GRANGEMOUTH RENAISSANCE

Remarkable turnaround that could inspire a new generation

ISSUE 11. 2016

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FACTS + FIGURES

As the German economy continues to outperform its European neighbours, INCH profiles the success of its Köln site

15%

15% of our sales come from Germany



INEOS in Köln works closely with 34 schools



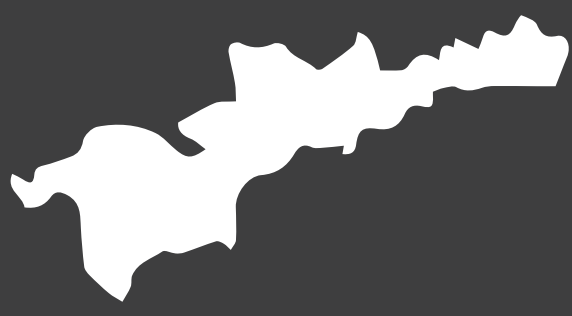
INEOS has 10 sites in Germany



INEOS Employs 4500 people across 10 sites in Germany



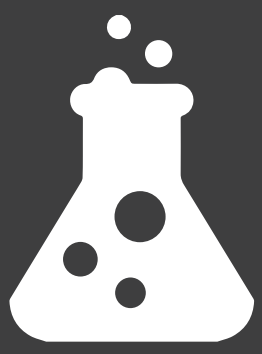
Its safety record is exemplary. It was awarded best in class SHE performance for its zero recordable injuries



The INEOS site at Köln is the largest in the country. It is the size of Monaco



Our Köln site was founded in 1957. A JV between BP and Bayer



INEOS is the largest chemical company in Köln and the 3rd largest employer



INEOS acquired the Köln site from BP in 2005



INEOS at Köln consume the same amount of energy as a medium sized city



Every year 1,600 people apply to join INEOS' team in Köln



INEOS' Köln produces 5 million tonnes of products every year

INTRODUCTION

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MANUFACTURING matters. To a nation's health, its well-being and its pride. At the heart of every strong economy is a sound manufacturing base. Britain once led the world. Not so today. It has, in so many ways, lost its footing. Its focus. Its way. The loss of manufacturing in many parts of the north of England, Wales and Scotland has been catastrophic.

But INEOS argues that it doesn't have to be that way and believes shipments of US shale gas now docking for the very first time at its plant in Scotland are just the start of a renaissance in manufacturing in Britain.

In this edition of INCH we follow the arrival of those shipments and the tremendous opportunities they have brought with them.

It also focuses on Germany and how lessons can be learned across INEOS and beyond when it comes to manufacturing and manufacturing excellence.

Just 20 years ago, UK manufacturing represented 22% of GDP compared to Germany's 23%. They were almost identical.

Today Germany's is little different whereas the UK has collapsed spectacularly. Only last year the World Bank released data showing that UK manufacturing had, for the first time ever, fallen below 10pc of GDP to its lowest point on record.

That's a loss of half of the country's manufacturing capacity in a generation.

The current UK Government is the most pro-manufacturing government for many years and it is uplifting to hear talk of the importance of the sector. But Britain is watching the slow death of manufacturing. If it wants to arrest the decline, or even return to growth, it needs to give corporations reasons to invest. And that requires competitive energy, a skilled workforce, attractive taxes and a government that wants to make it happen.

Britain needs USPs – unique selling points. Germany has them. It has a highly-skilled workforce and has great manufacturing infrastructure and competent suppliers. America has cheap energy thanks to shale gas, which has made an enormous impact, a skilled workforce and the world's largest market. China has growth, cheap labour and a huge market.

Britain needs to seize the day and look to others who are leading the way.

Germany has long recognised that being the best is not a destination. It is a never-ending journey that requires drive and focus. A focus on skills. A focus on innovation. And a focus on the way we will do business in the future.

