced bio-based materials, while ensuring strong alignment with circular economy principles and EU regulatory frameworks.
My career has been defined by bridging the gap between applied research and full-scale market implementation. I have successfully led technology and product development projects from laboratory concepts through high Technology Readiness Levels (TRLs) towards industrial deployment, consistently translating scientific breakthroughs into commercially viable, engineered solutions. Particular focus has been placed on the industrialisation of biochar in all its forms, activated carbon adsorbents, and nutrient recovery processes for the development of next-generation BIO-NPK-C fertilisers and innovative water treatment solutions.
I am recognised as an expert in EU policy harmonisation for the Circular Economy and have niche expertise in REACH compliance for chemically modified substances. My specialisation includes Animal Bone Char (ABC), Animal Bone Oil, and diverse formulated biochar products, supported by extensive knowledge of environmental permitting, process safety, and industrial energy efficiency. This expertise enables me to guide permitting processes and environmental assessments for innovative recovery technologies at full industrial scale, ensuring both regulatory compliance and operational excellence.
Since 2002, I have acted as coordinator and lead scientific/technical designer for numerous large-scale EU Research and Technological Development (RTD) projects, driving Europe's transition towards a sustainable bioeconomy. These roles required not only technical leadership but also strong stakeholder engagement, effective project management, and the ability to align complex innovations with market and user needs. My work has consistently focused on scaling sustainable technologies to industrial level, contributing directly to Europe's green transition and strengthening the competitiveness of the industrial bioeconomy.

WORK EXPERIENCE

3R-BIOPHOSPHATE LTD. (ESTABLISHED 1989 AS ALSTOM POWER SUBSIDY JV, INDEPENDENT SINCE 2002) – KAJASZO, HUNGARY

DIRECTOR, PYROLYSIS PROCESSING AND CARBON REFINERY PRODUCTS S&T ENGINEER – 1989

- **CEO, general company management and senior engineer since 1989.**
- Extensive experience in **applied research, development, and industrial engineering** for pyrolysis technologies and carbon refinery, including graphene-based products.
- Innovator in **fertilizers, recovered phosphorus, and adsorbents for water treatment**, leading development, testing, and commercial application of sustainable nutrient and environmental solutions.
- **Coordinator and lead technology designer** in four large-scale EU RTD and other projects since 2002, consistently translating scientific innovation into **market-ready, revenue-generating industrial solutions.**
- Driving **commercialisation strategies, marketing, and stakeholder engagement**, ensuring new technologies reach adoption at industrial, agricultural, and environmental markets.
- Responsible for **financial management, investment planning, and regulatory compliance** at both national and EU level, including permitting for innovative fertilizers and water treatment applications.
- EU policy support consultant for **Circular Economy incentives and Fertilizers Regulation revision**, advising DG GROW and JRC; active member of **EIP-AGRI** and **STRUBIAS** (struvite–biochar–ash).
- **REACH and permitting expert** with specialization in Animal Bone Char, Animal Bone Oil, biochar, and industrial-scale thermal technologies, ensuring regulatory approval for **profitable market deployment**.

- Authority permit specialist for **full industrial-scale thermal processing technologies**, including environmental impact assessments, process safety, and energy efficiency.
- Authority permit expert for the **application of chemically modified substances in agriculture and water treatment**, ensuring compliance and market-ready deployment of ABC, biochar, and advanced adsorbents.

EDUCATION AND TRAINING

1972 – 1978

M.SC. NATURAL AND ENVIRONMENTAL SCIENCES University of Lund, Sweden

LANGUAGE SKILLS

Mother tongue(s): **SWEDISH**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C2	C2	C2	C2	C2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

SKILLS

Communication

Extensive experience for preparation and evaluation of technical reports | Actively and confidently participate in technical and scientific discussions | Ability to distil complex discussions into concise, accurate summaries, | Experience in drafting clear, precise, and well-structured technical and scientific reports | Experience presenting to EU institutions, project consortia, and stakeholder workshops | Strong communication skills in multicultural and scientific environments

Organisational

Active involvement in technical and scientific working groups | Managing complex EU founded technical projects | Strong organisational and prioritisation skills | Organising, and facilitating multi-stakeholder meetings

