



SPINNING OUT RESEARCH BASED BUSINESSES

Issue 3 July 2003

New appointee to Knowledge Starts Board announced



Dr Chris King
Managing Director of Fluent
Europe Limited

Knowledge Starts has a new board member. Dr Chris King, Managing Director of Sheffield-based software company Fluent Europe Limited and sub-committee board member of Yorkshire Forward, has joined to further bolster the team.

Dr King brings to the board a wealth of experience gained through his work in both

research-orientated commercial companies and academia. His career began with the Royal Navy where he spent three years as an Instructor Lieutenant at Air Engineering School. He left the

Navy to move in to academia, gaining his PhD and conducting postdoctoral research, before taking up an engineering lecturing post and chairing the IT Working Party at Durham University. He subsequently moved into industry, working in a series of high-profile positions including Project Manager for the Clean Coal Power Generation Group, and European Director of Ricardo Airflow Sciences Corporation. In 1996 Dr King was appointed as Consulting Manager at Fluent Europe Limited, prior to progressing to his present position as Managing Director.

Fluent is the world leader in Computational Fluid Dynamics (CFD) software and services. The precursor to Fluent's current software code was first developed by researchers at Sheffield University around 20 years ago, providing an example of how the city's two universities can stimulate successful commercial enterprises.

Visit to Pittsburgh May 2003

In May a small delegation from Sheffield, including representatives from the University of Sheffield, the Local Authority, the Chamber of Commerce and Industry and Sheffield First for Investment, visited Pittsburgh to gather information on the US experience in spin-out activity and technology transfer from the Universities and its effect on local economic development and the strengthening of clusters in a city environment. The visit focussed on three Universities in particular, University of Pittsburgh, Carnegie Mellon and Penn State.

One of the first appointments was with the Pittsburgh Technology Council. This organisation appears to be a hybrid equivalent of our Chamber of Commerce, Knowledge Starts project and Business Link, but run as a non-profit, private sector dominated organisation. It has 1500 private sector companies split into an IT, advanced manufacturing or bioscience focus. It has a small business investment programme, runs a number of programmes with the Universities aimed at technology transfer and graduate retention, and produces an annual State of the Industry report for Pittsburgh which assesses the health of the emerging three clusters.

A highlight was a discussion with Gary Weber, Director of Technology Transfer and Tony Warren, Clinical Professor of entrepreneurship at Penn State University. The University has a well-defined system of

spinout and licencing but there is no local market in spin-out financing and they therefore rely on two options:

- 1) bringing in the experts from Pittsburgh and Philadelphia as and when needed and
- 2) the clinical professorship provides a role 'advising' a local, less sophisticated group of investors. The University sees value in providing this service since fewer 'burnt' local investors benefits all. For Knowledge Starts, the visit helped confirm a belief that Sheffield is moving in the right direction, but there is work to do on developing a local venture capital market.



DESTINY STAR LIMITED AWARDED £90,000

Only 2 months ago a recent University of Sheffield undergraduate spin out company, Destiny Star, looked destined to leave Sheffield and move to Manchester, taking existing jobs and huge potential for growth, with it.

Agencies in Manchester spotted the software company's potential and were able to offer a substantial grant to tempt Destiny Star to the other side of the Pennines. Fortunately, Business Link South Yorkshire, a key partner in Knowledge Starts, was quick to react. Following a presentation to the Independent Business Panel by Michael Wilson, Destiny Star's founder, they quickly confirmed an award of £90,000.

Business Link's prompt action has ensured this company remains in Sheffield, as will 12 new jobs in the short term, growing to 40 employees within 3 years.

The founders of Destiny Star have designed a modular product range to address the problems of internet-based computer gaming and other online services.

To find out more about Destiny Star, visit their website www.destinystar.com

THE UNIVERSITY OF SHEFFIELD



The University of Sheffield's Centre for Cement and Concrete was formed in 1993 and has over 60 active researchers and about £1m annual research grant income. Much of the earlier fundamental research is now at a stage where it can be commercialised and several spin-out companies have recently been formed to bring some of the emerging technologies to market.

