

Welcome to North East England

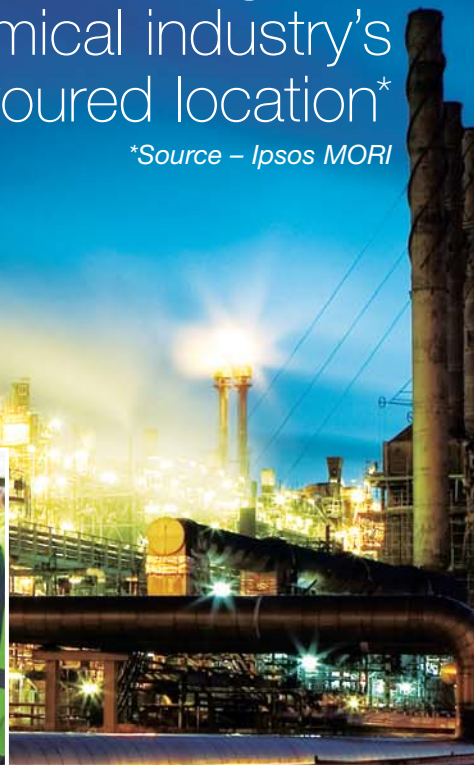
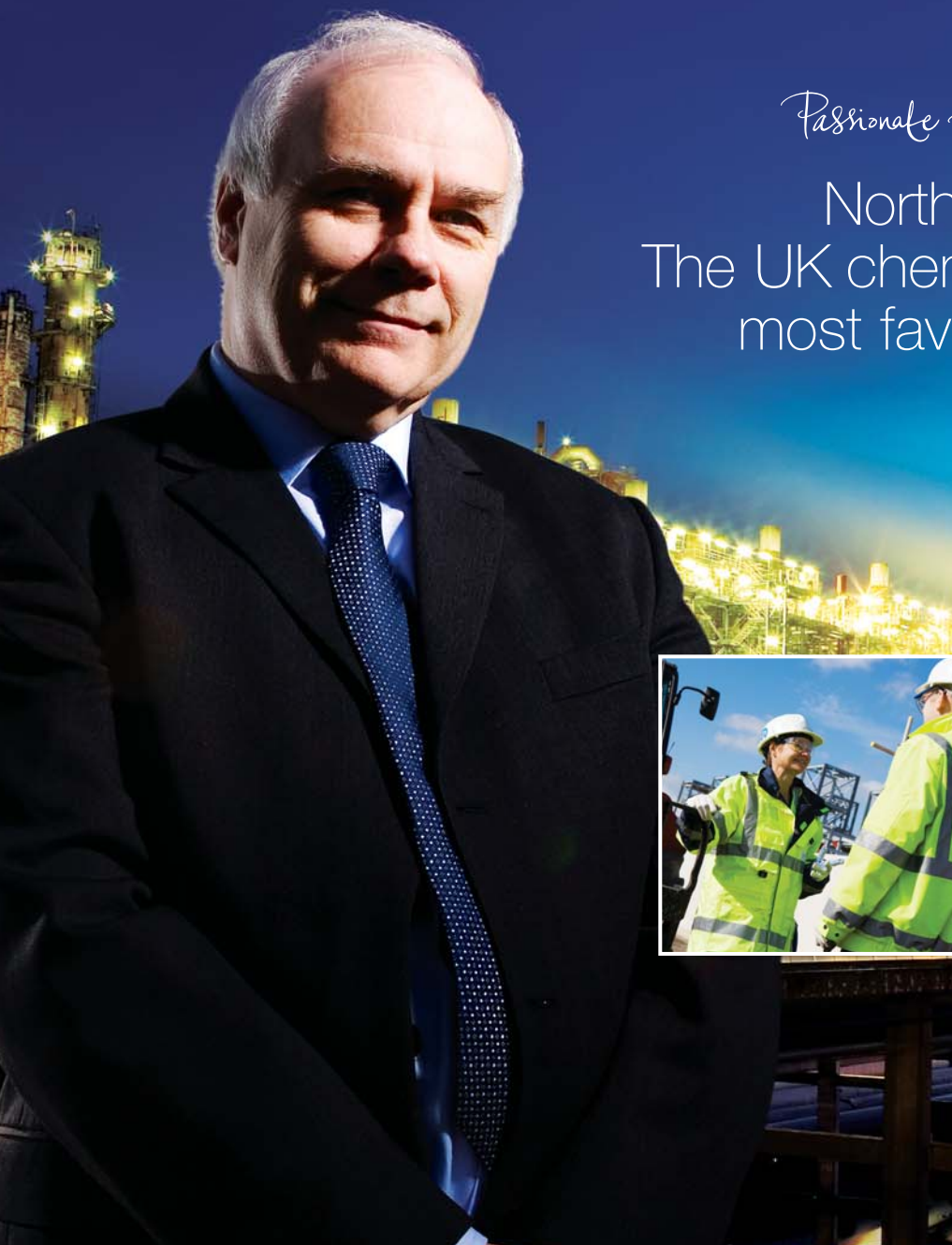
www.nepic.co.uk

19-23 Aug 2009

Passionate people. Passionate places.