Job Related skills

Converts science to market-ready, legally compliant industrial technologies and solutions | REACH expert for chemically modofoed substances | Authority permit expert for full industrial scale permitting of thermal processing technologies | R&D and scale-up of P/N fertilizers and nutrient recovery at industrial, economic scale | Bone-based phosphorus recovery for organic farming and water treatment (adsorbent use) | Developer of recycling technologies and permitting for industrial product applications | Specialist in pyrolysis, carbon refinery, biochar, nutrient recovery, and BIO-NPK-C products | Skilled in quality control, safety, legal compliance, climate and economic assessments

Digital Skills

MS Office, scientific data analysis, and technical documentation | EU Project Management tools

INTERESTS & FOCUS AREAS

Expert in Nutrient Recovery, Biochar Standards & Fertiliser Regulation

- Over three decades of combined **business leadership, applied research, and industrial engineering** experience, successfully scaling breakthrough technologies from concept to commercialisation.
- Proven track record in **business development, market entry strategies, and innovation-driven growth**, building competitive advantage in fertilizers, recovered phosphorus, and advanced adsorbents for water treatment.
- Skilled in building **strategic partnerships** across industry, academia, and policy, securing long-term collaboration and market penetration.
- Recognized for **bridging science, technology, and business**, delivering solutions that are not only environmentally sustainable but also **economically viable and commercially competitive**.
- **Developing quality and safety standards for Fertiliser Regulation revisions**, including process and product criteria for biochar.

- **Identifying, evaluating, and assessing technologies for processing diverse organic sources** (biowaste/byproducts) to recover nutrients, with emphasis on Nitrogen and Phosphorus.
- Assessing the agronomic value of recovered products, including nutrient content and availability, application rates, and impacts on soil physical and biological properties.
- **Evaluating innovative fertilizers using tools such as LCA, S-LCA, SWOT, and CBA.**
- Ensuring environmental safety of derived products, monitoring quality and contaminant loads in soil and water linked to application doses.
- **Developing practical tools and guidance to help farmers evaluate, select, and measure nutrient content/availability for crops** (best practice guides).
- Analysing economic and technical factors that influence the adoption of recovered nutrient products in agriculture, and proposing strategies to overcome barriers via innovation and knowledge transfer.
- **Determining strategies to adapt recovered nutrient products to market demands**.
- Documenting successful farm-level and regional business cases; identifying research gaps and practice-driven needs to advance nutrient recovery technologies.
- **Suggesting innovative technologies, solutions, products, and projects** to enhance nutrient recovery and circular bioeconomy practices.

TECHNICAL SKILLS

Senior Industrial & Scientific Expert in Biobased Circular Economy

Edward Someus is a senior scientific and industrial engineering expert in biobased industries, specializing in circular economy solutions for recycling and valorizing underutilised biomass.

- **High-TRL S&T development & scale-ups:** Advanced innovative Phosphorus and Nitrogen fertiliser technologies, nutrient recovery solutions, and integrated lifecycle analytics at commercially viable scales.
- **Zero-emission pyrolysis & carbon refinement:** Science and technology provider for high-temperature pyrolysis to produce refined carbon and safe biochar products, including agri-biotechnological formulations and high-value market-ready solutions.
- **Animal bone valorisation:** Industrial-scale processing for concentrated BioPhosphate Phosphorus recovery, targeting organic/low-input farming and specialized water treatment adsorbent applications.
- **Industrial permits & regulatory compliance:** Developer of recycling technologies and product applications, including full Authority permitting and environmental, safety, and market compliance.

Core Competencies: Pyrolysis industrial technology, carbon refinery, biochar products, nutrient recovery, BIO-NPK-C fertiliser formulations, quality management, analytics, legal/regulatory expertise, environmental/climate impact assessment, and commercialisation. Proven ability to translate scientific advances into legally compliant, industrially scalable, and market-driven solutions.

ORGANISATIONAL / MANAGERIAL & BUSINESS SKILLS

High-Impact Project & Team Management

- Proven **leadership** and **organizational expertise**, successfully managing EU research and innovation projects with **scientific** and **industrial teams** of 12–50 members across multiple countries.
- Strong **project management skills**, including **strategic planning**, **coordination**, **budgeting**, **risk management**, and **reporting**, ensuring compliance with EU regulations and project objectives.
- Extensive experience in **team management**, including **recruitment**, **mentoring**, **conflict resolution**, and **performance evaluation**, with strong ability to motivate **multicultural** and **multidisciplinary teams** towards achieving common goals.
- Skilled in organizing and supervising **industrial engineering** and **construction works**, from **conceptual design** to **full-scale implementation** and **commissioning**.
- Extensive experience in **logistics** and **operational management**, optimizing **resources**, **workflows**, and **costs** to deliver projects efficiently and on time.
- Experienced in **decision-making under complex conditions**, balancing **technical**, **regulatory**, **safety**, and **environmental factors** to ensure successful project outcomes.