Conteque Limited

Conteque Limited is a company set-up to exploit several patented technologies developed at the Centre for Cement and Concrete in the area of novel reinforcement systems for structural concrete.

Shearband is one such reinforcement system for resisting punching shear in concrete floor slabs. Manufactured from thin elongated metal strip it can be placed on top of all other reinforcement with minimal loss of cover. It is currently being exploited by Abcot Inc in North America where it is rapidly becoming the punching shear system of choice due to its superior technical capability and lower cost compared with other available systems.

External Lateral Confinement of Concrete is another patented technology which enables concrete elements such as columns

to be strengthened by using external prestressed lateral reinforcement. This can be achieved either through metal straps, or advanced composite materials pre-tensioned by expansive grouts. The greatest potential uses for this technology are for seismic and general strengthening and for providing greater impact resistance to concrete columns subjected to vehicle impact.

Fibre Reinforced Polymer (FRP) reinforcement bars represent yet another exciting opportunity. Developed as a replacement for steel reinforcement in aggressive environments in which durability is a major concern, the use of these bars permits much lighter and more durable reinforced concrete products to be produced.

Further information from Dr Kypros Pilakoutas at:
k.pilakoutas@sheffield.ac.uk
http://www.shef.ac.uk/conteque/



Shearband being installed

Material State Limited

Material State Limited is a company that specialises in providing advanced analytical solutions to complex structural mechanics problems. Finite Element (FE) analysis is a well-established modelling tool widely used in industry for solving difficult analytical problems. However, such FE models are only as good as the constitutive material models contained within them, and this is MSL's unique capability. Based on the results of material tests on a new £1m experimental facility, the internationally leading research team at the University of Sheffield has established a far superior FE model for analysing concrete and rock subjected to very high multiaxial stresses and elevated temperature. This advanced form of analysis isn't necessary for routine structural analysis but is essential when addressing safety critical structures such as dams, tunnels, and nuclear

Blastech Limited

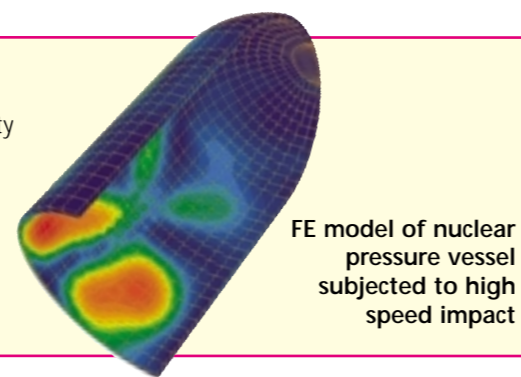
There is a major and growing need for UK industry and government agencies to be able to consider, and where possible, mitigate the effects of extreme loading from explosions or impacts on buildings, equipment and personnel. This issue has been highlighted by terrorist attacks on the World Trade Centre and elsewhere, but is also a major factor in more conventional situations, such as vehicle impact, and accidental explosions. The cost of large-scale testing of such events is often prohibitively high, and designers and analysts are increasingly using computer analyses, validated by small-scale

pressure vessels. In addition to undertaking advanced FE analysis commissions, MSL also has the capability to develop constitutive models for a customer's own materials and for incorporating the model into their existing FE code.

Contact Professor Peter Waldron at:
p.waldron@sheffield.ac.uk

experimental work, both to assess the consequences of a particular threat, and to design preventative measures. Blastech had been formed to capitalise on over 25 years of University of Sheffield research undertaken at their at their unique laboratories at Harpur Hill, Buxton. This facility provides commercial testing facilities in which structural elements may be subjected to high rates of strain as a result of real blast or impact loading. The performance of blast-resistant clothing or cladding may also be assessed.

For further information, contact Andy Tyas at at:
a.tyas@sheffield.ac.uk.



FE model of nuclear pressure vessel subjected to high speed impact

The above companies have been spun-out by Sheffield University Enterprises Ltd (SUEL) which is the University of Sheffield's wholly owned Technology Transfer Company dealing with intellectual property and commercial exploitation.