North East England.
The UK chemical industry's
most favoured location*

**Source – Ipsos MORI*



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Wilton International has more than 100 acres of development land available with outline planning permission for heavy industrial use. With all vital utilities in place together with ready made site wide infrastructure including roads, rail, pipe bridges and emergency response services, it has everything needed to get on-stream quickly.

To find out more information about business development opportunities at Wilton International, please email business@sembcorp.com or visit our website: www.sembcorp.co.uk



North East England: The location of choice for the Process Industry

North East England has a long history of innovation and industrialisation. With new ideas ranging from the invention of the safety match to the production of the first commercial steam railway, the region has consistently innovated and turned new ideas into reality. North East England has a rich industrial heritage with coal mining, shipbuilding and steel making sitting alongside the development of an extensive chemical manufacturing business during the 1900s.

The Pharmaceutical, Fine and Speciality Chemical sectors continue to grow, but as the global economy for Base Chemicals is changing the region is reacting. The Renewable Fuel and Energy sectors are attracting a lot of attention. The largest bioethanol plant in Europe is due to be opened by Ensus on Teesside in Q3 2009 joining the 250,000 tonnes/year biodiesel plant which was commissioned by Biofuels Corporation in 2006. Sembcorp has invested in a biomass power station at its Wilton Site and MGT Power will begin building a 295MW biomass power station in 2010.

Developments also continue in novel and innovative recycling methods. PYReco is building an industrial scale tyre pyrolysis plant on Teesside which will recover the raw materials from used tyres and solve the nation's tyre disposal problem.

North East England has been successful in attracting new industries to the region by utilising its strengths: The presence of a highly skilled and motivated workforce, the excellent infrastructure, easy access to markets, a regional authority that can support new projects financially with grant aid and the presence of an award winning Process Industry Cluster to help companies in the region with all aspects of their operation.

Front cover: Paul Booth
President, Sabic UK Petrochemicals

Passionate about science



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Cluster activities bring real benefits to bottom line

North East England has long been a major centre for the chemical industry and associated process activities. Sites such as Wilton, Billingham and Seal Sands are historic names in the industry's still unfolding story.

Today, these process industries still account for £9bn, or 30%, of the region's gross domestic product (GDP). Activities range from base chemicals production to fine and specialty chemicals, pharmaceuticals and, increasingly, biotechnology.

North East England is home to leading names such as SABIC, INEOS and Huntsman at the heavier end, to Banner Chemicals, Brenntag, Lucite, Thomas Swan, Fine Organics and Frutarom in the fine and specialty chemical area, and Aesica, Avecia, sanofi-aventis, MSD and GSK in the biotech and pharma sectors.

Five years ago the region's process companies came together to create the North East Process Industry Cluster (NEPIC). Their aim was to improve the long-term competitiveness of the region's chemical sector, develop the strength of the region's economy and to act as a collaborative body and collective voice.

The move, explains NEPIC's CEO Stan Higgins, built on earlier cluster activity in the region in mid-1990s, created in response to issues arising from the break-up of the region's once-dominant producer ICI. "NEPIC is driven by the industry and we have companies' buy-in all the way", comments Higgins.

"There is an acceptance that industry as well as government has a part to play in growing the economy of the region." Industry leaders, he adds, recognise that the economic future of the region is a key concern and that their businesses benefit from its well-being and growth.

The NEPIC cluster now has over 430 active members directly engaged in manufacturing or in the extensive associated supply chain. Its agenda is led by the NEPIC Leadership and Thrust teams, made up of some 80 of the region's top chemical executives, who meet on a quarterly basis.



Key strategic thrusts:

To deliver its promise to boost industry competitiveness and the regional economy, NEPIC has five strategic teams, lead and staffed by senior industry executives

These focus on the key areas of:

- Marketing and communications – to deliver a consistent message and brand identity and an ongoing programme of value-adding network events
- SMEs and trade – to assist members develop trade opportunities and help deliver investment projects
- Innovation – to provide a collaborative and coordinating mechanism for R&D projects
- GDP growth – to develop process industry projects
- Manufacturing and productivity – to deliver £100m/year in productivity gains
- Education and engagement – to set regional priorities and identify gaps in skills provisions and deliver solutions; in education, to develop mechanisms for engagement at all ages



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Our role, explains Higgins, is to “define and prioritise what is needed to sustain and expand existing businesses in the sector and attract new process industries to North East England. We also assist member companies to collaborate and improve their competitiveness by developing skilled resources, improving productivity and creating innovation projects.”

