

2016 / 2017

MANUFACTURING & SERVICES

The Parliamentary Review

A YEAR IN PERSPECTIVE

■ FOREWORDS

The Rt Hon Theresa May MP

The Rt Hon Greg Clark MP

Terry Scuoler CBE

■ GENERAL MANUFACTURING REPRESENTATIVES

Caterpillar UK

Stour Precision Tools

Brysdales

AleTrim

Skipper

Whitehill Spindle Tools

Simulation Solutions

FWB

MTAG Composites

Systematics International

Techna

Kladex

SEH Europe

Epoch Wires

TMD Technologies

■ FEATURES

Review of the Year

Review of Parliament



The Rt Hon Theresa May MP

Prime Minister

This year's *Parliamentary Review* follows a significant year in British politics. It was a year in which our economy continued to grow, as the Government followed its balanced plan to keep the public finances under control while investing to build a stronger economy. It was a year in which we began to deliver on the result of the EU referendum by triggering Article 50 and publishing the Repeal Bill, which will allow for a smooth and orderly transition as the UK leaves the EU, maximising certainty for individuals and businesses.

And, of course, it was a year in which the General Election showed that parts of our country remain divided and laid a fresh challenge to all of us involved in politics to resolve our differences, deal with injustices and take, not shirk, the big decisions.

That is why our programme for government for the coming year is about recognising and grasping the opportunities that lie ahead for the United Kingdom as we leave the EU. The referendum vote last year was not just a vote to leave the EU – it was a profound and justified expression that our country often does not work the way it should for millions of ordinary working families. So we need to deliver a Brexit deal that works for all parts of the UK, while continuing to build a stronger, fairer country by strengthening our economy, tackling injustice and promoting opportunity and aspiration.

In the year ahead we will continue to bring down the deficit so that young people do not spend most of their working lives paying for our failure to live within our means. We will take action to build a stronger economy so that we can improve people's living standards and fund the public services on which we all depend. We will continue with our modern Industrial Strategy,

deliver the next phase of high-speed rail, improve our energy infrastructure and support the development of automated vehicles and satellite technology, building a modern economy which creates the high-skill jobs of the future.

At the same time, work needs to be done to build a fairer society – where people can go as far as their talents will take them and no one is held back because of their background. So we will continue to work to ensure every child has the opportunity to attend a good school. We will continue to invest in the NHS and reform mental health legislation, making this a priority. And we will work to address the challenges of social care for our ageing population, bringing forward proposals for consultation to build widespread support.

So this is a Government determined to deliver the best Brexit deal, intent on building a stronger economy and a fairer society, committed to keeping our country safe, enhancing our standing in the wider world, and bringing our United Kingdom closer together. We will continue to put ourselves at the service of millions of ordinary working people for whom we will work every day in the national interest.

“This year's *Parliamentary Review* follows a significant year in British politics”

The Rt Hon Greg Clark MP

Secretary of State for Business, Energy
and Industrial Strategy



The UK has always been at the forefront of business and global trade. Our economy has many strengths: it is the fifth largest in the world, with the highest employment level anywhere in Europe and the best in our history. We can be truly proud of the fact that almost everyone of working age is in work and earning. We are home to many of the world's most innovative companies, attracting a level of foreign direct investment that is the envy of others around the world. We lead the world in a breathtaking diversity of sectors from financial services to the creative industries to computing.

Yet we recognise the need to do more. Low productivity in our workforce and regional disparities have been stubborn issues that successive governments have struggled to address.

Our Industrial Strategy will do just that. It will build on the existing strengths of our country while creating the conditions for people, places and firms to thrive in the economy of the future. At its core is the mission to boost earning power for all. We will do this by investing in our people, promoting excellence in innovation, backing the businesses of the future and promoting the strengths of all places in our country.

This is a modern industrial strategy fit to tackle the grand challenges of our age: automation, decarbonisation and ageing, to name a few. It is forward looking and puts the innovators, disruptors and value creators of tomorrow, in cross-cutting technologies, such as Artificial Intelligence (AI) and robotics, to the fore.

The vote to leave the European Union marks the beginning of a new chapter in the history of our great businesses. I am very clear that the future of our industry is global. There is scarcely a product or a service made in Britain that does not make use of products or services from overseas – whether that is in capital equipment, components of products, advice and design or specialist labour. That is why the Industrial Strategy has openness, competition and free trade at its heart. As an island nation, international trade is instinctive.

We have the opportunity to ask what the world will look like in the next 10, 20 or more years, and shape our country accordingly. While this will not be a quick or easy task, it is one which any responsible government must undertake.

As a leading nation of enterprise, our great strength has always been our adaptability to change. And in this time of unprecedented technological and political change, I firmly believe the UK, as always, has the businesses, ideas, people and places to make every success of the opportunities these present.

“The UK has always been
at the forefront of
business and global trade”



Terry Scuoler CBE

Chief Executive of EEF

Manufacturers are clear about their priorities from the Government's Brexit negotiations. Our sector's key concerns are that we retain the tariff-free movement of goods to the EU and, during an appropriate transition period, maintain the economic benefits of access to the Single Market and Customs Union. Thereafter, minimal customs arrangements and a flexible approach to accessing EU labour are essential for our sector to flourish.

We now have just over 12 months before a deal of some kind needs to go before both the EU and UK Parliaments for ratification. In that time, the Government has to sort out the divorce settlement and set out the terms of a new trading relationship with the other 27 countries. With the best political will in the world, success in achieving this satisfactorily and within that tight timescale is highly unlikely. There will come a point when businesses may, in a situation of ongoing uncertainty, decide not just to delay investment but to steer it offshore.

Access to the right skills is a major concern for UK manufacturing as we already struggle with a significant and well-documented domestic skills gap. An early agreement on guarantees for EU citizens would provide much-needed reassurance for all those already resident in the United Kingdom before Brexit, and of course for UK citizens already resident in the EU27.

Manufacturers must also be able to continue to recruit EU workers at all skill levels until the UK labour market is able to support businesses' demand for these workers. We understand that controlling future EU migration is a difficult balancing act, but it is vital government gets this right for the manufacturing sector to survive in a post-Brexit world.

EEF has also called for a reduction in the cost to business of recruiting from outside the EU by abolishing the immigration skills charge along with reversing the recent decision to remove the short-term intra-company transfer route.

In the longer term, we would like to see government spearhead a consistent approach to tackling the UK's longstanding and future skills needs. This must be a key thrust of the new and evolving Industrial Strategy, prioritising science, technology, engineering and mathematics (STEM) education and vocational training.

The Industrial Strategy should also ensure minimal disruption and no additional costs to trade with the EU, which remains a key market for our sector's goods and services. Over eight in ten manufacturers (84%) export to the EU while almost three-quarters (74%) say that a 10% tariff on exports to the EU would have a highly negative impact on their business.

Our regions and localities rightly form a major part of the proposed strategy and the Government's commitment to ongoing investment in broadband and other infrastructure projects, innovation clusters and greater support for small and medium-sized enterprises' (SMEs) supply chains is welcome.

If adequately implemented, these and other initiatives can not only reduce the uncertainty of Brexit, but will set our country on the right path for decades to come.

Return of the Two Party System

The BBC's Andrew Neil gives his take on the state of Parliament following the June 2017 general election.

It was a year in which politicians learned not only of the power of a referendum to overrule the will of Parliament – but of its power to change the party system in which they operate. Nobody saw this coming. But, in retrospect, perhaps we should have, since we had the fallout from the Scottish referendum to guide us.

In the autumn of 2014 the Scots voted 55%-45% to remain part of the United Kingdom. That was supposed to settle the matter of Scottish independence for a generation, until some Scottish Nationalists began regarding a generation as no more than a couple of years. But in post-referendum elections to Holyrood and Westminster, it also recast the Scottish party system.

Remember, Scotland had been one of the first parts of the UK to throw off the British two-party system and replace it with a multi-party choice of SNP, Labour, Tory, Green, Lib Dem and even UKIP. But as the constitutional issue took centre-stage – and remained there even after the referendum – Scottish voters coalesced round a binary choice: for or against independence.

Thus was a new two-party system born of a centre-left Nationalist party (the SNP) and a centre-right Unionist party (the Scottish Tories). The other parties have not been completely obliterated, especially in Holyrood with its peculiar voting system. But by the general election of 2017 Scotland had become a battle between a dominant

Nationalist party and a resurgent Tory party representing the Union. Two-party politics was back north of the border.

So we should have been prepared for something similar when Britain voted 52% to 48% to leave the European Union in the June 2016 referendum. At the time, we remarked on the power of referenda to overrule both the Commons (where MPs were 65% pro-EU) and the Lords (probably 80% pro-EU). What we did not see was how the Brexit referendum would reconfigure English politics just as the Scottish referendum had redrawn Scottish politics.

So we were taken by surprise for a second time. In this year's general election – perhaps the single biggest act of self-harm a sitting government has ever inflicted on itself – almost 85% in England voted either Conservative or Labour. The English had not voted in such numbers for both major parties since 1970, when the post-war two-party system began to wane – and declined in subsequent elections to a point where barely 65% voted Tory or Labour, encouraging some commentators to think the decline terminal.

The referendum, however, reversed the decline. The Brexit vote ended the schism on the Eurosceptic Right as UKIP voters returned to the Tory fold; and those on the Left of the Greens and the Lib Dems flocked to Jeremy Corbyn's more 'Red Flag' Labour offering. So, as in Scotland previously, two-party politics was back with a vengeance in England too.

But without one crucial element. Our historic two-party system regularly produced one-party government for the life of a Parliament. But our new two-party system has produced a hung Parliament with no party having an overall majority. This knife-edge parliamentary arithmetic means the smaller parties may be down – but they are not out.

The Conservatives need an alliance with one small party (Ulster's DUP) to be sure of a majority. Even then, with the Tories and Labour divided over Brexit, no majority on any issue will be certain and on many votes the smaller parties will be pivotal in determining many outcomes.

So politicians return from their summer recess to a great parliamentary paradox: the two-party system has resurrected itself but rather than bringing with it the stability and certainty of the two-party politics of old, almost every major vote in the months ahead will be uncertain and unpredictable – and politics will be peculiarly unstable. Power will rest in Parliament. Government will be able to take nothing for granted. No vote will be in the bag until all the votes are counted. Westminster will have a new lease of life – perhaps even a spring in its step. Our democracy might be all the better for it.



Neil believes two referendums have redrawn the map of British politics.

Review of the Year

Overview



The Rt Hon Greg Clark MP was one of several speakers at the EEF National Conference, addressing the challenges and opportunities that face the UK's manufacturing sector

Brexit, reshoring, better and cheaper technology, competition, digitisation, and how people will work in the future have all converged to make manufacturing examine its place in the British economy more keenly than ever before. That was evident at Engineering Employers' Federation's (EEF)'s National Conference in February where over 850 people swelled to hear from the Rt Hon Greg Clark MP, columnist Martin Wolf, businesswoman Jo Malone and others about the importance of this once neglected sector.

The news, in general, is pretty good.

There is the optimistic view and the more pessimistic view on the future of manufacturing, the pessimism being driven by Brexit fears and a sharp fall in automotive investment this year to £644 million (forecast) from the £2.5 billion it recorded in 2014. Some facts are unambiguous. Productivity

in the UK compared with our peer group in Europe is low, although this baffles many in manufacturing who have invested years on making their processes and people much leaner. In fact, EEF can demonstrate that productivity in the manufacturing sector is higher than in services.

The UK is 'top heavy' in services, with just 10% of gross domestic product (GDP) from manufacturing, although 68% of business research and development (R&D) is in manufacturing. While the 10% proportion is consistent with other G20 countries (Britain is the 9th biggest manufacturing economy), government recognises the need to diversify the economy. Increasing the number of profitable, high-tech manufacturing firms – often with well-paid jobs – is a good way. And with new technology and a more engaged media, the sector is being seen in a new way by a greater number of people and is losing its 'oily factory worker' stigma.

Technology, especially factory automation, is increasingly replacing lower-skilled repetitive jobs, meaning that more of the jobs that remain require engineering skills, soft skills and management and are more enriching and better paid than before.

However, many sectors and businesses still rely heavily on semi-skilled, lower-paid work to assemble and process products such as food and utility goods, and skilled specialist work such as car assembly, which is secure, is not highly paid. Brexit has boosted exports by devaluing the pound, however it has increased input costs for many firms which buy raw materials from Europe.

Generally, manufacturing as a sector has had a strong half year. The Markit/CIPS UK manufacturing Purchasing Managers Index (PMI), the widely-accepted barometer of manufacturing health, jumped to 57.3 in April from 54.2 in March – the highest level in three years. Forward to July and industrial output has slipped. But, for industry, the UK is in stable and modestly-growing territory. Other countries are growing faster, though.

‘Everyone is looking at manufacturing. It is essential to take into context that much of the rest of the world is doing much better,’ says Engineering Employers’

Federation’s (EEF) Chief Economist, Lee Hopley. ‘Global growth forecasts for many countries are ahead of ours.’

In January, the Government launched proposals for ‘a modern industrial strategy to build on Britain’s strengths and tackle its underlying weaknesses to secure a future as a competitive, global nation.’

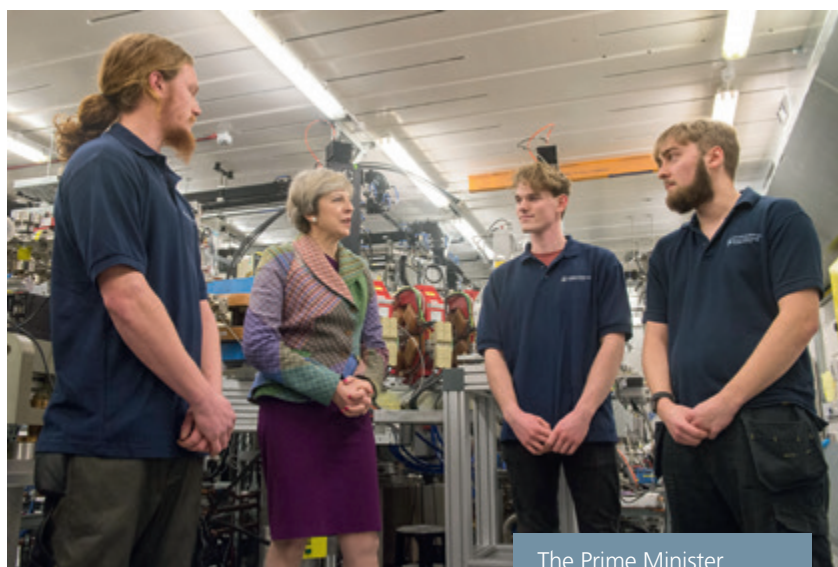
A systemic weakness in the manufacturing base and the economy restrains the levels of exports. Total exports of goods and services in 2016 were circa £550 billion, with manufacturing comprising 45% of this.

Industrial Strategy

The Industrial Strategy, the detail of which is expected to come in the 2017 Autumn Statement, is designed to thread together current government and industry investments across research, industry, skills development, energy and infrastructure. It is also expected to include new ambitious plans in areas such as digitisation, robotics, artificial intelligence and energy storage, and stitch these together into a single, cogent national strategy.

It has 10 pillars, ranging from investing in science, research and innovation to rebalancing growth across the whole country, by providing development funding for big infrastructure upgrades such as the Midlands Rail Hub and Northern Powerhouse Rail.

‘The Industrial Strategy is crucial,’ says Terry Scuoler, Chief Executive Officer of the manufacturers’ organisation, the Engineering Employers’ Federation (EEF). ‘Currently the economy is on an even keel and manufacturing is quite robust. While the sun is shining you fix the roof, and Government has seen we have to do it now,’ he emphasises.



The Prime Minister received a short tour of the facilities at the National Science and Innovation Campus while launching proposals for building a Modern Industrial Strategy

The strategy is full of good things, of which industrialists across the board, from the silver-haired director to the 20-something design engineer, will approve. Few would argue with its top pillar: investing in research and development (R&D) and developing skills.

It says skills shortfalls in some parts of the country contribute to imbalances in productivity in the UK, as shown in a recent Confederation of British Industry (CBI) report, highlighting education and skills as the biggest

determinants of regional variations in productivity. It pushes for more and better technical training.

In the Budget, the Government announced new money for technical education to fund the new T-Level qualification for technical education. The Government said it was 'the most ambitious post-16 education reform since the introduction of A-levels.'

Scuoler says of the Industrial Strategy 'Politicians are becoming more aligned with industry and its needs. Catapults are being seen as valuable and effective. They are reaching more SMEs, and while they can never reach them all, the innovation ecosystem that Catapults and Innovate UK represent are helping SMEs, not only big companies.'

Brexit



The decision to leave the EU will have ramifications for UK manufacturing in the immediate future, and in the long term

Just over a year after our decision to leave the European Union, it is still very difficult to gauge exactly what the consequences will be for the manufacturing industry.

In July, figures reported in *The Financial Times* showed that investment in the UK car industry had fallen to just £322 million in the first half of 2017, projecting £644 million for the year. This is in stark contrast to 2014 when the automotive sector spent a cool £2.5 billion on plant, kit, buildings and training. But commentators, including the Society for Motor Manufacturers and Traders, pointed out that auto sector investment is cyclical and 2014 levels were at the top of the cycle in an exceptional year.

Jefferson Group, a recruitment agency specialising in manufacturing and

engineering, counted 200 separate web news stories from December 2016 to June 2017 that related to 'significant' manufacturing investment; capital expenditure of more than £1 million, or a new research centre, training centre or new manufacturing/distribution park.

While pharma is concerned about the effects of extracting the UK pharmaceutical industry from EU regulation, this did not stop GlaxoSmithKline from investing £275 million in its UK manufacturing facilities, and Novo Nordisk is investing £115 million over the next decade on a diabetes research unit in Oxford (see the Pharmaceutical edition).

When industry as heavily invested in the UK as pharma sees a large geopolitical change, it can be unsettling but it clearly has not stopped business in its tracks. And some firms have never been busier, including suppliers of machine tools and moulding machines that serve the huge subcontract manufacturing industry where hundreds of big original equipment manufacturers (OEMs) source thousands of parts.

Credit ratings agency Moody's said the UK economy could be tipped into recession if Britain fails to land a deal with the European Union. Others are talking up the list of free trade deals we can negotiate with countries from the US to Japan.

Colin Tirel at ARBURG Ltd, a supplier of injection moulding machines in Leamington Spa, says 'to date, there does not appear to be any negative feeling in the market towards Brexit, quite the opposite with, pleasingly,

many instances of work being reshored to the UK. One issue we do see is that of a shortage of technical personnel in the industry. This is something many customers have commented on.'