BUSINESS SKILLS

Business Development & Industrial Transformation Expert

- **Business Development & Commercialisation** – Proven ability to transform innovative technologies into market-ready products and services, creating profitable growth in fertilizers, recovered nutrients, and water treatment solutions.
- **Strategic Leadership** – 30+ years of experience in company management as CEO, aligning R&D, operations, and business strategies to achieve long-term competitiveness.
- **Financial & Legal Management** – Strong expertise in investment planning, budgeting, and securing EU/national permits, ensuring projects are financially sustainable and legally compliant.

- **Market Strategy & Positioning** – Skilled in analysing markets, identifying customer needs, and adapting products to ensure commercial competitiveness.
- **Stakeholder & Partnership Management** – Experienced in building cross-sector collaborations with industry, policymakers, academia, and end-users to drive business opportunities.
- **Innovation Marketing & Dissemination** – Successfully promoting and scaling innovations at industrial, agricultural, and environmental levels through targeted outreach and communication.
- **Policy & Regulation Influence** – Active contributor to EU-level policy (Circular Economy, Fertiliser Regulation), shaping regulatory frameworks that enable new business opportunities.
- **International Project Coordination** – Track record in leading EU RTD projects, combining scientific, industrial, and business dimensions to achieve impactful results.

COMMUNICATION SKILLS

Multicultural Team Leader & EU Project Communication Expert

Cooperative and results-driven team worker, team leader, and organizer, with proven ability to thrive in multicultural environments across multiple EU countries. Exceptional communication and interpersonal skills honed over 20+ years as an EU RTD project coordinator, including stakeholder engagement, cross-cultural collaboration, public speaking, and technical/scientific writing. Demonstrated track record in leading interdisciplinary teams, driving complex projects to completion, and translating research innovations into practical, high-impact industrial and commercial solutions. Adept at motivating teams, fostering collaboration, and ensuring efficient knowledge transfer between research, industry, and end-users.

EXPERIENCE AT EU AND INTERNATIONAL LEVEL

2002 – CURRENT

Coordinator and lead scientific/technical designer for several large-scale EU RTD projects

Coordinator and lead technology designer in four large-scale EU RTD and other projects since 2002.
http://biophosphate.net/references

2016 – 2019

STRUBIAS

Specialized EU policy and law harmonization development consultant for the European Commission with core competence in the fields of Circular Economy and Fertilizers Regulation revision, work group member of the STRUBIAS (struvite-biochar-ash product developments – managed by DG GROW – JRC Seville) and EIP-AGRI, in the specialized fields of nutrient recovery cases from agricultural and food industrial by-products, including biochar (all types), BioPhosphate and ash products.

2016 – 2018

EIP-AGRI Focus Group on Nutrient Recycling

Edward Someus/3R-BioPhosphate Ltd. is **an expert member of the EIP-AGRI** (run by the European Commission DG Agriculture and Rural Development) **Nutrient Recycling Focus Group**. (http://ec.europa.eu/eip/agriculture/en/content/nutrient-recycling). Member of the STRUBIAS (struvite-biochar-ash) work group organized by the European Commission.

2011 – 2016

European Biochar Research Network (eBRN), Cost Action Biochar (TD1107)

European Biochar Research Network (eBRN), **Cost Action Biochar** (TD1107), **official national representative.**

PROJECTS

2023 – CURRENT

Waste4Soil: Turning food waste into sustainable soil improvers for better soil health and improved food systems (101112708)

Waste4Soil envisions the development of 10 technological and methodological solutions for recycling food processing residues from the food industry into local, biobased circular soil improvers for improved soil health. A user-driven standardised Evaluation Framework will support stakeholders from the food value chain, including waste managers, to assess their status towards food processing residues circularity and take action for recycling suitable waste streams into beneficial soil improvers. Role in the project: Partner. Programme: HORIZON-MISS-2022-SOIL-01-02

2021 – CURRENT

WALNUT: Improved resource recovery from the waste water cycle (101000752)