For further information about SUEL either contact David Catton, Managing Director on 0114 222 1008 or visit the website www.suel.co.uk and contact one of the Business Exploitation Managers.



Sheffield Hallam University

The Hip Solution

Surface analysis by the Materials Research Institute at Sheffield Hallam University has contributed to a breakthrough in hip resurfacing technology which brings new hope to many thousands of younger arthritis sufferers all over the world. Traditionally, replacement hip joints have been manufactured out of a metal ball and polymer socket. Whilst such joints have improved quality of life in the short term, surgeons have always delayed replacement because of their tendency to wear. Doncaster Centaur Precision Ltd, suppliers of castings to medical prosthetic manufacturers, realised the market potential for an improved design and approached the MRI to undertake an extensive investigation of metal on metal bearing products.

The research culminated in the manufacture of the Birmingham Hip Resurfacing product, which greatly increases the life expectancy of the hip replacement joint. Since there is no need for the femur to be replaced, patient trauma is reduced, and the operation can be undertaken at a much earlier age with shortened recovery times. Through this collaboration, Doncaster Centaur Precision was able to strengthen its manufacturing capability and market share to the extent that it is no longer classified as a SME.

The Materials Research Institute is a centre of excellence in industrially orientated research and commercial consultancy in many specialist areas including surface engineering, materials modelling,

nanocomposites and corrosion engineering.

For more information visit:
www.shu.ac.uk/research
or contact:
John Metcalf at the Materials Research Institute, Sheffield Hallam University.
Tel: 0114 225 4569
or email: j.e.metcalf@shu.ac.uk



Sunny times ahead for cheaper solar power



Greater use of clean electricity from the sun should be a step closer, thanks to new research carried out in the UK by a team from Sheffield Hallam University. The research has shown how the cost of generating solar electricity can be reduced, laying the foundation for a major expansion in the use of this sustainable energy technology.

The project has been undertaken by a team of physicists, chemists, material scientists and engineers at Sheffield Hallam University, with funding from the Swindon-based Engineering and Physical Sciences Research Council.

Electricity generation through the interaction of the sun's heat and light with semiconductors is called photovoltaics (PV). Although PV's environmental benefits are well-known, take-up of the technology has been limited by the relatively high cost of the solar cells that incorporate these semiconductors.

The team at Sheffield Hallam University has been exploring a range of options for cutting costs. These include the use of a low-cost semiconductor production method called electrodeposition, less reliance on expensive semiconductor materials, and the identification of alternative solar cell devices and manufacturing techniques offering higher conversion efficiencies.

Higher conversion efficiencies mean that more power can be produced per cell and that the cost of each unit of electricity generated is reduced. In the past, limited understanding of the scientific principles underlying PV meant that average solar cell efficiencies only improved from 15.9% to 16.5% between 1992 and 2001 for cadmium telluride based solar cells. By formulating a new "model" to describe the photovoltaic activity of these solar cells, the Sheffield Hallam Team has significantly improved this understanding and produced devices with 18% efficiency. This has opened up the prospect of new solar cells being

developed commercially with higher conversion efficiencies than those currently available.

The research has been led by Dr I M Dharmadasa, who says: "We've already applied for two patents and are preparing the final draft of the third patent in connection with our work, but there's a lot more science to be explored that could increase conversion efficiencies to over 20% in the near future".

The University are now actively seeking business partners who can help to realise this potential through product development and exploitation.

For more information, visit
www.shu.ac.uk/research or contact Dr I M Dharmadasa, School of Science & Mathematics, Sheffield Hallam University, Tel: 0114 225 4067, E-mail: dharme@shu.ac.uk

For further information about enterprise at Sheffield Hallam University and our involvement in this project, contact Peter Hayes, Director of the Enterprise Centre on 0114 225 5000, p.hayes@shu.ac.uk or visit www.shu.ac.uk/enterprise

South Yorkshire company turns up the heat on foreign competition

Business Link South Yorkshire, a partner in the Knowledge Starts Project, has assisted specialist manufacturer of precision components for the petrochemical industry, Sheffield Superturn, to become a 24-hour a day operation investing £300,000 in new equipment.