Investment

It has been striking how many big investments have been made in the manufacturing sector since the start of 2017. The net amount of new investment in the sector this year, offset by closures, liquidations and offshoring, is difficult to quantify, but there seems to have been a far higher than average number of factory investment and expansion stories – as well as training and research centre launches and upgrades – in the first half of 2017 than in previous equivalents periods.

A selection of some bigger and more notable investments in manufacturing in 2017 to date are listed below:

- » In December 2016 Siemens opened its £310 million turbine blade plant in Hull.
- » Announced in October 2016, Spanish automotive supplier Gestamp Tallent began work in May on a new £126 million plant near Cannock. The investment comprises £70 million in new technology and installation and build costs of £56.3 million.
- » In March Toyota said it will invest £240 million to upgrade its car plant in Burnaston. For future output it said that tariff-free trade with the EU was essential. The company said it would also move to use more locally-sourced components, which carmakers in Britain are focusing on as a way to overcome currency fluctuations and potentially meet new local content rules (Reuters). In July it was awarded planning permission for the expansion and said this would create 90 jobs.



A multi-million-pound investment deal by Toyota was approved in July

- » Airbus UK, and aeroengine maker Rolls-Royce, received a boost when China Aviation Supplies Holding Company signed a general agreement for 140 aircraft, worth up to £18 billion. All the ordered A320 and A350 aircraft's wings and the A350's Rolls-Royce Trent XWB engines will be manufactured in Britain.
- » International industrials group, Liberty House, completed a £100 million deal to acquire the speciality steels division of Tata Steel UK in May, protecting the jobs of 1,700 existing staff at three major sites at Rotherham, Stocksbridge and Brinsworth in South Yorkshire and smaller sites across the UK. It also said it would create around 300 new steel jobs in South Yorkshire and make multi-million pound investments to secure the future of five sites across the North of England and West Midlands.
- » In February supercar maker McLaren said it will build its supercar chassis in the Sheffield City region, building a new £50 million factory, creating 200 jobs.

- » Boeing's first factory in the UK was also announced in February. The multinational aircraft maker will build a £20 million plant to make actuators, which operate aircraft wing flaps, on the 737 and 777 airframes.
- » In April, Detroit Electric confirmed a \$370 million deal to build electric sports cars and suburban utility vehicles (SUVs) in Leamington. More than 200 new jobs will be created at Detroit Electric's factory in Harrison Way with the launch of the SP:01, a £100,000 sports car to rival the Tesla.
- » Ready meals manufacturer Charlie Bigham's secured investment to build a new factory in a Somerset quarry that will initially create 100 jobs, with the plan to increase this to 300 in the next few years.
- » Expanding manufacturing to logistics, in April work began on the second phase of £500 million iPort logistics scheme in Doncaster set to create many jobs. The total area will approach 6 million sq ft. Phase 1 of iPort has already seen 2.34 million sq ft of space let to Amazon, Fellowes, CEVA and Lidl.
- » In March Costa opens £38 million roaster in Basildon, Essex to quadruple production. It can now roast 45,000 tonnes of coffee a year (or 24 tonnes a day), up from the 11,000 tonnes at its previous Lambeth site. The new site is close to where the raw coffee arrives at Tilbury Docks, saving carbon miles.

These big announcements were supplemented by hundreds of stories of smaller, but very significant, investments such as Telford-based Proto Labs' €4 million spend on new machinery to service Europe-wide demand for rapid prototypes.

Jobs, pay, work and pensions



Unite the union argues that private sector pay for the majority of employees in manufacturing has steadily eroded

Engineering Employers' Federation's (EEF) annual Manufacturing Fact Card shows that pay within the sector continues to outpace services and the whole economy average, being up 1.9% (2015 vs 2014) or 3% compared to 2013. Average pay in the manufacturing sector in 2016/17 is £31,489, in services it is £26,825, and £27,607 is the average for the whole economy.

Unite, Britain's largest manufacturing union, says that employees in the private sector over the last two years have suffered the same downward pressures on pay as experienced by those in public services such as the NHS, where the majority of health staff have seen their pay in real terms eroded by 17% since 2010. Cases such as the recent multi-year pay deal on behalf of over 2,000 workers employed at luxury carmaker

Bentley are the exception rather than the norm.

Weak demand in the economy is not helped by below inflation pay deals – or no rise at all – as the Consumer Price Index (CPI) rate of inflation stands at 2.6% (July 2017). Wages are badly lagging behind inflation, Unite says, while Stock Exchange performance, at recent record highs, suggests big companies have the necessary cash reserves.

However, the majority of private sector jobs come from small and medium-sized enterprises (SMEs). The Federation of Small Businesses says 60% of all private sector employment in the UK is from SMEs and in manufacturing it is thought to be much higher.

The state pension age was due to increase to 68 between 2044 and 2046. Under new proposals that

have to be agreed by parliament, this will move forward to between 2037 and 2039. The Government did not include this proposal in its General Election manifesto.

Unite claimed the increase in the retirement age meant that workers would be paying for failed economic policy under the Conservative Government. It says raising the state pension retirement age to 68 between 2037 to 2039 will be detrimental to workers, especially if you have a physically-demanding job or are

suffering ill-health, and they called for this proposal to be reversed.

Unite Assistant General Secretary for Manufacturing, Tony Burke, said 'Brexit dominates economic and fiscal policy.

'As a union, we are seeking a 'Jobs First' Brexit where every aspect of the negotiations is set against whether this will create secure and well-paid employment in a country with a strong industrial base. To this end, we are calling on Business Secretary, Greg Clark, to put flesh on the bones of the Government's industrial strategy.'

The Taylor Review

A big criticism of work conditions in 2016/17 has been the treatment of atypical workers by some employers, typified by workers in the 'gig economy' such as those employed by Deliveroo and Uber.

The Taylor Review of Modern Practices was published on July 11 2017 and made a number of recommendations to approve the working conditions of atypical workers and those classed as self-employed. 'The report calls for a greater degree of consistency between employment law and tax law, and a review of definitions for employment status, including re-naming workers dependent contractors,' says Partner at FBC Manby Bowdler's Julia Fitzsimmons.

There are currently three categories of individuals: employees who have the highest level of protection, workers who do not have the full employment protection, and the genuinely self-employed. Those in the worker category would be re-classified as dependent contractors and become eligible for rights such as the National Minimum Wage, paid holiday and access to sick and maternity parental pay.



The Taylor Review addresses the treatment of atypical workers, following criticisms of the behaviour practised by Deliveroo and Uber

'It is unclear how many atypical workers are engaged in manufacturing but the report raises the point that the Government would be looking at different rates of National Insurance contributions which apply according to employment status,' Fitzsimmons says.

'This creates a disparity of tax treatment which the report says is neither justified nor sustainable and, therefore, is looking to bring more individuals into the worker or employed bracket in order to increase National Insurance contributions.'

The Apprenticeship Levy



Engineering degree apprenticeships are set to expand as an effective method of closing the skills gap

Government knows Britain needs to increase its technically-trained workforce. The Industrial Strategy green paper says 'We had a record 2.4 million apprenticeship starts in the last parliament, and we are on track to deliver a further 3 million by 2020, with closer links to employers through the new apprenticeship levy.'

Opting for the stick over the carrot approach, the Apprenticeship Levy came into force in April this year. It affects employers with an annual pay bill of £3 million or more who are now required to pay effectively a tax at 0.5% of their pay bill. An apprenticeship allowance of £15,000 offsets the levy. This gives employers an incentive to offer apprenticeships,

to both train their staff properly and qualify for the allowance.

While many manufacturing employers understand the logic of the system, the imposition of extra business costs was far from popular. '[Employers] understand a need to build a talent pipeline,' says Engineering Employers' Federation's (EEF), Terry Scuoler. 'They take apprenticeship training seriously; it did not need a levy.'

In Bob Bischof's submission on apprenticeships to London First this year it said 'The Government in England has tried to standardise apprenticeships somewhat following our submission and differentiates now into intermediate (level 1 and 2), advanced (level 3) and higher apprenticeships (level 4–5). The latter, which is the basis for the SEMTA higher apprenticeship for engineering technology in our opinion [German Industry UK and the German British Forum] goes too far in terms of an apprenticeship, but still lacks educational and commercial content. The intermediate apprenticeship hardly deserves the name. The advanced apprenticeship is the nearest to European standards. The attainment rates are shockingly low.'

The researchers for London First believe that attainment levels for some apprenticeship courses can be as low as 10%.

Training

The number of, and investment in, manufacturing training centres in the UK has risen in recent years. Engineering Employers' Federation's (EEF) Technology Training Centre in Birmingham is now well established, the Manufacturing

Technology Centre and Advanced Manufacturing Research Centres (part of the High Value Manufacturing Catapult) both have apprentice training centres, and Warwick Manufacturing Group is building a similar centre.

All these places are, in the main, fully occupied with a steady flow of applicants. A consortium of companies led by In-Comm Training and the Marches LEP have put £3 million into the new Marches Centre of Manufacturing and Technology, a training facility for modern skills including 'digital manufacturing'

disciplines like engineering simulation and mechatronics training.

The new £21 million Alstom UK train technology centre, recently opened in Widnes and is set to create hundreds of jobs and other sector-specific training centres are popping up with pleasing regularity.

Engineering degrees and degree apprenticeships

According to university admissions body UCAS there has been a drop in undergraduate applications for all degrees from both British and EU students in 2017. The number of applications from overseas students for post-graduate engineering courses has also fallen in the past year. Partly in response to university tuition fees of up to £9,000 per year and sub-optimal application rates, degree apprenticeships are a new and growing route through employment and higher education.

The small number of degree apprenticeships currently being delivered is expected to increase substantially over the next couple of years, says Henriette Fordham at the Higher Education Funding Council for England (HEFCE). Many higher education providers, including universities, further education colleges and private providers, are developing programmes based upon the increasing number of degree apprenticeship standards. Several institutions have been provided with funding through the Degree Apprenticeship Development Fund to develop new provisions to be delivered from the academic year 2017/18.



Expansion of degree apprenticeships could help close skills gap

'While they do not involve a financial cost for the apprentice, they do involve working in paid employment for the majority of the week and, as a route towards a higher education, qualification they can be challenging,' says HEFCE's Fordham. 'We expect them to complement traditional higher education routes, which will continue to appeal to potential students, but as employers look to spend their available levy funds on opportunities to develop their existing workforce and recruit new skilled staff we expect that an increasing number will consider degree apprenticeships as one of a variety of options.'

Caterpillar UK



Peterlee – articulated trucks



Mark Dorsett, Caterpillar UK
Country Director

When most people think of Caterpillar, they picture big yellow machines but what we offer our customers goes well beyond bulldozers and diggers. For over 90 years, Caterpillar has provided sustainable solutions for our customers in a wide variety of markets. As our customers grow, and attitudes to digital technology evolve, we aim to be at the forefront of providing the services and solutions of tomorrow.

With 2016 sales and revenues of \$38.5 billion, Caterpillar is the world's leading manufacturer of construction and mining equipment, diesel and natural gas engines, industrial gas turbines and diesel electric locomotives. Our businesses in the United Kingdom reflect the three key product segments in which we operate: Construction Industries, Resource Industries and Energy and Transportation.

In 1951, Caterpillar chose the UK to build its first manufacturing facility outside the United States. Today, over 60 years later, we are a major inward investor and employ over 9,000 people at 19 facilities across the country, making the UK one of the largest centres of operations outside the US. From defence products manufactured in Shrewsbury, articulated trucks in Peterlee, marine engines in Wimborne, industrial engines in Peterborough and Stafford, a range of products for the railway infrastructure market manufactured across four UK sites, and generator sets manufactured in Northern Ireland, which provide back-up power to London hospitals and the City, Caterpillar touches most sectors of the UK economy.

About 85% of our products manufactured in the UK are exported, which makes us one of the nation's most significant exporters. It's easy to see why Caterpillar has a vested interest in ensuring the Government understands the business issues

FACTS ABOUT CATERPILLAR UK

- » Caterpillar built its first major manufacturing facility outside the United States over 60 years ago in the United Kingdom
- » The company has over 9,000 employees at 19 facilities across the UK
- » 85% of Caterpillar products manufactured in the UK are exported
- » Caterpillar has the largest connected industrial fleet in the world with over 500,000 connected assets
- » Caterpillar invests about £140 million annually in research and development (R&D) in the UK

“Caterpillar was the first to introduce the world to autonomous vehicles in 1996”

regarding the UK’s withdrawal from the EU, and in seeing that a deal gets negotiated that supports our trade and growth ambitions.

Caterpillar UK’s trading relationship with the EU is tightly interwoven, with complex pan-European supply chains and a diverse, skilled workforce, some of whom are from the EU, and contribute daily to the productivity, innovation and growth of our businesses. There are obvious challenges associated with the UK’s decision to leave the EU. Securing a future agreement that includes zero tariffs and allows frictionless trade is critical to Caterpillar for the future competitiveness of our business, and to enable us to serve our UK, EU and global customers. Any imposition of tariffs/duties would drive incremental costs and complexity into our sourcing actions and would impact our customers’ costs.

Helping our customers to be more successful with our products and

services has been the cornerstone of who we are since our founding more than nine decades ago, and it is a tradition that won’t change. Mark Dorsett, Caterpillar’s UK Country Director, is based in Peterborough, our largest facility in Europe. He is the first to say that people don’t always think of Caterpillar as high tech but we are. Did you know that Caterpillar was the first to introduce the world to autonomous vehicles in 1996 on our large mining trucks?

The Government is currently reviewing policy and investment decisions to enable the UK to receive maximum economic benefit from driverless cars and connected autonomous vehicles. With over 500,000 connected assets, Caterpillar has the largest connected industrial fleet in the world, and our products, solutions and experience are helping to control costs. For example, statistics show over 90% of construction projects have cost overruns, of which 60% being avoidable or reduced with smart data in advance.

Europe Research
Development Centre
(Peterborough)



Without technology, even the most skilled operator would have uneven surfaces and would take 18–36 months to train to deliver the perfectly flattened surface upon which to put the asphalt. Today, operators can access data from the office through the Global Positioning System (GPS) to make the bed and base of a road within a quarter inch of accuracy.

Caterpillar has been focused on leading in innovation, providing our customers with the solutions they need. We have over 15,000 granted and pending patents worldwide as of July 2017 and invest nearly \$2 billion a year in research and development. In the digital age, the world is transforming at a rapid pace, and that's the same for Caterpillar customers and the industries we serve. We're merging our expertise in iron with new and evolving digital capabilities. We are connecting entire fleets, and using this data to create solutions that help our customers grow and innovate their businesses while staying on top of, and reducing, costs.

Peterborough is home to our Europe Research and Development Centre, one of three centres around the world, where our innovation and technology teams design and develop advanced engineering solutions to meet our global customer requirements. We are supported with the great links we have developed to world-class universities, including Loughborough and Imperial College, and through the Advanced Propulsion Centre.

Technology needs human skills. With much of the public debate focused on skill shortages across engineering and manufacturing, we understand the importance of developing our own people at Caterpillar and ensuring we have a future pipeline of talent for our businesses. Caterpillar has nationally recognised apprenticeship programmes



The Caterpillar Learning and Inspiration Centre (CLIC), Leicester

in place and our apprentices are themselves STEM ambassadors, going out to schools to promote the uptake of STEM subjects.

However, we don't stop there. We believe that bringing the excitement of engineering and manufacturing to young people needs to begin much earlier, and so our facilities work closely with primary schools, teachers and parents to do just that. Our purpose-built Caterpillar Learning and Inspiration Centre in Leicester, designed to get more young people into engineering and science, was opened in 2014 by the then-Education Secretary, Nicky Morgan MP. It offers half-day, hands-on learning experiences for children aged 7 and up, such as assembling digger parts, team-based manufacturing challenges and a factory tour. Students learn about the exciting career opportunities within STEM and meet our inspiring young STEM Ambassadors.

Helping our customers be more successful with our technology, products and services than any competitor's is Caterpillar's goal. Our businesses in the UK are a key part of achieving that.

“Caterpillar has nationally recognised apprenticeship programmes in place and our apprentices are themselves ambassadors for Science, Technology, Engineering and Mathematics (STEM)”

Brysdales



Elizabeth Porter,
Managing Director



Agile office storage solutions

With an established history of more than 45 years, Lancashire-based storage specialist Brysdales has undergone a modernisation programme covering everything from its IT systems to its warehouse practices – a move which helped strengthen the long-term prospects of the business.

FACTS ABOUT BRYSDALES

- » Established in 1972 by Chairman, John A Green
- » Based in Chorley, Lancashire
- » Specialist storage solution company offering solutions to warehouse, automotive, leisure, retail
- » Employs 25 people
- » A Specialty Equipment Market Association (SEMA) approved installation company
- » Acquired office filing company Railex in October 2016

Under the stewardship of John A Green, Brysdales had forged a reputation as a forward-thinking storage business serving multiple industries in its native North West England and the wider UK with shelving and racking products. The Chairman's footprint on the company he founded in 1972 was evident across the setup, even down to designing Brysdales' computer systems. However, over time, these systems began to show their limitations.

Helping oversee the modernisation of Brysdales was Elizabeth Porter, who joined the firm in 1994 before becoming Managing Director in 2014. Porter, who had previously been at United Utilities, admits the existing systems were restrictive and a radical overhaul was required in order to get them up to speed. 'The computer's language was built in a language that couldn't be updated, leading to problems such as losing customer data every two years due to a lack of capacity,' she says. 'There wasn't even a contact management system – a key part of any modern business.'

Attracting new recruits

Computer systems weren't the only function Brysdales changed. Upon taking the Managing Director role three years ago, Porter set out to grow its workforce to meet growing demand for its services. Employing around 15 people at the time, the workforce was grown by nearly 50% with seven new recruits joining the ranks.

‘Growth simply wouldn’t have been achievable without new people coming into the company,’ Porter says.

To negate the unbalancing effect often associated with a large influx of new staff, Brysdales undertook a series of team building activities and extensive training plans, actions which Porter says proved simple yet highly-effective ways of integrating staff members. ‘Driving enthusiasm for the business was the main aim of these initiatives and, to achieve this, we really didn’t miss a beat when training people in-house.’

