

#### MILLFIELD COMPOSITES

Millfield Composites Group Ltd is based in Hartlepool and has 30 years' experience manufacturing component parts using fibreglass (GRP) and other materials such as carbon fibre, natural fibre, PU and pDCPD. Key services include RTM; VARTM; infusion; handlay and RIM processes, plus 5 Axis CNC trim, bonding, robot painting and assembly. Major markets include construction, housing, industrial vehicles and transport, including rail.

#### LIONWELD KENNEDY

Lionweld Kennedy Flooring Ltd (LK) is based in Middlesbrough, in Tees Valley. LK is the major supplier of Open Grid flooring or gratings for low maintenance pedestrian through to heavy wheeled loading requirements. LK also supply composite products including supplier stair treads and standard handrails as well as welded heavy duty offshore barrier handrails, gates, ladders and other secondary metalwork access fabrications in carbon steel/GRP/stainless or aluminium. LK are a successfully invested and innovative company with over 100 years' experience who currently employ around 200 staff.

#### COMPOSITE FIBREGLASS MOULDINGS

Based in Darlington, CFM can provide bullet proof fibreglass panels or hygienic tile panels with built in antimicrobial protection. CFM Ltd is dedicated to producing high quality products with total traceability of raw materials and on-time deliveries.

#### Wider North East

##### LAMPLAS

Based in Consett for over 40 years, Lamplas is among the largest GRP and solid surface moulders in the UK. Lamplas' moulding services include GRP composite spray-up, glass fibre hand layup and closed mould RTM systems, vacuum forming along with solid surface casting. Other services include in-house design, model and pattern making, with mould tool manufacture and prototype build of components.

##### SCIGRIP

Based in Washington, SCIGRIP Smarter Adhesives Solutions combines two global leaders in the adhesives industry, Weld-On and Holdtite, enabling the manufacture of world class structural and engineered adhesive products on a global scale.

#### NORTH EASTERN COMPOSITES LTD

Based in Cramlington, North Eastern Composites manufacture GRP mouldings from Dormer windows, Canopies, Columns and GRP window surrounds for the construction industry, through to water, sewage and chemical storage tanks.

#### Secure sites with low cost power for energy intensive manufacturing

Tees Valley's large scale infrastructure and utilities can significantly reduce the capex and opex of investment projects compared to other European locations. Tees Valley provides 'energy intensive' occupiers with a 'plug and play' solution and sites that benefit from pre-consented planning permission for occupiers.

#### Case study: Wilton International

Tees Valley is home to the Wilton International site, the largest 'private wire' electricity network in the UK with between 140-160 MW of on-site generation capacity available to users. It is also connected to the national transmission system for security of supply. Low cost power generated on-site at Wilton avoids certain National Grid charges and green taxes, providing manufacturers with competitively priced energy from the largest private electricity distribution network in the UK

#### GAS

Locating at Wilton International reduces the typical consent and install time for an industrial gas connection from 2-3 years to less than one year. Connection costs are significantly cheaper reducing project capex. Gas is competitively priced compared to the rest of the UK due to access to short haul gas via the North Sea and utilisation of Tees Valley's excellent infrastructure.

#### ELECTRICITY

Locating at Wilton International reduces the consent and install time for an electrical connection from around 2 years to several months and the connection costs are typically less than new electricity connections external to the site. Savings can be made on electricity supply for industrial consumers compared to the rest of the UK due to the on-site supply arrangements.

#### SOUTH TEES DEVELOPMENT CORPORATION

The South Tees Development Corporation has been created to drive economic growth and business investment in Tees Valley. The site covers approximately 4,500 acres of land to the south of the River Tees and is wholly in the Borough of Redcar and Cleveland. It is in the heart of Tees Valley's industrial zone and benefits from strategically important businesses, facilities and operations, which includes the site of the former SSI steelworks, as well as other industrial assets. Being at the mouth of the River Tees, the area benefits from river access and encompasses the major port facilities of Teesport and Redcar Bulk Terminal. The South Tees area benefits from being situated within a major export region for the UK, with Teesport being the largest exporting port in England. Wilton International, the world-renowned major industrial complex, is immediately to the south of the site.

