

<b>PAUL STEVENSON</b> <b>Business Energy/ Carbon Consultant</b>	
<b>Telephone</b>	Tel = +44 (0)1235 762755 Mobile = +44 (0)7758 647492
<b>Email</b>	wantagepaul@sky.com
<b>Home base</b>	Wantage, Oxfordshire, UK
<b>Date of birth</b>	13 November 1957
<b>Nationality</b>	British
<b>Employment summary</b>	2009-date: Larkdown Environmental Ltd - independent consultant 2008-09: RPS - Principal Consultant/ Director of Energy Technology 1993-2008: AEA Energy & Environment - Business Energy Consultant 1987-92: Borax Research – Glass Lab Manager and Technical Services 1983-86: Redland Technology – senior scientist: ceramics & metallurgy 1980-82: Ever Ready – Batteries RD&D scientist
<b>Qualifications</b>	<ul style="list-style-type: none"> <li>• B.Sc.(hons): Materials Science. Sheffield University (1977-80)</li> <li>• Fellow of Energy Institute (FEI)</li> <li>• ISO50001 Lead assessor</li> <li>• Chartered Engineer (C.Eng), Chartered Energy Engineer</li> <li>• UK Register of Professional Energy Consultants (RPEC)</li> <li>• ESOS Lead Assessor and energy auditor</li> <li>• Accredited Carbon Trust Standards Assessor: (1) Energy/CO2, (2) water, (3) waste</li> </ul>
<b>Languages</b>	Mother tongue: English Moderate: German, French and Spanish Very basic: Romanian and Mandarin Chinese
<ul style="list-style-type: none"> <li>• Over 37 years project management experience, 25 in energy/ sustainability Experience in handling small teams and project budgets.</li> <li>• Excellent communication skills, both written and verbal.                             <ul style="list-style-type: none"> <li>➢ Written 40 reports, papers and articles for Trade Magazines and Scientific Press</li> <li>➢ Presented 20(+) papers at industry seminars and conferences.</li> <li>➢ Written and presented training material for Institutes and Donor Organisations</li> </ul> </li> <li>• Strong technical/ commercial knowledge of key technologies and techniques across industrial and commercial sectors:                             <ul style="list-style-type: none"> <li>➢ Excellent understanding of all energy-intense/ high-temperature industries: steel, aluminium, non-ferrous metals, foundries, glass, ceramics, bricks, cement, etc</li> <li>➢ Very good understanding of many process industries and service sectors: chemicals, food &amp; drink, paper &amp; pulp, engineering, data centres and offices/ buildings</li> </ul> </li> <li>• Good track record dealing with Government bodies and senior industrialists:                             <ul style="list-style-type: none"> <li>➢ 15 years’ experience working on UK Government energy-efficiency programmes, low-carbon legislation and other drivers/ interventions;</li> <li>➢ Co-developed National Energy-Efficiency Action Plans for Iran and Georgia.</li> </ul> </li> <li>• Energy management protocols and standards:                             <ul style="list-style-type: none"> <li>➢ ISO50001/ EN16001 (Energy management systems): BSI trained Lead Assessor. Introduced ISO50001 into UK Datacentres and Russian steel site;</li> <li>➢ ISO50002/ EN16247 (Energy Auditing): have conducted nearly 200 site audits:                                     <ul style="list-style-type: none"> <li>- UK ESOS Lead Assessor (EU EED Article 8);</li> </ul> </li> </ul> </li> </ul>	



