



FutureStory
Glasgow

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FutureStory Glasgow

From the 18th century, Glasgow has been connected to the world's trading routes. Throughout the 19th and early 20th centuries, busy docks and ship yards along the River Clyde made it one of Europe's major cities. Social philosophers and innovative engineers from Glasgow's universities were at the forefront of progressive thinking which continues to influence the world today. And at the start of the 21st century, significant investment has transformed the banks of the Clyde, attracting new industries and new energy into the city centre.

Glasgow was hit hard by the decline of the traditional industries. During the second half of the twentieth century, almost all the ship yards closed down and many Scots left the country to create a new life as far away as America, New Zealand or South Africa.

In recent years, the Clyde Waterfront Partnership has been delivering ambitious plans to regenerate the 13 miles along the river from the city centre to Dumbarton. Pacific Quays is now the hub for the creative industries in Scotland, with new digital media firms springing up around the BBC and STV – using the internet as their export route to compete in today’s world markets.

Modern engineering is still strong in Glasgow. Global companies, such as BAE Systems and Rolls-Royce, have operations in the city. Local companies, such as Clyde Blowers and the Digital Design Studio, are stepping up to compete on a global stage. And, around them, there is an extensive network of world-class supply chain businesses.

The growth industries of the future look very different from the traditional ones. But it’s the same spirit of enterprise which made Glasgow prosperous during the industrial revolution that will be the source of its fortunes in the future. Whether it’s financial services firms helping local companies to expand internationally, or the emergence of customer contact centres, or bio-science companies becoming leaders in today’s global healthcare industry, there is now a huge variety of businesses taking advantage of new technologies and new opportunities to serve customers all over the world.

Universities are forging partnerships with business to develop innovative manufacturing processes and create new degree courses. Colleges are training apprentices for the demands of high-value engineering. Local schools are connecting the classroom with the world of work. So – at all levels – education is adapting to build the skills which will be needed to create the industries and jobs of tomorrow.

So everywhere you look today you begin to see the FutureStory of Glasgow.

Established in 1451, the University of Glasgow is one of the **oldest universities in the world**

Since 1995 Glasgow has created almost **80,000 new jobs**, making it one of the **UK’s fastest growing cities** in terms of job creation

One quarter of Scotland’s **largest businesses** are in Glasgow

£5-6 billion of new investment is expected to go into Clyde Waterfront over the next 25 years

From the early days of the industrial revolution to today's digital revolution, enterprise and innovation have connected Glasgow to global export markets

Global trade and enterprise





06 A hub for global trade and industry through the centuries

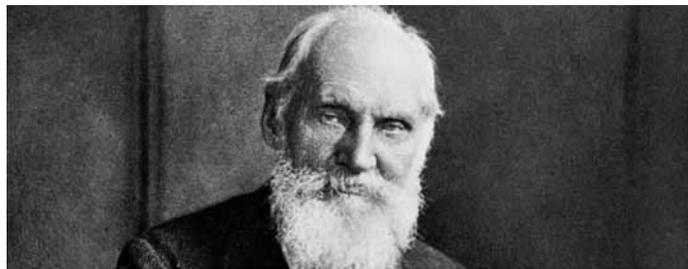
Glasgow was the birthplace for some of the main ideas and technologies that drove the Industrial Revolution – and brought massive social and economic change to Britain’s cities and towns. It became a major port, importing tobacco, cotton and sugar from Britain’s colonies and later exporting manufactured goods such as textiles, tools, machine components and even entire steam trains – and grew to be the fourth largest city in Europe.

18th Century



In the 18th century: Adam Smith – 1723-1790 – was Professor of Moral Philosophy at the University of Glasgow for more than a decade. Now known as the father of economics, he wrote the Wealth of Nations, which set out many of the key arguments in favour of free trade and globalisation.

19th Century



In the 19th century: Lord Kelvin – 1824-1907 – was another graduate of the University of Glasgow and one of the greatest scientists, engineers and inventors of the Victorian age. He developed the Kelvin temperature scale, and his research laid the foundations for international telephone calls and the internet.

20th Century

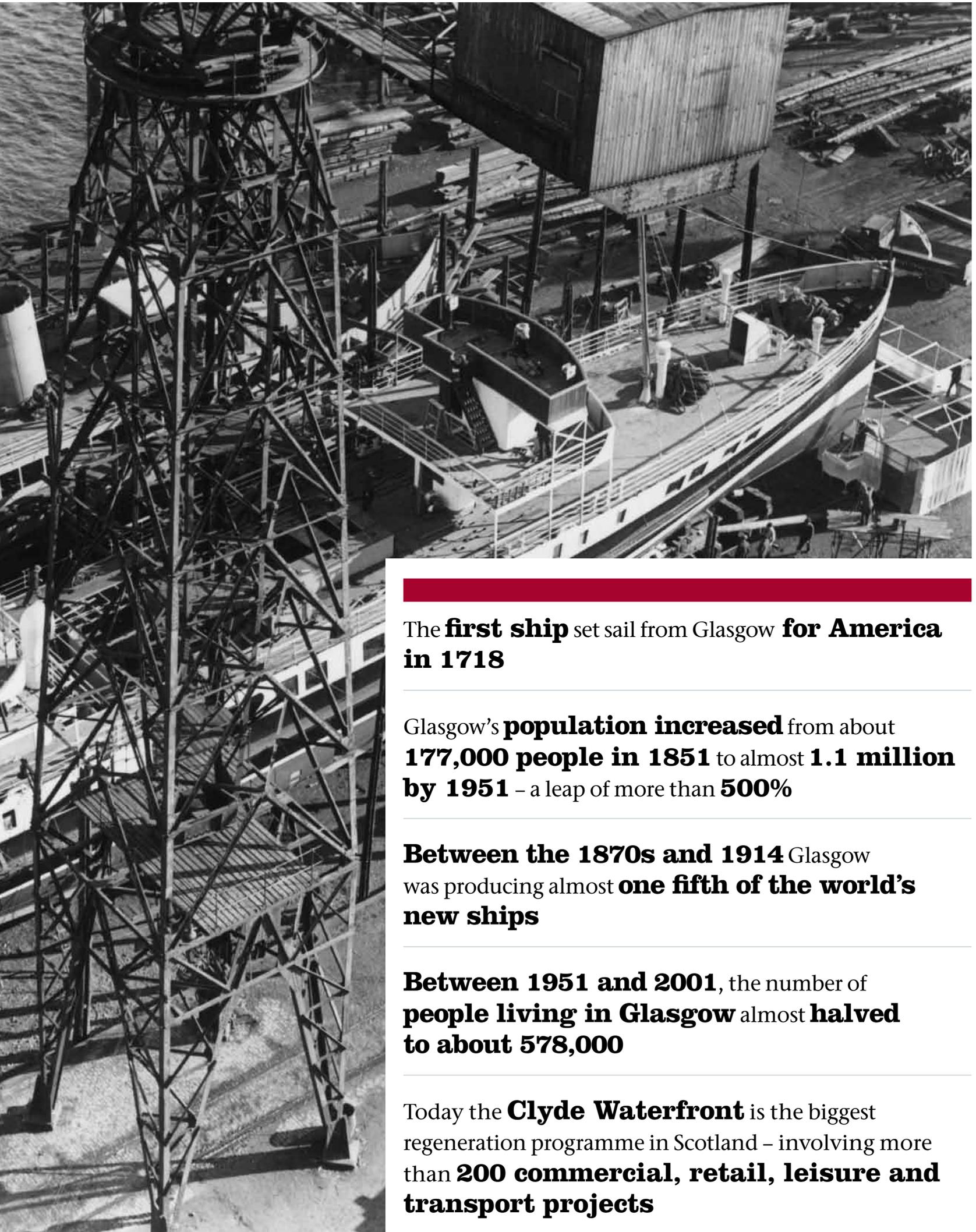


In the 20th century: At its peak, in 1913, one fifth of the world’s ships were built on the Clyde. Then, like many of the UK’s big cities, Glasgow was hit hard by the decline of traditional industries. By the late 1960’s there was little demand for the large ships and locomotives that had been the mainstay of the economy.

21st Century



In the 21st century: Huge investment has recreated Clyde Waterfront as a hub for the modern growth industries, from digital media to tourism. The city’s new economy is being built on knowledge-intensive businesses in sectors ranging from advanced manufacturing to financial services, medical science to customer contact.



The **first ship** set sail from Glasgow **for America** in **1718**

Glasgow's **population increased** from about **177,000 people in 1851** to almost **1.1 million by 1951** – a leap of more than **500%**

Between the 1870s and 1914 Glasgow was producing almost **one fifth of the world's new ships**

Between 1951 and 2001, the number of **people living in Glasgow** almost **halved to about 578,000**

Today the **Clyde Waterfront** is the biggest regeneration programme in Scotland – involving more than **200 commercial, retail, leisure and transport projects**

08 ‘The Clyde made Glasgow and Glasgow made the Clyde’

From the 18th century onwards, when the river was widened to receive trading ships, the River Clyde became the centre of Glasgow’s thriving port, the ship building industry and the many businesses which sprang up around it. Today Clyde Waterfront is being transformed into a hub for the growth industries of the future.



Back in the 17th century, the Clyde was a narrow, shallow river that had little use as a port. But at the beginning of the 18th century, the river started to be deepened and widened to allow merchant ships to come right up into the city centre with sugar, tobacco, cotton and other goods from North America. That is how Glasgow began to flourish as a commercial centre – and, as Mark Barton of the Clyde Waterfront Strategic Partnership explains, that’s why it’s often said that ‘the Clyde made Glasgow and Glasgow made the Clyde’.

But the Clyde’s fortunes started to decline after the First World War. ‘Some of the ship builders and engineering firms became less competitive in international markets, as other parts of the world were able to produce ships and other goods faster and cheaper than we were,’ says Mark. ‘Many Scots – perhaps hundreds of thousands – chose to leave for a new life in countries far away, such Canada, the USA, Australia and South Africa as the businesses and jobs disappeared from Glasgow.’

The impact of decline was hugely damaging for the banks of the Clyde, and the places that had once buzzed with activity sat unused for decades. But the past 10 years

“ Looking back at photographs from the 19th and early 20th century, the place is almost unrecognisable compared with today. Cranes were packed in nose to tail, ships were at various stages of completion, docks were rammed full of goods. ”

Throughout the 19th century, the river was humming with thousands of people working in the docks and ship yards. The coal and steel industries of Lanarkshire used the port to export their goods around the world. ‘Looking back at photographs from the 19th and early 20th century, the place is almost unrecognisable compared with today,’ continues Mark. ‘Cranes were packed in nose to tail, ships were at various stages of completion, docks were rammed full of goods.’

have seen a huge investment effort to bring life back into the area for workers, residents and tourists.

The Clyde Waterfront Strategic Partnership is responsible for co-ordinating and promoting the massive programme along the river from Glasgow city centre via Renfrew down to Dumbarton – 13 miles in total. The partnership is a concerted effort between the Scottish government, Scottish Enterprise and the three Councils in the area – Glasgow,





“ Our aim is to make Pacific Quay into a centre for the creative, broadcasting and digital media industries. It’s these kinds of industries which rely on people using brains rather than brawn, where Glasgow can compete in today’s global markets. ”



Renfrewshire and West Dunbartonshire, working together with the private sector. Around £1.5 billion has been invested so far, with a further £2 billion underway at the moment.