With this in mind, it has forged close links with the region’s five universities and regional and national government initiatives such as the Centre for Process Innovation (CPI), MAS NE, and the Centre of Excellence for Life Sciences (CELS), all with operations based in the North East.

“Potential investments worth £4bn are expected by 2014”

CPI has already received an accolade as an exemplar of excellence in innovation by the UK government and announced in July 2009 a further £12m expansion of its open access scale-up and demonstrator facilities for industrial biotechnology.

A prime aim, adds Richard Tweddle, international marketing manager for NEPIC, is to market the region and its companies overseas – to attract new investors to the region and to bring new business to NEPIC members. NEPIC has recently hosted delegations from Brazil and India, for instance, and been present at major overseas trade events. China is also a key market for NEPIC and its members.

There are a number of sites in the North East with land available for inward investment, notably the Wilton site in the Tees Valley for those investors looking for an integrated site with utilities and services. NEPIC and its partners continue to work on over 60 potential investments for the region and expect to see £4bn of investment come through by 2014.

Several large-scale biofuel plants are being built or planned in the region, including the Ensus bioethanol unit currently under construction at Wilton. The Tees Valley also has the UK’s largest operational biodiesel plant owned by Biofuels Corporation.

Higgins points to other investments NEPIC has played an active role in attracting to the region – Huntsman’s (now SABIC’s) LDPE project at Wilton, a new production unit for Banner Chemicals and the Graphite Resources waste recovery and recycling plant which uses new technology.

Such investments are needed to replace production currently being lost as a result of the steep decline in demand for chemicals. The last 12 months have brought announcement of plant closures in the region from Dow Chemical, Croda International and INVISTA.

Higgins admits the commodity end of the NEPIC cluster is struggling in the current economic climate, but points to the fact that fine and specialties and pharma have not been so severely impacted. He is confident the region can continue to attract large-scale biotechnology projects and to nurture spin-outs from industry and academia in the area of nanotechnology, solar energy and renewables.

The North East process sector, he says, “has an ongoing and unrecognised ability to rejuvenate itself. Its strength is in diversity and not just heavy chemicals”. He is confident the next 10-15 years will see renewed investment, in specialty chemicals, biofuels and biorefineries and other hi-tech areas, including electronics, energy and recycling.



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North East England: The UK chemical industry's most favoured location*

Grow your business or further your career in North East England's chemical and process sector and you'll be in good company: over 500 leading firms in the industry have a presence here, making up over 30% of our industrial economy.

Their reasons for locating here are many and varied, but all benefit from our longstanding reputation for innovation in engineering and manufacturing, enabling successive generations to understand and facilitate new technologies. North East England's core strengths in science, R&D and innovation fuel a diverse engineering and manufacturing base, encompassing four strong process and chemical industries: base & petrochemicals; fine & speciality chemicals; pharmaceuticals manufacture and biotechnology.

The region owes its excellent connectivity to its location and infrastructure: easy, direct access to international markets is achieved via two international airports, superb road links and three major ports including the major deep-sea and third largest port in the UK** – Teesport.

Close collaboration between sectors and the region's five universities (with over 50 technical departments achieving the highest rating of 4 star) ensures a constant exchange of innovative thinking, a supportive environment mirrored in the range of financial support and land for development available to businesses. In addition, practical support is available from NEPIC (North East Process Industry Cluster) and the CPI (Centre for Process Innovation), organisations facilitating a more innovative and competitive sector.

Extensive infrastructure assets like pipelines and power stations are particularly attractive to the base chemical industry, Jane Atkinson, Vice President Operations and Maintenance, Sembcorp Utilities UK says: "Having developed the UK's first large scale biomass power station of its kind and invested £250 million on the Wilton site we're ideally placed in North East England for further expansion.

*Source – Ipsos MORI **Third largest port in 2008



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Nigel Perry, CEO of the Centre for Process Innovation adds, "Considerable opportunities have emerged in the field of process industries due to current and previous levels of investment in the region's businesses and infrastructure. The chemicals industry in the region employs approximately 12,000 people and the petrochemical cluster at Wilton, Billingham and Seal Sands is the largest integrated chemicals complex in the UK in terms of manufacturing capacity.

"With a range of physical assets, a high calibre of scientists and an array of skilled expertise on its staff, CPI is in a strong position to continue driving forward North East England's processing sector."

Stan Higgins, CEO of NEPIC, says: "We have a long history of engineering dating all the way back to the iron and steel industries: the Sydney Harbour Bridge was built by a North East firm Dorman Long or the engineering of George and Robert Stephenson and Lord Armstrong. We still have that legacy of engineering expertise that is second to none."