The skills conundrum has provided challenges for Brysdales. On the negative side, Porter says one of the main difficulties is knowing exactly where to recruit, as gone are the simpler days of placing an advert in the local newspaper one day before recruiting the candidate as soon as the next day. While working with agencies is the preferred route, this doesn’t always produce the desired candidates. ‘Rather than volume, attracting the right talent in terms of skillset and attitude from other businesses is what any company would ideally rather do,’ says Porter.

Having achieved the overhaul in its setup, Brysdales had the foundations in place for a period of steady growth.



Mobile tyre racking
– solutions to suit all
shapes and sizes

Providing shelving and racking systems for industries as diverse as automotive to museums, along with a diverse product range covering everything from pallet racking, mezzanine floors and shelving systems among others, the company’s reach was in place to do just that.

However, this steadiness was done so in the face of some challenging events. One of these was the global financial crisis from 2007–2009, a scourge of many small to medium-sized enterprises in the UK. Porter credits the company’s setup as being a key reason for why the company managed to stave off the adverse effects of this.

“Growth simply wouldn’t have been achievable without recruiting new talent”

Save expensive office
space with roller mobile
shelving





Warehouse solutions
optimise efficiency –
time is money

“Everybody in the country needs a shelf, whether for their home garage, utility room or in a large Amazon distribution centre”



A one-stop shop

Integral to this setup is Brysdales' status as a one-stop shop, encompassing not just products but a design installation service. Providing specialised support across the country is something that has been at the forefront of its operation. Enhancing these on-site support services have included forging close working relationships with partners such as Dexion Ltd, a manufacturer of storage systems who Porter describes as the Dyson of the racking world.

Under the arrangement, Brysdales sells Dexion shelving and racking products. This arrangement works well for varying customer demands, from small local businesses to blue chip multinational corporations, for example, BAE Systems (Marine) – Submarines manufacturing centre in Barrow-in-Furness, where Brysdales worked with Dexion to lend their expertise to their racking problems.

Prestigious contracts with world famous names have given further gravitas to Brysdales. Porter says the element of trust associated with the installation of products which could prove hazardous if assembled incorrectly also provides a seal of approval. The company is also accredited by storage equipment trade association group SEMA. The SDG accreditation was acquired after it underwent a rigorous audit process. 'This approval not only allows customers to compare us against

other companies but is also a mark of our quality and adherence to safety,' Porter says.

A bright future

Having ridden out such challenges, signs point to a bright future. In the financial year 2015–16, Brysdales achieved its best ever set of results, posting a turnover of around £3 million. In its next set of results, there is optimism about doing even better. 'Everybody in the country needs a shelf, whether for their home garage, utility room or in a large Amazon distribution centre,' says Porter, who believes utilising every bit of available space is driving homes and companies to invest in storage equipment. 'Our products are ubiquitous and the potential to span across many more markets is there, with businesses especially looking to maximise every bit of space they can.'

Along with healthy revenues, further expansion is on the agenda. In October 2016, Brysdales bought Railex, a Southport-based filing company with interests in the medical and education sectors. Taken out of administration, following the acquisition, Porter concludes that the company will provide a good fit for Brysdales as it embarks on the next stage of its growth journey. 'Railex has been annexed into our group, and although a different product, it's the same sort of solution with the aim of maximising space,' she says.

Simulation Solutions



Simulation of Automotive Spot Welding Line – typically we would expect to increase productivity by around 5% by applying simulation



Robbie Birrell, Director who founded Simulation Solutions in 1998

After having invested millions in manufacturing equipment, concerns about whether it will provide the productivity gains hoped for, or even whether it's the best solution to meet your capacity needs are surprisingly commonplace. At Simulation Solutions we work with businesses to ensure manufacturing goes entirely to plan; mitigating risks and guaranteeing certainty of outcome – all ahead of your investment. Our passion is delivering efficiencies; for clients by building simulation models of new and existing factories, and being a small, Manchester-based business operating on a global scale.

Simulation Solutions drives efficiencies across a diverse range of sectors, from automotive, aerospace, pharmaceutical, to food and beverage industries. What clients across these sectors have in common is that they will not commit millions of pounds of capital for new manufacturing facilities without certainty of outcome; business leaders demand to know that any new facility will meet capacity and productivity requirements. Simulation Solutions supports this drive for efficiency by providing simulation software and expert consultants to build interactive models of future factories and manufacturing lines.

There are two other divisions to the business: Inspection Systems develops and manufacturers technology to monitor the quality of sheet glass; whilst Prosim designs and manufactures mechanical simulators to test the longevity of orthopaedic implants.

FACTS ABOUT SIMULATION SOLUTIONS

- » Manchester-based simulation software company
- » Over 25 years experience across global manufacturing sectors
- » Typically saves clients 5-10% in manufacturing investments
- » Best in class, specialist service is a core part of the culture
- » The only UK Siemens PLM partner with Smart Expert status

- » **Simulation Solutions** – Manufacturing simulation software and services
- » **Inspection Systems** – Inspection machinery for the glass industry
- » **Prosim** – Testing machinery for orthopaedic manufacturers and researchers

“Spending a little more and making it clear a supplier is a key part of our business is a foundation of our culture”

Learnings on organisational efficiencies

All divisions of the business had their origins in the Worknorth venture capital fund, emerging as start-up technology businesses in the '90s. The merger of the three companies led to financial stability as a result of being able to share sales, technical development and management resource. Seventeen years on, these are still our three key in-house competencies. Developing and managing reliable and trusted supply chains for outsourced services such as legal, marketing and human resources has been an important challenge and we have built great relationships with key organisations in our supply chain. We learnt early on that not being a reliable partner to our suppliers – buying at the lowest possible price and spreading our purchasing too thinly – led to poor quality, bad advice and late delivery. Spending a little more and making it clear that a supplier is a key part of our business is a foundation of our culture.

Eagle-I Inspection Systems measure and check the quality of more than 14 million tonnes of glass per year



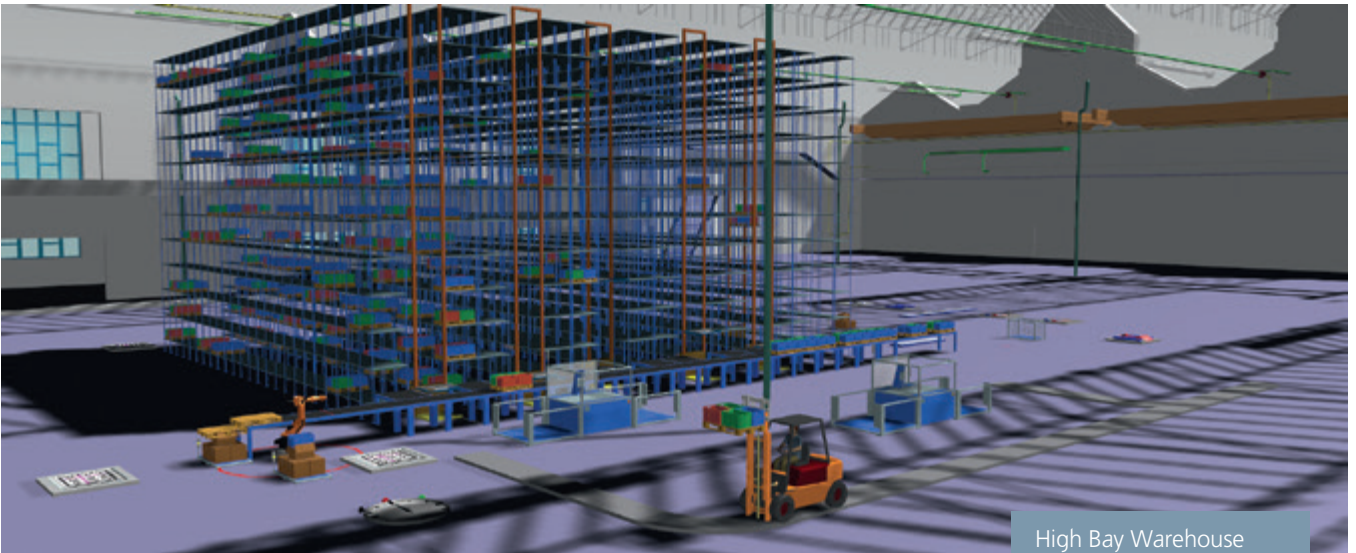
With shared technical resource across all three divisions, our development team is our greatest investment and asset. This team is diverse – comprising engineers from mechanical, electrical, software, electronics, manufacturing and logistics disciplines as well as physicists, mathematicians and statisticians. When they are all together in a room, with a problem to solve, amazing things happen. Technical innovation is the backbone of our business: it's how we turn customer requirements into new products and services. It has to be a fast process based on customer demand without capital reserves to allow funding for long term speculative development.

Adding value as a specialist in global markets

Our Inspection Systems division, which develops and manufactures technology to monitor the quality of sheet glass, competes against much larger organisations that sell a range of different glass types. It's not unusual for a competitor supplying an entire glass manufacturing line to bundle together costs; discounting the line by the cost of the inspection equipment and appearing to make the inspection system 'free of charge'. The crafty foxes. To overcome this economy of scale, Inspections Systems adds value through a specialist service: providing a high level of after sales service and guarantees against product obsolescence that the competition cannot match. I'm proud to say it's simple and effective. We win much more than we lose and have close to 100% customer retention.

Managing risk across the organisation

All divisions are set up to behave as a hedge against the others. For example, in 2008 after the global financial crash, automotive and construction, which have two of the



High Bay Warehouse Simulation – reduced travel distances and double handling, as well as optimising picking and put-away strategies are common outcomes

largest industry demands for glass, went into recession. We were able to divert resources and investment to other divisions, Prosim and Simulation Solutions; this resulted in a growth spurt driven by sales of Prosim simulators to China and realisation of the latent potential in Simulation Solutions. Inspection Systems has since recovered and as that division enters a new growth phase it is Prosim that faces challenges in sales. Testing capacity is being met by existing simulator capacity in the Western markets, new simulator sales have slumped, the cycle will repeat and we expect to see a return to growth in the next five years. During these cycles, Simulation Solutions remains our most consistent performer, providing stability and opportunity to deliver efficiencies for our customers.

Campaigning for optimum efficiency as best practise

In twenty five years of providing simulation services and software I have not yet been involved in a project that did not pay for itself in either or both reducing capital expenditure or improving productivity. Simulation is attractive because making wholesale changes to a physical manufacturing plant is perilous; it provides insight into behaviour of manufacturing

operations, allows experimentation with seemingly ridiculous ideas and helps senior management select which changes to implement. All at zero risk to ongoing operations.

Simulation is not new technology, yet the number of cases without this step included in facility design is inexplicably low. The benefit of simulation was estimated in a German industry study (VDI-directive 3633) as:

- » 2%–4% reduction in investment costs can be achieved.
- » 0.5%–1% of the investment costs are the costs of the simulation.

From my own experience, I would suggest these figures are pessimistic, perhaps because simulation isn't as widely applied in the UK. It is not unusual for clients to achieve a 5–10% reduction in investment costs as a direct result of using simulations.

As a Director of Simulation Solutions with over 25 years experience, I remain passionate about simulation, my mission is to raise awareness of the value simulations can add to the processes of designing new factories and manufacturing. Feel free to get in touch if you'd like to arrange a complimentary consultation for your business.

How Simulation Solutions help manufacturing efficiencies:

- » Reduce errors
- » Maximise capacity
- » Mitigate risk
- » Test innovations

“It is not unusual for clients to achieve a 5–10% reduction in manufacturing investment costs as a direct result of using simulation”

Skipper



Alan Bentley, Managing Director



Leading the way in waste and safety management

SKIPPER AT A GLANCE

- » Established in 2005 with one product: the Skipper complete barrier system
- » 'Commended' in the Industrial Product category of the Design Week Awards
- » More than 20 safety management products available today
- » More than 70 distribution partners globally
- » 70% of all products exported
- » 15 UK employees – projected to rise to 23 in 2017
- » A strong R&D ethos
- » £1.9m net profit per year
- » £600,000 invested in developing 'UniBank' – a renewable energy charging system

Skipper is a specialist manufacturer of multifunctional, patent-protected safety management products. These include flexible barrier systems, post and base systems, waste management solutions – and a unique road cone that incorporates a highly reflective helix design. The company's vision is to be the recognised industry leader in safety management.

The Skipper story began in 2003, when business-owner, Alan Bentley, decided there had to be a way of reducing the number of road cones used around the world. After many months of development, the result was Skipper – a versatile, highly robust interlinking retractable outdoor barrier system that contained nine metres of specially developed fabric tape and could be attached to any standard traffic cone.

Commended by Design Week

Launched in 2005, the Skipper complete barrier system was 'Commended' in that year's 'Industrial Product of The Year' category of the Design Week Awards. Featuring the world's longest retractable outdoor barrier, it was described as 'an example of how good design can make a real difference to a mundane product'.

Rather than lead simply to a reduction in the number of road cones in use, however, the Skipper system quickly found favour across a number of sectors across the world, including emergency services, retail, distribution, airports and shipping, where temporary barriers were required.

Meeting customer needs

After enjoying considerable early success with the Skipper barrier system, the company focused its attention on gathering as much feedback as possible from safety industry bodies and professionals from a wide spectrum of industries.

Through engaging with customers and listening to their specific operational needs, Alan Bentley was encouraged to develop a range of accessories and attachments to extend further the capability of the Skipper product.

Following extensive research and development, by 2007 Skipper had introduced a wide range of brackets, clips, lights, attachments and signs both to complement and extend the use of its flagship system. The investment in innovations proved an immediate success, allowing the company to invest further in new product development and to attract new market sectors globally.

Attention to detail

Having begun with a single invention, Skipper now boasts more than

20 product lines, each developed with the same uncompromising design, attention to detail and quality manufacturing that has been the hallmark of the brand since day one.

Three key areas of safety

Over the years, Skipper has become known not only for its tape barriers, but also as a provider of complete safety systems. Today, the company focuses on three key areas of safety; the indoor environment, outdoors and the increasingly important field of waste management. Skipper is a member of the British Safety Council and the International Powered Access Federation (IPAF) – an organisation that promotes the safe and effective use of elevated work platforms worldwide. Skipper products are manufactured to all relevant safety standards.

Thanks to its diverse product range, Skipper is able to market 'safety' to a wide number of sectors. With resulting income streams stemming from areas as diverse as education and the military, the business has been successful in mitigating the risks often associated with market turbulence and spending cycles.

“...everyone at Skipper knows how the business operates – from creating new products to helping customers”

Alan Bentley,
Managing Director

The investment in innovations proved an immediate success, allowing the company to invest further in new product development and to attract new market sectors globally





Dependable, robust,
innovative and versatile

“Skipper remains committed to developing new products and both improving and diversifying its existing range”

Proudly made in Britain

‘Since Skipper was formed, our entire focus has been on manufacturing the highest quality products that are the result of impeccable design,’ comments Alan Bentley. ‘To ensure we maintain total quality control, all our products are designed and manufactured in the UK, with despatch then taking place from our Knutsford HQ.’

Dependable, robust, innovative and versatile

Committed to the core values of being Dependable, Robust, Innovative and Versatile, Skipper takes its responsibilities as a manufacturer of safety systems seriously. However, those values don’t simply apply to Skipper products. The business has gone to considerable lengths to use the same principles to help grow the company and develop its people.

Challenging, rewarding and enjoyable

‘Our core values set us apart from our competitors and imitators and reflect the qualities we look for in both our products and staff,’ adds Alan Bentley. ‘Working at Skipper is challenging, rewarding and enjoyable.’

We encourage strong communication and initiative and go to tremendous lengths to make sure all our employees feel valued. We also ensure that every staff member understands the role his or her fellow workers play. In fact, everyone at Skipper knows how the business operates – from creating new products to helping customers.’

Never standing still

Over the past 10 years the Skipper brand has reached around the world. Today, Skipper products are sold in more than 30 countries by more than 70 distribution partners. Appreciating that its competitors aren’t resting on their laurels, Skipper remains committed to developing new products and both improving and diversifying its existing range. Typically, 25% of annual profit is set aside for new product development.

UniBank – taking Personal Protection Equipment (PPE) to the next level

As a further example of its desire to innovate with products that lead the way in safety management, Skipper is currently developing ‘UniBank’ – a patent-protected, hand-powered renewable energy device.

‘No larger than a computer mouse, UniBank will provide a reliable source of immediate, sustainable power for workers in the field and people on the go,’ says Alan Bentley. ‘In addition to the obvious benefit of providing instant power for tablets, mobile phones and body-worn cameras, it is intended that each UniBank device will incorporate safety lighting, laser technology and an alarm beacon function. Embracing the power of ‘The Internet of Things’, we are also working on a selection of apps that will make UniBank invaluable to a wide range of professions and to personal users.’

MTAG Composites



RS Sailing is one of many long-standing customers that have used our expertise



Nick Maltby, Managing Director of MTAG

MTAG Composites is one of the leading Phenolic and Polyester fibreglass moulders in the UK. Beginning with one man with a distinct vision for embracing innovation – and a shed in which to work – MTAG now has a decade of success and experience to build upon in the years ahead.

Nick Maltby, founder and managing director of MTAG, launched the company over 9 years ago from his home near Boston, Lincolnshire. Born from hard-work, dedication, and a commitment to quality, our success has meant that, today, MTAG employs over 100 people, some of whom have more than 20 years hands on experience in composite mouldings, and turns over £7 million a year.

History

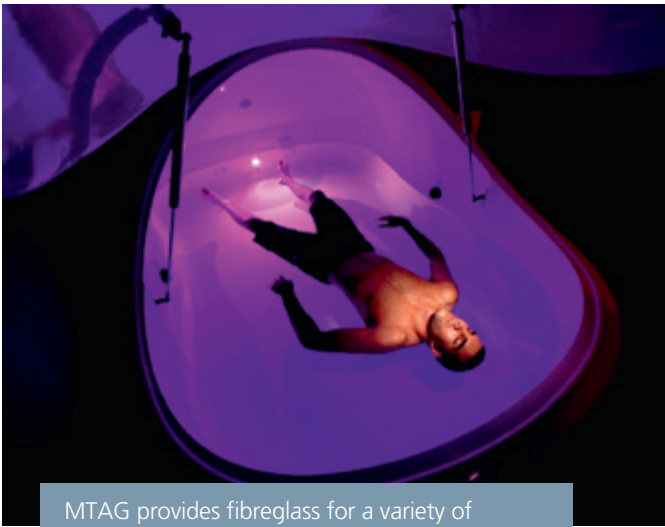
Nick's journey in the fibreglass moulding industry began after leaving school at 16, shaping his craft at a local company before leaving in 2008 to help look after his young son. His passion for the industry meant that he was not long from returning to fibreglass moulding, establishing MTAG in the same year.