- Prepared Industry energy audit protocol for Kazakh Government;
  - ISO14064/ PAS2050: (GHG protocol) Carbon Trust standard assessor/ certifier.
- Energy and Carbon Accounting:
  - Carbon foot-printing: assessing both direct and “hidden” CO2 plus other GHGs;
  - Carbon Trust Standard: 25 CTS certifications/ re-certs to ISO14064 protocol;
  - Product mix and output algorithms for tracking energy performance over time.
- Energy/ resource/ waste minimisation surveys and audits:
  - Approx. 250 energy audits of industrial and commercial organisations throughout the World: UK, China, Iran, Russia, Romania, Germany, Qatar, South Africa and elsewhere;
  - Approx. 15 detailed assessments of specific EE or low-C investment opportunities, including financial appraisal of bankable opportunities;
  - UK Climate Change Agreement (CCA) audits of 25 Sector Associations and 80 sites, covering: robustness of energy, CO2 and activity data, reviewing performance against target and (where necessary) adjustments for product mix or process modifications;
  - Introduced formal environmental management system into large, steel company, for ISO14001 certification, with focus on energy and graphite electrodes;
  - Water, energy and resource-efficiency audits of metals, food & drink and paper.
- Renewable and low-carbon energy technologies:
  - Ofgem auditor for renewable heat incentive (RHI) biomass facilities;
  - Financial analysis of solar PV arrays in UK and South Africa. Have own solar PV array.
  - Heat “mapping” for 5 planned Energy Recovery Facilities: exploring potential for local heat consumers and anchor loads to make them CHP units;
  - Industrial waste-heat recovery studies for UK Government;
  - Familiar with hydro, wind, heat-pumps and electrical & thermal energy storage.
- Considerable experience in emerging economies:
  - Central & East Europe: Russia, Romania, Croatia, Serbia, Georgia, Ukraine, Albania, Moldova & Kosova.
  - Others: China, Kazakhstan, Mongolia, Turkey, Iran, Qatar, South Africa, Mexico.
- Performance monitoring:
  - Developed performance indicators for National Energy Action Plans;
  - Mid-term assessment of performance indicators against targets for a national ESCO investment programme.
- Training: prepared and delivered training material for:
  - Energy management systems (EnMS) and practices;
  - Energy/ carbon “accounting”, including performance and product mix algorithms;
  - Benchmarking: internal and inter-company and against “best practice”;
  - Energy audit methodology. Energy efficiency technologies and techniques;
  - Motors & drives: wrote Energy Institute’s Level 2 (EI L2) training module;
  - Water: water efficiency, thermal & electrical energy associated with water (EI L2);
  - Heat Recovery technologies and techniques (EI L3);
  - Financial appraisal, including full and marginal payback, NPV, IRR, ROI, etc

**CAREER HISTORY/ SELECTED PROJECTS**

**1. Larkdown Environmental (independent consultant): 2009-date**

Dates	May 2009 – date
Location	UK
Company	Larkdown Environment
Position	<b>UK &amp; EU: Energy, Carbon and Water Specialist, including ESOS</b>
Description	<p>EE, low-C and legislation/ reporting activities, including:</p> <ol style="list-style-type: none"> <li>2015-19: ESOS Lead Assessor (Article 8 of EU EE Directive 2012/27/EU) <ul style="list-style-type: none"> <li>➤ Phase 1: completed for 9 x organisations, inc. 30 site energy-audits;</li> <li>➤ Phase 2: completed for 11 x organisations, inc. 36 site energy-audits</li> </ul> </li> <li>2019: Ofgem auditor for renewable heat incentive biomass facilities (x 16)</li> <li>2017-18: EU's DG CLIMA: 2050 vision and novel / low-carbon technology opportunities for key industrial sectors: Main focus: (1) Iron &amp; steel, (2) non-ferrous metals. Also covered: (3) Ceramics, (4) Glass, (5) Refineries.</li> <li>2016-19: Wrote &amp; presented Energy Institute's Level 2 &amp; 3 Energy Manager training: (1) Motors &amp; drives, (2) Water &amp; Energy, (3) Heat recovery</li> <li>2013-17: Supported 2 x UK (and 1 x Russian) organisations towards formal energy-management system (EnMS) or ISO50001 certification.</li> <li>2017: Due-diligence for Scottish Enterprise for new furnace grant.</li> <li>2009-2016: Carbon Trust Standard Certification. Assisted cert/ re-cert of 25 organisations, typically £5-10M/y energy, to ISO14064/ PAS2050 protocol, including EnMS review.</li> <li>2014-15: CT Water Standard and Waste standard: 2 x Assisted certification</li> <li>2011-13: CRC support to 3 x Organisations</li> <li>2009-10: 15 x short energy surveys/ audits: industry &amp; commercial</li> </ol>