CASE STUDY: DUPONT TEIJIN FILMS

Recognising the invaluable opportunity to develop his career here, Dr Rob Eveson moved straight to North East England on gaining his DPhil in Chemistry at Oxford University nine years ago. A research scientist in product development with DuPont Teijin Films, his role is to find ways of building new functionalities into polyester film, for example antibacterial coatings as hygienic surfaces in hospitals and the food industry or developing next generation flexible display materials.

"I wanted a role in which my expertise could have a positive impact on customers," he says, "and I was impressed with the opportunities here." Based at Wilton International in Tees Valley, Rob's career has seen him travel to DuPont Teijin Film's other R&D operation in Gifu, Japan, to increase synergy between scientists at the two facilities. This is just one of the initiatives that have made the company a world leader in its field, able to respond quickly to changing markets from their R&D centre in North East England.



KEY FACTS:

- Over a third of the UK's pharmaceutical GDP is made in North East England
- Over half of the UK's petrochemicals are made in North East England
- The Tees Valley is home to one of Europe's largest R&D facilities, Wilton International, where advanced technologies and pioneering products are driving the future of the process and chemical sector
- A recent Ipsos MORI opinion poll names the North East as the most favoured location for the chemical industry
- North East England is home to the UK's first National Skills Academy for Process Industries
- Over 500 leading companies in the chemical and processing industry have operations in North East England
- Leading the way with our commitment to sustainable energy development, the Sembcorp Biomass Power Station at the Wilton International site in Tees Valley is the UK's first large-scale 'wood to energy' plant
- Planning consent has been granted for a 295MW clean energy biomass power station at Tees Port
- Ensus group will start production in Europe's largest bioethanol plant mid 2009
- The North East has the highest success rate of any English region in approving planning applications – 90% compared to 82% nationally
- A £12m upgrade of the National Industrial Biotechnology Facility within the CPI at the Wilton Centre, Tees Valley will provide larger scale, open access demonstrator facilities allowing companies to test their products and processes, enabling them to bring them to market quicker and more affordably
- Teesport is the third largest port in the UK, handling 50 million tonnes of cargo every year
- The full pharmaceutical life cycle from product development to delivery can be accessed in less than an hour's drive within North East England

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Northeast Biofuels – Growing a renewable fuel industry



Commercial development of biofuels is a priority in Europe, driven by EU legislation that mandates a 10% use of renewable energy in transport by 2020.

Heavy investment is required, not just in biodiesel and bioethanol production, but along the entire supply chain – from “field to tank”, and in the development of new technologies.

North East England is well placed to capitalise on the drive to a sustainable biofuels industry, given its existing process expertise, logistics infrastructure and access to an assortment of relevant crops, either locally grown or imported.

To ensure the region is at the forefront of biofuels development, companies and organisations from along the supply chain have created the Northeast Biofuels (NEB) cluster. Members of the grouping, which has been active for the past three years, have several common aims:

- to act as an engine for commercial and economic growth in the business of biofuels
- to create a business network which helps improve business practices and efficiency and stimulates effective supply chains
- to build a centre of expertise and competency in biofuels within the North East region

NEB is a key partner of the North East Process Industry Cluster (NEPIC) in its role of delivering the North East England's Regional Strategy for Transport Biofuels. NEPIC was awarded this £1.7m contract in April 2008 by One North East, the government's regional development agency.

NEB members come from the farming, chemical, fuels, utilities, engineering, project development and public sectors, and include the region's two big biofuel producers – Biofuels Corporation, which operates a 250,000 tonnes/year biodiesel facility at Seal Sands on Teesside, and Ensus, which will this year bring onstream a 400 million litre/year bioethanol plant at the Wilton International site, also on Teesside.

NEB's ambitions go further in the region. Mark Lewis, one of the directors, explains that work is underway to develop the technology and business case for a 1million tonne/year facility that will convert biomass to biofuels – notably A1 jet kerosene, together with chemicals by a gasification process route.

The Integrated Biomass to Syngas (IBS) project, as it is called, is a regional initiative that aims to see a plant operational by 2020, with development in stages beginning in 2012. To minimise risk and encourage investment, the IBS team proposes first to establish a viable demonstration business based on a 50 MWhr biomass to electricity facility. This facility will be used as a development base to demonstrate the manufacture of fuels and chemicals from biomass-derived syngas. Ultimately, the aim is to build a major biorefinery in the North East.

