

G. Edward Soméus

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Curriculum Vitae

Name: **SOMEUS, George Edward**

Date of birth: **April 28, 1951**

Citizenship: **Swedish**



Soméus – combining high level of scientific knowledge with industrial engineering and field applications, specialising in the: research, technical development, engineering and industrial applications of the **Thermal Desorption (PYROLYSIS) - Low Temperature Carbonisation Technology** for **COAL & CARBON**: added value recycling of carboniferous materials, agricultural and industrial waste and by-products, and thermal desorption of contaminated inorganic materials. Specialising in:

- **REDUCTIVE THERMAL PROCESS**: pyrolysis and carbonization by indirectly-directly heated rotary kiln technique and auxiliary installations, such as post combustion chamber constructions and off gas treatment scrubbers.
- **AGRICULTURAL BIOTECHNOLOGY**: carbon and mineral recycling by solid state fermentation and formulation, agro-biotech process scale up.

EDUCATION

Univ. of Lund in Sweden 1972 - 1979, graduated in 1978, M.Sc., Natural and Environmental Sciences.

EXPERIENCE

- **TERRA HUMANA Clean Technology Development, Engineering and Manufacturing Ltd.** Swedish-Hungarian joint venture (established 1989 together with Lang Machine works (since 1868, a subsidiary to ABB), from the beginning 1989 Someus is owner and executive manager, share capital €200k): innovative scientific developments and engineering of the Thermal Desorption Technology Recycling-Reduce-Reuse “3R” technology. Project management of industrial applications of the 3R technology. EU RTD performer of Clean Coal, renewable biomass utilization technologies, agricultural and industrial soil decontamination and recultivation, agricultural biotechnology development, incl. biocontrol, phosphorus mobilization, and solid state fermentation and formulation techniques.
 - **EU FP5 NNE5/3636/2001** (coordinator and key technology designer)
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- **EU FP6 514082** (coordinator and key technology designer)
www.terrenum.net/protector
- **EU, EACI, Eco-Innovation programme**, ECO/08/238984/SI2.532247. First industrial application of eco-innovative biotechnological process and product, for recycling and re-use of food industrial waste to economically important and high added value farming products - PROTECTOR, (coordinator and key technology designer)
- **3R Environmental Technologies Ltd.** International holding company established in 2007 for legal uniting of patents and rights related of the 3R technology systems.
- Product Control Ltd. of UK (1986-1997): technical manager of the Research, Technical Development and Engineering of innovative hazardous and nuclear waste treatment, pollution control technologies, manufacturing of Activated Carbon and Clean Coal.
- Geoteknik AB of Sweden (1979-1986): consulting and engineering for environmental protection and pollution control systems in South Sweden.

Large projects (1990's): Swedish Elektrolux Corp. chlorinated haz waste landfill design, construction and operation (project value USD 7,5 M). Hungarian Railway soil and ground water decontamination (project value USD 0,75 M). Ceramic-Activated Carbon filter manufacturing (USD 1,1 M). NATO soil remediation, ref no. 973720. Invention-Patent: Method and Apparatus for Treatment of Waste Materials, Including Nuclear Contaminated Materials (patented in the USA, 1998, No. 5,707,592)

Large projects (2000's): EU FP5 Clean Multi Fuel 2002-2005 (€2,3 M), EU FP6 2005-2008 (€2,7 M), MSW Municipal Solid Waste recycling 2007-2009 (€ 2 M), Intelligent Energy 2006-2007 (€200k), Bio-Agro Phosphorus 2007-2009 (€ 125k).

SKILLS

- **Successful project management with result oriented leadership skills, team player with high work ethics and goals, strong analytical skill with problem solving ability.**
- **Efficient manager** of general contracts, including administration - finance - legal issues, and technical specialist in recycling and pollution control.
- Knowledge in EU and US industrial and **environmental laws, regulations and permitting procedures, ISO 14000** auditor, efficiency in computer analyses.
- High level skills in **COAL & CARBON** science & technology and its application, including carbonization process engineering, rotary kiln designs, offgas treatment and post burners from lab to industrial full scale.
- **High level skills in soil** science, fertilization, decontamination and recultivation.
- Thermal engineering of hazardous and LLW radioactive waste.
- High level of technical writing and interpersonal skills in English, Swedish and Hungarian.