The Clyde is fast becoming a tourist destination, with attractions such as the Glasgow River Festival in the summertime, and the new Riverside Museum from 2011. As Mark says, ‘The vision for the Clyde Waterfront as a whole, over the next 15 to 20 years, is that it completes its regeneration and becomes a vibrant and thriving place to invest, work and live.’

Pacific Quay is one of the jewels in the crown of the Clyde’s transformation. The first major project to open there was the Glasgow Science Centre in 2001, which now attracts over 400,000 people a year. The BBC Scotland and Scottish Television located here recently, contributing to the 17,000 jobs that have been created in the area since 2003.

‘Our aim is to make Pacific Quay into a centre for the creative, broadcasting and digital media industries,’ says Mark. ‘It’s these kinds of industries which rely on people using brains rather than brawn, where Glasgow – and, indeed, the rest of the UK – can compete in today’s global markets.’



Total investment in the Clyde Waterfront **so far has been £1.46bn** – **75%** from the **private sector, 25% public sector**

Clyde Waterfront redevelopment has **created 17,000 jobs** and **6,000 new homes** since 2003

A further **£2 billion** is due to be invested **over the next three years** – including the Riverside Museum and the new SECC National Arena

Glasgow's engineering
and science businesses
are adapting to succeed
in the new global economy

High-tech, high-value engineering



14 BAE Systems Surface Ships – modern manufacturing on the Clyde

Two ship yards on the Clyde design and build warships and aircraft carriers for the Royal Navy. One of their big programmes currently is the Type 45 Destroyers – the most complex warship at sea in the world today.

“Our engineers have had to raise their game and get up to a level of expertise in a whole new range of skills to design what is significantly more sophisticated than anything we’ve built in the past,” explains Jim McHarg, Head of Employee Development for BAE Systems Surface Ships.

“The world is changing so fast with technology. It’s really important for us to stay ahead of that as best as we possibly can; that’s why we’ve spent a lot of money on developing the capabilities of our whole workforce to operate these new technologies.”



“In previous years, when we were manufacturing Type 21 and Type 23 Frigates, a lot of engineering was done on a drawing board. Now the industry has moved on to new computer-aided design packages.

“The world is changing so fast with technology. It’s really important for us to stay ahead of that as best as we possibly can; that’s why we’ve spent a lot of money on developing the capabilities of our whole workforce to operate these new technologies. We’re encouraging everyone to be computer literate, so we ensure we’re at the forefront of our game.”

A consequence of the advance in technology is that the time span from design through to launch of a ship, through to sea trials, then on to handing over to the customer, is a lot faster. Re-work is reduced and quality is increased. “A lot of our processes are automated. For example, in the steelwork area we’ve moved to automated panel lines, automated welding processes,” he continues. “Take another example, there are thousands and thousands of metres of electrical cables, pipes and ducting on a ship. Integrating all that is a real challenge, and new modelling packages have made a real difference.”

The company employs around 4,000 people in Glasgow across the two sites, one in Govan, on the south side of the river, and in Scotstoun on the north side. Govan is the main steelwork area, where raw material, sheet metal, is turned it into various units, which are then brought



together to form blocks – a Type 45, for example, is made up of five blocks from bow to stern.

The programme to deliver six Type 45 Destroyers began in 2000 and the Royal Navy took delivery of the first, HMS Daring, in 2008. The last ship, Duncan, will be launched in October 2010. These are highly complex, very skilled and long-term programmes, from concept design to manufacture, test and trials, to handing over to the customer, and then support through their thirty year lifespan.

A lot of the parts and systems which make up the build of a warship are from third parties in a broad European supply chain, including engines, weapons, and on-board computer systems. The propulsion systems, for example, are supplied by Rolls-Royce and pumps by Clyde Union. One of the essential skills which makes BAE Systems Surface

“We have over 350 apprentices going through a three-year programme with us right now – and about 50 graduates on a two-year framework, which will enable them to take on bigger roles within the organisation as they become more experienced. We’re committed to training the new breed of talent coming into the organisation, for sure.”

Ships a world leader is its ability to integrate all those complex systems. As Jim says, “Our key capability is to make sure that we are a first-class systems integrator, taking all the various components and systems and pulling all that together into a product that’s fit for purpose. That means we need people with first rate project management skills to ensure everything is properly co-ordinated and that quality, schedule and cost commitments are all met.”

Once delivered, the ship may be in service for over 30 years. So in the constant drive for security and efficiency, the customer – in this instance, the Royal Navy and the Ministry of Defence – is always very concerned about the cost of maintenance. Therefore, an important part of the value of the high-tech design, which the engineers come up with right at the start of the process, is making the ship easy to maintain throughout its whole long life.

All this explains why the company has made an investment of £4-5 million a year for the last five years on training and development. Part of that is on their apprenticeship programme. “We have over 350 apprentices going through a three-year programme with us right now – and about 50 graduates on a two-year framework, which will enable them to take on bigger roles within the organisation as they become more experienced. We’re committed to training the new breed of talent coming into the organisation, for sure,” says Jim.

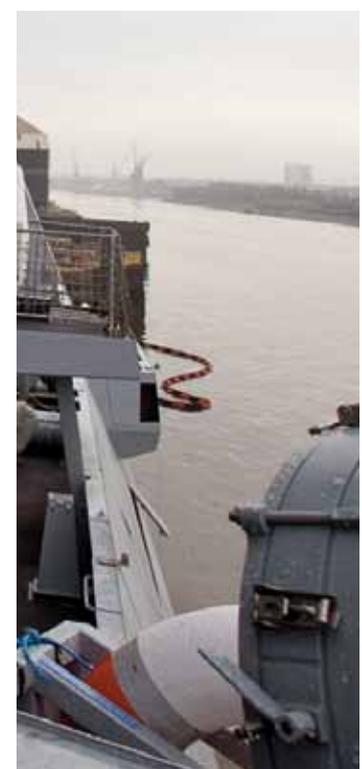
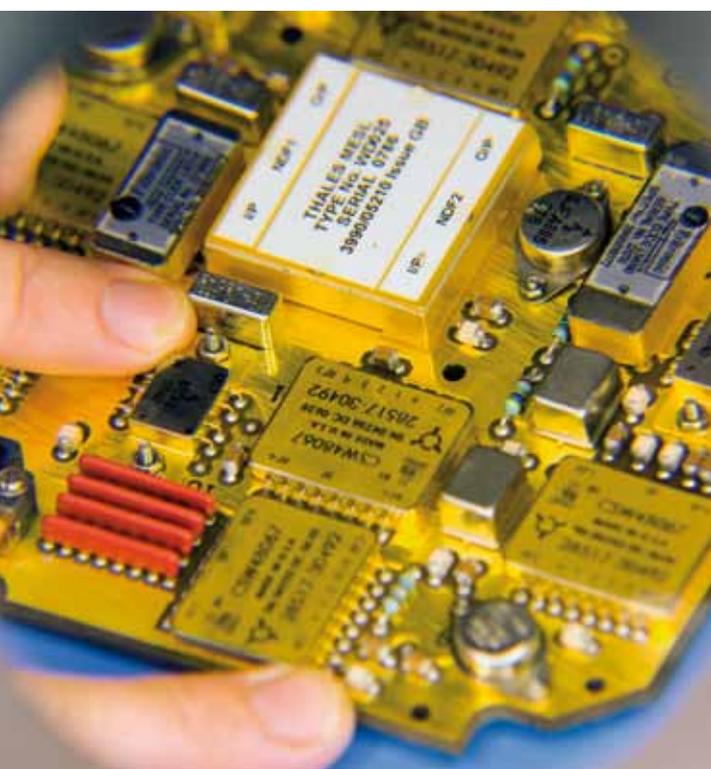
The company has also built strong relationships with local universities, such as Glasgow Caledonian University which works with them on a number of bespoke programmes, and the Marine Engineering and Naval Architecture faculty at the University of Strathclyde and Glasgow. “We do a lot of work on naval architecture,” says Jim, “to make sure the hull of the ship moves through the water with the minimum amount of drag so that we can get extra speed for the same amount of engine power.”

“The contribution this company makes to the local economy is significant. In 2008-9, that translated into £324 million to the Scottish economy and over 8,000 jobs locally. For us, it’s all about creating opportunities for people to work on these high profile contracts with the Royal Navy. Whether they’re shipbuilders or engineers, people involved in project management or finance, or working in the businesses which supply us, there’s a raft of opportunities in this industry.”

BAE Systems Surface Ships is a partner in an alliance to build two new aircraft carriers which will be the largest ships ever built for the Royal Navy. In manufacture now, they are due for delivery in 2014 and 2016. And at 65,000 tonnes each, the ships are so big that they need to be constructed in five blocks at different yards in the UK and will be brought together and integrated at the Rosyth Dockyard – so some of today’s apprentices are helping to build sections of these high-tech aircraft carriers which will be in service for decades to come.



“ A lot of the parts and systems which make up the build of a warship are from third parties in a broad European supply chain, including engines, weapons, and on-board computer systems. ”



18 Engineering apprentices at Anniesland College – mastering new skills and new technologies

Anniesland College has been training apprentices for the shipbuilding industry for 40 years and has seen technology transform the jobs they are going into.

David Loudon has seen a lot of young engineers train during his 21 years as Head of Engineering at Anniesland Further Education College, based in the West End of Glasgow, close to the banks of the Clyde – so he has first-hand experience of how technology has transformed the industry, “The traditional form of shipbuilding has moved away from the Clyde, from Scotland and from the UK. Today our focus is on the Royal Navy and the navies of the world.

“BAE Surface Ships has survived because they adapted; they changed. I would say that’s how Anniesland College has survived too. Our market is focused just on our local area, their market is the world – and yet we serve them. Therefore, we’ve had to change.”

“Who’d have thought a few years ago you’d be seeing Welders using robots. Who’d have thought you’d be seeing Burners using computerised numerical control machines to cut plates. It’s really exciting and engineers do get excited about it.”