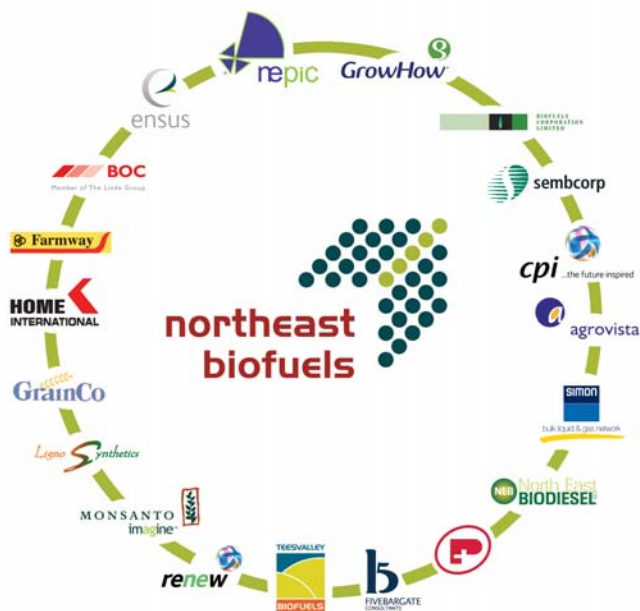
And this is not the only large-scale project being promoted for the region. Lewis points also to proposals for a 500,000 tonnes/year oilseed crusher plant on Teesside, which would link the region's agricultural and industrial biodiesel supply chains.

But it is not just large-scale projects that NEB and its members are interested in. NEB and NEPIC have created a grower network involving local farmers aimed at increasing crop yield and overall grain and oil content for local growers. Lewis describes NEB's





Mark Lewis



active support for projects looking into extracting extra value from rapeseed and other biomass feedstocks, and enhancing the yields from crops such as rape and wheat so that biofuel production can be optimised.

It is also promoting trials of biofuel additives, to ensure that transport fuels with a biofuel component deliver the same performance as conventional gasoline and diesel.

Increasingly the biofuels industry talks about using the whole crop and making beneficial use of all the by-products from the production process. Looking at the wheat bioethanol chain, for example, the wheat straw is useful biomass which can be used to produce heat and power or as an animal feed.

Pyrolysing the biomass (or heating biomass in the absence of air) produces a charcoal like material called bio-char which can be crushed and dug into the soil to improve soil fertility, reduce nitrous oxide emissions and assist with water retention whilst keeping the carbon long term within the soil because the bio-char is largely resistant to decomposition.

NEB has also played a role in supporting the nascent industry through the recent “fuel vs food” debate, in which biofuels were attacked as a wrong-headed approach to the issue of climate change, given the impact on food production and prices. It commissioned an evidence-based paper on the food and fuel debate which helped support the biofuel sector’s arguments.

Now, however, there is another threat as the UK government has softened the timeline for its biofuels mandate, moving the deadline for 5% content of biofuels in transport fuels from 2010 to 2013. This, notes Lewis, has impacted the business case for existing and future investments. “We can’t have things like this changing on a

whim”, he says, pointing to the fact that the decision to alter the timeline came just at the height of the fuels vs food debate.

NEB’s chairman Professor Dermot Roddy comments that these are indeed challenging times for the European biofuels industry. “A clear message arising from all this is that we need to develop ways of using the whole crop and diversify the feedstock base. NEB is central to the development of this new industry in the region.”

“NEB is here to represent the whole [biofuels] industry in the region, not just deliver the government’s Regional Strategy for Transport Biofuels”, emphasises Lewis. “You can’t develop a biofuels industry overnight – you need to look ahead 10 to 20 years. You can’t just turn on added supplies of biomass raw materials.”

www.northeastbiofuels.co.uk

KEY FACT:

NEB members come from the farming, chemical, fuels, utilities, engineering, project development and public sectors, and include the region’s two big biofuel producers – Biofuels Corporation, which operates a 250,000 tonnes/year biodiesel facility at Seal Sands on Teesside, and Ensus, which will this year bring onstream a 400 million litre/year bioethanol plant at the Wilton International site, also on Teesside

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Tees Valley Regeneration

The business investment team at leading urban regeneration company Tees Valley Regeneration has a proven track record of attracting major inward investment and guaranteeing thousands of local jobs.

Its role is vital in securing the region's future economic viability alongside Tees Valley Regeneration's flagship land projects: Middlehaven in Middlesbrough, Northshore in Stockton, Victoria Harbour in Hartlepool, Central Park in Darlington and Skylink International Business Park at Durham Tees Valley Airport.

In the last few years, over £750m of investment has been secured and in excess of 5,000 jobs created. In a difficult economic climate, the team is identifying new ways to overcome the challenges of taking Tees Valley's flourishing economy on to the next level.

John Leer, Tees Valley Regeneration's head of business investment, says; "TVR provides business investment support to attract and develop business opportunities within the five boroughs of Tees Valley. We have over seven years' experience of sites and infrastructure, supply chains and industry support, local demographics and market knowledge.

"Tees Valley has a remarkably strong offer for those companies looking to relocate and as such, we already have some £5bn worth of potential investments in a three year pipeline which could create a further 3,500 jobs."