Objective: Develop concepts and technological solutions to re-design the value and supply chains of nutrients from wastewater and brine. **Programme:** H2020 Societal challenges, CE-RUR-08-2018-2019-2020 - Closing nutrient cycles, Role in the project: Partner

2018 – 2022

Nutri2Cycle: Transition towards a more carbon and nutrient efficient agriculture in Europe (773682)

Programme: H2020-SFS-30-2017, SFS-30-2017, Objective: Use an integrated approach to enable the transition from the current (suboptimal) nutrient household in European agriculture to the next-generation of agronomic practices, characterized by an improved upcycling of nutrients and organic carbon. Role in the project: Partner.

2018 – 2021

NUTRIMAN: Nutrient Management and Nutrient Recovery Thematic Network (818470)

Programme: H2020 – RUR15 Thematic networks compiling knowledge ready for practice. Role in the project: Coordinator, science and technology core work senior engineering. NUTRIMAN is focusing on compiling knowledge and knowledge exchange of best practices and methodologies for innovative organic and low input farming in particular cost efficient and safe recovered N/P innovative fertilizer supply. : **https://www.nutriman.net**
The NUTRIMAN initiative was a Nitrogen and Phosphorus Thematic Network focused on compiling and transferring knowledge of “ready-for-practice” recovered bio-based fertiliser technologies, products, applications, and practices for the benefit of agricultural practitioners.
The project successfully connected market-competitive, commercially viable, and innovation-driven results from high research maturity applied scientific programmes and industrial practices. A key outcome was the establishment of the **Farmer Platform** (https://nutriman.net/farmer-platform), a long-term open-access digital training and knowledge database.
This European digital library provides farmers with direct access to high-maturity, practice-oriented N/P recovery technologies and products, addressing the most urgent agricultural needs. Designed as a continuously expanding knowledge reservoir, the platform is systematically updated and maintained, ensuring accessibility and relevance up to 2031.

2012 – 2016

ECO-ZEO - Developing a pool of novel and eco-efficient applications of zeolite for agriculture sector (282865)

Programme: European Union Seventh Framework Programme (2007-2013), **Role in the project:** Partner, Project status: successfully completed.

2011 – 2015

REFERTIL: Reducing mineral fertilisers and chemicals use in agriculture by recycling treated organic waste as compost and bio-char products (289785)

Objective: EU legislation support by definition of improved compost/biochar standards in the EU27. **Programme:** FP7-KBBE-2011.1.2-02. **Role in the project:** Coordinator, science and technology core work senior engineering.

2009 – 2012

PROTECTOR (ECO/08/238984/ SI2.532247)

Programme: CIP Eco-innovation. **Role in the project:** Coordinator, science and technology core work senior engineering, Phosphorous recycling. **Status**: Successfully completed, follow up developments and high TRL scale ups made.

2008 – 2012

EUPHOROS - Efficient use of inputs in protected horticulture

Programme: European Union Seventh Framework Programme (2007-2013), FP7-KBBE-2007-1. **Role in the project:** Partner. Contract/reference number: 211457, Project status: successfully completed.

2005 – 2008

PROTECTOR - Recycling and upgrading of bonemeal for environmentally friendly crop protection and nutrition (FOOD-CT-2005-514082)

Programme: European Union Sixth Framework Programme (2002-2006), Action: FOOD-2003-T6.6 Recycling and upgrading organic wastes from the food chain in environmentally friendly healthy food production.
Role in the project: Coordinator, science and technology core work senior engineering.
Contract/reference number: FOOD-CT-2005-514082, **Project status**: Successfully completed, follow up developments and high TRL scale ups made.

2002 – 2005

TDT-3R MULTI FUEL - Multi Fuel Operated Integrated Clean Energy Process: Thermal Desorption Recycle-Reduce-Reuse Technology

Programme: European Union Fifth Framework Programme (1998-2002) - Energy, Environment and Sustainable Development specific programme.
Role in the project: Coordinator, science and technology core work senior engineering.
Contract/reference number: EU FP5-NNE5-363-2001.
Project status: Successfully completed, follow up developments and high TRL scale ups made.