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REFERENCES

Prof. Dr. A.K. Gupta: University of Maryland, Mech. Engineering USA
Tel.: (1-301) 405 5276

Prof. Dr. L. Jakab: Budapest Technical University, Hungary
Tel.: (36-20) 943 9107

Operational areas:

North America



European Union



Australia



Reference List of Edward Soméus

University of Lund, Sweden, 1972-1979, Environmental and Natural Science, environmental assessment and geological survey works for Vattenfall AB electric power generation company.

Geoteknik AB, Sweden, 1979-1986, environmental assessment studies, waste treatment studies, construction works for Helsingborg coal fired electric power generation plant, MSW landfill constructions and RTD of Low Temperature Carbonisation – Clean Coal and Activated Carbon manufacturing - technology applications, design and operation of paper waste transportation system in South Sweden, Höganäs AB Sweden: 1982-1986, construction works for improvement of industrial environment in chemical industries. 1980 - 1986, design and operation of waste transportation system in South Sweden.

Product Control Ltd., U.K., 1987 - 1996, RTD and Engineering of Low Temperature Carbonisation and Thermal Desorption Technology applications.

Terra Humana Clean Technology Development, Engineering and Manufacturing Ltd., established in 1989 as a Swedish – Hungarian joint venture company with large equipment manufacturer for design, manufacturing and installation of waste treatment equipment and:

- Site assessment work for MSW landfill.
- Activated Carbon technology engineering and running of Field Demonstration Plant in Hungary, Érsekcsanak.
- Aqua Gold Fin Tower Ltd. India, Calcutta: technology design and construction of industrial hazardous waste treatment system.
- From 1997 establishes of several joint venture companies: United European Environment Controls Ltd., U.K., Pure Carbon Systems Ltd., Hungary, Environment Controls Pvt. Ltd., India. Chief consultant for international environment service companies, such as Comco Martech Ltd. Switzerland, whereas executing remediation works, such as for Hungarian Railway.

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Pacific Basin Consortium for Hazardous Waste Research and Management, USA, Hawaii, Honolulu, April 20 -24, 1998: Advanced Thermal Desorption of Solid Hazardous Waste.

U.S. Environmental Protection Agency, VISITT 5.0 1996, where 3R is highlighted under the (1)Thermal Desorption, (2)Pyrolysis and (3)Off-gas Treatment.

U.S. EPA's Fifth Forum on Innovative Hazardous Waste Treatment Technologies: Domestic and International, Chicago, Illinois, May 3-5, 1994.

ADPA, American Defence Preparedness Association, Environmental Restoration Opportunities Conference, Munich, Germany, October 25-27, 1994.

Comco Martech AG., Switzerland, 1996 - 1998: chief engineer for environmental works in Hungary, whereas executing general contract based remediation works, such as for Hungarian Railway, MOL Hungarian Oil Company, Lehel Elektrolux. General contracted works:

Hungarian Railway Wood Preservation Works East Hungary: writing a tender including technology specification and detailed cost calculations, upon tender award writing a detailed juridical contract for the work, organization and integration of the work, financial management and administration of the work: complex soil and Activated Carbon ground water remediation technology design, site assessment, construction and execution of works. Project value: USD 600,000.-.

Hungarian Railway Wood Preservation Works West Hungary: writing a tender including technology specification and detailed cost calculations, upon tender award writing a detailed juridical contract for the work, organization and integration of the work, financial management and administration of the work: complex Activated Carbon ground water remediation technology design, site assessment, construction and execution of works. Project value: USD 425,000.-.

LEHEL ELEKTROLUX: recovery of illegally dumped 80,000 m³ hazardous waste, chlorinated hazardous waste landfill design, construction and management of landfills, technical supervision and start up the leach water treatment operational phase after finalization of the construction, financial and maladministration supervision. Total project value: USD 7,5 million.