Dates:	Sep 2014 – date
Location	Georgia
Company	Larkdown Environmental, via ECO Consulting
Position	International Industry Expert
Description	<ol style="list-style-type: none"> <li>2014-15: EBRD supported programme for Georgian “National Energy Efficiency Action Plan” (NEEAP). A co-ordinated national plan for energy/ CO2 reductions (over BAU scenario) to 2030. Focus on industry energy base line, major sectors and players, opportunities for EE, challenging but realistic targets and Government interventions to drive forward.</li> <li>2017-18: establishing EE Law to cover critical areas, including: <ul style="list-style-type: none"> <li>(1) Mandatory Energy Auditing of “large” organisations (EU EED Article 8)</li> <li>(2) Voluntary Negotiated Agreements with energy-intense industry</li> </ul> </li> <li>2019-date: “Energy &amp; Environmental assessment of large steel site”: Critical analysis of performance against standard and best-available technologies for steel melting and rolling mill, as a prelude to investment(s) in EAF/LF/ oxygen plant and scrap preparation, plus explored and assessed other energy &amp; resource saving opportunities. Client =EBRD</li> </ol>

Dates	Oct 2014 - date
Location	Short international activities:.
Company	Larkdown Env't, via LDK (Greece), Integration (Germany) and others.
Position	<b>Energy, Water and Resource specialist</b>
Description	<p>Short activities for EBRD, GIZ and others, including:</p> <ol style="list-style-type: none"> <li>Energy/ water and resource efficiency investments for 2 x soft-drink sites</li> <li>Team Leader: EE &amp; process upgrade opportunity for recycled paper</li> <li>Trainer for 8 x “Intermediate” Industry or Buildings EE programme (typically 3-5 days each)</li> <li>Training and EE Guidebook for Mongolian Energy Managers and Auditors</li> <li>Energy audit and raising employee awareness at Qatar refinery.</li> </ol>

## Larkdown Environmental Ltd

Curriculum Vitae – Paul Stevenson (March 2020)

	Countries include: Albania, Kazakhstan, Kosovo, Moldova, Mongolia, Palestine, Qatar, Romania, Serbia and Turkey
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Dates:	June 2013 – June 2016
Location	UK
Company	Larkdown Env, via Ecofys (on behalf of DECC/ BEIS)
Position	<b>High-Temp Industry heat and heat-recovery expert</b>
Description	<ol style="list-style-type: none"> <li>2013: Potential for additional “reject” (waste) heat recovery from energy-intensive industrial sectors in UK, considering “all technically possible” and “all cost-effective” scenarios. Focus on: cement, ceramics, glass, power-generators and food &amp; drink. Activities included dialogue with Sector Association and leading organisations to better understand key barriers to additional reject heat-recovery. Co-author for DECC/ BEIS “The potential for recovering and using surplus heat from industry” report, 20142016-17:</li> <li>DECC’s 2050 decarbonisation Road-Maps, stage 2: <ol style="list-style-type: none"> <li>Electrification of heat, including assessment of technology readiness;</li> <li>Thermal clustering, including around low-C energy sources</li> <li>Carbon Capture Utilisation or Sequestration,</li> <li>Re-usable heat support programme</li> </ol> </li> </ol>