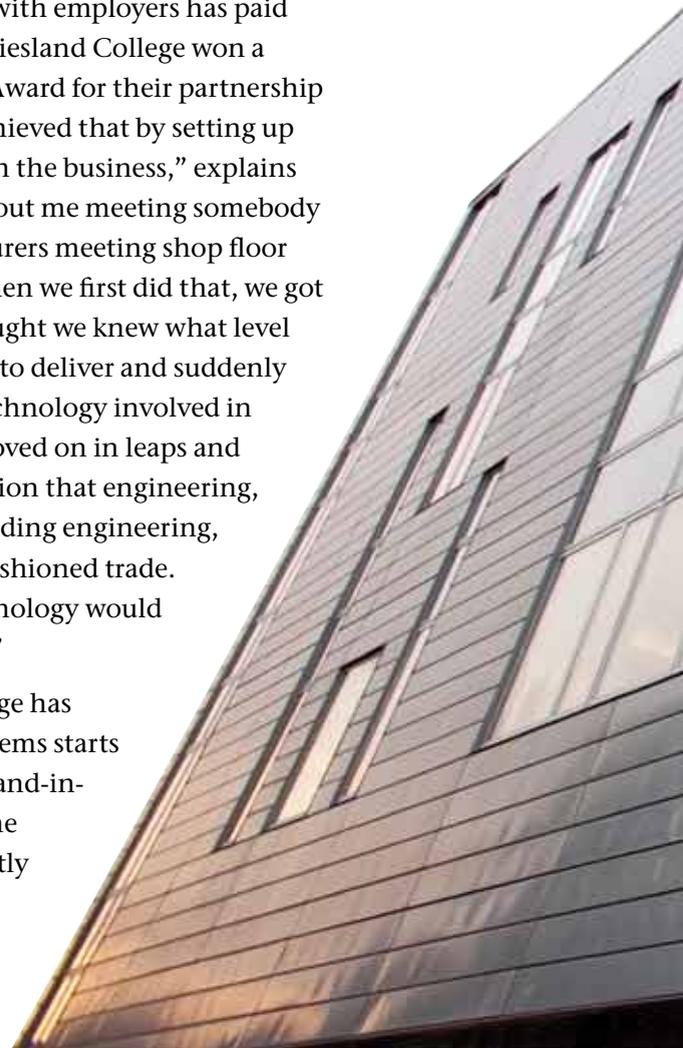
So what has that change been? “Technology has moved at a fantastic pace,” explains David. “Who’d have thought a few years ago you’d be seeing Welders using robots. Who’d have thought you’d be seeing Burners using computerised numerical control machines to cut plates. We’re training apprentices

today to work in that kind of industry and at that level of technology, with highly complex integrated systems. It’s really exciting and engineers do get excited about it.”

“Like BAE Systems itself, we’ve had to differentiate ourselves in our market. Historically colleges tended simply to give employers the courses we had to offer. But one of the great things we’ve done at the college in recent years, I think, is to take a different approach. We’ve gone direct to the employers and asked them what they actually want.”

The new way of working with employers has paid off and very recently Anniesland College won a Modern Apprenticeship Award for their partnership with Rolls-Royce. “We achieved that by setting up trade working groups with the business,” explains David. “So it’s not just about me meeting somebody in HR, it’s about the Lecturers meeting shop floor workers. To be honest, when we first did that, we got a shock – because we thought we knew what level of technology we needed to deliver and suddenly we realised the level of technology involved in engineering today has moved on in leaps and bounds. There’s a perception that engineering, more specifically shipbuilding engineering, is some sort of dark old-fashioned trade. It’s not. The level of technology would actually astonish people.”

The partnership the college has established with BAE Systems starts with Lecturers working hand-in-hand with people from the business to establish exactly





Anniesland College



what skills and what knowledge the college needs to provide to enable apprentices to flourish from the start of their careers. From there it moves onto the Senior Lecturers talking to the Production Managers; then the Head of Department level talking to more senior managers, right up to the Principal talking to Directors of BAE Systems Surface Ships.

“We deal with something like 30 to 40 companies in the region, and I’d say that the engineering industry has changed dramatically – remarkably – over recent years. What we’ve found out is that what all these companies expect of an engineer now – whether that’s a mechanical engineer or an electrical engineer, or any kind – is a far higher level of skills, knowledge and understanding. The simple reason for that is that information technology and the computer controlled systems, which are now part of everyday life, are developing at an accelerating rate,” says David.

But he concedes that, in the current tough business climate, some local firms are likely to close. “But competing successfully is about adapting and modifying, diversifying your skills and talents to

“ We’ve got to break down the barriers of people’s perception of what an engineer is. If young people don’t understand the level of new technologies involved in engineering today, they’re not going to apply for it. And that would be a waste because engineering is a fantastic career path. ”



meet these markets.” So even though almost all the traditional shipbuilding jobs on the Clyde have gone, David sees a healthy future for engineering in and around Glasgow. “As long as we have big firms with operations here, such as BAE Surface Ships or Rolls-Royce – global companies competing in global markets – those companies will require a supply chain of businesses providing them with the component parts they need to manufacture and to assemble.

“So I think there’ll continue to be engineering in Glasgow. It might have a different face. It might be more technological. It might be leaner. But it will be better; it’s a good thing.”

“Globalisation affects global companies certainly, but people tend to think that’s it, it just affects that small part of the industry. But, in reality, it affects all of their supply chains. In other words, there’s



a plethora of small engineering firms in Glasgow and the surrounding area who are affected by globalisation – and that has a direct affect on our economy locally. One example is Castle Precision which supplies components to major global companies round here, so the level of work they do and the tolerances and the precision of they work to, is fantastic; it's world-class.”

Anniesland has had the contract for BAE Surface Ship's apprenticeship programme for many years, but they're only about 60% of the 900 engineering apprentices who train at the college, “We supply apprentices to companies scattered all over Scotland, not necessarily big firms, some small and medium sized ones – such as the fabrication companies on the Highlands and Islands. There's a great demand for good apprentices. It is often undervalued and underestimated just how much these engineering firms put into our economy.”

That is why David is so passionate about getting the excitement of modern engineering across to young people in Glasgow, “We've got to break down the barriers of people's perception of what an engineer is. If young people don't understand the level of new technologies involved in engineering today, they're not going to apply for it. And that would be a waste because engineering is a fantastic career path. You'll never be without a job really because there's always somebody needing something engineered.”

22 Clyde Blowers – from local engineering firm to global success story

Jim McColl started his working life as an apprentice, spotted the potential in a local engineering business and grew it into a worldwide operation.

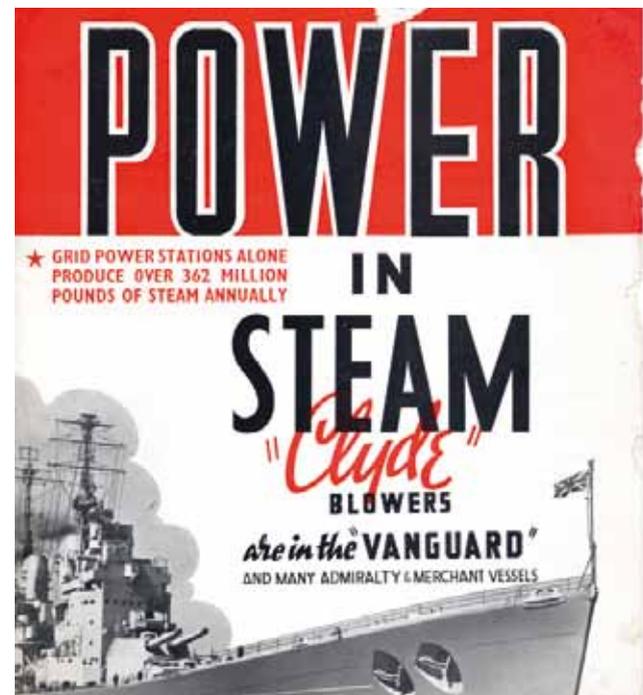
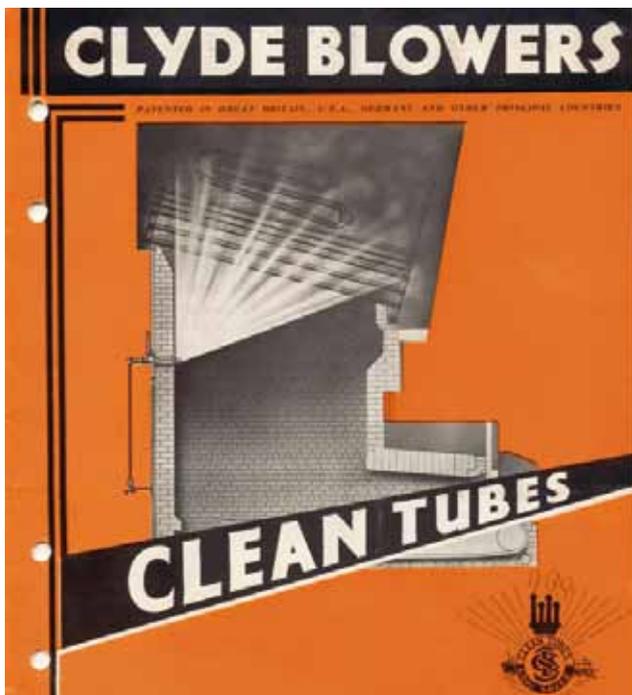
Jim left school at 16 to take up an engineering apprenticeship at Weir Pumps, one of Glasgow's oldest engineering businesses. After six years, he decided to do a degree in Technology and Business Studies at the University of Strathclyde. From there, he went back to work as an engineer but carried on his studies, taking an MBA part-time and following that with a Masters degree in International Accounting and Finance.

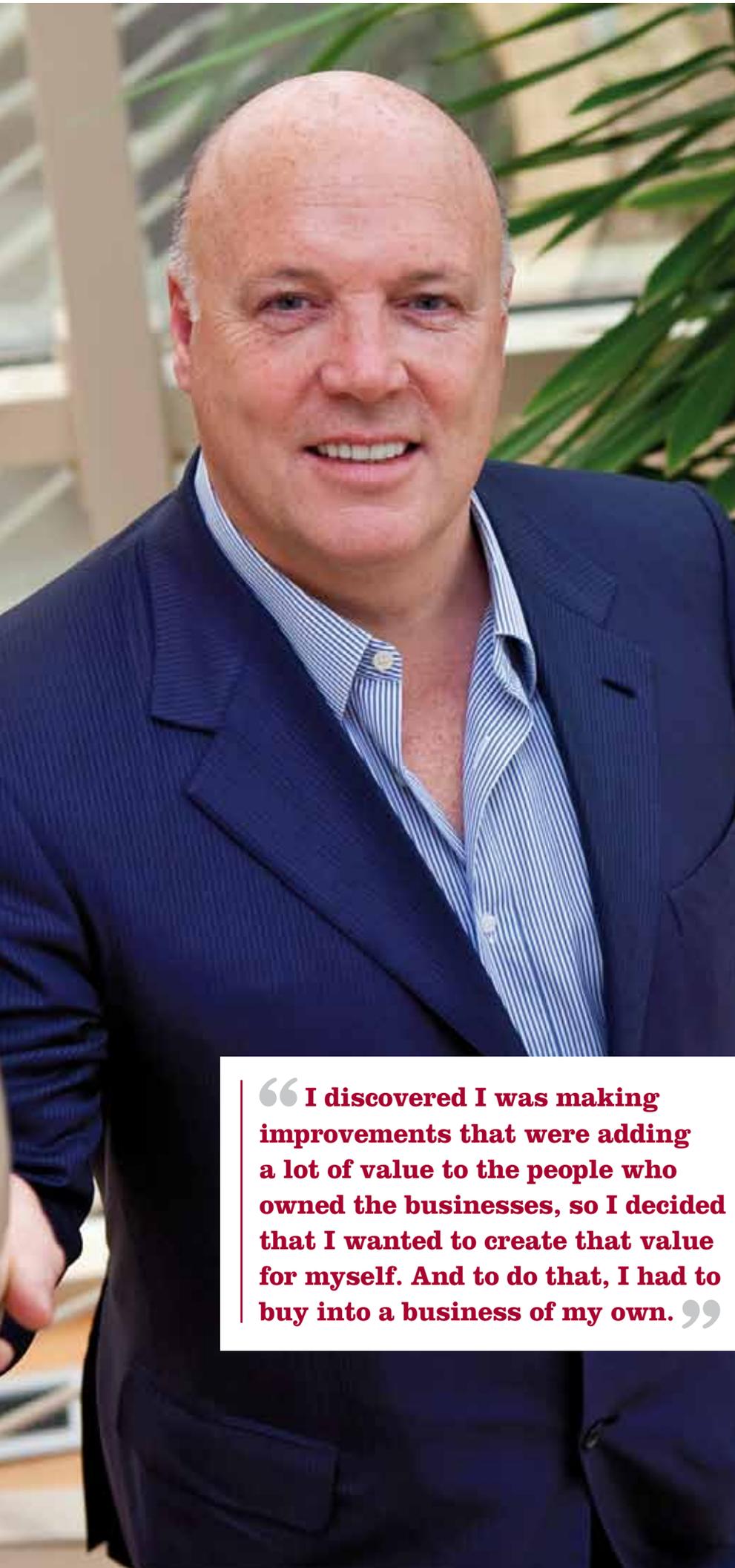
He was headhunted by Coopers and Lybrand to work in their consultancy business, and it was there that his entrepreneurial instincts first came to the fore, 'My job was to look at companies that were in trouble to see if I could come up with a way to turn them round,' he explains. "I discovered I was making improvements that were adding a lot of value to the people who owned the businesses, so I decided that I wanted to create that value for myself. And to do that, I had to buy into a business of my own."