Nick started from his workshop at home, manufacturing Phenolic ammunition cases for submarines in his shed. From such humble beginnings, within six months Nick was providing moulded parts for major players within the rail industry.

After a period of moving into increasingly larger premises – including taking over the site of the company where he started his career – MTAG is now based at Coningsby, at a site over 45,000 square feet. Still actively recruiting and expanding, we are determined to secure our place at the forefront of the industry, meeting the ever-growing demand for our services.

FACTS ABOUT MTAG COMPOSITES

- » Established in 2008 by Nick Maltby
- » Based in Coningsby, Lincolnshire
- » Annual turnover of £7 million
- » Specialised in Phenolic mouldings that give excellent fire resistant and marine environment-friendly properties meeting BS476 Part 6 and 7, BS6853: 1999 toxic fume R and smoke density standards and EN45545-HL3
- » Proud to be certified with ISO 9001:2008



MTAG provides fibreglass for a variety of commercial, manufacturing and leisure services



We accept custom orders and make them exactly to specification

“We are determined to secure our place at the forefront of the industry, meeting the ever-growing demand for our services”

Hitachi and other global brands are amongst the clients we have worked with



Our Work

Phenolic materials have a distinct advantage over other types of available resins, due mainly to a chemical structure that is unique and inherently fire resistant in the event of a fire. Phenolic mouldings do not readily burn or smoke.

Mass transit companies, striving to improve levels of public safety, are specifying phenolic mouldings to be used in their vehicles, because of these excellent characteristics. Phenolic composites are chosen to meet the stringent fire properties imposed by the rail industry.

From the very beginning, MTAG have been keen to embrace and develop this move toward using advanced materials in manufacturing, which has lent to our success and relationships with these industries. MTAG prides itself on its specialisation in this area: manufacturing high quality Phenolic, Epoxy and Polyester Glass Fibre and Carbon Fibre reinforced mouldings.

While continuing to supply composite mouldings for rail companies, MTAG now also produces a wide variety of other products, including seat backs for commercial aircraft. Further, we now manufacture 10-15 sailing boats per week, owing to our successful partnerships with businesses in this area. More recently, MTAG have engaged in further expansion into producing car components, including a project to manufacture a complete vehicle, emulating the build of an iconic motorcar.

As one of the leading Phenolic, Epoxy and Polyester fibreglass moulders in the UK, MTAG can turn its hand to most customer requests. These are predominantly in the aerospace, rail, and leisure industries, but we have found that demand for our services has proven incredibly varied – even producing parts for theme park rides and fire protection panels for underground stations such as Canary Wharf.

MTAG are always looking to develop innovative solutions. We are happy to offer on-site consultations for customers, and be involved with prototyping and research and development projects. Our focus on design, quality and our approach has meant that, as well as being widely used within the UK, parts manufactured at our premises in Lincolnshire have been exported worldwide to destinations as diverse as China, Japan, Spain and Italy.

Service Ethic & Awards

MTAG are dedicated to building long lasting working relationships with everyone in our customer base. Through our hard work and professional service, we have established some great partnerships on projects within the aerospace, rail and leisure industries.

We ensure that the techniques we utilise at MTAG are fit to the purpose of our orders, ranging from wet Lay Up, vacuum infusion and vacuum bagging. Likewise, we also provide a full painting service and assemblies including fitting and bonding of frames and electrical products.

This commitment to going the extra mile for our customers has been essential in our success, and is central to our ethos as a business. Our aim at MTAG is to provide our customers with a prompt, professional service, and ensure they receive high quality products at very competitive prices.

A testament to our success in this are the awards we have received in 2017, which has proven to be a gala year for our team. Everyone at MTAG has worked very hard over the past year and more to build the company to the level it is today, and it is an honour to see this recognised.

We are delighted to have been awarded 'Excellence in Manufacturing' by the East Lindsey Business Awards. East Lindsey District Council launched the ELBA to showcase the skills, talents and

» R E V I E W S

- » 'We rely on MTAG to fabricate and build our UltraGuard personal fire protection systems, which are endorsed by many UK Fire Brigades. With a combination of fibreglass, electrical and mechanical components, the MTAG team put together these bespoke systems to our exact standards and are always responsive to our needs and ideas.' – Ultra Surefire Ltd
- » 'RS Sailing's business strategy is to only work with the best of companies to achieve the best results. MTAG certainly fits this mould! With their highly skilful team, reliable in all aspects and fun to work with, they are our perfect business partner. They are always open to challenge the status quo in all situations and at any time are self-driven to increase the standard of quality in any of our products above any price point' – Alex Newton-Southon, RS Sailing

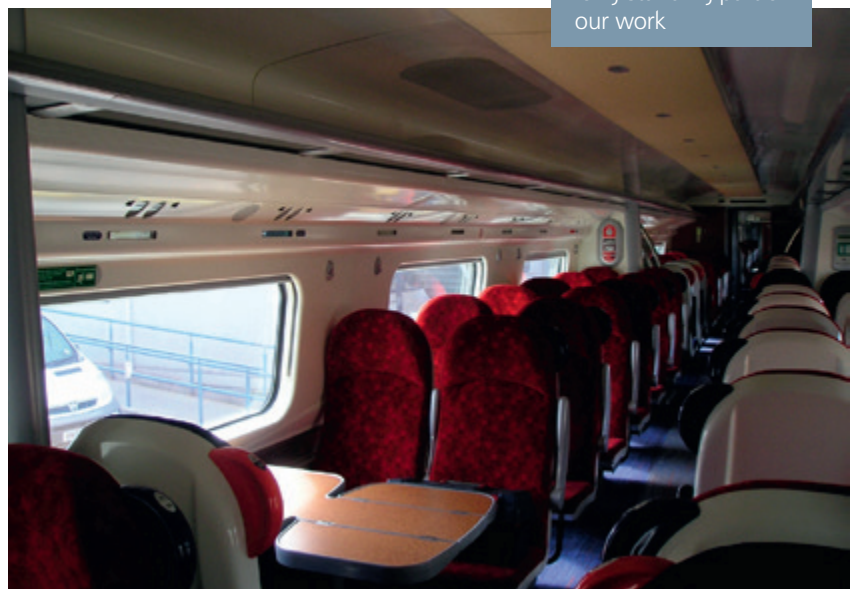
successes of East Lindsey businesses. By recognising local excellence, best practice and innovation, we provide a benchmark and inspiration for all businesses in the future.

We were also recipients of the 'Made In Lincolnshire, Sold Nationwide' award, showcasing the region's manufacturing sector. The awards ceremony – hosted by Streets Chartered Accountants, Natwest and Business Lincolnshire, and now in its second year – aims to recognise the variety of goods and services produced in Lincolnshire that demonstrate pioneering thinking, and serves to highlight the county's well-earned reputation for innovation and manufacturing.



The Excellence in Manufacturing Award presented to us earlier this year

Supplying to the rail industry has been a long-standing part of our work



Techna



John Mestitz, Managing Director



Protecting the power
at Glastonbury

Founded in Cardiff in 1945 by my grandfather, Techna operates in the switchgear and power electronics markets. Our products are in all those faceless grey cabinets that control the power in buildings. We also provide equipment for things like vehicle charging points, car park ticketing machines, airport security scanners and for big events like the Olympics, Glastonbury and New Year firework displays.

FACTS ABOUT TECHNA

- » Founded 1945
- » Design and manufacture of electrical switchgear and power electronic controls
- » 25 employees in UK
- » 30% of sales to export markets
- » Achieving 20% annual growth and accelerating

We're on a path to faster growth. In the past five years we have increased our staff from 15 to 25 and almost doubled turnover. 30% of our sales are now to export markets. My grandfather, Ervin Mestitz, started Techna having moved to the UK from Czechoslovakia at the beginning of the war. Engineering ran in the family. I completed my electrical engineering degree in 1991. As the third generation Director of Techna, I realised we didn't have to remain a small family business.

Space, power, people

Today we operate in the low voltage switchgear and power electronics markets, where competition is intense and engineering safety demands reach the highest levels. We are currently based in Hertfordshire near Watford. Our site houses all engineering and research and development (R&D) staff as well as sales, admin and warehousing operations. Part of our manufacturing is on site whilst some remains abroad.

That can be difficult for a small- or medium-sized enterprise (SME). Long lead times, hidden overheads, extra management time, more complex quality control procedures – it's not just about labour costs. So we began a plan to manufacture our new products in the UK.



London's New Year fireworks

More employees, high levels of automation, more space, more power

To achieve success we need more employees, high levels of automation, more space and more power. The plan is working but it's not easy.

The first challenge was finding skilled employees. Key shortages exist in engineering and IT. It was not just the lack of available candidates but also the quality of their education. In electrical engineering things have to be 100% right. The situation was so bad we started a programme of trying to engage directly with Universities. Initially only one replied – University College London (UCL) where I studied 25 years ago.

We set up a Knowledge Transfer Partnership with UCL. The Partnership was excellent and enabled us to acquire and embed the additional knowledge we needed inside Techna.

Brexit

Brexit presents great opportunities if the UK would seize them. The day after the referendum, I decided the way forward would be to accelerate investment within the UK so we could better target future export markets.

Today I have more pressing concerns.

Expansion requires more space but in recent years space is not only at a premium, it's almost non-existent. Around us there is practically nothing available. Relaxation of planning laws has seen rapid building of apartments on every available site, leaving a serious shortage of commercial and industrial premises. The shortage of housing remains a key issue but addressing that by reducing local employment prospects is no solution.

Power problems

The search for premises is further complicated by one big issue – the need for more power. Our products protect electrical systems so during R&D and production they are tested to withstand maximum fault levels on the electricity network. That requires a very special type of laboratory.

Currently the UK is lacking in this area and it puts not only Techna but also the UK's entire low voltage electrical industry at a disadvantage. We design and prototype a product and then we must go abroad to test it. There are many options – Germany, Netherlands, Italy, USA, China, India. We have to give months' of notice

“To achieve success we need more employees, high levels of automation, more space and more power. The plan is working but it's not easy”

- » BS/EN Product Certification for UK/ Europe
- » UL / CSA Product Certification for North America
- » UCL Knowledge Transfer Business Partner of the Year 2015
- » UCL/Techna KTP achieved Outstanding national scoring 2016



Engineering design at Techna

“We would like to build our own R&D laboratory in the UK. For the UK to regain a leading position within the world market it has to be done ”

to use these labs. So we design, wait several months and test. Then we do six weeks of design improvement, wait months more and re-test. It can take a year to complete the R&D which foreign companies can do in four months. Hiring these laboratories can cost up to £1,000 an hour and testing takes days, sometimes weeks.

The solution is to build our own R&D laboratory. Obtaining input power is difficult. There's doesn't appear to be enough spare capacity within existing infrastructure around our location. Ideally we need to move close to a large substation but local substations are next to fields protected in the Green Belt.

We would like to build this facility in the UK and make it available to other British companies. It's going to require an investment of up to £3 million. For an SME that's a big project but for the UK to regain a leading position within the world market it has to be done. The global market for our sector is estimated at £5–10 billion. Currently our access to it is seriously hampered.

Growth

This year we are on track to achieve 20% growth. Our strengths come from being able to offer high-quality products while retaining the outstanding service and technical support that come from our long history as a family-run business. As awareness of Techna strengthens within the market we are able to penetrate more specialised industries such as distribution infrastructure, railways and defence. This, coupled with significant growth in the emerging renewable energy sector (eg solar, wind) and electric vehicle markets, gives us a medium term target for 200–300% growth.

For future recruitment we are considering apprenticeship schemes with local colleges. The planned Metropolitan Line extension would provide better access to the Universities and talent pool in London.

The space and power issues need to be resolved.

SEH Europe



SEH European
Headquarters



Discussing silicon process with
HRH The Princess Royal at the
plant opening

The Shin-Etsu Handotai Group, headquartered in Japan, manufactures a wide diversity of silicon wafer products at numerous production bases in various countries around the world. At present, about two thirds of our net sales are made outside of Japan. Silicon wafers are the essential building block for almost all electronic devices.

Shin-Etsu Chemical Co. Ltd. is the name of our parent company. Shin-Etsu derives from the region where the company originates, and our name of Handotai is the Japanese word for semiconductor. The company was first set up in Europe in 1979 as a sales office located in Paris. From there the company decided to expand into manufacturing in Europe, with the UK being the site chosen. That first manufacturing investment was for non-polished wafers, a product mainly used in discrete semiconductors in which European companies held a strong position. That factory opened in Livingston, near Edinburgh in the so-called Silicon Glen. This a nickname for the high-tech sector of Scotland along the Central Belt, the name being inspired by Silicon Valley in California. We ran the company on that site for about five years, before expanding to a custom-built site close by.

In the late 80s, the company had to reinvent itself for the first time. We foresaw that the future market for non-polished wafer and the cost pressure in our industry was such that production would need to consolidate into one manufacturing site, which was best in Japan. The company in the UK refocused on polished wafer, a higher value-added product and of a newer generation.

Generations of wafers

In the silicon wafer industry, we have generations of products that are broadly categorised upon the diameter of the silicon wafer produced. Our customers process

FACTS ABOUT SEH EUROPE

- » Shin-Etsu group founded in 1926 in Japan
- » Number one producer in the world of semiconductor silicon
- » Manufacturing in the UK since 1984, employing over 400 staff
- » Supporting UK and European semiconductor markets as well as exporting worldwide
- » Chief Executive Officer (CEO) has spent almost twenty years in the UK working for SEH
- » Fostering close ties with the local community



12-inch silicon ingot
donated to the
National Museum of
Scotland

“There is a healthy internal competition between those facilities which means that our company learns very quickly and we progress very quickly”

‘one silicon wafer’, but a six-inch wafer has 2.25 times the surface area of a four-inch wafer and thus more output – similar production cost, but more than double the products. Thanks in large part to this we have seen the price of consumer electronics become ever more affordable. The industry started in the 60s with one-inch diameter silicon wafers, moving through, two, three, four and five-inch wafers and then the plant in Livingston was set up for six-inch polished silicon wafers in 1989. We produced through the 90s until in 1997 we made a further investment adding capability for the latest generation eight-inch product. At the same time, we added a further product known as epitaxial wafer, a further value-added step. With those ongoing developments, we were running six-inch, eight-inch diameter and polished and epitaxial wafer products.

At that time, much of the six-inch and eight-inch silicon wafers went into dynamic random access memory (DRAM) products, the memory for personal computers. It is a big market, but while some European companies were manufacturing that type of product, much of it was moving geographically to the Far East, but also onto today’s latest generation 12-inch wafers, driven by cost savings.

European semiconductor makers shifted their focus, for example to the analogue

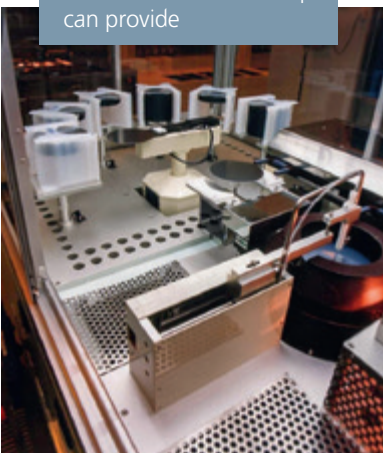
sector serving the telecoms market, and our company adapted accordingly with appropriate products. That is how this industry works, requiring a nimble and flexible approach to follow the market trends, which often follow very short product life cycles.

Today one of the big products is on RF (Radio Frequency) devices, such as Bluetooth, wi-fi, mobile phone connectivity etc. Each of those have been an ongoing process of development, from the very first 1G, 2G, Edge, 3G, 4G, LTE, with ongoing work now on 5G. Each of these require better or entirely new products, new materials, and new challenges. With final products – mobile phones, tablets, cars - every year having new requirements and capabilities; we must keep our products and assets current in that fast moving environment.

Planning for the future

We are in a sector that evolves and reinvents itself on a regular basis. Today we continue manufacturing six- and eight-inch products, however much leading-edge development is on 12-inch, which is where demand is mainly growing. Although that can sound negative, the six-inch wafer generation began life in the early 80s and we are not only still manufacturing that today, but have new products developing in this technology. However, both six- and eight-inch wafers are very mature

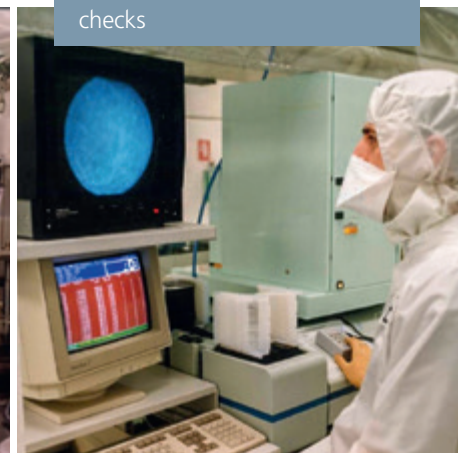
Later process steps require the extreme cleanliness that an automated setup can provide



Earlier processes form the precise wafer shape



Final product inspection, with both manual and automated checks





Very specialised equipment required in a very capital intensive industry



The management team at the time of our former CEO's return to Japan

products that had reached a peak of world demand and we were managing a very gentle decline in the demand for those products.

That strategy for market maturity places a high requirement for ongoing improvements in capability and efficiency. The company has 13 facilities worldwide, and although those do not all make the same product, there is a healthy internal competition between them. The competition and learning from across the globe means that our company learns and progresses very quickly.

If you had asked me four years ago, I would have said that with the eight-inch market mature, it would show a steady decline due to the 12-inch generation carrying the growth.

However, for economic reasons, 12-inch has not grown and the eight-inch decline has reversed. Seeing a market that was in decline moving back into growth is very unusual, and presents an interesting new challenge. Silicon wafer manufacturers were managing their production to optimise for efficiency and maturity, which were the requirements over the next 15 or 20 years. A temporary reversal and increase changes the landscape and strategy again. Such are the shifts in our industry, bringing new challenges and opportunities for the company and staff.

Japanese culture in Europe

We are a Japanese company operating in the UK, which brings cultural challenges and learning. That is not only between Japan and the UK, but also from the UK serving Europe and each European country has their different culture; that has been not only a fascinating challenge bringing together the cultures with each generation of staff, but a very enjoyable one.

A key from that, and from the company's global reach and internal/external competition, is that so much of what we have achieved internally and with our customers we can trace to the ideas from our people.