Tees Valley has an illustrious industrial heritage in heavy engineering and steel and chemical production and its borders include major chemical sites such as Wilton, Billingham, Seal Sands and North Tees. So it is no surprise that there is an emphasis on attracting companies in the oil, gas & energy fields, chemicals and related process sectors, these days including biofuels and recycling.

Neil Kenley, strategic investment and marketing director at TVR, adds that although the business investment team plays a lead role in attracting inward investment, it does not work single-handed.

"We liaise closely with agencies such as NEPIC and One North East," he explains, "and will pull in expertise from them as and when required."

TVR's work does not stop there. It runs a significant strategic account management programme that works with major investors once they have located in the region.

As Leer explains: "We work closely with companies which make a significant contribution to the Tees Valley and its supply chain to see what issues they face and what needs they have. We also make an effort to understand their strategic plans.

"As a result we can help steer companies through their difficulties and lobby for the improvements they need. Where several companies have the same issues we can aggregate these and take them to the relevant bodies, often, again in partnership with NEPIC and One North East."

TVR can help potential and actual investors with the local skills agenda, environmental issues, labour availability, and so on, through its contacts with the local and regional authorities, the Health and Safety Executive and the Environmental Agency.

As Neil Kenley adds: "The business investment team prides itself on its relationships with companies in the Tees Valley – offering a single point of contact and often being able to dig deep into the issues that are affecting them. There is a great deal of trust between the companies and they like that one-to-one aspect of what we offer."

To improve its service, TVR has recently developed a comprehensive audit of the available infrastructure and asset base of the Tees Valley and its levels of utilisation. This, says Leer, will help understand what is available, what is underutilised and what might be needed in the future.

The study, carried out with other local agencies, is now well underway and the results should be available to present later in the year. The findings will be shared with potential investors when discussing their relocation requirements.

The intent is to continue to grow that pipeline out past 2012 and thus ensure the continued economic development of the Tees Valley.



North East England – Spearheading innovation for the process sector

Nigel Perry, chief executive of the Centre for Process Innovation (CPI), explains why the recent £12m government investment into the Centre's industrial biotechnology asset is a sign of things to come for the region as it strives to become a national leader of innovation for the processing sector.

Through its history, industrial heritage and geographical location, North East England has become an attractive location for the process industries.

Partly due to our relatively small geographical size, and the close proximity of urban, academic and industry centres to one another, as well as its uniquely collaborative business climate, the region is pioneering partnership work like no other in the UK.

Industrial Biotechnology (IB) is one such area where the region is forging ahead, demonstrated by the government's recent £12m investment that has been pumped into CPI's highly successful National Industrial Biotechnology Facility (NIBF). Thanks to these funds the open-access facility will significantly increase its capacity in enabling customers to develop proof of concept ideas for new cleaner and more efficient IB manufacturing methods.

Not only will the expanded facility bring further jobs to CPI and North East England, it will also allow UK chemical companies to access the opportunities IB presents in the global market place without the usual capital risk associated with innovative changes in processing methods. This will help encourage more investment into the emerging field and position the region at the forefront of innovation in the process sector.

As a lead driver in the UK's processing sector CPI has played a central role in the recent growth of the processing sector in North East England, stimulating a more innovative, sustainable and competitive sector by allowing businesses to take advantage of growing international demand.

Focusing on the commercialisation of new products and making new technologies ready for the marketplace, the Centre champions four key technology areas which offer the most sustainable growth and commercial potential for the UK. They are advanced processes, low carbon energy, functional materials and printable electronics.

With a range of physical assets, a high calibre of scientists and an array of skilled expertise, we are forging ahead with a new model of market-led innovation, identifying industry requirements through

collaborative rather than competitive partnerships with research and industry.

In addition to NIBF, the Centre manages a number of other national facilities to allow companies to scale up new processes and drastically reducing the risk associated with innovation. This includes PETEC, the UK's national centre for the development and commercialisation of printed electronics, which offers expertise and equipment to deliver design, development and prototyping services in the field of printable electronics.

Looking forward, significant potential exists to harness market-led innovation in North East England. The region's unique combination of research and process skills, assets, logistics and business infrastructure – all established to support the traditional chemical industry in the region – mean that the opportunity exists for North East England to develop competitive, and in some areas world leading, capabilities for the production of chemicals, fuels and chemical building blocks.

CPI is in a strong position to continue driving the region's process and manufacturing industry to innovate and evolve, ultimately becoming an internationally renowned centre. Only by being ambitious, through projects like PETEC and NIBF, can we convince investors that North East England is the place for investment when it comes to technology innovation.



KEY FACT:

The expanded NIBF facility will bring further jobs to North East England and also allow UK chemical companies to access the opportunities IB presents in the global market place without the usual capital risk

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Wilton International – Development plans are key to success in changing times

Decades of M&A activity and restructuring in the chemical sector have created a string of multi-occupancy production sites across Europe from what were once the production bases of major national players.