So that's what led Jim to buy his first business in 1992, 'Glasgow was going through a period of change. A lot of traditional industries were in decline. Many of my contemporaries at university were leaving to go elsewhere. But I thought there was a lot of potential that wasn't being spotted. That's why I bought into Clyde Blowers.'

Clyde Blowers specialised in equipment to clean the inside of power station boilers – not an industry most of us have ever thought about. It's all about improving the thermal efficiency of large coal fired power plants by keeping the heat exchanger surfaces clean while the boiler is running. Jim had worked for the market leader in the industry at the start of his career, and felt sure he could see what he could do with the business.

Over the next five years, he systematically bought up six out of the seven competitors to Clyde Blowers in the world. He branched out into serving the oil and gas, metals and minerals, water and waste water,





“ I discovered I was making improvements that were adding a lot of value to the people who owned the businesses, so I decided that I wanted to create that value for myself. And to do that, I had to buy into a business of my own. ”

“ We like to focus on products and services that are key to the whole process – so that if our equipment doesn’t work and our service isn’t there, the process stops. ”

petrochemicals and chemical industries; any major industry which has engineering processes at its heart. ‘We like to focus on products and services that are key to the whole process – so that if our equipment doesn’t work and our service isn’t there, the process stops,’ explains Jim. And that strategy has paid off.

Today Clyde Blowers is made up of 85 businesses in 27 countries around the world. ‘This is very much a global company now,’ says Jim. ‘That’s different from being an international company. As an international business, you may be involved in markets overseas but you’re based in one country. We’re truly global because we have bases in the markets which we serve. The reason that’s important is so you can be close to your customers, you can service them quickly – there’s no distance or time difference.’

The original boiler cleaning equipment business was pretty basic in engineering terms, but since then Jim has focused on technology as a driver of business success. ‘We developed sensor technology software that automated that whole process. So although the core product hasn’t changed all that much, by constantly looking at new ways to do things – the way you control the process, or the way you pick up the signals to tell you something needs to be done, for example – we’ve turned the company into a technology leader in the market.’

“Innovation is absolutely key in our business – and, in fact, in any business. Innovation comes from getting close to your customers and really trying to find out what their pains are and how you can come up with a solution for those pains.”

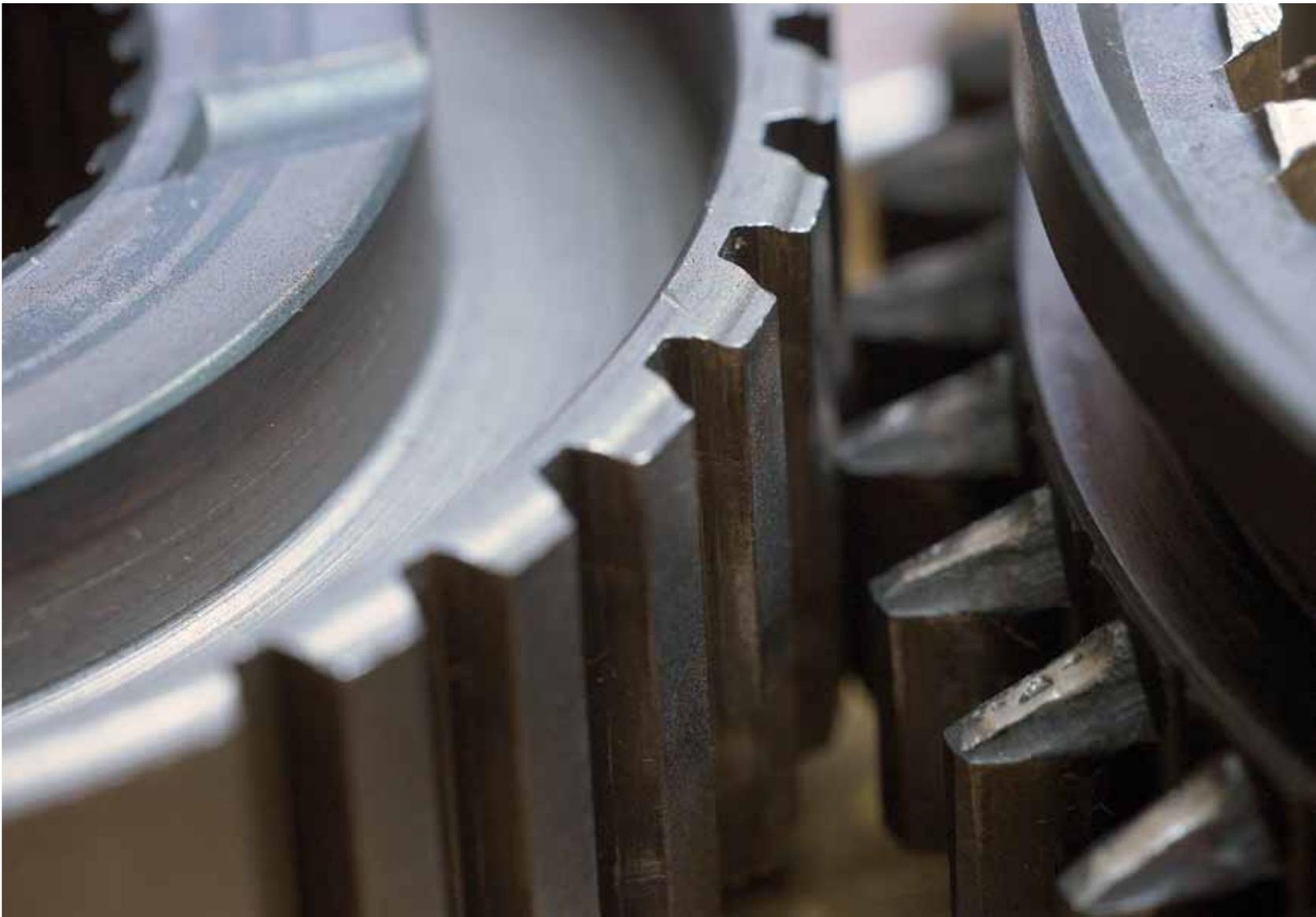
Jim acknowledges that, while the technology gets smarter all the time, service is the essential ingredient in how the business differentiates itself, ‘With modern information technology, it’s very easy for your competitors to get up to speed with the

products that you have and offer the same features. So at the end of the day you’re competing on the service you provide; being quicker to respond, focusing more exactly on what the customer needs – and working with them, rather than having a fixed view of what they should be supplied with.’

In the past year alone, Jim has completed joint ventures in Brazil and India, and is ambitious to expand their geographic footprint further still. The real growth markets for Clyde Blowers are in the developing countries, where activity is booming putting in new infrastructure, from power plants and oil refineries to mines.

‘Engineering in the UK has become increasingly focused on high value-added activity, because there are lower cost countries that can do things cheaper than we can. Also, for us, the large markets we are selling to are China, India and Brazil, and countries like that. So it doesn’t make sense to make products

“The challenges we’re seeing now in global warming, those are going to be solved by engineers – through new technologies like carbon capture. In our power business, for example, all our technologies are focused on reducing emissions and improving efficiency.”



in the UK and ship them overseas, as we did in the days of the British Empire – though many companies are still holding onto that. That means in the UK we have to concentrate on higher value-added products.’

But even with the move of much manufacturing to the East, Jim is confident that there are opportunities for engineering in Glasgow in the future, ‘The challenges we’re seeing now in global warming, those are going to be solved by engineers – through new technologies like carbon capture. There’s a new industry emerging in offshore wind and renewable fuels. And the big push nowadays towards low carbon is playing to the strengths of our business too. In our power business, for example, all our technologies are focused on reducing emissions and improving efficiency.’

Jim McColl has built a global business from a local firm, but he’s still ambitious for its future, ‘If I look back to when I started out, I would have thought

it was impossible. I couldn’t have envisaged doing things on the scale that I’m doing now. You need always just look a little bit ahead. My approach all through my life has been to reach to the next level up – but once you’re there, you look up again. It’s doing it in a series of steps that makes it manageable.’

He’s clear that what the city needs is a lot more of that entrepreneurial spirit, ‘What we need in Glasgow now is entrepreneurs – plenty of them – to start new, and grow existing, businesses. And we need to put more effort into encouraging existing businesses to raise their sights and look further afield to winning in today’s global markets.’

Jim McColl’s determination to improve his own skills was an important catalyst to his success as an entrepreneur – but he hasn’t only invested heavily in his own education. When Clyde Blowers wasn’t able to find the skills it needed to expand, the solution Jim and the team came up with was to start their own in-house university.

Clyde Union Academy was established to fill gaps in expertise, ‘It’s not easy to recruit people who are ‘job ready’ straight from university, so we set up the Academy so we could fast-track graduates and people coming in from different industries, so they could add value more quickly in any job they take in the business,’ explains Jim.

The Academy has three Masters degrees running, with tailor-made modules created by specialist engineers, who had retired but had great engineering skills, working in collaboration with academics from three Glasgow universities.

Jim McColl believes that continuously upgrading the skills of all his people is key to business success, but when it comes to recruiting he’s looking just as much at attitude, ‘We look for a can-do approach, a high level of energy, a self-starter. It’s those softer factors that I think are more important. We can train people to do many different things, if they have those characteristics.’

26 Strathclyde University – putting cutting-edge research at the forefront of business innovation

Engineering businesses compete on innovation – and the new Advanced Forming Research Centre, based at Strathclyde University, brings together engineers from academia and business to invent new techniques and processes that will help them stay ahead in today’s global markets.