Our excellent local staff together with the learning from all of the companies in the SEH group has been a powerful interaction that has allowed us to develop the solutions we have. In Japan the word is 'kaizen' – the incremental build of many ideas, whatever the size, the sum of which together is very powerful. We are sorry when occasionally we see people move on but one positive from that is when we can see their development in Shin-Etsu has helped bring a beneficial impact in another company. I think that has been very good for Scotland and the UK as well as for Shin-Etsu.

“How to continue to best use the company's assets, how to keep them current in a very rapidly changing market”

TMD Technologies



Peter J Butcher,
Executive Chairman



Microwave tube assembly
in clean environment

TMD Technologies is a world leader in the design, development and manufacture of microwave products for use in radar, communications and electronic warfare (EW) systems. Based in Hayes, West London, TMD has an enviable reputation for innovative solutions which also include electro magnetic compatibility (EMC) and radio frequency (RF) testing.

FACTS ABOUT TMD TECHNOLOGIES

- » Formed in 1995 following an MBO from horn-EMI
- » SME with 180 staff, turnover £24 million
- » World leading innovator of equipment for radar, communications and electronic warfare (EW)

Given the potential impact of Brexit on the UK, and the need for British Industry to develop new overseas markets, we believe our story – that of an small and medium-sized enterprise (SME) working and prospering with limited government support – shows what is possible.

TMD Technologies was formed by a management buy-out (MBO) in 1995 – just after the Cold War ended. TMD's founders concluded that the world would continue to need our technology, or its derivatives. And so it has proved. However, it required a radical change in customer approach for us to be successful.

In the early 1990s around 95% of the business of Thorn Microwave Devices (our predecessor company) was domestic. We knew this was not sustainable. Exports would be fundamental to the health and prosperity of the company. The key was to identify and understand our markets, focusing resources on those countries which had Original Equipment Manufacturers (OEMs) which form our customer base. We decided early on that, because of the protectionist policies pursued by a certain number of our EU partners, our export business focus should lie elsewhere. Having understood the nature of our target market, the next step was to find those OEMs which might use our products and to develop close and trusted relations with them. In each country a local representative was appointed, whose role was

to introduce us, manage the cultural and language difference and look after our local interests. They have been key to our business success, and developing customer relationships is no small task. It takes years. However, where the opportunities were properly understood, and considered tangible, we put in the effort.

We are now established as the supplier of choice by many of our overseas customers. In fact, our exports account for around 90% of the total company sales. We are an internationally-focused company. TMD has excellent and long-standing relationships with our partners in Japan and South Korea and on the back of strong company success in the USA, we established a sales and service facility in Baltimore in 2013. These are particularly challenging markets in which to operate.

TMD has done exactly what successive governments have been asking British SMEs to do. To go out and export. We have shown it can be done; the British brand can still be a great one. But that in itself is not enough: it needs commitment, vision and dedication, as well as a marketable capability.

In our business area, 'standard' customer requirements are rare. Bespoke solutions are invariably the order of the day. Being suitably responsive to customer needs has been one of the keys to our success.

In order to ensure that we stay at the cutting edge of technology – and remain competitive in an ever-changing world – TMD consistently invests more than 10% of our turnover each year on new product and technology development, and has done so every year since our inception in 1995. We also invest around 10% of turnover on state-of-the-art capital equipment.

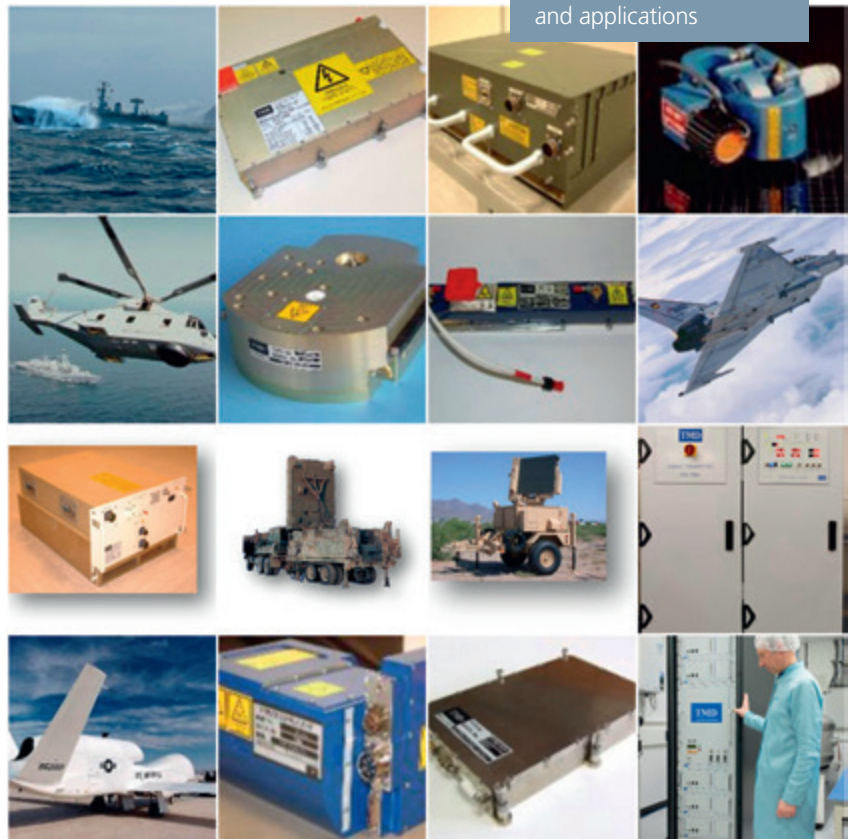
In 2014 TMD was selected to participate in the Government's

Sharing in Growth (SiG) scheme. SiG provides concentrated training and development programmes tailored to the assessed needs of each beneficiary; this covers a wide range of disciplines including leadership, engineering excellence, lean operations, quality, supply chain management, strategic thinking and planning. The aim is to establish world class standards of performance, and thereby to ensure that we are best placed to build on the excellent foundations we have established in the international marketplace and to take advantage of the growth in global market opportunities. SiG Chief Executive Office, Andy Page, said 'I am delighted that SiG has been able to support TMD to achieve their recent success. Their investment in the capability of their people and technology is resulting in a healthy order book and is a powerful example of how an ambitious UK manufacturing company can compete globally.'

We do not anticipate any significant change after Brexit, as most of our

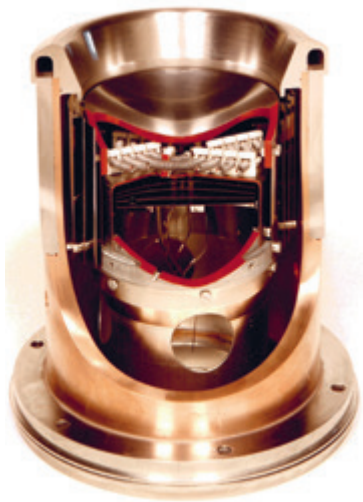
“Developing customer relationships is no small task. It takes years.”

Wide variety of products and applications





TMD's latest compact microwave products



High power electron source

sales come from countries outside Europe. In those countries where the EU has Free Trade Agreements, we need transitional arrangements to be put in place so that we avoid the imposition of unfair tariffs in March 2019. But Brexit does present the opportunity for the UK to re-set its trading relationship with key nations around the world and, by getting rid of certain of the more restrictive elements of EU fair trade agreements (FTAs), for us to come out stronger. We trust the British Government will call on the experience that exists in British industry as it seeks to make such new arrangements.

What do we need to continue our expansion? We are not dependant on UK government policy, save for export licenses, where we need consistency. We would like the Government to ensure a more level playing field, and to show more recognition of the important role SMEs play.

Our biggest issue though is the recruitment of skilled technicians and engineers. We rely on immigration,

because we cannot find sufficient candidates with the skills we need. It follows that a major reduction in immigration – not just from the EU – would hurt us badly. Where individuals add real value to our economy, we need them to be welcomed with open arms. We already work closely with British universities, and sponsor certain of their activities. We engage with local colleges, providing apprenticeships for young, upcoming technicians and commercial staff. But we also need to see secondary education focus more on usable Science, Technology, Engineering and Maths (STEM) subjects, with the ability to read and write coherently. These needs are not new, but will become more important post Brexit.

In summary, we look forward with optimism. The company is lean, fit and agile. We have, and are continuing to develop technologies that the market needs. And we have a loyal and valued customer base from which to expand. Onwards and upwards!

Stour Precision Tools



Hydraulic robot welding
fixture nearing completion

Founded in 1966 manufacturing press tools, Stour Precision Tools has developed and evolved over the past 51 years at its premises in Droitwich, Worcestershire into a specialist precision engineering company. We design and manufacture bespoke work holding equipment. This includes conformance work holding fabrication fixtures for manual and robotic welding, end of arm tooling for robot handling solutions, positioning manipulators for manual and robot installations, and hydraulic work holding machining fixtures for computer numerical control (CNC) production solutions..



Clive Chaplin,
Managing Director

3D parametric designs

By developing our in-house 3D parametric design capability, which we have embraced for over 20 years, we have been able to provide innovative designs which deliver robust durable solutions. Combined with our highly-skilled team of toolmakers and machinists, using the latest CNC-machining technology, we manufacture and assemble to exacting standards. Our valued employees take great pride in their work. We have always placed meeting customers' requirements as our main priority which has enabled us to establish long-standing customer relations.

At Stour Precision Tools, we maintain the ability to adapt our core competences to new customers' requirements for tooling solutions. This has allowed us to adapt to changes in the manufacturing sector over the decades. We continue to keep a close eye on future developments and opportunities, as the requirements of the manufacturing sector in the United Kingdom continue to change.

FACTS ABOUT STOUR PRECISION TOOLS

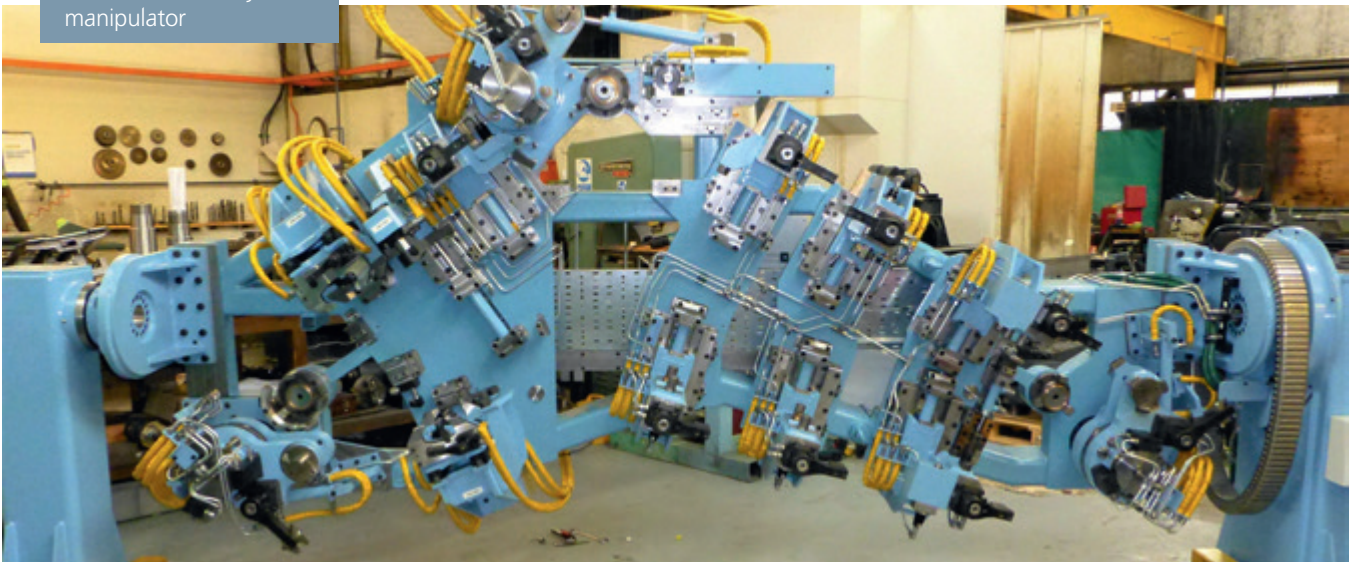
- » Turnover: £1.3 million
- » 14 employees
- » 18 years average length of service
- » 4,500 sq ft facility
- » ISO 9001 accredited

» PRODUCTS
AND SERVICES

- » 3D CAD Design
- » Fabrication up to five tonnes
- » CNC milling and turning
- » Full toolroom machining services
- » Electrical, pneumatic and hydraulic control design and build
- » Mechanical assembly and test
- » Site installation and support

“We have been able to provide innovative designs which deliver robust durable solutions”

Hydraulic welding fixture mounted on a single axis manipulator



Systems and control

Having good systems in place to manage the design, planning and manufacturing process is key to being able to deliver complex bespoke tooling. It is very important to have good control and I have made significant investments in Enterprise Resource Planning software and Product Life Cycle management software.

This has had its challenges and great care must be taken when selecting software systems. Don't allow your business to become a slave to a bad system.

ISO 9001 accreditation is an essential standard for us to supply to our customers within the UK, including global leaders in industrial robots and systems and global manufacturers of articulated dump trucks and backhoe loaders, tier one automotive component manufactures, as well as many other business sectors.

It is key that a company has good systems and controls embedded in its culture. These will enable it to function and meet all the requirements of the ISO 9001 system routinely.

Surviving the ups and downs

Being a service company, providing solutions to customers' needs and requirements exposes Stour Precision

Tools Limited to declines in demand when the manufacturing sector is depressed. I have been extremely cautious when considering taking on new staff to meet increases in demand during periods of buoyancy which has at times stifled expansion. However, I have always held the job security of my staff very highly and have always tried to maintain our staff numbers through quiet periods in readiness for the good times, and my staff have repaid this with excellent loyalty.

New products

Over the past two years, I have been reviewing product types that we can offer as standard product solutions to complement the bespoke design and manufacture we provide. As we develop and market these products this enables us to utilise our manufacturing capacity more efficiently, helping to flatten the peaks and troughs we are accustomed to in the sub-contracting sector. The first products we have started to offer as a standard range are handling positioners. These are used primarily to carry a work holding fixture or components that require orientating to enable various assembly or welding processes to be performed. These have either one, two or three axes of motion to provide better ergonomic access for operators or as a requirement of process, for instance with welding.

The standard manipulator system fits perfectly with our key competencies and we can offer complete systems, including bespoke work holding fixtures or tooling, demanded by individual companies processes and products.

Investing

We have recently expanded our CNC machining capability and capacity by investing in two more machining centres, a three-axis high-speed vertical machining centre and a turning centre with driven C axis providing milling functionality.

New company

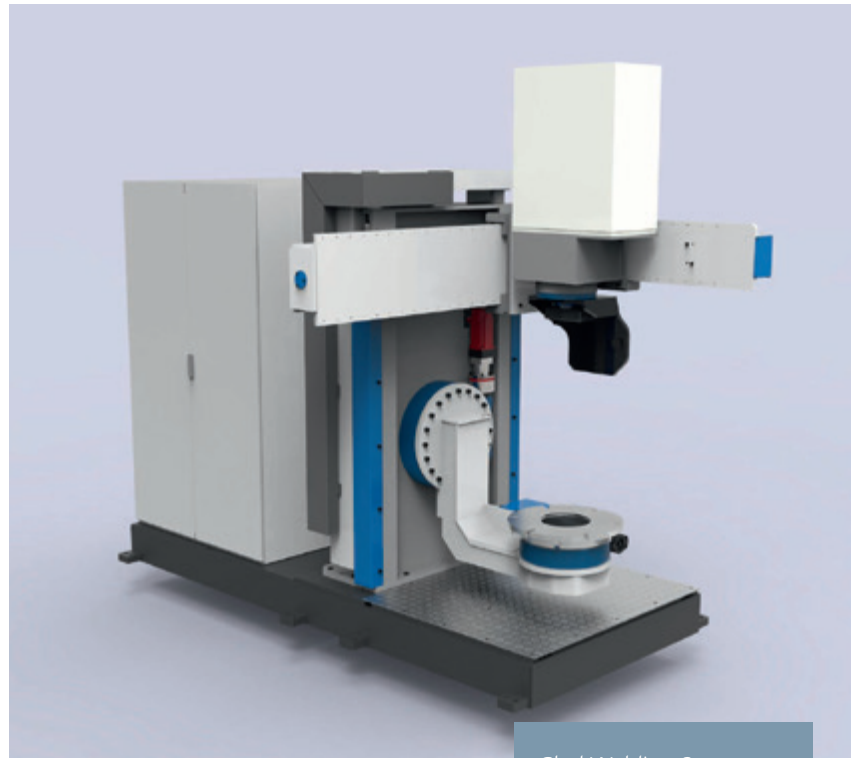
Continuing my planned introduction of standard products, I have been developing a completely new system for the clad welding of components. This is a very exciting opportunity and offers great potential for expansion.

To maintain Stour Precision Tools core services and to not obscure its direction I am creating a divisional company structure and creating a new company which will market, sell and support the overlay welding systems globally.

Clad welding is a process used extensively in the oil and gas industry to improve the duty cycle of equipment used in the extraction and production of the industry's products.

The new system offers significant advancement over current market equipment and, to protect the intellectual property of these features, two patent applications have been completed.

The main hardware of the system again uses our key competences in both the design and manufacture of precision-engineered equipment. It also requires additional skill sets which we will have to recruit externally and develop internally to cover electronic controls, robot integration and welding



Clad Welding System

processes required by the specific industries to which the units are to be sold.

Following the planned launch of this system later in 2017, I am also planning additional systems allied to specialist overlay welding processes to complement the clad welding system.

The future

Having worked within an SME business for over 34 years, 24 of those as Managing Director, I have faced much uncertainty at times within the marketplace, none more so than now as the Brexit negotiations take place. It is only by having a strong belief in what we do as a business and having the confidence to be proactive and take positive actions that will we continue to prosper.

With the creation of our divisional company structure and innovative products we are preparing to seek new export markets. What we will need from our government and policy makers is the ability and support to access these global markets.

“Over the past two years, I have been reviewing product types that we can offer as standard product solutions to complement the bespoke design and manufacture we provide”

AleTrim



Clear Man – designed, built and supplied for the Science Museum in 1997



AleTrim - Dispensing Science

Guess how much beer gets wasted every year in the UK? What about in Europe? Or the world? In the UK it is approximately 5%. That's a lot of waste! AleTrim uses the science of laminar flow to stop the beer from being too frothy when poured, a lot of that waste can now be saved. AleTrim will increase the yield of every cask or keg, all whilst pulling a great pint in half the time. Invented in 2012 by long-standing micro-manufacturing entrepreneur Oliver Browne-Wilkinson, AleTrim is UK patented and ready to hit the global market.