The North East of England has been no exception to this process. The near 2,000 acre Wilton site, once the cornerstone of ICI's production, now hosts eight multinational companies, including SABIC, Sembcorp, Huntsman, Artenius and Dow, as well as 50-60 smaller businesses.

The complex, now branded Wilton International, has been managed since 2003 by Sembcorp UK, a subsidiary of Singapore-based Sembcorp Industries. Sembcorp acquired much of the site and the services infrastructure and today provides a range of utilities, such as electricity, steam and water supply, plus services such as the fire and emergency protection, site security and storage and warehousing.

“We offer a wide range of essential services to the many companies based here.”

Patrick Pogue, business development manager for Sembcorp, explains that the company plays a key role at the heart of Wilton. “We offer a wide range of essential services to the many companies based here.” Sembcorp also owns the vast majority of the development land on the site and plays an active part in stimulating inward investment to the chemical park.

There is plenty of land available for both heavy industrial use (10 plots totalling 100 acres) and light industrial use (10 plots totalling 230 acres). In both cases, Pogue says, “we are looking for investors with synergies to existing users on the site, including energy-intensive process operations and engineering, technology and service providers.”

Over the past 15 years, more than £800m has been invested at Wilton by current operators at the site. This includes £200m by SABIC for its new LDPE plant, over £120m by Artenius in PTA and PET, and nearly £80m by Huntsman in a nitrobenzene unit and subsequent improvements to its PU raw materials base.

The largest newcomer to the site is Ensus which is building a worldscale bioethanol plant at Wilton (see page 13). This represents an investment of approximately £250m and brings with it a £27m investment by Yara, for a plant that will capture carbon dioxide from Ensus for sale to the food and drinks industry.

Sembcorp itself has invested heavily, spending more than £150m over the past five years to upgrade utilities and services to meet current and future needs. For instance, it is investing £36m in a new gas turbine/heat recovery steam generator to supply steam and electrical power to the Ensus plant.

Sembcorp's latest project builds on previous investments in a new gas turbine in 2004 and four new package boilers and the UK's first large-scale biomass power station in 2007. The biomass plant uses wood as its fuel and prompted a further £8m investment by feedstock supplier UK Wood Recycling.

Says Pogue: “These investments have made the site's utilities and services supply more secure and are playing their part in encouraging other investments.” He points out that the site has become more diverse in recent years – attracting renewable power, biofuels and recycling projects – and expects this trend to continue, reducing the impact of the traditionally cyclical petrochemicals base.

“Obviously, in the current climate we have to take a realistic view of further investment, but Sembcorp believes the fundamentals of the site are still good and are still attractive to investors”, concludes Pogue.



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The world's largest wheat-to-bioethanol facility

In just a few months time, the Wilton International site in North East England will see the start up of the world's largest wheat-to-bioethanol facility. Designed to deliver over a third of the bioethanol required by the UK's Renewable Transport Fuels Obligation, the plant is also the first of its kind in the UK.

Ensus, the company established to develop the project, is headed up by CEO Alwyn Hughes. He stresses that the bioethanol plant also produces a large quantity of high-protein animal feed and carbon dioxide from the wheat feedstock. This, he explains, makes it more like a biorefinery than just a biofuels facility, which helps deflect arguments of the "food or fuels" variety.

The carbon dioxide will be captured by Yara International and sold into the food and drink industry.

Hughes and several other board members of Ensus, including chairman Rob Margetts, are former ICI senior executives and see the development at Wilton in part as a renewal of the Wilton site. The location, he explains, offers good infrastructure, good logistics and, above all, the right skill set in the local workforce. "While the chemical sector might be struggling, the skills base it has built up is absolutely right for the biofuels industry and can help turn it into a new growth area."

Also, he notes: "The highly integrated nature of the site reduces the capital requirements."



A further reason for locating the plant in the North East of England is the surplus of good quality animal feed wheat in the UK and access to nearby port infrastructure in the event that this raw material or bioethanol should need to be imported or exported in the future. "When you are investing upwards of £250m in a 20-30 year project you need to be certain of supply and access to markets."

But in the initial period of operations at least, Hughes expects Ensus to source the majority of the required 1.2m tonnes/year of wheat from UK growers, via a company called Glencore. The process uses a soft wheat that is high in starch and low in protein.

This wheat is widely grown in Northern England and is not the high protein milling wheats associated with food production. The low protein wheats tend to have higher productivity and to be somewhat easier to grow – they thus use less good land than top quality bread wheats and generally use less added nitrogen-based fertilizers.