Dates	Jan – Oct 2014
Location	Kazakhstan
Company	Larkdown Environmental, via Pierce Atwood (USA) and Tetra Tech
Position	<b>Energy Audit: protocol and training</b>
Description	<ol style="list-style-type: none"> <li>EBRD-funded “Kazakhstan Resource Efficiency Transformation (ResET) Programme”: assist the Kazak Government improve mandatory energy reporting and auditing protocols. As peripheral activities, also developed process for better defining “large” energy consumers, pre-visit questionnaires for characterizing site, and system for regulating National auditor expertise.</li> <li>ResET Training: Audit and EnMS training for: Kazakh State Energy Inspectors, and 2 x Akimat (Oblast) Regions.</li> <li>USAID KCCMP: Express Audit training for young Energy Auditors: 2 day formal classroom style training followed by series of “on-the-job” shadow training of 2 x industrial facilities</li> </ol>

Dates:	May 2012 – Jul 2013
Location	South Africa (RSA)
Company	Larkdown Environmental, via GFA (Consulting)
Position	<b>International Energy Expert</b>
Description	<p>Industry Energy Expert for “Green Energy Efficiency Fund” (GEEF) – funded by KfW and administered through RSA International Development Corporation:</p> <ul style="list-style-type: none"> <li>Identifying SA industry sectors that offer potential for EE, renewable energy or heat recovery. Liaising, training and support to Sector Associations;</li> <li>Walk-through energy-assessments for EE and RE investment opportunities, particularly those offering large electricity savings. Over 25 Organisations visited/ surveyed;</li> <li>Follow-up detailed assessments of 7 sites, including: CHP, heat recovery, EE furnaces, reduced fugitive refrigerant-gas losses.</li> </ul>

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Curriculum Vitae – Paul Stevenson (March 2020)

Dates	Dec 2009 – Sep 2010
Location	Iran
Company	Larkdown Env, via UNIDO
Position	<b>International Energy Expert</b>
Description	<p>Industrial Energy Efficiency programme for the Iranian “Big 5” Sectors (Steel, Cement, Oil refineries, Petrochemicals and Bricks), with a view to developing a National Energy programme to be funded by UNIDO/ GEF and Iranian Fuel Conservation Organization.</p> <p>Our team developed an outline programme to accelerate uptake of EE technologies and techniques across Iran, and to track performance improvement across disparate sectors over time. Long-term cumulative target savings were 1,030 TWh and 292 Mt CO<sub>2</sub>.</p> <p>Several strands have since been implemented by local team.</p>

Dates:	Aug 2010 – May 2013
Location	Russia
Company	Larkdown Env, via ICF International
Position	<b>High-Temp Industry Energy Expert</b>
Description	<ol style="list-style-type: none"> <li>2012-13: Core Team member for the “Energy Management System (EnMS) and Systems Optimization (SO) Capacity Building for Large Industry”, EBRD/ UNIDO programme, offering direct support plus tailored training: <ul style="list-style-type: none"> <li>➤ Developed training material for 10 x EnMS and 7 x SO Modules.</li> <li>➤ Training: 2 x 4-day EnMS/ ISO50001 courses for large industrial site.</li> <li>➤ Site-visits then developed work plans for 4 x energy-intense Enterprises, comprising: (1) Feasibility studies for process improvements, (2) bespoke support, including investment opportunities for EE/ low-C technologies</li> </ul> </li> <li>2010: “Energy Efficiency Indicators in Russia”. Devised EE indicators for tracking energy performance across Russian sectors / sub-sectors, to disaggregated “headline” economic indicators (e.g. tCO<sub>2</sub>/\$1 million) and track real improvements over time. The system was designed to harmonize with indicators already developed and used by EU/ International Organizations: IEA, EU (DG TREN &amp; ENER), EC-JRC and Odyssee.</li> </ol>

Dates	Jun – Dec 2009
Location	Ukraine & Moldova
Company	Larkdown Env, via ICF International
Position	<b>Low-carbon Expert and follow-up proposals</b>
Description	<p>EU Eurasian Steppe Sustainable Economic development.</p> <p>Covering: land-use management and planning, carbon sequestration in soil through land-use change, expanding renewable energy opportunities, in particular: biomass and anaerobic digestion.</p> <p>Estimated 20 Mt CO<sub>2</sub> savings through sequestration or localized RE.</p>