Entrepreneurial to the bone

Aged 16, I spent a year in France working on a farm and found my confidence. Joining a small travel company (now First Choice) in London, I zipped around on a motorbike collecting and delivering tickets, but a part of me knew that I wanted my own Enterprise. After hearing about a couple that needed investment to grow their business making skeletons for medical students, I took the plunge, securing the borrowings against my first flat. It was a commercial blunder on so many levels and the flat was sold 18 months later to pay the debt.

The silver lining was spotting a potential niche market in the UK, the orthopaedic medical device industry. At the time, artificial bones for training orthopaedic surgeons worldwide in hip and knee joint replacement surgery were only available from the USA. After a lot of trial and error, I developed the world's first reusable joint model – the magnetic hip. A patent was applied for in 1995, Medical Models Ltd was incorporated, and I bought my first garden shed.



As a young lad setting up my first garden shed

From Las Vegas to Bristol

The idea for AleTrim was conceived in 2008 whilst exhibiting at an orthopaedic conference in Las Vegas. Walking down the Strip, I was fascinated by the Bellagio fountains, and started to wonder, 'how do they do that? Maybe I can do that!'

I started researching what I now know is the science of laminar flow, but due to the lack of funds, development stopped. The medical device industry had taken some heavy blows – changes in global compliance legislation, the global financial crisis and the new US medical devices tax. Work dried up and forced me to rethink our business model. We put more work out to our sub-contractors and focused on product development, assembly and customer care – driven by our ISO 9001:2008 certification (the quality management standard), which continues from our base in Bristol today.

In 2013, I bought my second garden shed and after numerous prototypes, AleTrim finally worked! We have a UK patent, and pending applications in other key overseas markets. In anticipation of AleTrim and the emergence of computer-assisted joint replacement surgery, we recently moved into our own building.

Setting up AleTrim has been a case of applying a lot of what I've learned from Medical Models, as many of the manufacturing processes are the same. We have recently implemented the ISO 14001 environmental management system to complement our existing certification. This means that, as well as making a product that helps to reduce waste, we are continuously improving our own sustainable operations. By making sustainability a focus, we are showing that small businesses can influence big corporations. Everybody needs to

FACTS ABOUT ALETRIM

- » Less wasted beer: saving up to 80%
- » Great taste with a lasting head
- » More time to serve
- » Fits onto the end of any beer tap or font
- » Works on any beer tap for cask or keg
- » Designed and developed in Bristol
- » Patent granted in UK
- » Applications for patent in a further 38 countries
- » Franchise business

get on board, otherwise we will all go to hell in a handcart.

The micro-brewery industry is growing, so it's an exciting time to be launching AleTrim both at home and overseas. With grant support from the Department of International Trade and help from commercial officers in embassies and consulates around the world, we just need a little bit of luck as we go for it!

How can the Government help micro-manufacturing businesses?

My belief is that the state's role is to help companies to grow, thus creating jobs and tax revenue. It is surely wrong, however, to burden micro businesses with the administration related to the collection of taxes, especially when using the stipulated HMRC software which can be frustrating and time consuming. Alternatively, why not get the state to carry the burden of administration and reconciliation for PAYE, Employers' NI, EC sales list, corporation tax, pension, maternity, VAT, Companies House annual registration and the online filing of accounts? As a micro-business manager, I would snap up an offer that would give me back at least at least two days a month to concentrate on sustainable growth. I might even pay for it!

“By making sustainability a focus, we are showing that small businesses can influence big corporations”

“Giving micro-manufacturing firms the right assistance at the right time will help them blossom into small businesses delivering a pipeline of great innovation”

Do micro-businesses maximise the full potential of innovation?

A great example of state support is research and development tax credits, but this is only the start. Much larger benefits can be derived if more support is given to stop the copying of products protected by patents. There is an urgent need for an infringement fund that acts as a guarantor of last resort, protecting UK product innovation that has granted patents and/or copyright from illegal infringement. The costs incurred whilst protecting against infringement could be recouped from future increased sales or licensing fees. Great ideas would then get the chance to develop into great home-grown companies.

Is micro-business startup funding missing the point?

Every effort should be made to educate and train the aspiring entrepreneur in alternative business models that instill the basic business principles of management. The basic principles can focus on the known pitfalls when starting and running a new business – otherwise those management skills have to be bought in – usually at a hefty price and often in exchange for a controlling share in the company. That means giving away control of the enterprise far too early in its development. Most startup investors

are financiers with a short 3–5 year investment period, their focus is entirely about the return on their investment.

Once a business is consistently turning over more than £1 million per annum, its value increases dramatically. Investors can see there is a solid base to build upon, their risk is smaller and there are a lot more of them looking to invest. Giving micro-manufacturing firms the right assistance at the right time will help them blossom into small businesses delivering a pipeline of great innovation that is ripe for further development, providing sustainable long-term growth.

Why are micro-business management skills so important?

For too many years I ran my business without key performance indicators (KPIs), but instead learning to believe in my own gut instinct. Today, the combination of both is very powerful.

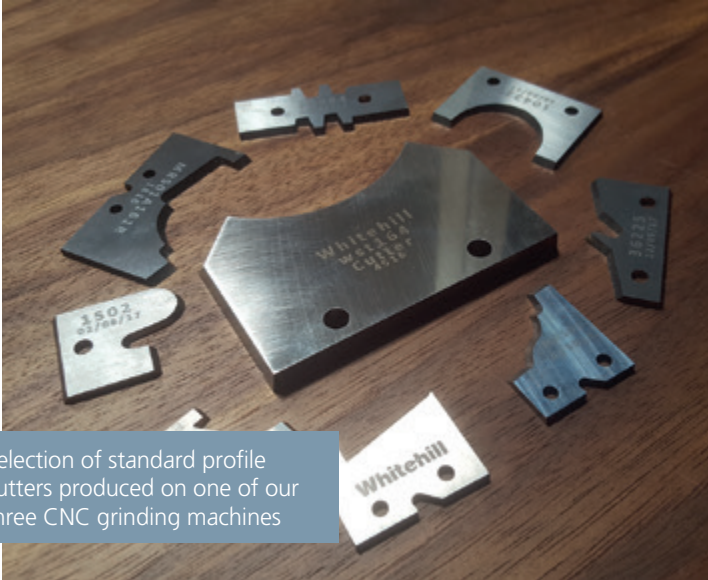
The problem is that the bigger one's business gets without KPIs, the harder they are to implement. If integrated early enough, I believe there is a greater likelihood of longevity. The collation of KPIs using a simple score card system is a foundation that can be built upon and developed. It quickly warns managers about impending problems and trends, and gives them time to resolve them, whilst positively reinforcing what is being done well.

A slightly more sophisticated management system allows you to work very efficiently with other businesses. Today there is no longer a need to do everything in-house. Subcontracting all manner of jobs is now second nature, but managing how they perform and how that relationship develops requires a reliable process. It's so much easier once you are shown how!

With the medical models product range called MITA RECON



Whitehill Spindle Tools



Selection of standard profile cutters produced on one of our three CNC grinding machines



David Hudson with his highly skilled team in the Luton factory

Whitehill Spindle Tools is the UK's leading woodworking tool manufacturer. The Luton-based family-owned business was established in 1930, producing dedicated window and door tooling for the woodworking industry. David Hudson, the current owner and Managing Director, has developed the business and made significant investments in both plant and personnel training to create a very experienced and highly-professional manufacturing company and team. His ethos is to provide all customers, however large or small, with the best technical advice and incomparable quality of both products and services.

To thrive in this modern demanding age of manufacturing and to be able to compete with your competitors, you must address the continual market changes and challenges. Highly-qualified people utilising the most modern equipment is the name of the game and that's the sentiment behind my recent investments in plant, machinery and personnel. It has enabled us to improve production and service to our existing and loyal customer base while continually attracting new business from companies that are either new to the industry or up until now had purchased their tooling elsewhere.

I find it hard to believe that this adventure was all started by Mr White and Mr Hill over 80 years ago when they had an idea to turn tools from being square to round with the intention of making them a lot safer. They used to have huge knife projections to profile wood that could take workers' hands off during production. They decided the market was there to start a company and convinced ten people to invest £100 each and went on to set up Whitehill Spindle Tools.

They approached my great-grandfather and asked him if he would make the tools for them, which he accepted and, as they say, the rest is history.

FACTS ABOUT WHITEHILL SPINDLE TOOLS

- » Founded in 1930
- » 22% increase in turnover over past five years
- » Continuous investment of profits into new technology and training
- » £3 million investment in state-of-the-art factory in Luton
- » 18 employees, approximately 65% having more than 10 years' service
- » Focused on both small and large customers

“Whitehill are the leading manufacturer of tools in the UK and the name of Whitehill is renowned within the industry, and it has been for many, many years”

Mike Lewis, Technical Sales Manager, Accsys Technologies

I started working at Whitehill on the 1st of April 1979 and since then I have been developing it into a more diverse modern company within the ever-changing woodworking market.

I have seen tremendous growth over the last few years. However, investment is not something that I have just started, it has been a 20-year journey and our ultimate aim is to manufacture all our products in the most cost effective and innovative way. I rely on a team of highly-skilled technicians using the most recent CAD-CAM systems for drawing and design and our wide range of standard and special products are all manufactured on-site in our 11,000 sq ft state-of-the-art factory in Luton. We have invested in modern, high-tech computer numerical control (CNC) machines with robotic operations, ensuring both accuracy and speed of service. My most recent investment is our fourth CNC profile grinding machine, thereby increasing our blade capacity by over 30%, producing over 400 blades per 24 hours, enabling faster and more efficient deliveries.

Changes in manufacturing processes

Over the years I have seen dramatic changes in the woodwork manufacturing processes, especially for small-

and medium-sized joinery shops. This has been driven by changes in machinery design, availability and price. Advances in software has increased the capabilities and ease of use of machinery and the changes in our tooling design reflects this and allows dedicated window and door systems to become widely available to everyone within the industry.

We have recently demonstrated our window tooling expertise and advancements to a large number of customers, some small joinery shops and other larger companies, all of whom were very impressed with our latest tooling design, some of which had never been seen before.

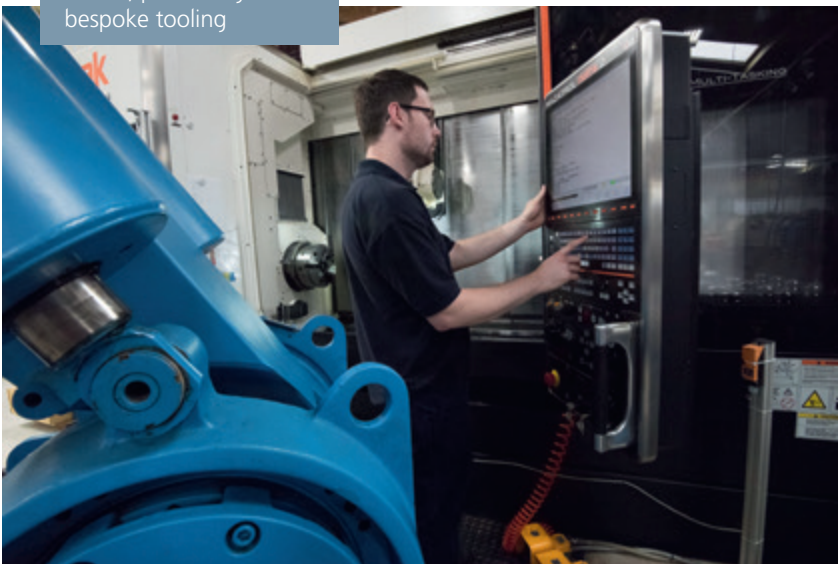
Our tools have enabled the simplest and most cost-effective methods of manufacture for our customers, thereby reducing waste and significantly improving their productivity. Whether it is used on older, single purpose machines, newer digital/CNC versions, or multi-function machining centres, our replacement carbide tip tool sets have set the benchmark in the industry for finish, quality and speed of production.

Move to wooden windows

Wooden window and door technical design has been radically improved, partly as a result of changes in legislation and partly as a response to the dramatic loss of market share to UPVC. Consequently, I have made vital investments in product design in order to reverse this trend and increase the wooden window market share. This has resulted in tremendous growth year-on-year for at least the last decade and shows no signs of slowing down.

Our on-site research and development team are continually looking to address these market changes and opportunities. We have designed products and solutions which are dedicated to window and door tooling. The tools are fully compliant to security

Robot loaded 9 Axis CNC turning and machining centre, producing bespoke tooling





Tool being tested for quality and optimum performance before despatch



Display of windows and doors manufactured using Whitehill's tooling

requirements of Part Q and meet PAS24:2012 standards. All our tools are fully tested on site, under BSI test number 8506223.

Our bespoke tooling solutions uses complex 3D models of every component part of the toolset. This allows a virtual assembly on the sleeve, showing the relationship of all the knives and inserts, along with access clearance for knife changing and positioning. This sophisticated and technical approach enables us to split knives within the profile, allowing shear up and down in the same block, which ultimately provides a superior finish-quality and greater depth of cut. The relative fall in price over the years of Whitehill's constant diameter tooling with disposable carbide tips has made our tools accessible to every level of the industry.

With virtually no set up times, no marking out and perfect repeatability, this allows windows to be made to order with no minimum batch size and often by semi-skilled staff. This gives the small- and medium-sized joinery shops capabilities that were only ever available to large manufacturers a decade or so ago. These enormous technical advances mean that most joinery businesses are now able to offer a fully-finished quality-controlled wooden window or door, backed by certificates of performance criteria.

Not only that, all our customers benefit from a significant increase in productivity and a finish quality that negates the need for hand sanding – windows which used to take eight hours to make can now be made in eight minutes.

Internal processes

I also recognise that we need to constantly review, manage and question our internal processes. With the unknown challenges that Brexit will bring, we are continually questioning our internal ways of working and searching for the leanest, most cost-effective way of working. We are currently implementing an advanced integrated enterprise resource planning (ERP) system which will provide greater control and visibility of our total costs, develop customer and supplier details and hence manage our complete supply chain. We aim to continue to be a proactive market leading organisation within the UK.

The team

I am very proud of my small team here at Whitehill. They are highly trained and committed to providing quality and service. Our core values are Integrity, Service, Lean and Learning. We aim to meet all our customers' ever-changing demands, providing unparalleled technical advice, superior tooling and service and therefore continue as the UK's leading tooling manufacturer.

“Dealing with Whitehill Spindle Tools has been an absolute pleasure from start to finish. (...) David was really helpful in explaining exactly what I needed for an economic solution to the problem”

Customer experience

FWB



FWB, your supply chain partner of choice



Paul Meehan Group's Managing Director, and the FWB Management Team

FACTS ABOUT FWB

- » Engineering products distributor and procurement expert
- » Established 1963 – over 50 years servicing British manufacturing
- » Three branch locations in Stoke, Wrexham and Truro, providing nationwide service with local support
- » Over 70,000 stocked lines covering eight core product groups
- » More than 1,000 years of technical expertise across the group
- » www.fwb.co.uk

Supply chain partner FWB celebrated its 50th anniversary in 2013, having grown from five tons of nuts and bolts to over 70,000 products across eight core product groups. Experts in delivering the best product and procurement solutions to the construction, infrastructure, industrial and public-sector markets, much of FWB's success can be traced back to its earliest days and the actions of entrepreneurial founder, Mr Henry John Key. However, over the last decade all was not well with the Stoke-based supplier and it took a change of strategy and direction to return the company to profitability.

The 2008/9 recession made it apparent that the company had become quite outdated – it had not embraced new technology and, because the company had just tried to keep repeating what it had always done, it was effectively going backwards. It had got to a point where it was heavily in debt and, faced with trading losses, called in a group of outside consultants who worked on the Pareto principle to implement the drastic changes that were necessary. A quarter of the workforce were made redundant and there was massive upheaval. Turnover plummeted by over a quarter, and when I joined the company as Financial Director, times were difficult and we lacked support from an unfriendly bank. The business entered its own version of austerity in the following years to return it to a stable financial platform, and various consultants that did not really have any affinity for the business were brought in to try to generate growth, but without success. By the end of the first trading quarter last year, after fifteen successive months of year-on-year sales decline, it was clear that you can only go so far on cutting costs.

When I stepped up to Managing Director in March 2016, my priority was to implement a new sales strategy based on four key business objectives. We have a fantastic workforce and too many companies sometimes ignore the value of that to their business. I have people that have been here for more than 40 years, but had become completely disengaged. The management team were very unmotivated and strategy and decisions came from external consultants, which, to my mind, showed a lack of trust in our own staff. Very quickly I gave everyone in the business a voice, to involve them, to listen to what they had to say, and we did it ourselves. In the first quarter of 2016 we had been trading down 10%, in the second quarter we transformed that into double-digit growth. Brexit did hit us quite hard, as it did everyone else, and our third quarter growth was minimal, but still growth. But from the fourth quarter of last year onwards we grew at an average of 14%.

That has been achieved through just a change in leadership style and recognising that we had a workforce that had pride and passion and now had a voice.

A four-pronged improvement programme

There were four key areas that I wanted to focus on as a business: growth not cost-cutting, investing in people, embracing new technology and reconfirming our commitment to our customers. As a service distributor working within manufacturing, we are there to support British manufacturing; we work with some major blue chip companies right down to small engineering workshops. The four stalwarts of our business are having stock availability, being competitively priced, offering excellent customer service and technical expertise. Across our three

sales offices, I have got over 1,000 years of expertise and that is what we have harnessed.

In terms of sales strategy, we have built this on what we call our 'six pillars' and the central element is our customer service team. Most companies will talk about putting the customer at the heart of their business, but we have really embraced that. We have invested in our external sales team with the core focus centred around account management and product specialism. To underpin this we have also invested heavily in staff training throughout the business, as well as making capital investment in our warehousing facilities, trade counters and commercial fleet.