Sensor - Batalas, UK-Hungary: ISO 14000 lead auditor workshop, no.: 97/11/916

ISO 14001 auditing the Hungarian Railway Real Estate Service

ISO 9001, NATO AQAP 110 auditing works and services

ZENON Systems Ltd. Canada, 1999: water treatment project management and marketing works.

Environment-orientated Sustainable Industrial Development in Central Europe During the European Union Integration Process: Expert Meeting and Workshop as a Preparatory Forum of Specific Project Development, Thursday 21st January 1999 Budapest, Hungary

Title: "Environment and Sustainable Development: Creation of New Industrial Employment by Global Market Distribution of Advanced Waste Recycling and Treatment Technologies"

Executive field manager of NATO project for soil remediation: NATO ref number 973720.

Project manager for 3R Multi Fuel Clean Coal project for the European Union, with participation of Universities, research institutes and multinational companies from seven EU

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countries (NNE5/363/2001, project value ECU 2,248,440). The goal is to develop Clean Coal technology by preventive pretreatment of the coal, for clean energy production in solid fuel power generation between 50 MW and 300 MW capacities.

1989 - **Terra Humana Clean Technology Development, Engineering and Manufacturing Ltd.** of Hungary, soil decontamination, ground water remediation, recycling of refuse agricultural waste materials and biomass utilization engineering company. Exclusive Hungarian distribution partner for Fairey Industrial Ceramics of UK. manufacturing of ceramic/activated carbon drinking water treatment equipment for hospitals, military field application and house hold use. Producer of "Edward Aqua Humana" ceramic/activated carbon microfilter.

Recent publications:

1. European Union CORDIS database: **EU FP5 NN5/363/2001 MULTI FUEL** "*Multi Fuel Operated Integrated Clean Energy Process: Thermal Desorption Recycle-Reduce-Reuse Technology*" 2002-2005 (coordinator and key technology designer) <http://cordis.europa.eu/>
2. European Union CORDIS database: **Food-2005-514082 PROTECTOR** "*Recycling and upgrading of bone meal for environmentally friendly crop protection and nutrition*" 2005-2008 (coordinator and key technology designer) <http://cordis.europa.eu/>
3. Someus, "**3R biotechnology integrated industrialized biochar production**" 2008 Conference of the International Biochar Initiative, BIOCHAR, SUSTAINABILITY AND SECURITY IN A CHANGING CLIMATE, Newcastle, United Kingdom, September 8-10, 2008, www.biochar-international.org
4. 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://www.orbit2008.de>
5. C Baum, P Leinweber, K Eckhardt, E Someus, M Halasz, "**Auswirkungen der Applikation von mit Trichoderma harzianum inokulierter Knochenkohle auf die mikrobielle Biomasse, Enzymaktivitäten und die Zusammensetzung der organischen Substanz des Bodens (Effects of the application of animal bone chaircoal inoculated with Trichoderma harzianum on the soil microbial biomass, enzyme activities and the composition of soil organic matter)**", German Community of Soil Science Conference in Osnabrueck, February 25, 2008,
6. J. 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.
7. 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.
8. 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, www.3ragrocarbon.com www.terrenum.net

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USA, University of Maryland, USA, United States Department of Energy.
www.awma.org/.

9. M Polgari, J Hein, M Toth, A Brukner-Wein, T Vigh, E Someus, M Halasz, L Biro, "**Genesis of a regionally extensive celadonic chert/ironstone bed overlying Upper Lias Manganese deposits**" (SED-2007-OM-176), Sedimentology, International Association of Sedimentologists.
10. 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, <http://www.matchmaking.at/feedseg/>
11. E Someus, "**Moving Towards Zero-Emission Plants**" June 20-22, 2005, Leptokarya Pieria Greece
12. International Symposium, <http://www.lignite.gr>, <http://www.lignite.gr/mt0ep/mt0ep.htm>
13. E Someus, "**The 3R Anthracite Clean Coal Technology**" CARBO 2/2006, Poland
14. E Someus, "**THE 3R ANTHRACITE CLEAN COAL TECHNOLOGY. Economical Conversion of Browncoal to Anthracite Type Clean Coal by Low Temperature Carbonization Pre-Treatment Process**" Original scientific paper, UDC: 662.641.66:662.612, BIBLIO: 0354-9836, 10 (2006), 3, 55-69. THERMAL SCIENCE:Vol. 10. (2006) No.3, pp.55-69.
15. 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. Web: https://www.novapublishers.com/catalog/product_info.php?products_id=8372
16. 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. <http://www.springerlink.com/content/4876u47123372264/>