“We exist to take academic research up to a level where it can be successfully exploited by manufacturing industry. So our job really is to plug the gap in between “blue skies activity” and manufacturing,” says Jeff Brooks, Research Director for the Advanced Forming Research Centre.

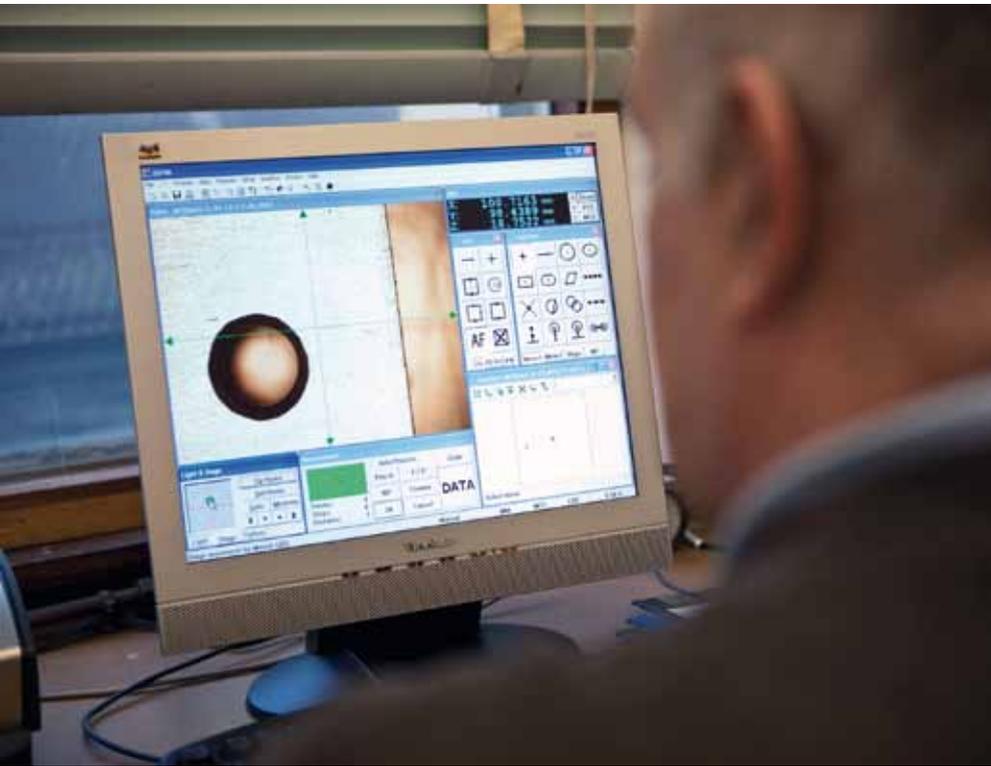
“Companies which are normally competitors in the commercial world, choose to collaborate to create breakthroughs in some of the latest technologies on which all their businesses depend.”



Opened in 2009, the Centre is a place where world-class businesses – such as Rolls-Royce, Boeing, Mettis Aerospace, Timet and many others – come together to work with top research scientists. So companies which are normally competitors in the commercial world, choose to collaborate to create breakthroughs in some of the latest technologies on which all their businesses depend. One of the key advantages of the Centre is production scale equipment which can operate and test to industrial levels, rather than the smaller facilities which academic engineers generally get to work with.

“There are lots of new materials these days that companies want to manufacture their products in,” explains Professor Bill Ion, Operations Director at the Centre. But he sees engineers today as similar in essence to engineers 100 years ago, “The challenges they faced then and the way they approached them are similar. But it’s the technologies and tools we use today that are quite different. We have far more sophisticated instrumentation, and a huge amount of it involves computerised modelling of manufacturing processes.”

The skills involved are very varied, from practical metal working to computer simulation or metallurgy, with people who understand the essential nature of the materials. “The businesses we work with need engineers who can understand how to make the best of a manufacturing processes as a whole, whether that’s for the production of a car or a jet engine – and, at the same time, they need engineers who can understand how to maximise the output of a single machine,” says Bill.



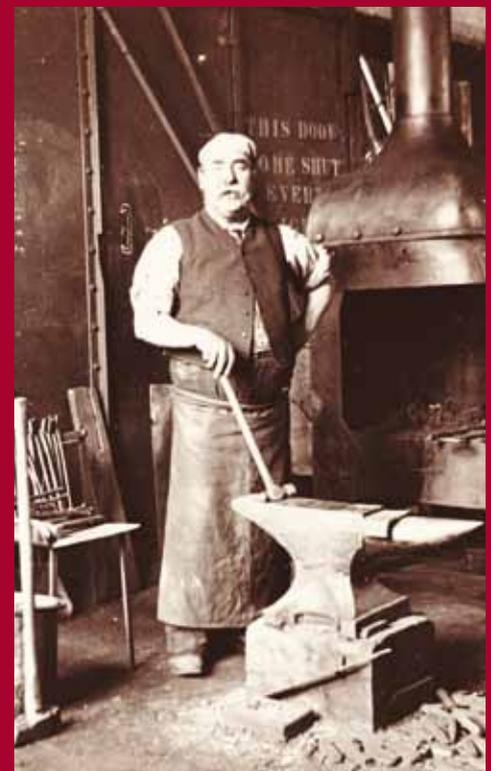
“The Centre is at the forefront of a rising trend in the UK to move pure academic research out of the laboratory and make it relevant to modern industrial needs.”

“Our corporate partners share three main priorities for the research: improved productivity, improved performance of the components and lower cost. Forming and forging utilises a lot of energy because the technique is based on heating metal. So companies are interested in reducing the amount of energy used in the process; that’s key to a lot of the projects we’re working on. All the companies we work with have targets to reduce carbon emissions, so the shift to a low carbon economy is absolutely at the heart of the work we’re doing.”

The Centre is at the forefront of a rising trend in the UK to move pure academic research out of the laboratory and make it relevant to modern industrial needs. Jeff’s own specialist area is the relationship between the microstructure of materials and the performance of components. As he says, “Innovation and the development of advanced components like these are absolutely key to the future of manufacturing industry in this country.”

Undertaken for around 7,000 years, “forging” and “forming” are the oldest sort of metalworking processes known to mankind.

“It’s important because it allows us to take metallic materials and make them into shapes that are useful for human beings. The most primitive form of forging is a blacksmith, taking a hammer and bashing the hot metal over an anvil,” explains Professor Jeff Brooks. “But modern forming techniques have moved on, of course, and today a complex suite of specialist tools allow experts to manufacture components to very precise shapes.”



28 Aggreko – from local company to global leader

‘We’re very proud to be a global company and we’re also very proud to be a Scottish company,’ says Carole Cran, Financial Controller of Aggreko. ‘Our heritage is here, we manufacture and test our equipment here in Dumbarton but we export all around the world – and last year we sold into 100 countries.’



“ As little as 10 years ago, most of the sub-assemblies for our products were sourced from within Europe, and now they’re coming from China. ”

'We're a world leader in the supply of temporary power and temperature control - which in itself probably doesn't mean a great deal to most people,' explains Carole, so she's found that giving an example makes it easier to recognise what the company does. 'We did 50% of the temporary power for the Beijing Olympics. The organising committee never likes to rely solely on the permanent grid of the country that the Olympics is happening in, so they always have back-up temporary power - and that was us. That's the glamorous end of what we do.'

On a more day to day level, computers have to be kept at a certain temperature to operate so, if the air conditioning breaks down in the technology centre of a big company, for example, Aggreko comes in with a bank of chillers to keep the temperature down to the level it needs to be so the company can keep working. Another significant part of their business is in Sub-Saharan Africa where they supply power to cities in countries such as Angola or Uganda where the permanent grid is not reliable.

The engineering world has changed a great deal over recent years, from the arrival of computer generated design packages to international sourcing, 'As little as 10 years ago, most of the sub-assemblies for our products were sourced from within Europe, and now they're coming from China,' says Carole.

The company now has a permanent presence in over 30 countries, so a critical part of their management structure, as Carole sees it, is the international helpdesk they've set up in their technology centre in Dumbarton, 'We have people in 130 service centres and they are all linked to Glasgow from a technology perspective. And our senior management team is constantly on the road visiting our service centres round the world. So we're very global in our approach.'



30 Closing the gap between the classroom and the world of work

In 2009 Aggreko joined-up with St. Mungo's Academy to give pupils at the school an understanding of the opportunities on their doorstep.

A perspective from St Mungo's Academy

St Mungo's Academy has been in Glasgow for 150 years, but just last year, St Mungo's teamed up with local business, Aggreko, to give students a sense of the real world of work. John Riley, Head Teacher of St. Mungo's, says the relationship has taken off even beyond their expectations. 'It's absolutely fantastic for students to see how what they're learning in the classroom has relevance in the outside world.'

'For our Business Studies students to visit Aggreko and see how what they're doing in school is similar to what is happening in the HR Department, or for our Product Design students to see how what they do with us works at a more advanced level in the manufacturing facility at Dumbarton, is outstanding,' John continues.

“What's the connection between Dennistoun, Dumbarton and Beijing?” The answer's Aggreko, because the business has operators in all those places. It's powerful for our students to know that a company which has its head quarters in Glasgow has a worldwide presence. ”

He sees making the connection to the world of work as relevant to all subjects across the curriculum, 'All the communication skills involved in the English department, for example; reading, writing, listening, talking, are essential to becoming somebody who is employable. And our Work Experience programme in Year 4 shows students that what they're learning in school in their dress code, or being mannerly and punctual, is transferable to the real world: we demand that of them in the school situation and it will be demanded of them in the workplace.'



'For students leaving school now – 17 years old, maybe – the shipyards and heavy engineering plants that Glasgow was famous for had disappeared before they were born. But I think they now have a much broader view of where they see their future might lie. Nowadays, when a young person leaves school and goes into a job, that's just the start – they'll probably have half a dozen jobs throughout their life. So to prepare young people for the 21st century, I think, our most important responsibility is to give them a set of transferable skills, so they can take the opportunity to embark on any number of career paths. That's our core business; that's what we've got to do.'

'Young people have a far more worldly view than I ever had when I was their age, partly because of the way telecommunications have advanced. They're so comfortable with texting, emailing, and connecting to people on the other side of the world through Skype, for instance.

'That's why it's so important that they get to see a global company like Aggreko close-up. I say to them, "What's the connection between Dennistoun, Dumbarton and Beijing?" The answer's Aggreko, because the business has operations based in all those places. It's powerful for our students to know that a company which has its head quarters in Glasgow has a worldwide presence.'



“ To give the pupils visibility of the opportunities out there for them is really important – and something which, as an international business, we can contribute to quite simply. ”

A perspective from Aggreko

Aggreko has a significant operational base in Kenya and has worked with Kenyan schools on a book aid programme for a number of years. But until recently the company had not linked up with schools in their own backyard. Then the Scottish Executive approached them to participate in a programme designed to make what happens in the classroom more relevant to the world of work – and they were keen to get started.