Dates	Jun 2009 – Dec 2011
Location	UK
Company	Larkdown Env, via several major Utility companies
Position	<b>Energy from waste heat mapping</b>
Description	<p>Heat map projects for 5 x Energy from Waste (EFW) schemes:</p> <ul style="list-style-type: none"> <li>• Comparison of overall GHG footprint of EFW v alternative disposal.</li> <li>• Exploring realistic opportunities for local heat off-takes from EFW CHP unit, including dialogue with selected, large potential heat-users</li> <li>• Assessing impact from different heat off-takes, including impact from Renewable Heat incentive (RHI)</li> <li>• Assessing revenue and costs at different heat off-takes</li> </ul>

**2. AEA Technology (Energy & Environment) 1993 – 2008**

Dates	Dec 1993 – Mar 2002
Location	UK
Company	ETSU – part of AEA Technology
Position	<b>Sector Manager</b>
Description	<p>Energy Efficiency Best Practice programme, later Action Energy Programme. High Temperature Sector Manager, covering:</p> <ul style="list-style-type: none"> <li>(1) Foundries: 1993-2001;</li> <li>(2) Glass and Fibre glass: 1994-2002;</li> <li>(3) Non-Ferrous Metals, Iron &amp; Steel and Ceramics (various times)</li> </ul> <p>Activities included:</p> <ul style="list-style-type: none"> <li>• Prepare Sector Energy strategy, in collaboration with Sector Association;</li> <li>• Benchmark Energy consumption patterns across sector – including major energy-consumption centres. Identifying norms and best practice;</li> <li>• Produce guidance documentation on good (EE) operating practice;</li> <li>• Industrial case studies of new or good-practice technologies or techniques</li> <li>• Support R&amp;D projects attract Government support, then managing projects;</li> <li>• Providing specific advice to Organisations on EE/ low carbon technologies.</li> <li>• Providing training, workshops, articles in trade magazines, talks, etc</li> </ul>

Dates	Mar 1997 – Apr 2008
Location	UK and elsewhere
Company	AEA Technology
Position	<b>Business Consultant: Energy mapping / databases</b>
Description	<p>Regional Energy supply and demand mapping/ Sankey flow patterns for:</p> <ul style="list-style-type: none"> <li>• Scotland (Base Year 2002 and back-comparison with 1990/1 data);</li> <li>• Wales (2002 &amp; 2004 CO2 and greenhouse gas analyses, plus Wales Industry Energy database),</li> <li>• Northern Ireland (2002, plus NI Industry Energy database),</li> <li>• Ireland (including estimation of thermal/ non-thermal energy split);and</li> <li>• Liaoning (China, as part of LIEP study – see below)</li> </ul>

Dates	Mar 2001 – Apr 2008
Location	UK
Company	AEA Technology
Position	<b>Business consultant: Government climate change initiatives</b>
Description	<ul style="list-style-type: none"> <li>• Advisor/ Auditor for UK Government’s Climate Change Agreements: Conducted 80 site audits and 25 sector association audits, across all industries. Typical CCA audit included industry facility visit with follow-up exploration to assess robustness of data collection and manipulation; review process eligibility and technical linkage; develop algorithms for output/ product mix variation, and advise on EE opportunities.</li> <li>• DEFRA: EU ETS sector expansion under National Allocation plan.</li> <li>• Direct Consultancy Support to Private Sector Companies, including: GSK, Cargills, Alcan, Anglesey Aluminium, Rockwool, Superglass, Pilkington Brothers, and others</li> </ul>

Dates	Aug 2006 – Apr 2008
Location	Croatia
Company	World Bank (through AEAT)
Position	<b>Team Leader/ Monitoring Expert</b>
Description	<ul style="list-style-type: none"> <li>• Monitoring and Evaluation of HEP ESCO activities (World Bank/ GEF)</li> <li>• M&amp;E of HEP ESCO/ HBOR programme, including reviewing base year indicators/ targets and mid-term performance review.</li> </ul>