Scientific co-operations in 2009

(in alphabetic order)

<u>BELGIUM</u>	Chemviron Carbon GmbH (CALGON CARBON CORPORATION) Nutrition Sciences N.V., Belgium
<u>CYPRUS</u>	SEAWAVE Fisheries Ltd. , Cyprus
<u>FRANCE</u>	INRA-LBE - French National Institute for Agricultural Research, France Lab. de Biologie et Génétique Moléculaire (de l'Inst. de Génétique et Microbiologie de l'Université Paris XI)
<u>GERMANY</u>	Fraunhofer Institute for Environmental, Safety-Energy Technology University of Rostock (Institute of Energy and Environmental Technology) University of Rostock (Institute of Soil Science and Plant Nutrition) Centre for Environmental Research (UFZ Centre for Environmental Research, Department of Chemical Ecotoxicology, Leipzig, Member of Helmholtz Association of National Research Centres) University of Hannover (Institute of Plant Diseases) Ruhr-Universität Bochum. Germany
<u>GREECE</u>	Aristotle University of Thessaloniki, (AUTH) Centre for Solid Fuels Technology and Applications (CSFTA)
<u>HUNGARY</u>	BUNGE Research & Development Centre for Vegetable Oils (BUNGE Corporation) University of Debrecen, Medical and Health Center, Faculty of Medicine, Dpt. of Human Genetics Biotechnological Research Center Szeged "Frédéric Joliot-Curie" National Research Institute for Radiobiology and Radiohygiene AGRICULTURAL OFFICE of the County Fejér Plant Protection & Soil Conservation Directorate, Hungary Arpad Agricultural Production Cooperative Plc. Hortobagy Fish farm Ltd.
<u>ISRAEL</u>	MIGAL Galilee Technologies Northern Agro Ltd.
<u>ITALY</u>	AGROINNOVA (Centre of Competence for the Innovation in the Agro-environmental Sector, Torino) University of Naples Federico II (Dipartimento di Scienze del Suolo, della Pianta, dell'Ambiente e delle Produzioni Animali)UNINA-DISSPAPA
<u>LATVIA</u>	Latvian State Institute of Wood Chemistry, LSIWC University of Latvia, Research Institute of Microbiology and Biotechnology
<u>LUXEMBURG</u>	Landwirtschaft Energie Umwelt sarl, Luxemburg
<u>THE NETHERLANDS</u>	Wageningen University and Research Centre. Plant Research International B.V. WUR-PRI Wageningen University and Research Centre, Agrotechnology and Food Innovations BV SONAC Vuren B.V. [a SOBEL company] ECN Netherlands Energy Research Foundation TNO-MEP TNO - The Netherlands Organisation for Applied Scientific Research, Microbial Production www.3ragrocarbon.com www.terrenum.net

Processes Group.

SCHOTHORST Feed Research B.V., The Netherlands

POLAND

Research Institute of Pomology and Floriculture

PORTUGAL

ICETA - University of Porto, Faculty of Pharmacy, Laboratory of Bromatology and the Laboratory of Pharmacognosy, Portugal

SPAIN

CSIC-CEBAS Dpt. Soil and Water Conservation Campus Universitario de Espinardo, Murcia

CSIC-CINDOC Centro de Información y Documentación Científica

University of Granada

U.K.

Fairey Industrial Ceramics Ltd.

The University of Reading (Soil Science, School of Human and Environmental Sciences)

Brimac Carbon Services Ltd.

Sutcliffe Speakman Carbon Ltd. - Waterlink (part of CALGON CARBON Corp.)

MCS Ltd.

UNITED NATIONS

APCTT Asian-Pacific Center for Technology Transfer

USA

University of Maryland (Dept. Mechanical Engineering)