There may be ways to work smarter, but there are no short cuts. Manufacturing excellence means excelling at what you do – every day in every way and in everything you do for your colleagues and your customers. It's about staying on top of your game, understanding what your competitors are doing – and whether they are doing it better. It's about inspired leadership, willing to take tough decisions when necessary.

It's about showing staff that everyone has a part to play.

But it's not just thinking about what can be done.

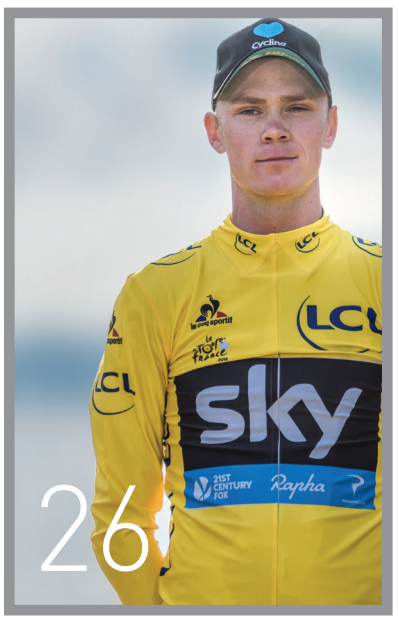
It's about doing it. Before your competitors do.

In this edition, we explore INEOS' approach to manufacturing excellence at some of its sites around the world and the difference that it is making to their global competitiveness.

As a society, we face tremendous challenges. But with the right people in the right jobs producing what customers really want, and need, companies and manufacturing can grow.


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INEOS' INSIGHT INTO THE FUTURE

FIRST US SHALE GAS SHIPMENT DOCKS AT GRANGEMOUTH

" We want to turn Grangemouth into the place for manufacturers"

John McNally, CEO INEOS O&P UK

The arrival of US shale gas into Britain marks a new chapter in the story of Grangemouth. And it is a story worth telling

A LONE Scottish piper heralded the arrival of the first shipment of US fracked shale gas into Grangemouth.

Bob Lowe, a former INEOS employee, played Skye Boat Song from the bow as the 600ft vessel INEOS Insight – emblazoned with the words 'Shale gas for manufacturing' – passed under the Forth Bridge.

For John McNally, CEO INEOS O&P UK, it was a moment to savour as he witnessed history in the making along with about 400 guests including INEOS staff whose names had been drawn from a hat.

"When I took over as CEO in 2014, people were talking about this day then," he said. ***"We have literally been counting down the days for the past two years."***

On board the specially-designed ship, which had been built in China, was 27,500 cubic metres of ethane that had been pumped out of the ground more than 3,000 miles away in Pennsylvania and loaded on to the vessel for its 10-day voyage across the Atlantic.

The UK's Chemical Industries Association described it as the most significant investment in manufacturing in a decade.

"The shipments are not just good news for INEOS," said Steve Elliott, Chief Executive of the Chemical Industries Association. ***"It is also good news for the whole of the sector and beyond. By allowing affordable and secure energy into the system as INEOS are taking the lead in doing, we can get manufacturing working at better capacity. This will deliver strong environmental, social and economic benefits for all."***

INEOS' precious cargo from America will allow British industry to finally take advantage of the cheap US gas which has done so much to revitalise manufacturing in America, and help the UK to compete globally. Across the Atlantic, America's energy is now so competitive that there are large building programmes in industries such as chemicals and steel, which have suddenly become the most competitive in the world.

"In America so much gas is being produced, that gas import terminals are being converted for exports," said INEOS Chairman and Founder Jim Ratcliffe.

Jim, who grew up in Failsworth, Manchester, said the arrival of the first US shipment was a hugely important and historic day for both INEOS and the UK.

"Its arrival guarantees the security of thousands of jobs in Scotland," he said. ***"Shale gas can help to stop the decline of British manufacturing and today is the first step in that direction."***

It is the first time ethane from US shale gas has been shipped to the UK's shores and is the culmination of a $2 billion (£1.53 billion) investment by INEOS.