PUBLICATIONS

Works published on nutrient recovery

- Edward Someus, Massimo Pugliese; Concentrated Phosphorus Recovery from Food Grade Animal Bones; Sustainability 2018, 10, 2349; doi:10.3390/su10072349, https://www.mdpi.com/2071-1050/10/7/2349
- Edward Someus, Massimo Pugliese, Joeke Postma, Henning von Alten, Lea Lavric. REFERTIL–compost and biochar testing, BioRefine Bulletine, 2015 Issue 3.
- J. Postma, F. Clematis, E. H. Nijhuis, E. Someus, Efficacy of four phosphate-mobilizing bacteria applied with an animal bone charcoal formulation in controlling Pythium aphanidermatum and Fusarium oxysporum f.sp. radicis lycopersici in tomato, Elsevier, Biological Control 67 (2013) 284–291, 19 July 2013, DOI:10.1016/j.biocontrol.2013.07.002
- Sebastian Meyer, Lorenzo Genesio, Ines Vogel, Hans Peter Schmidt, Gerhard Soja , Edward Someus , Simon Shackley, Frank G A Verheijen, Bruno Glaser; Biochar standardization and legislation harmonization. Journal of Environmental Engineering and Landscape Management, January 2017, 25(2): 1-17, DOI: 10.3846/16486897.2016.1254640
- Edward Someus Zoltán Palotai, Zsolt Hantosi, Gábor Bordós; Food safety importance of biophosphate applications in safe food crop productions, Food Safety News, Élelmiszervizsgálati közlemények, (62) 4. pp. 1308-1314. (2016). http://acta.bibl.u-szeged.hu/id/eprint/79115
- Postma J., Nijhuis E.H., Someus E., 2010. Selection of phosphorus solubilizing bacteria with biocontrol potential for growth in phosphorus rich animal bone charcoal. Applied Soil Ecology, DOI: 10.1016/j.apsoil.2010.08.016
- G. P. Warren, J.S. Robinson and E. Someus, Dissolution of phosphorus from animal bone char in 12 soils, Nutrient Cycling in Agroecosystems, Volume 84, Number 2/ Jun, 2009, Springer Netherlands. DOI: https://doi.org/10.1007/s10705-008-9235-6
- E. Someus, Food crop mineral deficiency and disturbance stress mitigation in temperate climatic regions by economical and environmental valorization of agricultural by-products, Nova Science, New York, 2009.
- E Someus, "Plant derived feed additive: recent scientific results and regulatory development, successful EU projects and partners for scientific cooperation" FEED –SEG Symposium, January 14-15, 2008, Hungary,
- Ohlsson, T., Lienemann, K., Aiking, H., Bindraban, P., Clift, R., Fikiin, K., Guiramand, M., Hedges, N., Noell, C., Notarnicola, B., de Ruijter, F., Sagenmuller, A., Someus, E., & Walter, C. (2008). Priority research challenge 2: Solutions for sustainable food chains. In J. Castenmiller, R. Fenwick, & J. Maat (Eds.), *European Technology Platform on Food for Life: Implementation Action Plan* (pp. 38-39). CIAA.
- E. Someus, "TOWARDS ZERO EMISSION: Economical Conversion of Low-grade Coal to Clean Coal by Low Temperature Carbonization Pretreatment Process" Twenty-seventh Annual International Conference on Thermal Treatment Technologies; May 12-16, 2008, Montreal, Quebec, Canada, Air & Waste Management Association, USA, University of Maryland, USA, United States Department of Energy. www.awma.org/
- J. Kruse, P. Leinweber, F. Godlinski, E. Someus, "Speciation and quantification of inorganic and organic P forms in environmental samples by P L-edge XANES" University of Rostock, Germany, Agriculture & Agrifood Canada, Lethbridge Research Station.
- Postma, E. Nijhuis, F. Clematis, E. Someus "A new carrier for biocontrol agents", Wageningen University Research, Plant Research International B.V, P.O. Building nr. 107, Droevendaalsesteeg 1, 6708 PB Wageningen, The Netherlands.
- J Postma, E Nijhuis, F Clematis, E Someus, "Recycling and upgrading of bone meal for environmentally friendly crop protection and phosphate fertilization "ORBIT Conference, October 13-15, 2008, Moving Organic Waste Recycling Towards Resource Management and for the Biobased Economy, Wageningen, The Netherlands. Wageningen University Research, Plant Research International B.V, P.O. Building nr. 107, Droevendaalsesteeg 1, 6708 PB Wageningen, The Netherlands.

http://biophosphate.net/3r-publications