#### SUPPORT

Companies locating to Tees Valley can take advantage of grant funding, skills support and access to Enterprise Zone sites offering tax incentives or business rate relief.

We can help with introductions to a wide range of support organisations from both the public and private sectors and also facilitate links to companies already in your supply chain.

Contact the Business Investment Team at the Combined Authority to discuss how we can support you.



TEES VALLEY MAYOR  
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*Tees Valley*  
Advancing the  
Composites Industry



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**Tees Valley is one of the most significant integrated industrial economies in the UK, producing some 30% of the UK's chemical output. With world class chemistry expertise, Tees Valley is well positioned to support the growth of the global composites industry.**

The Tees Valley offer includes acrylonitrile feedstock, polymers and glass fibres, pre-eminent resins expertise, embedded power infrastructure and proximity to UK and European fabricators and composites customers.

Uniquely, Tees Valley has the largest private wire electricity network in the UK enabling manufacturers to realise significant savings on both capex and opex, compared to other UK locations. This operating environment is enhanced by unrivalled materials and chemistry expertise within Tees Valley's business base, universities and innovation stakeholders.

Tees Valley's combined offer of infrastructure and materials expertise is particularly attractive to energy intensive manufacturers.

Tees Valley is home to key businesses active in both the upstream and downstream composites industry, as highlighted here.

## Upstream composites supply chain

### INEOS

INEOS leads the global market for the production of acrylonitrile, an important molecule for the production of plastics such as the polyacrylonitrile resin, an essential ingredient used in the manufacture of carbon fibre.

In Tees Valley, INEOS operates a world scale 280,000 tonne p.a. acrylonitrile plant from a 268 acre site based at Seal Sands.

INEOS holds strategic relationships with many downstream carbon fibre producers covering aerospace, automotive and consumer segments. For example, in the US, INEOS' acrylonitrile is enabling Toray to fulfil \$11 billion worth of carbon fibre supply for the manufacture of Boeing's 787 Dreamliner and forthcoming 777X fleets.

### VICTREX

Victrex operates from a site at Seal Sands, Tees Valley, where it produces benzophenone difluoride (BDF), the key raw material for PEEK (polyetheretherketone) thermoplastic polymers.

Victrex is a manufacturer of specialist PEEK, a durable, high strength and lightweight plastic. PEEK is part of the PAEK (polyaryletherketone) family of polymers.

Victrex serves a diverse range of downstream markets from consumer electronics, aerospace, automotive, oil & gas platforms and medical devices. Within automotive, Victrex is supporting European OEM's with PEEK based applications across ABS braking systems, transmission systems and gears, driving innovation in light-weighting and fuel efficiency solutions. For example, when used in gears, PEEK is 70% lighter than metal gears and offers 50% lower noise vibration versus metal.

### SOLVAY

Solvay's Composite Materials Strategic R&I Group is based at Wilton, in Tees Valley.

Solvay is an international chemical and advanced materials company, servicing diversified global end markets including automotive and aerospace, consumer goods and healthcare, energy and environment, electricity and electronics, building and construction, as well as industrial applications.

Wilton is the main centre for Solvay's strategic materials science research activities. The Group specialises in the chemistry and materials science of polymers, composites, adhesives and specialty materials.

The Wilton site aims to establish and protect through IP new technology platforms with these technologies exploited by the Composite Materials Business Product Development and Applications Engineering groups. Current technologies under development include composite recycling, flame retardancy and resin toughening.

### SABIC INNOVATIVE PLASTICS

SABIC UK Petrochemicals and SABIC Innovative Plastics have manufacturing operations in Tees Valley.

SABIC IP are based at Thornaby in Stockton-on-Tees and are focused on the production of Verton, a long glass fibre, injection moulding compound characterised by outstanding mechanical performance. SABIC IP's core market is the automotive industry with the LNP Verton long glass fibre sold as a metal replacement product. Example automotive applications include seat belt tensioner housings, starter ring gears, mirror brackets and light grilles.

SABIC UK Petrochemicals runs a number of major assets on the Wilton International site including the Olefins 6 "Cracker" plant which makes ethylene and propylene, plus a Low Density Polyethylene Plant. In 2017, SABIC finished upgrading the Olefins 6 Cracker to take ethane feedstock. This major investment will make it one of the most competitive plants of its kind in Europe.