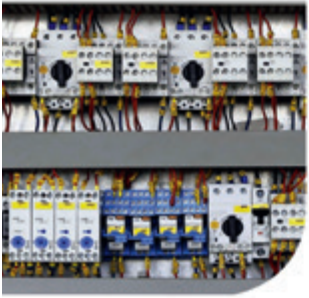
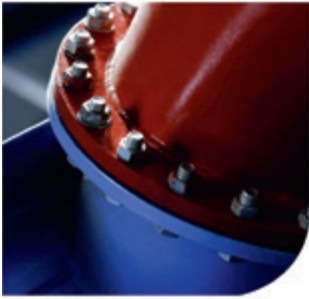
Recognising the value of the workforce

The big message here is about recognising our own workforce and taking pride in what we are doing. We have given an identity to the business and we are now undertaking some sub-branding to make it clearer to our customer base what we do, because we cover a whole raft of industrial sectors and products.

“The four stalwarts of our business are having stock availability, being competitively priced, offering excellent customer service and technical expertise”

The FWB site in Stoke-on-Trent where it all began





FWB's striking brand imagery represent the eight core product groups available

“The real focus for us for the future is to keep looking and listening to our customers”

The fundamental building-block was to have a management team in place to start to deliver and it was eye-opening when we undertook a review at the start of this year. We talked about how they felt at the start of the journey last year to where they are today. Virtually all of them talked about feeling completely repressed, and the feeling of release when given the right level of support to express themselves. We are committed to moving ourselves, as a business, away from the national living wage or minimum wage. I think that is important; we are putting much more reward into all the business. At the end of last year, with the shareholders' agreement, we put a reward package together for every single employee in the business, which was very well-received. One of the things we did focus on with the business is keeping traditional family values at the heart of what we do, to make it personable. Although we are bringing more structure to the business, we think you can lose your identity if you go too corporate; I think that is something that is really valued by our customer base as well.

I now have people with smiles on their faces. They are happy to come

to work. The fundamental for me has been putting that trust back into this entire workforce. I am not afraid to say it, it is a great British workforce, these are good people and I am proud of them. They are exactly the kind of people that you want on your side when facing change and adversity. From my point of view, that pride is the biggest thing for me, to see these people flourish and taking on new things that they probably would never have thought of doing in the past.

Customer focus for future growth

We are now looking at opening additional sites as well as increasing our resource internally to support the markets in which we currently trade. The customer base is growing at about 10%, we are opening about 30 new accounts every month. The real focus for us for the future is to keep looking and listening to our customers. We have listened internally but now we are looking at what our customer base needs and what the problems are that our customers are facing, and that gives us an opportunity to grow even further.

Systematics International



Systematics state-of-the-art offices, Battlesbridge, Essex



The Systematics team

Systematics International Ltd (Systematics) based in Battlesbridge, Essex, operates across the world – with a team of nine people. Originally formed in 1972, Systematics is an independent and award-winning data processing business that collects, aggregates and delivers market information for multiple industry segments using leading-edge technology to enable customers to realise their full potential. The business has gone from strength to strength since existing Chief Executive Officer (CEO) Christine Bhatt led a management buy-out (MBO) of the company in 2007.

What does Systematics do?

Systematics provides global shipments, wholesale and retail sales volumes data for the agricultural, construction and industrial machinery sectors, providing standardised and customised market analysis in line with customer requirements. The company's broad client base ranges from high-profile corporate clients such as digger giant JCB and farm machinery manufacturer CNH Industrial, to small independent businesses and national trade associations across the world.

Through its own innovative web-based system, the company collects detailed volume data from a variety of independent sources operating within worldwide markets. Systematics then organises this information into a comprehensive database, which can be used by its clients to assess business performance, production requirements, individual dealer performance and more.

Companies and trade associations using Systematics' services benefit from an enhanced insight into the markets in which they operate, providing the framework

“Proud of our UK beginning, Systematics has rapidly grown into a diverse and multicultural company which prides itself on looking forward and thinking globally”

FACTS ABOUT SYSTEMATICS INTERNATIONAL

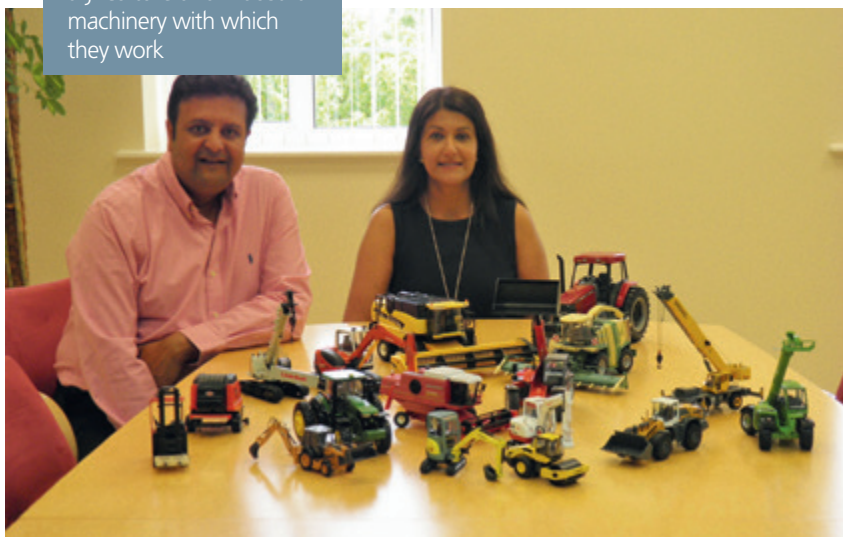
- » 269% turnover increase since the 2007 MBO to £1 million
- » Continuous investment into technology infrastructure and staff training
- » Focus on quality and customer service through in-house IT development and data management teams
- » Won a number of successive accolades at the Essex Countywide Awards from 2013–2015, including the Business to Business award and Business Woman of the Year award
- » In 2015, Systematics scored 100% in a customer satisfaction survey carried out by an independent marketing company
- » In 2016, Systematics was awarded the best customer service award at the Essex Countywide Business Awards
- » Compliance with EU Competition Law certifying data integrity at all times

“Our vision is to become a leading one stop shop providing data and business intelligence solutions”

they need to make accurate forecasts and assess market data trends. Systematics adds value to the data it collects, processes and provides by classifying each unit into recognisable, easily-digestible categories which can be customised to suit the requirements of each client.

In 2015, the business was certified as an ISO 27001 company by the British Assessment Bureau – an accreditation given only to information management organisations which are committed to continuous improvement. The achievement reflects the company’s ongoing commitment to best practices and Systematics is assessed annually to ensure progress is being maintained.

Manuel and Christine Bhatt with the display of agriculture and industrial machinery with which they work



The Systematics story

Systematics was formed in 1972 as a private, family-owned data processing company, specialising in UK agricultural registration data.

Although proud of its British beginnings, the company has rapidly grown into a diverse and multicultural business which prides itself on thinking global.

The company was acquired by Metal Bulletin (MB) Group in 1987 and Christine Bhatt, Systematics’ existing CEO, first joined as Business Development Manager in 2000.

In 2006, MB Group was bought out by an international publishing group whose core interests did not match those of Systematics. This inspired Christine to lead a MBO of Systematics and subsequently reinvent the business according to her own unique set of values, ambitions, and best practices.

In 2012, Christine’s husband, Manuel, joined the company as Chief Finance and Strategic Planning Officer – and together the duo have transformed it into a leading data processing powerhouse, which is now considered an invaluable resource to various companies and industry trade associations worldwide.

Expansion

Thanks to the company’s commitment to best practices, Systematics has evolved into a key strategic partner to many multinational companies and trade associations, including the British Industrial Truck Association (BITA), Agricultural Engineers Association (AEA) and Construction Equipment Association (CEA) in the UK, the Association of Equipment Manufacturers (AEM) in the USA, the European Trade Association FEM, and many others – all of whom rely on the company’s ISO 27001-certified services.

Thanks to its unique approach to data processing, Systematics has managed to extend its service offering worldwide, to include Eastern and Western European markets, the USA, Japan and China.

Across the globe, the company acts as a one-stop shop for clients in numerous industries – providing them with the data they need in order to make key strategic decisions in relation to future investments, products and growth. Its data is also invaluable to national associations in terms of lobbying – whether in the UK, the EU or elsewhere.

Innovation

Information gathering and data analysis can be time-consuming and laborious, particularly for a company dealing with a worldwide clientele separated by very individual database systems.

Prior to the MBO, Systematics was receiving data submissions in a variety of formats, including paper. However, under Christine's leadership, the company has created a standardised system which all clients can use, leading to significant time and cost savings. Simultaneously, the company's turnover has increased threefold since 2007, from £359k to more than £1 million.

Through implementing focus groups and webinars to gather industry opinions, the company has developed an innovative web-based reporting system which is user-friendly and data driven – this means that Systematics' clients throughout the world can now access reports anywhere at any time through the company's state-of-the-art systems.

Systematics has won several prestigious local and regional awards on account of the best practices it has pioneered.

Looking ahead and future plans

Systematics' vision is to become a worldwide leader in business intelligence and consulting services by



Systematics very own wall of fame with several well deserved accolades

delivering high-quality, value-for-money data services through the very best systems, processes and IT infrastructure. The team truly believes that the unique set of skills innovated and developed by Systematics are transferable to any data gathering industry in the world.

The company intends to achieve its vision through a clearly defined and documented strategy for growth, incorporating organic expansion and mutual co-operation with other similar organisations and trade associations.

The key priorities for the future are, firstly, to continue to deliver first class customer services; secondly, to continue to focus on creating new services that will meet the needs of its customers; and, finally, to continue to modernise its systems.

With its years of experience in providing timely and accurate market data, the company is able to provide 'The Systematics Advantage' to manufacturing industries worldwide.

Systematics prides itself on a firm set of business values, which include: passion, innovation, honesty, responsibility, team spirit and service excellence, but also having fun along the way, as demonstrated by the company's most recent celebration – its 10th anniversary since the MBO.

“Systematics is a forward-thinking company with a global agenda and a solid set of principles and values, with its people as the core of its success and innovation”

Epoch Wires



CEO and founder, Prof Dr Serdar Atamert, with the longest MgB_2 wire ever produced



The MgB_2 superconductive cable comprised of seven individual wires

FACTS ABOUT EPOCH WIRES

- » Established in 2013 to revolutionise the production of superconductive wires
- » Product can significantly decrease the cost of MRI scanners and wind turbines
- » Created the longest magnesium diboride superconductive wire in history
- » Acquired private and public investments totalling £2 million since its founding
- » Currently working alongside Bekaert, a private investor, to commercialise its product

Epoch Wires is a very new company, founded in 2013 with the aim of significantly reducing the cost of healthcare equipment and renewable energy products through creating a new superconductive wire. Though little understood by the public, superconductor technology has many uses and is expected to trigger the next industrial revolution in clean energy applications, once it becomes more affordable. The technology is explained more fully below.

Our company has become the first to successfully commercialise the use of a superconductive wire using one of the cleanest and cheapest options available. It has the potential to slash the cost of wind turbines, medical magnetic resonance imaging (MRI) scanners, and energy storage and transmission systems.

We produced our first superconductive wire by 2015, made from magnesium and boron, and the following year we manufactured the longest wire of its kind on Earth. This development has been ground breaking, as many previous problems with this material prevented its manufacture at sufficient lengths and technical consistencies. We are currently taking a lead role in expanding our superconductive products throughout international markets, gaining a foothold in Europe and the Far East, tapping into these growing economies to integrate our latest hi-tech wires into superconductive equipment.

Given the prospective growth of Epoch Wires, we predict that over the next five years, the company will have a cumulative turnover of more than £30 million, while creating a further 35 jobs – both in the Cambridge area and throughout the UK – to expand our current small team of 10 people.

History and development

By basing ourselves in Cambridge, a city at the forefront of innovation, we have acquired access to leaders in the field of superconductivity, enabling the company to develop and grow. These resources allowed us to improve our product with scrupulous attention to detail, focusing solely on research and development until we could achieve guaranteed superconductivity throughout continuous rounds of testing. This has been spearheaded by Prof. Bartek Glowacki, who has applied his specialist knowledge based on decades' of superconductivity research into creating the superconductive product we sought to develop.

Complementing this approach, our Board of Directors – which includes Nuno Carvalho for the private investor, Bekaert – brings together more than 60 years of management experience, providing Epoch Wires with the expertise to commercialise our products. We are currently in talks with industry leaders in manufacturing medical MRI scanners and have already established a strong relationship, with these firms – many indicate that they want to switch from their current, expensive superconductive products to our new, innovative and cost-efficient design.

Applications for our superconductive wire

Our company's superconductive wires have extensive possible applications, ranging from the growing MRI health care market to the potential for wind turbine generators and we predict a wide array of other opportunities for Epoch Wires.

The superconductive wire we can now produce – made from magnesium diboride (MgB_2) – has overcome many challenges that mean it can be successfully integrated into applications throughout the healthcare

» WHAT IS SUPERCONDUCTIVITY?

First observed just over a century ago, superconductivity is the ability of certain materials at very low temperatures to allow electric currents to pass through cables, wires and magnets very efficiently, with practically zero resistance. This capacity produces potentially useful effects and applications. Traditionally, superconductors rely on liquid helium during this cooling process, but its expense and other problems inhibit its potential use. At Epoch Wires, we are working hard to solve this problem, with our unique superconductive material that can be cooled using much more cost-effective pumps that eliminate the reliance on liquid helium.

and energy markets. The ability to produce such single wires at very great length has overcome a major limitation that previously prevented the adoption of this technology: an inability to create such wires at the length and consistency required to make the product commercially useful. Our success has opened up the potential of significantly reducing the costs of MRI scanners and wind turbines.

Epoch has thus placed itself at the forefront of a unique superconductive wire manufacturing process that is unrivaled throughout the industry.

This unique product is also capable of connecting large quantities of offshore wind-power generated electricity to consumers without any electrical losses, enabling the production of extremely efficient large wind turbines also capable of storing large quantities of electrical energy.

The successful development of this superconductive wire has led to various forms of investment totaling around £2 million – from private investors,

“Epoch has thus placed itself at the forefront of a unique superconductive wire manufacturing process that is unrivaled throughout the industry”



The Epoch Wires manufacturing facilities



Our unique
superconductive
process in action



Epoch Lab –
superconductive
testing facilities

“Epoch’s technology will act as a facilitator in bringing about sustainable, low-cost change”

public bodies such as Innovate UK, and Bekaert, a Belgian-based global company with 30,000 employees worldwide and an annual revenue of more than £4 billion. This has enhanced the technical research capabilities of Epoch Wires, helping us to perfect our manufacturing technology and products.

Advantages of our technology

The reliance on liquid helium has been a major inhibitor of the sustainable growth of large-scale superconductive applications. Since 2009, the price of liquid helium has increased by more than 60%, while volatile supply conditions have caused temporary price surges of up to 250%. This trend is only set to continue with the imminent closure of US federal helium reserves planned for 2021.

Additionally, the limited availability of liquid helium in remote and less economically-developed countries adversely affects patient access to MRI scanners. As a result, our liquid helium-free scanner will significantly enhance access for those in developing countries, enabling better, cheaper healthcare.

Projects such as International Thermonuclear Experimental Reactor (ITER), a collaboration of 35 nations seeking to build the world’s largest magnetic fusion device to provide a carbon-free source of energy, rely on superconductive wires for their success. Similarly, the success of further

European-wide renewable energy programmes aiming to keep the global average temperature rise below two degrees Celsius will greatly benefit from using low-cost superconductive wires.

As a result, we have the unique opportunity to integrate our products into the MRI and energy market, eliminating the need to use liquid helium and reducing the engineering challenges and financial barrier that may prevent the success of such projects.

Epoch’s future

Continuing talks with market leaders in the healthcare and energy sectors, mean Epoch Wires is well placed for future success. Alongside this, its current application for the European Commission’s Horizon 2020 fund, an EU initiative to provide financial support for innovative and ground-breaking scientific discoveries, signals an exciting and global future for the company. In a post-Brexit Britain, the accessibility of such funding remains an open question. As a result, we will have to seek funding from sources outside of the EU, potentially turning to the UK Government, further private investments or extra-regional bodies to continue the strength of our research. While the scientific and technological background of Epoch Wires is vital to its success, our desire to tackle pressing societal issues ranging from low-cost healthcare to renewable energy provides a clear direction for the future.

Given the nature of contemporary challenges – ranging from climate change to the rising costs of healthcare – Epoch’s technology will act as a facilitator in bringing about sustainable, low-cost change. Our technology has the potential ability to hugely enhance accessible, high-tech health care by dramatically reducing the cost of MRI scanners while also cutting the costs of renewable energy sources, such as the power generated by wind turbines.

Kladex



Fully-automated
production line



Left: Serkan Tuncbilek in the
wire manufacturing plant
Right: Amir Davari overseeing the
welding of Kladex wires

Three global specialists in the welding industry founded Kladex in 2013 to create a new base for the production of customised welding solutions aimed at enhancing the lifespan of mechanical components used in key strategic industries such as oil and gas, steel, mining and cement in the UK. By 2015, after rigorous research and development phases, Kladex began commercial production, seeing its turnover grow exponentially over three years from £90,000 to £3 million.

Becoming the second-fastest growing company in the cable and wire manufacturing industry, Kladex has emerged as a new force in the market. Consequently, this has attracted investment into Kladex, now totalling nearly £1 million. The firm's global reach – supplying companies in Russia, Europe, China, Scandinavia and the Middle East – can only assist this growth.

Cambridge, the UK and beyond

By basing the company in Cambridge, we have placed ourselves at the centre of both a global city and market, attracting the most specialised experts in the welding industry, and combining the strengths surrounding academic understandings with a business-orientated mentality. Strong engagement with international markets from the outset has placed us in a unique position, enabling the rapid growth seen over the past three years. Without neglecting European countries, we have thrived by providing our services to emerging and competitive markets, notably in the Middle East and Far East.

FACTS ABOUT KLADEX

- » Established in 2013, in Cambridge
- » Second-fastest growing company in the UK
- » Expertise in development of welding metallurgy, alloy design and welding wire production
- » Manufacturing facilities in three countries
- » Automated manufacturing base in Cambridge

“We do not uniformly create one product designed for all services, instead opting to provide a client-by-client focus”

This approach should continue to prove successful in a post-Brexit Britain, demonstrating the collaborative benefits of having a wide reach, and simultaneously improving our products, services and client base. Our manufacturing products have become unique in our market, with a base in Britain helping to provide the certainty of a quality product to buyers across the globe.

Co-founders Amir Davari and Serkan Tuncbilek enriched Kladex from the outset with their own expertise. Tuncbilek's background in the management of manufacturing systems has allowed Kladex to become a sustainable brand, ensuring that its growth will not decline. Davari has provided invaluable experience from the Middle Eastern manufacturing market, providing Kladex with access to markets outside of Europe.