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Curriculum Vitae – Paul Stevenson (March 2020)

Dates	1999-2008
Location	Russia
Company	EBRD / EU / Tacis / DFID (through AEAT)
Position	<b>Energy Expert</b>
Description	<ul style="list-style-type: none"> <li>• 2005-08: Energy Intense Enterprises in the Urals (EBRD). Financial appraisal model of EE/ waste-min opportunities for Russian Enterprises.</li> <li>• 2006: Ekaterinburg - Training in Business Models, Energy Management Systems, ESCOs and Financial Appraisal (British Council). Prepared 2 x 1-2 day Training Modules.</li> <li>• 2007: Energy Intense Market Sectors – EBRD. <ul style="list-style-type: none"> <li>➢ In-depth study of nature, size, key players and cost-effective low-carbon and environmental opportunities for Russian Steel sector. Smaller study for non-ferrous metals.</li> <li>➢ Co-designed model for integrated Russian steel plant for financial appraisal and assessment of EE/ waste min technologies and techniques.</li> </ul> </li> <li>• 2007: Benchmarking Training for Russia IFC Team. Organised then ran 2-day workshop on Energy Benchmarking.</li> <li>• 1999: Tacis: scoping energy saving opportunity for Steel Mill</li> </ul>

Dates	Mar 1997 – Jun 1999
Location	Romania
Company	DFID (through AEAT)
Position	<b>Energy Manager / EE Expert</b>
Description	<p>1997–99: Cleaner Production in Steel Manufacture (UK DFID). Part of team introducing ISO14001 Environmental Management accreditation, requiring 5 visits, typically 2-3 weeks. Introduced and developed energy management system for plant, including metering, monitoring and targeting, followed by implementation of no/low cost opportunities, with a view to larger investment opportunities.</p>

Dates	Jul 2000 – Mar 2004
Location	China
Company	EU (whilst at AEAT)
Position	<b>Industry Energy Expert</b>
Description	<ul style="list-style-type: none"> <li>• 2000–04: Liaoning Integrated Environmental Programme (LIEP). EU funded multi-task programme to address 7 different environmental strands in NE China. My role was Industry Energy Expert. Activity comprised five in country visits/ tours, each of 4-6-week duration: <ul style="list-style-type: none"> <li>➢ Industry site visits (x14): identified large potential savings from no/low cost activities and investment opportunities. Some progress made to developing EMS three selected sites for EMS.</li> <li>➢ Final report recommended that a Provincial Energy Strategy Group be established to act as a focal point for benchmarking and taking forward various strands of EE in the province.</li> </ul> </li> <li>• 2000: SECIDIC: Assisted in developing National energy strategy for steel</li> </ul>

**3. Borax Group (part of RTZ – borate minerals and chemicals) 1987 - 92**

Position	<b>Senior Scientist/ Team Leader</b>
Description	<ul style="list-style-type: none"> <li>• Technical advice and service to customers:             <ul style="list-style-type: none"> <li>➢ Designing and managing short programmes of work.</li> <li>➢ Contact and visits to customers throughout the World.</li> </ul> </li> <li>• Technical market analyses, such as:             <ul style="list-style-type: none"> <li>➢ strength/ weakness of Group v. competitor's products</li> <li>➢ impact from technology changes on core business.</li> </ul> </li> <li>• Developing novel products/ new materials better tailored to customer requirements. Activities often required 1-2 weeks Missions to Europe, USA and Mexico.</li> <li>• Running the high temperature laboratory, with 4 staff.</li> </ul>

**4. Redland Technology (Building products) 1983 –1986**

Position	<b>Technical Officer/ metallurgist</b>
Description	<ul style="list-style-type: none"> <li>• Product development (e.g. anti-scum and efflorescence on bricks)</li> <li>• Cost-cutting exercises (e.g. reduced drying times, industrial by-products as raw materials for bricks).</li> <li>• New building products, inc alternatives to plasterboard.</li> <li>• Metallurgy (hard metals for cement extrusion, nail plate corrosion studies).</li> </ul>

**5. Ever Ready (batteries) 1980 - 82**

Position	<b>Scientist / metallurgist</b>
Description	Materials selection, testing, cost-cutting and trouble shooting.