### LUCITE INTERNATIONAL

Lucite International, part of the Mitsubishi Group, has manufacturing operations in Stockton-on-Tees. Lucite is the biggest producer in the world of MMA (methyl-methacrylate), the precursor of Perspex Acrylics and first manufactured in the North East of England.

Lucite produces liquid acrylic resins to produce cold curing mixtures containing ATH fillers that are ideal for casting in simple moulds to create solid surface sheets and shaped articles. Applications include kitchen worktops, solid surfaces, bathtubs and washbasins. UV and colour stability, heat and scratch resistance coupled with relatively low cost casting technology allows for significant design and application freedom. Additionally, Lucite's MMA is ideal for mixing with coloured quartz and sands to create the main ingredient for composite sinks. Elvacite® resin functions as a low profile additive to improve the surface characteristics.

### HUNTSMAN

Huntsman Polyurethanes has an aniline plant and a nitrobenzene plant at Wilton, Redcar - both of which are the largest of their type in the world. Over 90 percent of the aniline produced at Wilton is exported to a sister plant in Rotterdam for the manufacture of MDI (methylene diphenyl diisocyanate).

Polyurethanes are essential components in a wide variety of products such as insulation, appliances, automotive components, footwear, adhesives, coatings, mattresses and furniture and composite wood products (e.g. MDF and OSB). MDI provides a cost-effective and easier-to-use alternative resin for the manufacturing of composite wood products.

### APPLIED GRAPHENE MATERIALS

Applied Graphene Materials (AGM) is based at Wilton, Redcar and is wholly focused on graphene material production and assisting its adoption by end users. AGM has continued to develop its intellectual property, know-how and knowledge base through extensive work on the formatting and dispersion of graphene, including its proprietary graphene delivery technology, Structural Ink™.

Within composites, trials with the likes of the University of the West of Scotland and Spirit AeroSystems Inc. have demonstrated improvements to inter-laminar shear strength, where the introduction of graphene is acting to reinforce the resinous areas.

In March 2017, AGM supported SHD Composites launch of a range of graphene pre-impregnated (composite) products, MTC9800, for sales to their customer base.

Structural Ink™ is AGM's innovative graphene delivery technology, that once fully commercialised, will be targeted at the advanced composites industry. This comprises the deposition of graphene nanoplatelets directly onto composite laminates, boosting the mechanical toughness, performance and structural design of composite materials. Four specialist end-users from different sectors of the composites industry, including Prodrive Composites, have committed to explore Structural Ink™ with potential near term applications in motorsport and aerospace.

## Downstream composites supply chain

Tees Valley has a strong advanced manufacturing base with companies supplying automotive, aerospace, defence and energy customers in the UK and internationally. The following companies in Tees Valley and the wider North East of England have expertise in the development, manufacture and supply of composites related products and services.

### NIFCO

Nifco is an automotive Tier 1 supplier based in Stockton-on-Tees in Tees Valley which produces plastic components used in the engines, interiors and exteriors of cars made by Nissan, Ford, Honda, Toyota, Vauxhall Opel and Jaguar Landover. It is part of Nifco Inc, a global business, headquartered in Japan.

Nifco UK has seen its business grow to employ more than 500 people and the business is on course to reach turnover of £90m by 2020 after recording its eighth successive year of growth.

Within composites, Nifco has been a participant in the Advanced Propulsion Centre's £20 million 'Alive 6' project with Jaguar Land Rover (JLR). Nifco's team helped produce a new composites oil pan, weighing 1kg less than a steel equivalent and engineered with continuous glass fibres, to deliver optimum performance while remaining lightweight. The oil pan is one of the outcomes of the JLR project, which was launched to create a prototype engine incorporating many new and cutting edge technologies. Nifco has worked in partnership with plastics supplier DuPont to create the new part, and it hopes to see the part produced in mass use over the next few years.

### TEESSIDE UNIVERSITY

Teesside University has expertise across polymer composite processing and production. Specialisms include waste reduction techniques, fibre recycling and thermoplastic composites. Teesside University is supporting the current composite design skills gap and is working with Siemens and their Fibersim software offering to optimise design activities and reduce composites waste during manufacturing.

invest in  
**Tees Valley**