The product

At Kladex, we provide engineering solutions aimed at improving the life of components and equipment. Through a tailored and bespoke approach, we do not uniformly create one product designed for all services, instead opting to provide a client-by-client focus, consulting individual needs and moulding products around client requirements.

Customised welding wire production for weld-overlay applications



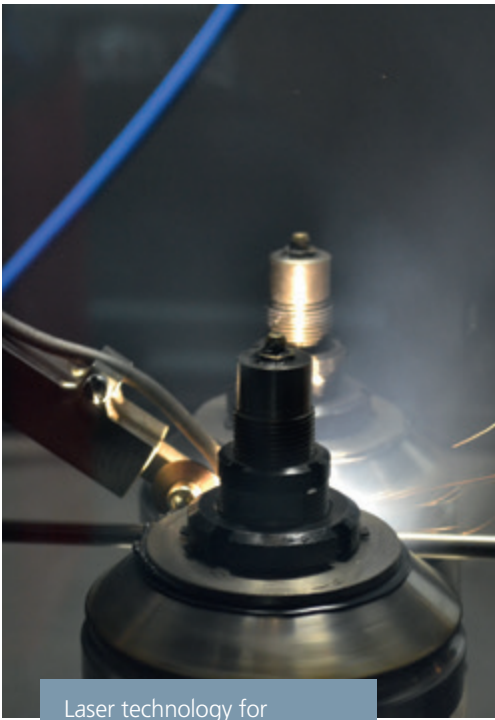
This enables a unique 'Kladex experience', with tailored personalisation allowing our products to be widely integrated throughout the manufacturing industry. For example, we have recently designed and manufactured welding wires used for surface coating of rolls for continuous casting equipment of steel plants, substantially improving the performance of their continuous casting machines.

Our customised solutions provide no barriers to the future. The wide-ranging application of our products within many industries, including steel, cement and oil and gas, shows the adaptability of Kladex, ensuring that we are not tied to the fluctuations of one sole market.

Innovation, quality and consistency

Our youthful and global brand provides the potential to re-energise a specialised manufacturing market, defying the gloomy forecast for the cable and wire market made in 2017 by industry experts, which predicted low growth rates and low operating margins.

Innovation, quality and consistency have all enabled Kladex to grow, as demonstrated by the penetration of our products across global regions and various markets. For example we have designed specific nickel-based mixtures alongside a welding process using inert gases to create a product that is extremely effective in protecting the equipment used in the oil and gas industry. With a similar ethos, in cement manufacturing, we provide protective coatings for mining, grinding and various other industrial components. Meanwhile, in the steel-making industry, we have created solutions to enhance the life of machinery handling raw materials, iron-making processes,



Laser technology for production of welding wires



Welding steel mill rolls with Kladex wires

oxygen furnaces and rolling mills used to make the surface of metals more uniform. These varying applications provide us with a vast range of experience, allowing the knowledge gained by working closely with one industry sector to complement another, creating a dynamic working environment.

Overcoming challenges

While the benefits of choosing Cambridge as a base have significantly outweighed the costs, we have faced the difficulty of acquiring skilled manual workers to operate our machinery, due to the highly-academic and technical focus of the city. As a result, the firm has had to adapt, investing to fund the development of unmanned automation services to aid its manufacturing process in order to complement its small workshop team. This has been achieved through the introduction of robotic arms together with sensors and online monitoring systems to reduce the manual workers' interference and replace them with the skilled operators. Meanwhile this achievement enhances

the quality of our products. This has also placed the company in the unique position of being integrated within another emerging market, with unmanned operation filling a UK-wide void caused by a decline in available manual workers.

The future

Despite our rapid growth, we still view ourselves as a young company with endless potential. With an aim to expand investment from global sources, we want to further promote our brand by fully integrating it throughout the manufacturing industry, thus enhancing our desire to grow and increase profitability. This will be achieved through the continuing development of new products by fully understanding the needs of our customers and building robust partnerships with the end users within key strategic industries. The versatility of our products will continue to ensure that the company remains at the forefront of the market, being quick to respond to emerging industries, products and services.

“The versatility of our products will continue to ensure that the company remains at the forefront of the market, being quick to respond to emerging industries, products and services”

Review of Parliament

A snap election

On the 19th April 2017, having repeatedly insisted that she had no intention of calling a snap election, Prime Minister Theresa May sprung a complete surprise when she summoned the press to Downing Street to announce she would seek a Commons vote to go to the country on June 8th 2017.

The announcement, made as Parliament returned from its Easter break, had the force of a thunderclap in Westminster. Quite unexpectedly, MPs and parties were plunged into election mode.

The immediate effect was to turn what were now the two remaining Prime Minister's Question Times of the Parliament into de facto leader's debates – especially since it was made clear that Theresa May would not take part in the kind of televised debates held in the 2010 and 2015 elections.

The Prime Minister stated her case: 'There are three things that a country needs: a strong economy, strong defence and strong, stable leadership. That is what our plans for Brexit and our plans for a stronger Britain will deliver... The Right Hon. Member for Islington North (The Labour Leader, Jeremy Corbyn) would bankrupt our economy and weaken our defences and is simply not fit to lead.'

To Conservative jeers, Mr Corbyn counter-attacked: 'She says that it is about leadership, yet she refuses to defend her record in television debates. It is not hard to see why. The Prime Minister says that we have a stronger economy, yet she cannot explain why people's wages are lower today than they were 10 years ago or why more



Prime Minister Theresa May sought to strengthen her position before negotiations with the EU began

households are in debt. Six million people are earning less than the living wage, child poverty is up, and pensioner poverty is up.'

The two leaders traded more accusations with Theresa May warning that ordinary working people would face higher taxes and lost jobs under Labour while Mr Corbyn claimed the Prime Minister's priority was 'tax giveaways to the richest corporations while our children's schools are starved of the resources they need to educate our children for the future'.

Brexit emerged as one of the Prime Minister's main campaign themes: 'every vote for the Conservatives will make me stronger when I negotiate for Britain with the European Union. And every vote for the Conservatives will mean we can stick to our plan for a stronger Britain and take the right long-term decisions for a more secure future for this country.'

Later that afternoon, the Commons voted to call an early election, by 522 votes to 13.

The Queen's Speech



The Queen's Speech announced the government's legislative plan for the coming Parliament

What a difference. Theresa May and Jeremy Corbyn's final Commons confrontation before the election had seen the Conservatives limbering up for a triumphal campaign which would culminate in the inevitable smashing of their Labour opponents. When the diminished, battered band of Conservative MPs reassembled, minus their parliamentary majority, for the state opening of Parliament on June 21st, they were chastened and uncertain, while euphoria gripped the occupants of the Labour benches.

When they came to speak in the traditional debate on an address thanking Her Majesty for the Queen's Speech – the new Government's legislative programme – the dynamic between the two main figures had changed completely. Mr Corbyn seemed a far more confident, assertive parliamentary performer, relishing the opportunity to throw back the taunts that had been hurled at him during the campaign.

A Government which had warned that he could only gain power in a 'coalition of chaos' with the SNP and the Lib Dems had been forced

to negotiate for the support of the Northern Ireland Democratic Unionists ... and as the first debate of this new Parliament began, that support had not been secured. Mr Corbyn could not resist the open goal. To triumphant Labour laughter he noted that 'the latest coalition may already be in some chaos'.

'Nothing could emphasise that chaos more than the Queen's Speech we have just heard: a threadbare legislative programme from a Government who have lost their majority and apparently run out of ideas altogether. This would be a thin legislative programme even if it was for one year, but for two years – two years? There is not enough in it to fill up one year.'

That was a reference to the Government's decision to declare a two-year Parliamentary Session – a procedural move intended to ensure ministers could push through vital Brexit legislation in time for the exit date in March 2019. Mr Corbyn mocked the Prime Minister for dropping a series of election promises that had not found favour with the voters: means-testing the winter fuel allowance and replacing the triple lock on pensions among others.

On Brexit, Mr Corbyn stuck to Labour's careful positioning in favour of a deal with the EU 'that puts jobs and the economy first'. He called for full access to the single market and a customs arrangement that provided Britain with the 'exact same benefits' as now. And in his final flourish he warned the Prime Minister that Labour were now 'not merely an Opposition; we are a Government in waiting, with a policy programme that enthused and

engaged millions of people in this election, many for the first time in their political lives. We are ready to

offer real strong and stable leadership in the interests of the many, not the few.'

Grenfell Tower

The fire that destroyed Grenfell Tower, a social housing block in the London Borough of Kensington and Chelsea, seemed to some to crystallise the issues that had driven the 'Corbyn Surge' in the General Election just days earlier.

Accusations about the neglect of social housing tenants, chronic under-investment and official incompetence were flying, even while the pall of smoke still hovered over the capital and the horrific images of the blaze were replayed on TV.

So potent was the symbolism that it became intertwined in the debates on the post-election Queen's Speech - but the Government also committed to keep MPs informed about the aftermath, the efforts to identify casualties in the wreckage of the tower, to re-house and assist those who had lost their homes, and to set up a public inquiry.

So it was that the Communities Secretary, Sajid Javid, came to the Commons on July 3rd to announce £2.5 million had been distributed from the special £5 million fund set up to help the residents. Mr Javid said the public inquiry and the criminal investigation had to be allowed the space to follow the evidence wherever it took them, and everyone should be careful not to prejudice their work. Responding to the Labour MP, David Lammy, who had lost a family friend in the fire, he added that although it was for the judge to determine the scope of the inquiry, he expected it to be 'as broad and wide-ranging as possible'.



Tributes for the Grenfell victims came from across the country

Mr Javid also dealt with the key issue of the authorities' inability to say exactly how many people had died: 'There has been much speculation about who was in Grenfell Tower on the night of the fire, and it is vital that we find out. The Director of Public Prosecutions has made it clear that there will be no prosecution of tenants ... who may have been illegally sub-letting their property, ... There may have been people living in flats that were illegally sub-let who had no idea about the true status of their tenancy. Their families want to know if they perished in the fire. These are their sons, their daughters, their brothers and their sisters. They need closure, and that is the least that they deserve.'

The Government was also taking urgent action to avoid another tragedy in buildings with architectural cladding similar to that which appeared to have been a factor in the Grenfell fire.

Last rites on the Brexit Bill



David Davis, Secretary of State for Exiting the European Union since July 2016

Back in March, when an election seemed a distant prospect, parliament's main focus was on the European Union (Notification of Withdrawal) Bill. This Bill, which would give Theresa May the authority to begin the UK's divorce from the European Union, was forced on the Government after a Supreme Court ruling that Parliamentary approval was required to begin the process.

Despite fears that the Bill could be watered down or even reshaped to reverse the Referendum verdict, it passed through the Commons unscathed. All attempts to amend, or add, to its 136 words were voted down. Predictions of a major rebellion of up to 50 Conservative Remainers proved unfounded, and only a handful defied the party whip.

But when it moved on to the House of Lords, where there is no Government majority and a large concentration of pro-EU peers, the Bill was amended twice.

One change guaranteed the rights of EU citizens living in the UK, and the second promised Parliament a 'meaningful vote' on the final Brexit deal. That meant the Bill had to return to the Commons because both Houses of Parliament must agree on the final wording of legislation.

After much debate, MPs rejected both Lords' amendments, the Bill was sent back for immediate consideration in the House of Lords, where David Davis came to watch his Junior Minister, Lord Bridges, call on Peers to drop their opposition. And while the Liberal Democrat, Lord Oates, did urge Peers to continue defying the Government, support for the amendment melted away, and the attempt to throw it back to MPs was once more rejected, as was the attempt to keep the 'meaningful vote'. The final form of the Bill was settled – and it was sent off for the Royal Assent, un-amended.

Article 50 is triggered



Theresa May meets with European Council President Donald Tusk in Downing Street

The passage of the European Union (Notification of Withdrawal) Act cleared the way for the Prime Minister to act

on the Referendum verdict and formally trigger Britain's departure talks with the EU.

She was greeted by cheering Conservative MPs when she announced, on the 29th March, that the process had begun: 'A few minutes ago, in Brussels, the United Kingdom's permanent representative to the EU handed a letter to the President of the European Council on my behalf confirming the Government's decision to invoke Article 50 of the treaty on European Union. The Article 50 process is now under way and, in accordance with the wishes of the British people, the United Kingdom is leaving the European Union.'

She added that she wanted to build a close partnership with the EU: 'We want to continue to buy goods and services from the EU, and sell it ours ... Indeed, in an increasingly unstable world, we must continue to forge the closest possible security co-operation to keep our people safe. We face the same global threats from terrorism and extremism.'

Jeremy Corbyn warned against leaving without a trade agreement: 'the Prime Minister says that no deal is better than a bad deal, but the reality is that no deal is a bad deal.'

He said the debate had now moved on to what a post-Brexit Britain would be like: 'There are Conservatives who

want to use Brexit to turn this country into a low-wage tax haven. Labour is determined to invest in a high-skill, high-tech, high-wage future ... Labour will not give this Government a free hand to use Brexit to attack rights and protections and to cut services, or to create a tax dodger's paradise.'

The eurosceptic Conservative, Jacob Rees-Mogg, quoted the Elizabethan hero Sir Francis Drake: "There must be a begynnyng of any great matter, but the conteneuing unto the end untill it be thoroughly ffynysshed yeldes the trew glory' ... I wish my Right Hon. Friend good luck and good fortune in her negotiations until she comes to true glory and is welcomed back to this House as a 21st century Gloriana.'

A terrorist attack on Parliament

On the afternoon of March 22nd, as MPs were engaged in a routine vote of the Pensions Bill, a man drove his car into pedestrians just outside, killing two people and injuring dozens more, before stabbing to death a police officer who was guarding the gates to the Houses of Parliament, and he was then shot dead himself.

The sitting of the Commons was suspended and MPs were held in their Chamber for several hours, before being escorted away. When they returned the next day, they began with a minute of silence. Then the Speaker opened proceedings by expressing 'our heartfelt condolences to the families and friends of the victims of this outrage. A police officer, PC Keith Palmer, was killed defending us, defending Parliament and defending parliamentary democracy.'

The Prime Minister was heard in silence as she updated MPs: 'Yesterday, an act of terrorism tried to silence our democracy, but today we meet as



The attack on Westminster was one of several terrorist attacks in the UK during the year

normal, as generations have done before us and as future generations will continue to do, to deliver a simple message: we are not afraid, and our resolve will never waver in the face of terrorism. We meet here, in the oldest of all Parliaments, because we know that democracy, and the values that it entails, will always prevail.'



PC Keith Palmer, who died trying to stop the attacker, was given a full police service funeral, and praised for his heroism

She gave an account of the previous day's events and ended by declaring that the best response to terrorism was to act normally: 'As I speak, millions will be boarding trains and aeroplanes to travel to London and to see for themselves the greatest city on Earth. It is in these actions – millions of acts of normality – that we find the best response to terrorism: a response that denies our enemies their victory, that refuses to let them win, that shows we will never give in; a response driven by that same spirit that drove a husband and father to put himself between us and our

attacker, and to pay the ultimate price; a response that says to the men and women who propagate this hate and evil, "You will not defeat us." Mr Speaker, let this be the message from this House and this nation today: our values will prevail.'

The Labour Leader, Jeremy Corbyn, said people should not allow the voices of hatred to divide or cower them – adding that PC Keith Palmer had given his life defending the public and democracy.

Watching impassively in the crowd of MPs standing at the Bar of the House, in the area across the Chamber facing the Speaker's Chair, was the Foreign Office Minister, Tobias Ellwood. He had tried to save PC Palmer's life by giving him mouth-to-mouth resuscitation. Many MPs took a moment to exchange a word with him as they passed or pat him on the arm. And many of those who spoke over the next hour praised his actions.

Tributes and thanks came from all the Party Leaders – the SNP's Westminster Leader, Angus Robertson, the Liberal Democrats, Tim Farron, and the DUP's, Nigel Dodds.

The Conservative MP, James Cleverly, had served with PC Palmer in the army spoke movingly and implored the Prime Minister to 'posthumously recognise his gallantry and sacrifice formally.' Theresa May promised that she would.

President Trump

This year more than most, US politics had a bearing on our own. Not only were many MPs looking across the Atlantic for a trade deal and an enhancement of the 'special relationship', following the decision to leave the EU. But the American people themselves had managed to

outdo the British electorate when it came to delivering the most surprising democratic decision of 2016.

As recently as January 2016, a small number of MPs had gathered in Westminster Hall to debate whether or not Donald Trump should be banned

from entering the UK altogether. His comments about Muslims, among others, had led to an online petition for him to be considered a ‘hate preacher’ and therefore banned from British soil. Even those who supported the motion knew there was little chance of such a ban being implemented. But few would have suspected that, just 13 months later, Parliament would be discussing the appropriateness of a state visit from President Donald Trump.

One of the first acts of the new US President was to order a blanket ban on people from a list of Middle Eastern countries travelling to the US. In the Commons, the former Labour Leader, Ed Miliband, and the Conservative, Nadhim Zahawi, joined forces to ask the Speaker for an emergency debate – and it was held that day.

Mr Zahawi, born in Iraq to Kurdish parents, arrived in the UK as a nine-year-old refugee from Saddam Hussein’s regime. He is now a British citizen, but because he was born in Iraq, he believed he came under the Trump ban.

He told MPs his place of birth already meant he had been required to go through an interview at the US embassy, to secure the right to travel to America, under rules imposed by President Obama. But the new restrictions were much tougher.

The US Government has since clarified that people with British passports will not be affected by the ban, whatever the country of their birth, but Mr Zahawi still thought the ban was ‘wholly counterproductive’. He described how it was already being used by pro-Islamic State social media accounts as ‘clear evidence that the USA is seeking to destroy Islam. They have even called it the “blessed ban”’.



Nadhim Zahawi MP strongly criticised the Trump administration’s travel ban on certain Muslim countries

Labour’s Yvette Cooper, who chairs the Home Affairs Select Committee, was ‘deeply worried’ that the Government had already invited the new President to make a state visit to Britain: ‘It will look like an endorsement of a ban that is so morally wrong and that we should be standing against.’

The Conservative, Sir Simon Burns, disagreed: ‘I think it is absolutely right that the British Government continue the work of the Prime Minister to build bridges with President Trump so that we can, through engagement, seek to persuade him and to minimise or reduce the danger of his more outrageous policies ... I believe that very little would be achieved by cancelling a state visit to which the invitation has already been extended and accepted.’

The emergency debate was on a formal motion that MPs had ‘considered’ Donald Trump’s travel ban, so no call for a policy change was voted on.

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