So far, the company has hosted students on visits to their technology centre and their manufacturing facility – and they’ve even been helping with interview skills. ‘We don’t often get the opportunity to do something like this and spend time with pupils. It’s been really stimulating and we personally get something out of it too. We absolutely want to be involved in this sort of programme,’ says Carole Cran, Financial Controller of Aggreko.

‘Our partnership is still new, so we’re exploring what we can do together,’ she continues. ‘One idea we have for the future

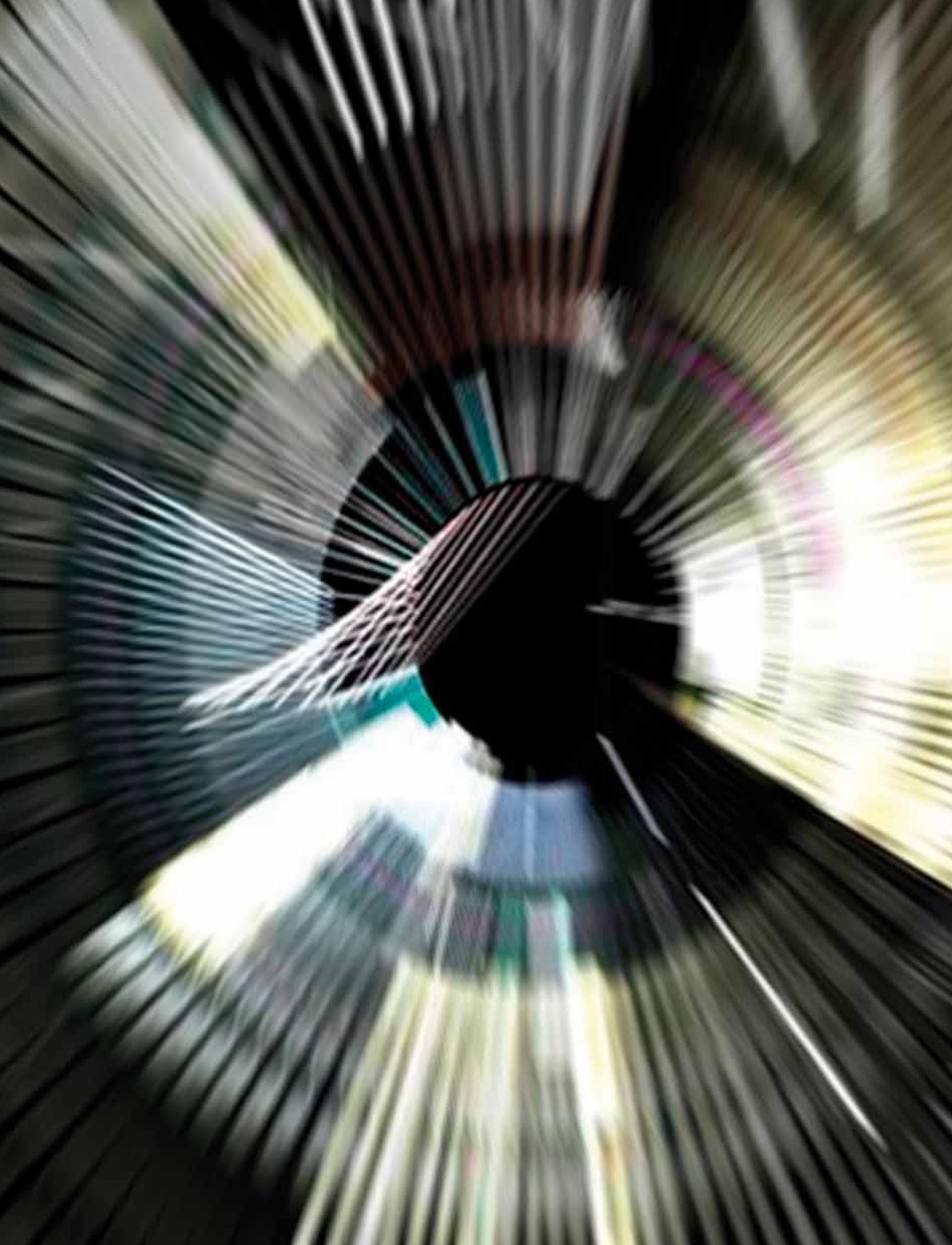
is to involve our managers who travel a lot. For example, someone who runs our African business and works with African schools could go into St. Mungo’s in Glasgow and share what he does. And we have quite a significant presence in Latin America, so we’d like to introduce the pupils to some of our teams from non-English speaking countries.

‘I think to really open their eyes to the global nature of our business, it would be great to meet people from other parts of the world.

‘To give the pupils visibility of the opportunities out there for them is really important – and something which, as an international business, we can contribute to quite simply. Maybe one of the pupils who get involved might be a future manager of Aggreko, if not within Scotland, then perhaps somewhere else in the world.’

The banks of the River Clyde
are being transformed as
a hub for the growth
industries of the future

Creative business at the heart of the city



34 Pacific Quay – Scotland’s digital media centre and a hub for one of the key growth industries of the future

Once the banks of the Clyde were dominated by ship yards and ports, and shipping routes were Glasgow’s connection to world trade and exports. For the creative and media businesses based along the Clyde at Pacific Quay today, products are digital and the internet is their route to global export markets.

The area was vacant until about 10 years ago and then the BBC, Scottish Television, Galaxy FM and a number of other creative industry companies decided to relocate to the area.

The momentum continues to grow. The Hub a new building, opened in 2009, is already 50% occupied, with the likes of Glasgow School of Art’s Digital Design Studio and Shed Media based there. Film City Glasgow, an incubator for film and media companies, is busy with production projects.

Mark Barton from the Clyde Waterfront Strategic Partnership is enthusiastic about the continued expansion of the site, ‘We want Pacific Quay to attract more creative and digital media companies to the area because we know they will play a very important part in the future economy of Scotland.’





36 Film City Glasgow – home to the creative talent of tomorrow

The city converted the old Govan Town Hall into a state-of-the-art business space to help small film and digital companies grow and create new jobs.



Opened in 2008, Film City Glasgow was developed by a joint venture between Glasgow City Council, Scottish Enterprise and European Regional Development Funding.

“ Film City Glasgow is an important part of the city’s strategy for retaining skilled and talented people, and generating high skilled jobs in the creative industries. ”

Tiernan Kelly, Film City Glasgow’s General Manager, explains its origins. ‘It’s an impressive building, reflecting the strength of the shipbuilding and engineering industries of the nineteenth century. Having gone through a really difficult period with most of the shipyards in the area closing, a massive impetus for change has emerged in the city and a lot of money has been invested in places which can build the growth businesses of future.’

‘We want to offer top quality space for production and post-production companies in Glasgow so that it’s cheap and easy for them to set up here. We tend to focus on films with budgets of £1 to £3 million; which is normally classed as small budget by Hollywood standards.’

In the film industry, even small companies need to forge international links, as Tiernan explains, ‘It’s often impossible to get a film funded without overseas investment; we’ve got a film being worked on here at the moment which is backed by German and French money, as well as Scottish funding, for instance.’

That global mindset along with local connections makes for a powerful combination, he continues, ‘One of the companies based here specialises in 3D digital design – and unless you stay bang up to date with the research and technology in that field you can get left behind by your competitors pretty quickly. So linking up with universities is a great way to stay abreast of latest developments. Establishing those relationships can be difficult for small businesses, so that’s another area where we can help them.’

Film City Glasgow is an important part of the city’s strategy for retaining skilled and talented people, and generating high skilled jobs in the creative industries. ‘In smaller countries like Scotland there’s always a concern about a talent drain, because some of the most capable people tend to want to go down to London or over to the US to pursue their careers. But with the facilities that we’ve got here now – such as our leading-edge sound equipment – we can offer access to the same kind of technology at about half the cost. We’ve already got over 20 small creative businesses on site at the moment, with almost 100 employees between them, working across all aspects of the TV and film industry.’

“ A massive impetus for change has emerged in the city and a lot of money has been invested in places which can build the growth businesses of future. ”

SAVALAS – stepping up to the creative opportunity

One of the entrepreneurial companies located in Film City is Savalas – a sound engineering business set up in Glasgow in 1998.

‘We do sound and music mixing for TV and film. For a BBC documentary, for example, we’d lay the sound effects over the visuals, put the music in, record the voice and mix it all to broadcast standards,’ explains Giles Lamb, one of Savalas’ directors and founders.

“ When we set up the business there were only four of us and we ran it from our bedrooms initially. We’d left university and we just went for it. ”

Digital technology is changing the kind of the work they do. Sound effects for computer games are a growing part of their business, ‘In the past year, we’ve done Crysis 2, Turning Point and Arc – all Playstation 3 games,’ says Giles. ‘We’ve also been working on the sound effects for iPhone applications – and the businesses we work on for those kinds of projects tend to be based in LA or Washington.’



Giles set up Savalas with three friends, after they realised that the combination of their different skills could create a successful company. ‘When we set up the business there were only four of us and we ran it from our bedrooms initially. We left university and just went for it,’ he says.

But it hasn’t been plain sailing. ‘The business side of it was tough. None of us had any business training. We were creatives rather than business people. So the logistics aspect of it was a big challenge for us at first, for example, when you grow the company and start employing more people. But it’s part of what makes running a business such an interesting challenge.’

Another challenge to the whole industry is the growth of ‘Do It Yourself’ sound engineering software and technologies. ‘A lot of what we’ve traditionally done, people can now do at home on their laptops or in their own offices because technological advances mean anyone’s got access to the kit to do it. So, generally, professional post-production is changing. We try and focus on the higher-end activity – feature films and computer games – where standards are always rising because quality is such an important determinant of success.’

Technology may be a threat to the business, but it’s also one of the most important enablers. The internet helps Savalas collaborate with people and businesses elsewhere in the world. ‘We can work wherever and with whomever we want,’ says Giles. ‘For a recent drama we did for the BBC we used a guy based in LA because he was the best available for the job. That’s what it’s all about for me. Borders don’t really matter anymore. We need to be flexible and go for excellence wherever that exits.’

“ Borders don’t really matter anymore. We need to be flexible and go for excellence wherever that exits. ”

38 999 Design – at the heart of Glasgow’s creative design community

The firm began in 1982 with 8 people doing graphic design and has grown to a team of 40 design professionals across the UK, with offices in Glasgow, Manchester and London.



The services offered by 999 have expanded since the firm began. ‘Today we work on large branding exercises for our clients,’ says Richard Bissland, one of the founding members of the company. ‘Clients have become much more sophisticated in how they reach their customers. They see their brand as critical to how they compete and how they create an empathy with their audience. That means we need to get under the skin of our clients and understand the business itself.’ So these days the firm delivers a wide range of services from branding through to marketing literature, packaging and events.

“ Everything is produced on computer. There’s been a complete transition from hand-produced artwork to digital, which has led to some great innovations. ”

The technologies that designers use have changed over the years too. As Richard says, ‘Everything is produced on computer. There’s been a complete transition from hand-produced artwork to digital, which has led to some great innovations. It’s much clearer, simpler and easier to make changes, so everything’s a lot faster.’