Ensus has contracted to sell the entire 400m litre/year output of bioethanol to Shell, for blending into gasoline in its UK and European refineries. Regulations allow up to 10% ethanol blending in conventional fuels, although the UK target is currently 5% by 2013. Since last year, UK gasoline has had to contain 2.5% bioethanol.

The Wilton facility is but the first step in the Ensus strategy, notes Hughes, who foresees further such investments in Europe. "We have big financial backers in the form of Carlyle and Riverstone private equity groups, who see opportunities for sustainable biofuels, and there is the need for a lot more investment in the UK and continental Europe."

Ensus plant fast facts:

Location	Wilton, Teesside
Investment	£250m+
Owners	Carlyle Group and Riverstone Holdings
Wheat requirements	1.2m tonnes/year
Ethanol capacity	400m litres/year
Animal feed output	350,000 tonnes/year
Carbon dioxide output	300,000 tonnes/year
Technology provider	Katzen International of the US
Construction	Simon-Carves of the UK
Construction started	Q2 2007
Onstream date	Q4 2009

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Lucite International focuses on growth & efficiency

A focus on investment for growth and a drive for continuous improvement has seen Lucite International's Cassel site develop over recent years. Production capability for methylmethacrylate (MMA) has increased by 33% over the past 10 years, to 200,000 tonnes/year, mainly through plant debottlenecking and greater manufacturing efficiency.

Located in Billingham on the north bank of the River Tees, the 130 acre Cassel site is well placed for raw materials supply and for exporting product to customers in Europe and beyond, given the close proximity to Teesport.

Phil Bailey, site director at Cassel, explains that Lucite International is the major supplier of the merchant market for methacrylates in Europe, and aims to grow this position in the future.

"This gives us an opportunity in the market and a chance to further improve facilities and output at Cassel. We will concentrate on improving manufacturing productivity and reliability of the plants to ensure we remain a reliable supplier to our customers. In today's climate you have to continuously improve your performance in all areas to ensure that you remain a competitive supplier."

MMA demand in Europe is expected to grow at about 1% above GDP in the medium term, driven along by demand into the automotive and construction end markets.

Lucite International operates 12 plants and makes five products at Cassel, making it the largest single site in the company's global operations, with 250,000 tonnes/year of production – approx 20% of the group's total output. It takes in methane from the UK's natural gas grid and imports methanol and acetone through Teesport. The other major raw material, ammonia, is sourced from GrowHow UK, the Yara International/Terra Industries joint venture, which has ammonia, nitric acid and ammonium nitrate facilities close by in Billingham.

Products include not only MMA but methacrylic acid and n-butyl methacrylate. Most of the MMA is sold on the merchant market, but some 30% of the output is used in Lucite International's own downstream production of acrylic resins, polymer and sheet.

With revenue of some \$1.5bn, Lucite International was acquired by Japan's Mitsubishi Rayon earlier this year for \$1.6bn, reinforcing the global reach of the combined companies in the MMA market. But for the Cassel site, says Bailey, the priorities will remain the same. "Going forward, we will continue our theme of low-cost debottlenecking and continue to focus on improving our cost base over the next 3-4 years."

The company has plans for investment at Cassel that will deliver further savings over the next three years. It has delivered £3m/year of cost savings over the last two years, with no investment cost, and has a further £1m/year of savings targeted for this year.

Where the MRC/Lucite International tie-up will bring benefits is in global sourcing, where the added geographic reach will add flexibility to its sales and operations planning (S&OP), allowing it to serve customers around the world from its global asset base and uniquely diverse technology range.

Bailey concludes: "The Cassel site has achieved significant improvement over the past decade and there is potential for more. We hope to make more investments here, reflecting our position as the major supplier to the European market."

KEY FACTS:

- Lucite International has delivered £3m/year of cost savings over the last two years, with no investment cost, and has a further £1m/year of savings targeted
- Magners was the first UK-based company to use a unique, specialist acrylic sheet featuring product from Lucite International in their high profile advertising campaign across London

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Jane Atkinson, Vice President
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Productive, dynamic businesses are built by positive, motivated people: people who enjoy an equally inspirational quality of life both at and outside of work. North East England has been acclaimed as "the most exciting, beautiful and friendly region in the whole of England" by the Lonely Planet BlueList 2008. It's an intensely rewarding place to live and spend quality leisure time, with its vibrant cities and beautiful countryside. The quality of its schools and healthcare are excellent and salaries are competitive too. The region also benefits from having a large number of leading companies in its thriving chemical and process sector. Businesses enjoy excellent support from two major sector specialists: NEPIC and the CPI, as well as close ties to the region's universities, cultivating a region-wide hotbed of innovation.

The map opposite illustrates just some of the investors that have chosen to make North East England their home and also shows the region's excellent infrastructure and support network, all easily accessible due to its compact nature and central location.

For further information about investing and working in North East England, visit:

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