In all, eight tankers will create the virtual pipeline between the US and the UK every week for the next 15 years.

To receive the gas at Grangemouth, INEOS had to invest millions to modernise the 1,700-acre Scottish site. It built a new import terminal so vessels could offload their vital cargo and installed more than three miles of pipelines to transport the gas on its final journey from the port to a new 40-metre high ethane storage tank, the largest of its kind in Europe.

A brand new office block was also built, bringing everyone together for the first time since INEOS bought the site from BP in 2005.

"The impact on Grangemouth will be transformational," said John. ***"It will reverse the plant's fortunes overnight because it will finally be able to run at full capacity."***

The olefins plant has been running at half capacity, leading to huge losses, for many years because of a shortage of North Sea gas which INEOS uses as an essential feedstock.

Without it, INEOS would have been forced to close the loss-making petrochemical plant due to the severe decline of gas from the North Sea.

The closure of the petrochemical complex would have probably also spelled the end of its refinery, which produces the bulk of fuels used in Scotland and contributes about 3% of Scotland's GDP.

"If you look back at the history of this site we were at times losing over £100 million a year and it was unsustainable," said John. ***"Looking forward we expect to be making over £100 million a year if everything is running."***

The crucial element to saving the complex has been the shipments of US shale gas.

"Our shale 'investment' has saved 10,000 direct and indirect jobs in Scotland," said Jim.

But it's not only INEOS' site at Grangemouth that will benefit from the shipments.

An historic pipeline built to transport surplus North Sea gas from ExxonMobil's ethylene plant in Fife to Grangemouth is being reversed so that INEOS can now transport some of its imported gas to ExxonMobil instead.

"The Fife plant plays an important role in the region's economy," said Sonia Bingham, Fife plant manager for ExxonMobil Chemical.

A pipeline will also carry ethylene from Grangemouth to INEOS Oxide's manufacturing plant in Hull so that it can increase its production of ethyl acetate by 100,000 tonnes a year from next year.

Ethyl acetate is in high demand for use in pharmaceuticals, cosmetics, inks and flexible packaging and the Hull plant is already running at full capacity.

That multi-million investment was announced shortly after Britain voted to leave the European Union.

"We believe in British manufacturing and will support it whenever we can," said Jim.

Graham Beesley, CEO INEOS Oxide, said INEOS Oxide was already the largest producer of ethyl acetate in Europe.

"We are about to get a lot bigger," he said. ■

GRANGEMOUTH'S RENAISSANCE

REMARKABLE TURNAROUND THAT COULD INSPIRE A NEW GENERATION



INEOS' new Grangemouth office has enabled the 450 people, who work for INEOS Olefins & Polymers, to be based in the same building for the first time since it bought the site from BP in 2005

INEOS is billing it as Grangemouth's Renaissance. Whatever you choose to call it, it is a remarkable turnaround for a site which was on the verge of extinction three years ago. But INEOS wants others to prosper too

THE huge gas storage tank and impressive new offices at Grangemouth have become symbols of hope.

The tank – believed to be the largest of its kind in Europe – holds US ethane from shale, that has breathed new life into an INEOS site that was facing extinction three years ago.

The offices – bring many working at the site together under one roof for the first time ever.

But other doors are opening too.

"The future of Grangemouth is very bright," said Julie Brown, senior director of life and chemical sciences, Scottish Enterprise, which is working with INEOS to find new companies interested in working at the site. ***"Other companies are clustering around INEOS."***

Success, it seems, really does not only breed success. But it also breeds confidence.

John McNally is CEO of INEOS O&P UK.

"We want to turn Grangemouth into the place for manufacturers," he said. ***"The site has the potential to provide a base for new manufacturing enterprises that can use our world-class infrastructure and facilities to compete with the best in the world."***

The Roosevelt Institute in America believes that a nation's well-being depends on the strength of its manufacturing.