‘A lot of the major UK consultancies are looking abroad to find business because the fact is that with communication these days it doesn’t really matter where you’re based. Your client could be anywhere in the world, just press a button and they can see your work immediately. So technology has broadened our base enormously,’ he continues. For over five years, 999 has done work in the United States but, in the past year alone, the business has had enquiries from Taiwan, Croatia and other European countries.

With clients’ expectations rising, technology advancing and international reach expanding, Richard sees an improvement in the quality of talent coming into the industry, ‘Modern students are a lot more design and brand savvy than they were in the old days. They have creative, analytical and problem solving skills all woven into one person, which is great. It’s what the design industry needs.’

The business has built links with Glasgow Design College to offer work placements because Richard believes the students benefit so much from being in a real workplace, ‘We try to give them a feel for what it will be like in the real world, once they’re qualified.’



“ There’s much more of a creative bias in the city now than there was before and Glasgow is flying the flag for fashion, music, drama, design and the digital arts, which will be critical to the success of Glasgow in the future. ”

It takes them out of their safe zone. They get an insight into the commercial environment; what it’s like to apply creative thinking quickly and effectively, dealing with a real brief, under real time constraints.”

Over the years, Richard has seen Glasgow itself go through a period of transition, “The change is dramatic. The old industries are dying away and the new industries are taking a foothold. There’s much more of a creative bias in the city now than there was before and Glasgow is flying the flag for fashion, music, drama, design and the digital arts, which will be critical to the success of Glasgow in the future. For me, it’s exciting to be part of a city that’s so creative.”



40 The Digital Design Studio – leading the way in high-tech creativity

Glasgow School of Art's Digital Design Studio is at the forefront of the digital revolution, building 3D designs for everything from city streets to medical training.

'We've got the largest virtual reality lab in the UK,' says Professor Paul Anderson, a Director of the Studio, who explains why their work has become so important in recent years. 'Basically, anything that people touch and interact with can be modelled. And being able to manipulate 3D images – whether they're of cars, buildings or bodies – is a great way of designing a product or practising a skill.'

Paul heads up Digital Design Studio's commercial projects with major businesses, such as the simulation work they have done for Ford Motor Company's advanced design studios in Detroit., 'We're creating virtual prototypes of new car designs, which are being used to test new concepts, reduce risk and cut time to market. So the company can build several digital prototypes before they make final decisions on which one they are going to put into production.'



“ Today we're digitally prototyping ships and complex oil platforms, so we're building the virtual equivalents of the engineering feats that used to happen here. ”

The team at Digital Design Studio also uses advanced laser scanning to produce 3D models of buildings and even cities – including Glasgow. 'We went from street corner to street corner picking out the streets and buildings we needed to cover and scanned them in from different vantage points, and processed the images to end up with a unified 3D image of the cityscape,' explains Doug Pritchard, who heads up the Visualisation team. 'Glasgow's built environment has been going through major changes and the Council wanted to help the local community get a better understanding of just what's been going on in terms of regeneration and the construction of the modern city.'

Recently the Digital Design Studio has been working with the National Parks Service in the United States to capture a 3D model of Mount Rushmore, 'People can't actually get close to the mountain,' says Doug, 'so this is a way of getting a clearer idea of what it looks like.'



“ One of the most exciting projects going on at the Studio at the moment is on the teaching of anatomy through interactive simulation: we believe it’s going to transform the future of medical education, not just in Scotland but worldwide. ”

One of the most exciting projects going on at the Studio at the moment is on the teaching of anatomy through interactive simulation. Working with the Royal College of Physicians and Surgeons in Glasgow and NHS Education, they are pioneering sophisticated animation techniques to help medical students and surgeons practice operations before doing them in real life. ‘We believe it’s going to transform the future of medical education, not just in Scotland but worldwide,’ says Paul. ‘It’s going to allow people to touch and feel anatomy in an innovative way, which will reduce risk at the same time as significantly enhancing teaching and learning.’

‘Our business is global. We’ve got a strong Scottish base, but we’re doing projects all around the world. What we are building for people are digital data sets, so they can be sent anywhere across the globe in a moment,’ he explains. ‘And our work has grown as design has moved from the conventional world to digital world where everything is built in 3D inside a computer – but also, just as important, where we can now visualise that data and enable people to interact with it.’

The Studio is part of one of the oldest art and design institutions in the UK, the Glasgow School of Art. So, as well as their commercial activity, the Digital Design Studio offers two Masters degrees, in Animation and in Sound for Moving Image, which are focused on the use of advanced digital technologies. ‘One of the reasons we’re based here in Glasgow’s digital media hub is that we’re close to BBC’s headquarters in Scotland, also to STV and a whole range of companies creating digital content. That’s a rapidly growing industry worldwide, so we’re not just producing graduates for Scotland, or even the UK. Our graduates are going anywhere across Europe, the United States or the Far East.’

‘Yet, at the same time, Glasgow’s history is fantastic in terms of ship building and heavy engineering. The building the Studio is based in is at the heart of what was the ship building industry. And though the physical steel making and welding that took place decades ago has gone, we’ve replaced it with new technology. Today we’re digitally prototyping ships and complex oil platforms, so we’re building the virtual equivalents of the engineering feats that used to happen here. That’s very exciting; all the conceptual engineering and high-end technical creativity that is our heritage continues to this day.’

The people leaving the Masters programmes go into a wide range of disciplines, from engineering to broadcast. This cross over between high-end technology and high-end artistic creativity, and the multiple ways those skills can be applied, is critical to the Studio’s future. Paul is enthusiastic about the potential, ‘We’re expanding rapidly. We’re taking on new staff. We’re bringing in new technologies – particularly interactive technology. So I think in the future we’re going to be bigger, but in global terms we’re also going to be very competitive because we’re focused on specialised high-end markets.’

New technologies,
new scientific discoveries
and the demand for new
services are creating opportunities
for entrepreneurial companies to
compete in worldwide markets

New engines of growth



44 Glasgow's new Customer Contact industry – creating jobs for the future

Almost one million people today work in customer contact centres around the UK, and Glasgow has become a leading base for the industry.



“There’s been a huge explosion of our need, as a population, to communicate with more than one provider of services, from music downloads to insurance, travel to television. All of them demand a contact point with the organisation with which we have the contract – and the ‘contact centre’ sector emerged to enable us to do that,” explains Anne Marie Forsyth, Chief Executive of the Customer Contact Association, based in Glasgow.

Anne Marie identifies three factors which led to the rapid growth of the industry. The initial spur was the deregulation of telecommunications, financial services and utilities, all at about the same time in the early ‘90s. Suddenly, people had more than one option and providers could compete with one another for business.

“With working life getting busier and with more relationships with different service providers to manage, people wanted access to services outside normal opening hours.”

Second, technology transformed what was possible. In particular, the invention of the ‘automatic call distributor’ allowed companies to route calls efficiently without the need for switchboard operators. Technology enabled companies to cut costs and do more for their customers both at the same time.

Third, customers got more demanding. With working life getting busier and more relationships with different service providers to manage, people wanted access to services outside normal opening hours. ‘I’m old enough to remember going to the bank at lunchtime and having to spend almost your entire lunchtime queuing,’ reflects Anne Marie. ‘So doing banking in the comfort of your own home, whether it’s on the internet or the phone, at whatever time you want, is a fantastic benefit.’

With contact centres springing up all over the country, Glasgow stole a march on other cities right from the start, ‘In the early days the authorities worked hard to attract business to the city to replace

the heavy industry jobs that had been lost, and that focused approach has made all the difference,' says Anne Marie. Today around 40,000 people work in the industry in and around the city, for a wide range of major companies such as Direct Line, Lloyds TSB and O2. Most recently Tesco Personal Finance has moved in.

One of the common concerns for UK customer contact centres is that employment will be lost to countries where labour costs are lower, such as India. But Anne Marie thinks that the future of industry in the UK is still promising, "It's a global sector now. We sometimes forget that there are lots of companies in the UK, and in Glasgow as well, who serve a global market through big operators, like Dell or IBM. There are about 50,000 people employed serving the UK from contact centres in India, versus about a million here. The more things go online, the greater will be the demand for more complex customer service and the more it requires cultural empathy. I think most companies understand that now.'

The industry's still evolving fast. Voice recognition is one new technology making a big difference. National Rail Enquiries already has a comprehensive voice recognition service – and insurance companies are even beginning to use the technology for secure identification purposes.

For somebody on the front-line serving a customer, the job is considerably more sophisticated than it was just a few years ago. "There's been such a big shift to automated responses for the simple things that what's left, by its very nature, has become a more complex job. People have to think on their feet. They have to be able to problem solve. They may

have to work on several screens simultaneously to answer an enquiry and then, of course, they have to record the whole thing for the intelligence of the organisation.

'Above all, they have to empathise with the customer. It may be a difficult call, or an angry call. If it's an insurance case, somebody may be highly emotional because they have lost a partner. In a tough economic climate, they may be worried about the implications of a tariff on their household finances.'

“ There's been such a big shift to automated responses for the simple things that what's left, by its very nature, has become a more complex job. ”

The Customer Contact Association has been researching the special characteristics of Generation Y: people under 25 years old. 'Multi-tasking and multi-skilling are part of the culture of young people today; they're very good at it,' says Anne Marie. 'So companies need to make sure they're taking advantage of the talents of this next generation, which are ideal for the new type of work that's emerging.'



46 Marsh – expertise in managing risk on a global stage

Business and financial services have been growing in Glasgow over the past 10 years and many international companies have established offices in the city as a base for their UK or European headquarters – Marsh is one of those.

Marsh is part of global professional services firm Marsh & McLennan Companies, which has about 52,000 employees, operations in 100 countries and revenues exceeding \$10 billion a year.

Gordon Duncan, the Regional Development Director for Scotland, Northern Ireland and the Isle of Man, explains what kind of insurance Marsh offers, ‘We help companies manage their risk. So, for example, if you

“Cyber Liability would be a good example of a type of insurance product that was very specialised 10 years ago but is more prevalent today for anyone trading on the internet.”

were a manufacturing company, by law you need employee protection against injury or disease. But also you may want Product Liability insurance, which would cover the

firm if for some reason your products failed to meet the necessary standards when they reach the consumer – or, Business Interruption insurance in the event of a fire or some other accident that prevented the company operating for a time.’

The insurance industry is evolving with the way risks are changing in the world. ‘Cyber Liability would be a good example of a type of insurance product that was very specialised 10 years ago but is more prevalent today for anyone trading on the internet,’ says John Nicholson, Chairman of Marsh UK for the region.

Glasgow has become the centre of the insurance industry in Scotland, and many global firms have a presence in the city. In this trend to larger companies serving world markets, Marsh’s international capability works in two ways. They look after international clients needing a local Scottish service and, at the same time, Scottish clients expanding from their home base. ‘Our international network is very important because more and more of our clients are growing internationally and they’re looking for risk transfer and insurance solutions that can help them be successful wherever they are around the world. We’re able to offer them a consistent standard of service through our global network.’