**SUMMARY OF INTERNATIONAL EXPERIENCE**

<i>Country</i>	<i>Date: from (month/year) to (month/year)</i>	<i>Missions/ trips</i>
Russia	Jun 1999 – May 2013	13
Romania	Mar 1997 – Jun 1999 and Nov 2014	6
South Africa	Jun 2012 –Jul 2013	5
Kazakhstan	Jan 2014 - Sep 2017	6
China	July 2000 – June 2004	5
Iran	Jan – June 2010	3
Ukraine	Jun – Dec 2009	3
Moldova	Oct 2009 – Dec 2016	3
Croatia	Aug 2006 – Apr 2008	3
USA & Mexico	1983-1986	3
Georgia	Sep 2015 - Nov 2019	3
Albania	May 2018	1
Turkey	Oct 2014	1
Kosovo	Jan 2015	1
Serbia	Nov 2014	1
Mongolia	Nov 2018	1
Palestine	Nov 2019	1
Qatar	Jan 2020	1



## **SELECTION OF PUBLICATIONS AND PRESENTATIONS**

- “Borax in Glazes and Ceramics”, Institute of Ceramics/Society of Glass , London, 1989.
- “Boric Oxide in Container Glasses”, Glass, Vol 68, No.12, 1991,p 500.
- “Borax in Container Glass Formulations”, Glass Mach. Plant & Acc., V, No.2, 1992, p41.
- “Borates in the Vitreous Industry”, Glass Prod. Tech. Int, 1992, p31.
- “Electron Microprobe Techniques for Glaze Analysis”, XVI International Glass Conf, Madrid, 1992
- “Effect of Boric Oxide on Viscosity and Durability Properties of Glass Wool”, Glass, 1993, p199.
- “Use of Borax in Glazes and Recent Developments”, Ind. Ceramic & Verr., 887, 1993, p720.
- “Pentahydrate Borax as a Scum Prevention Additive to Bricks”, publication for dissemination to the brick industry.
- US Patent 5,100,842 "Glass Composition for Microspheres", (also GB Patent 900924).
- “Key Factors Affecting Energy Consumption in Foundries”, BCIRA Conference, Warwick, 1994.
- “Energy Efficiency - Managing to Control Your Losses”, Castcon Congress, Glasgow, 1994.
- “Energy Efficiency - Casting Ahead”, Foundry Trade Journal, 1994.
- “Scrap and Yield - An Overview”, The Foundryman, 1995, p 178.
- “Glass Energy Efficiency - the Way Forward”, Glass EnergyConf, Doncaster, 1995.
- “Glass Pollution Control & Energy Efficiency”, UK Glass Environment Meet, Sheffield, 1995
- “Energy Efficient Foundries Help the Environment”, Foundry Newsletter, 1995.
- “Energy Savings for the 21st Century”, Foundry Trade Journal, 1996, p39.
- “The Cupola - an Energy Efficient Melting Furnace for Iron”, IBF Conf. on Advances in Modern Efficient Cupolas, Alvechurch, 1996.
- “Slaves to Tradition”, Foundry Newsletter, 1996.
- “Iron Melting - A Bit of a Pig?” Foundry Newsletter, 1996.
- “Metal Quality and Reliability - the Life Cycle Arguments”, IBF Non-Ferrous Foundries Conf., Sutton Coldfield, 1996.
- “The Future may be Bright, but it Needn’t Glow Orange”, Glass, 1996.
- “A Strategic Approach to Energy Efficiency in Glass Making” Glass Newsletter, 1996.
- “Energy Efficiency: Complicated Arithmetic but Positive Answers”, Foundry Trade Journal, 1997.
- “Metal Quality and Reliability: Cost Savings and Environmental Benefits”, The Foundryman, 1997.
- “Foundries - Focus on Quality and Yield”, FMJ Focus on High Temperature Energy Efficiency, 1997.
- “Energy Efficiency in Glass - a Lot of Hot Air?”, FMJ Focus on High Temperature EE, 1997.
- “Compressed Air - The Cinderella Energy Centre” Foundry News, 1997.
- “Compressed Air Savings”, Glass Newsletter, 1997.
- “Are You Using Too Much Juice?”, Foundry Trade Journal, 1997.
- “Options for Cupola Operators”, The Foundryman, 1997.
- “Control Yourself”, Glass Newsletter, 1997.
- “The UK Container Industry: Good Savings, Scope for Improvement”, Glass Prod. Tech. 1998.
- “Energy Savings in Foundries” -paper for the CDC Member’s Conf, Sheffield, 1998.
- “Cost Savings in Glass - Just a Waste of Energy?” paper for the Society of Glass AGM, Accrington, 1998.
- “Effective Energy Management Cuts Costs”, Glass, 1998.
- “Efficient Melting and Handling of Aluminium in Foundries” Alfred Conf., Stratford, 1998.
- “Energy Savings – What can we agree on?” International Castings Conf, Sheffield, 1999.
- “Glass Essentials, Utilities & Services” Energy Savings Glass Seminar, Leeds, 1999.