The new Mazak Integrex 300 FMS system with a Gantry Robot will increase production capacity to 24 hours with 16 hours unmanned.

The company has particular expertise in the manufacture of valves and valve bodies from complex materials such as Inconel and Incoloy – heat and corrosion resistant alloy grade materials used in the oil and gas processing industry. Business Link South Yorkshire has assisted with the sourcing of finance, business planning, financial forecasting and supplying market research through its specialist Information Service.

“Technological advancement and high-tech applications have been the cornerstones of competitive advantage for this business,” said Mark Bamforth, expert Business Adviser with Business Link South Yorkshire. “This state of the art multi-tasking machining centre is one of only a handful in the UK, and the first of its kind in the industry in South Yorkshire.

“An investment of this kind is good news for the local manufacturing industry and good news for local jobs and production.”

Sheffield Superturn employs 19 people and is entering its twentieth year of trading. The £300,000 investment is expected to increase turnover from £2million to £3million within eighteen months. The investment package was supported by a DTI Enterprise Grant of £35,000 and a small Invest for Growth grant of £5,000. As well as the machine investment, the company has redesigned and automated its PPC (Production

Planning Control) system to give real-time updates via Internet access for selected clients.

“Business Link South Yorkshire has been extremely helpful throughout this project,” said Andrew Taylor, Managing Director of Sheffield Superturn. “The investment that they have assisted us with will ultimately make the company much more competitive against Italian valve imports, and will enable us to reduce lead time on our non-standard batch business from three weeks to three days. This not only gives us a major USP in the market, but also provides us with a premium service unique to the industry.”



Andrew Taylor (left), Managing Director of Sheffield Superturn and Mark Bamforth, Business Adviser with Business Link South Yorkshire

For further information visit: www.blsy.com



Supaplants Ltd continues to thrive

Following a successful year, SupaPlants is launching its second retail product under the gel2root label.

More than 2,000 outlets, including Asda, Focus, and Homebase, now stock the company's first product, the revolutionary gel2root propagation system for softwood cuttings. Initial trials of the new product, a dispenser bottle of gel2root aimed at more experienced gardeners, indicate it will be equally well-received.

A University of Sheffield spin out company, SupaPlants specialises in the development, manufacture and marketing of unique, patented gel-based products for the consumer and commercial horticulture markets.

The company works widely with schools, and recently supplied product to all entrants in the National

Schools' Growing Competition, organised by the Garden Centres' Association. The Royal Horticultural Society now features gel2root in its schools programme.

Following its success in the UK, where gel2root is marketed by Mr Fothergill's, the UK's largest seed house, SupaPlants is starting to develop markets overseas. **Further information** www.supaplants.co.uk or **Gary Waters on: 0114 222 0003**



The innovation factory

Knowledge Starts partners, Yorkshire Forward and Objective 1, are pleased to announce a new scheme under the innovation support programme. Following a brief outline in the newsletter's previous edition, Chris Goodhand, Innovation Promoter, tells us more.

The Innovation Factory is a new three-year, £2.1m programme partly funded by Yorkshire Forward and Objective 1 and is designed to encourage the development of a culture of sustainable innovation within small and medium sized companies.

Aimed specifically at SMEs in South Yorkshire, the Innovation Factory will help local businesses to innovate to improve profitability and sustainability and stimulate economic growth. This can include help with understanding market opportunities, acquiring new technologies and skills,

accessing resources and funding and developing ways to minimise time to market through world class project and implementation management.

The programme, delivered by Pera Innovation, involves detailed benchmarking of the companies skills, products, markets and culture by highly experienced innovation consultants.

Based in Barnsley, the Innovation Factory is easily accessible to the region's businesses, allowing the close contact between the innovators and the SMEs necessary for success.

For further information contact the I-factory on 01226 209950, or e-mail iFactory@pera.com.



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