‘The main changes in the industry are driven by how client demands have altered over recent years,’ reflects Gordon. ‘Insurance used to be seen as a necessary evil but it’s become much more sophisticated. Today





“ It’s a relationship business and our key asset is the strength, quality and talent of our colleagues... competitiveness is based on how we make the most effective use of our local knowledge across the global network. ”

it’s about risk management overall and considering how best to manage the company through different economic circumstances and shocks – including, most recently the recession – so they can recover more quickly than they would have done if they didn’t have any protection. So it’s about risk management overall.

‘Also a company’s risk management structure has an impact on how it is ranked by the credit rating agencies which, in turn, affects how easily it can borrow money and at what interest rate. So risk management is about delivering business benefit.’

So how does Marsh stay competitive in such a crowded international market? Gordon says it’s about skills and technology. Technology because the firm must have tailored computer systems that enable clients to access the information they need worldwide fast. Skills because Marsh offers consultative services, therefore, as the chairman says, ‘It’s a relationship business and our key asset is the strength, quality and talent of our colleagues.’

The firm still requires the traditional skill base of insurance qualifications, of course. But these days, it has broadened its horizons and is looking for people with the ability to

understand and study risk management, and communication and relationship skills, in order to compete with the likes of the Big 4 accountancy firms. Marsh likes to recruit locally and has good relationships with Glasgow University and there is now even a Risk Management degree at Glasgow Caledonian University.

To do client service work, Marsh requires a graduate level qualification generally, although not always a financial degree – but even so they expect to train their new recruits. ‘Our graduates do accelerated training and leadership programmes,’ says John. ‘For the calibre of service we need to offer our international clients now, we’re investing more than ever in new talent.’

In a knowledge-based, skill-based industry like insurance, success is dependent on how well that knowledge is used, as John acknowledges, ‘We use our knowledge of local territories, such as which insurances are compulsory in an individual territory, or what the prevalent risks are in that territory, rather than everyone trying to know everything for every market in the world from a local base. So for Marsh, competitiveness is based on how we make the most effective use of our local knowledge across the global network.’



48 BioReliance – playing an essential role in getting new treatments to patients around the world

Glasgow has a long tradition in medical research and today new life science businesses are providing innovative services to the world's healthcare markets.

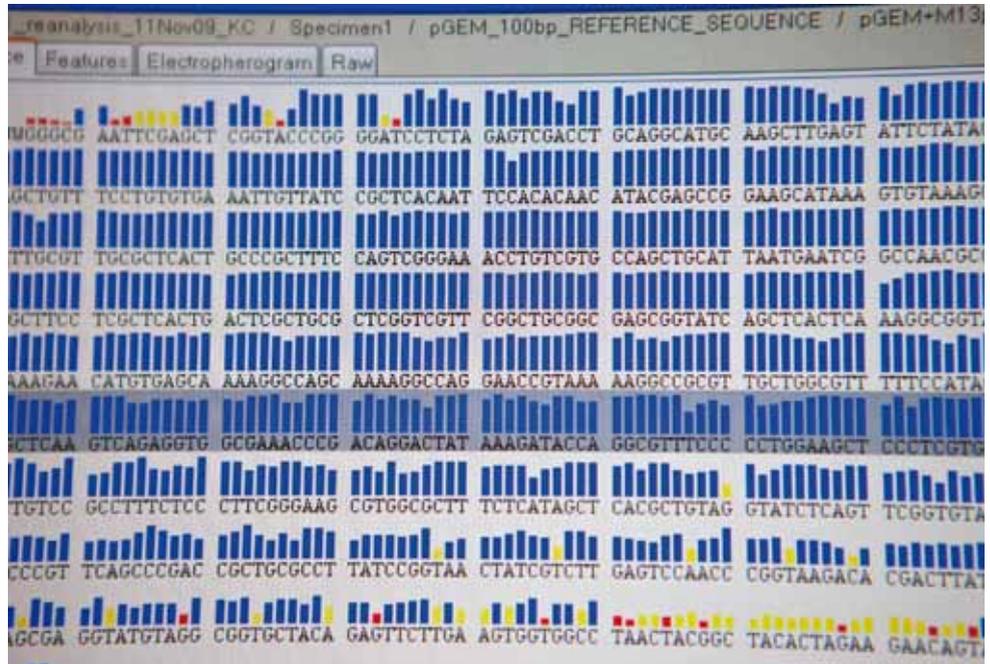
One of Glasgow's leading life science companies is BioReliance, a global business, headquartered in the United States. Paul Armstrong, their Director of Sales for Europe and Asia Pacific, explains where they fit in to the process of getting a new drug to market, 'Bio-safety testing is something that's required by all pharmaceutical companies as they take a drug from early stage development through to clinical use in the real world. That's our expertise; we test a new product at various stages to make sure it's safe for people to use.'

So with offices in Tokyo and Bangalore, as well as Glasgow, BioReliance has a very specialised part to play in the process of drug development. Their customers include the Top 10 pharmaceutical companies and the Top 10 biotech companies in the world. As Paul says, 'These companies expect a top class standard from anyone providing them with a service. So, in order to help them with their regulatory approvals, we have to operate with the best science and the best quality people – and we're able to offer that here in Glasgow.'

BioReliance's presence in Scotland comes from their tie-up with Q-One Biotech, an entrepreneurial start-up company which grew directly out of the University of Glasgow, which is just across the road. Now from this base, the company looks after customers throughout Europe and the Far East.

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‘We’ve become a core part of the global biotech supply chain,’ says Paul. ‘Our customers come from everywhere – and most of them work with partners all around the world. So we need to be flexible enough to deal with that – whether it’s an America company with a European partner, a European company with a Japanese partner, or an Indian company with a partner somewhere in the Middle East.’

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The industry is growing worldwide and BioReliance is well placed to grow with it. The core and largest part of their business is monoclonal antibodies. – and over the past 20 years they’ve helped to approve over 50 products as they’ve made their way through the development pipeline to the market.

A new and growing part of what the company does is called ‘pharmacogenomics’, which is all about personalising how medicines are used. This is cutting-edge work, which involves understanding the genetic make up of patients and how they will react individually to particular drugs.

The third and dynamic part of the business is known as ‘biosimilars’, commonly known as ‘generic products’ which are produced when an original drug comes out of patent. As emerging markets – such as India, Korea, Taiwan or countries in the Middle East – work fast to bring medicines to ever wider numbers of people they are focused on biosimilars and vaccine development. Paul recently returned from a trip to India to learn more about the healthcare challenges they face, ‘They have a huge population who can pay very little for their drugs

compared to people in Europe, which means we’re going to be involved more and more in helping those guys develop better products and treatments for the future.’

In the life sciences industry, where new break-throughs are being developed all the time, innovation is key to competitive edge, as Paul explains. ‘Our customers are developing innovative molecules for drugs which are becoming increasingly targeted to particular diseases – such as rheumatoid arthritis, cancer and nowadays, vaccines as well.

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‘Over the past two years, BioReliance has put a lot of investment into improving the facilities in Glasgow. The molecular biology labs have been expanded by 30% and the manufacturing capability has been upgraded, with a new microplasma lab which speeds up the processing of samples and decreases the turnaround times for clients.

‘Innovation, for us in Bioreliance, comes in the form of improving our processes. Increasing the speed at which we can provide test results to our customers means they can reduce the time it takes for them to get potentially life saving drugs to market.’

50 All eyes on Glasgow for the Commonwealth Games 2014

In a symbol of Glasgow's revival over recent years, and its historic links with the wider world, the city is set to host the Commonwealth Games in 2014.

The Games will see 71 nations competing for honours across 17 different sports - and about one million tickets are expected to be sold over the 12 days of the event.

Steve Inch, Glasgow City Council's Executive Director of Development and Regeneration Services, has been leading the city's preparations for the Games, 'The key thing we're working on first and foremost is meeting all the technical requirements of the Games itself. So we have to provide venues that are fit for purpose for the 17 sports, an athlete's village which will accommodate up to

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8,000 competitors and officials, and a transport management system that will allow competitors to move between where they're staying and where they're competing. Those are the fundamental requirements which must be delivered to hold the Games here.'

But on top of this, Glasgow's doing a lot to cement the legacy of the Games. As Steve explains, 'We've incorporated community benefit aspects into the capital investment programme. So when a company is bidding for a project, we evaluate how they intend to go about sourcing from small businesses and recruiting and training local people. That's all part of a much bigger legacy plan linked to generating long term benefits to the city from hosting the Games.'

The amount of new investment is impressive. The total budget for the Games is something like £450million.

The plan is for the whole city to benefit from the investment and jobs generated by the Games, but capital investment is being focused on two main areas. The east end of the city, which is the location for athletes' village, indoor sports arena, velodrome and aquatic centre, is getting a major part of the capital investment. Public and private sector investment will total about £400 million. The other major area will be on the riverside, just across from the Pacific Quay development.

Important though these investments are, Glasgow City Council doesn't see the legacy of the Games only in terms of new buildings, business and jobs. As Steve explains, the aim is to ensure that the Games also bring a lasting health and educational benefit to the city. 'We want to use the Games to get





more people to participate in active sports to increase health levels in the city – and we’re taking the opportunity to link schools in Glasgow with schools in other commonwealth countries.’

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After the Games the athletes’ village will be converted into new housing. ‘As part of the tender process for the development of village, we required the developer to submit two master plans. The first was how the village would work in Games-mode with 750 houses, the second was how the site would ultimately be developed, which will result in approximately 800 more new houses.’

The opportunity to put Glasgow on the world map through the Commonwealth Games, also provides an opportunity to leave a lasting legacy in the local community.

Building blocks for the future

Glasgow has been connected to global trade for hundreds of years, but the growth industries of the future look very different from the traditional ones. The banks of the River Clyde have been transformed from a centre for ship building to a hub for the creative industries – and the shipping routes of the industrial revolution have evolved into the information super-highway of the digital revolution.

Looking ahead, one thing is clear. The work that we do, the way that we live and the cities we live in, are all changing.

Glasgow's local companies are stepping up to serve customers all over the world in a range of new knowledge-based, skill-based industries – from 3D digital design to healthcare, from customer contact to financial services. The city's modern manufacturing businesses, large and small, are focused on developing the high-value, high-technology products and services that can win in today's global market place. Universities are collaborating with industry to generate wealth from scientific and engineering break-throughs, and provide the training needed for the jobs of the twenty first century.

Building up home-grown talent will be the surest way to win in a world where the new industries will depend, above all, on skills and creativity, technology and innovation.

It is this new energy which can attract vital investment and talent into the city, and encourage the enterprise and drive that will help Glasgow succeed in the new global era

And, all over the city today, it is already possible to identify what the building blocks of the future will be.



The world is changing

The last half-century has seen unprecedented growth in international commerce. **Total world trade** in 2000 was **22 times** the level seen in 1950.

Falling telecommunications costs have driven globalisation: in 1927 the first transatlantic phone call from Columbia, Missouri to London lasted **6 minutes** and **cost \$162** – it can now be done for **free over the internet**.

In a ranking of the world's top companies, the UK **has 3 in the top 25**. Last year, China had no companies in the top 25 – it now has 4.

Investment now operates at a global scale. In 2007-8 there were 1,573 investments into the UK, creating more than **120 new jobs** a day.