## Larkdown Environmental Ltd

Curriculum Vitae – Paul Stevenson (March 2020)

- “Energy Efficiency Manual – for Romanian steel”, 1999.
- “Case Studies at Industria Sarmei steelworks, Romania”, 1999.
- “Energy Use in Foundries”, Module for MSc course on “Energy Technology and Economics” City University, London, 2000.
- “Energy Efficiency & Environmental Control – you can have your cake and eat it”, Glass, Nov 2001. *Similar article also used in “Glass Technology” magazine.*
- “Northern Ireland Energy Study: 2002”, Carbon Trust publication (CT/2003/10), 2003.  
<http://www.carbontrust.co.uk/Publications/publicationdetail.htm?productid=CT-2003-10&metaNoCache=1>
- “Non-Ferrous Alliance: Things-on-offer from UK Government”, NFA AGM, West Bromwich, 2004.
- “Wales CO2 and other GHG Emissions: Base Year 2004”, Carbon Trust publication.  
<http://www.carbontrust.co.uk/Publications/publicationdetail.htm?productid=CTC725&metaNoCache=1>  
*Similar publications for BY 2002 (Aug 2005) and BY 2003 (July 2006), both superseded*
- “Scottish Energy Study - Volume 1 - Energy in Scotland, Supply and Demand”  
<http://www.scottishexecutive.gov.uk/Publications/2006/01/19092748/0>; Jan 2006
- “Scottish Energy Study - Volume 2 - A Changing Picture: Comparison of 2002 Energy Study findings with an earlier study using 1990 data”  
<http://www.scottishexecutive.gov.uk/Publications/2006/01/19093058/0>; Jan 2006
- “Advanced metering for SMEs: CO2 and cost savings” co-author for Carbon Trust publication, 2007.  
<http://www.carbontrust.co.uk/publications/publicationdetail?productid=CTC713>
- “Energy End-Use in Ireland” report for SEI, March 2008 (in association with Bryne O’Clerigh)  
[http://www.sei.ie/Publications/Statistics\\_Publications/EPSSU\\_Publications/Commissioned\\_Research/Commissioned\\_Research.html](http://www.sei.ie/Publications/Statistics_Publications/EPSSU_Publications/Commissioned_Research/Commissioned_Research.html)
- “Potential for Solid Recovered Fuel (SRF) utilisation and in CHP applications for waste PFI procurements”, 5 x Regional reports for DEFRA WIDP, Jan 2009  
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