"One of my great concerns about the UK economy is the collapse in manufacturing, which used to be the backbone of the UK economy," said INEOS Chairman Jim Ratcliffe. ***"Saving Grangemouth is a brick in the wall to arresting that decline. But shale gas also has the ability to reverse that decline."***

To highlight its role as a force behind UK manufacturing, INEOS Shale attended the three-day Tory Party Conference in Birmingham in October to speak directly to Conservative activists and members about the benefits for manufacturing from a safe and well-regulated onshore shale gas industry in England.

"We know that shale gas production can be carried out safely and responsibly and we have seen how it has positively transformed communities in the US," said Gary Haywood, CEO INEOS Shale. ***"It could create thousands of jobs here in the UK and bring substantial economic and societal benefits to the nation."***

In the meantime, INEOS wants to open up parts of its Grangemouth site – where shale gas is now a reality – to other industries seeking to take advantage of the existing power, steam, logistics and other services it can provide.

"Our vision for the future is a revitalised chemical site at Grangemouth and a virtuous circle of attracting new investment, creating jobs and providing Scotland with the vital raw materials that it needs to support its manufacturing sector," said John.

INEOS recently finished building a four-storey office block that has enabled the 450 people who work for INEOS O&P to be based in the same building for the first time since it bought the site from BP in 2005.

The new building, though, is just one element of the innovative redevelopment of Grangemouth. Old plants and empty buildings are being demolished to create brownfield plots that can be used by other companies. ■

GOVERNMENT SUPPORT WAS CRUCIAL, SAYS INEOS

THE UK Government's £230 million loan guarantee for Grangemouth was critical in safeguarding the site's future, says INEOS.

Without it, INEOS Olefins & Polymers UK would have found it more difficult to raise the money it needed to develop the site so that it could import ethane from US shale.

With it, INEOS was able to raise funds through public bonds for its £2 billion, world-first project, to ship ethane more than 3,000 miles to the UK and save thousands of Scottish jobs.

In September, that faith – that belief that INEOS could actually pull it off – was justified as the site welcomed the very first shipments from Pennsylvania.

But the arrival of INEOS Insight, which was carrying that precious cargo, leaves Scotland in a dilemma.

The Scottish Government contributed £8 million of public money to INEOS' bold plans, knowing that without the U.S. gas to replace dwindling North Sea supplies, the loss-making petrochemical complex at Grangemouth would have closed.

But the Scottish Government has put in place a moratorium on fracking pending the results of an investigation into whether it is safe.

That moratorium, imposed by Nicola Sturgeon's SNP, prevents INEOS, which has licences to explore and develop shale gas, from even testing the geology in Scotland.

As almost 400 people gathered to welcome the first shipment of US shale gas, no one from the Scottish Government was there.

Scotland's Conservative Leader Ruth Davidson, whose colleague Secretary of State for Scotland David Mundell attended the event, said it reflected badly on the SNP.

"People in Scotland will find it hard to understand why Nicola Sturgeon seems happy for shale gas to be shipped across the Atlantic to be used in Scotland, but when it comes to extracting the gas itself, she finds it unacceptable here," she said. ***"It is neither environmentally nor economically coherent."***

She added: ***"This development will safeguard thousands of Scottish jobs. By being there, it would have shown that the Scottish Government recognises the economic importance of shale gas and the wider Grangemouth facility."***

INEOS, which is now pursuing shale gas exploration in England, described the SNP's absence as a disappointment but preferred to focus on the positives.

"This shipment of US shale gas safeguards thousands of manufacturing jobs in Scotland," said Jim Ratcliffe, INEOS Chairman and Founder.

INEOS' VOTE OF CONFIDENCE AFTER BREXIT

NEWS of Britain's decision to leave the European Union earlier this year may have sent shockwaves around the world. But for INEOS, one of the world's largest chemical and energy businesses with 67 manufacturing sites in 16 countries, it remains business as usual.

"We had always said we would make things work either in or out of the EU," said INEOS Chairman and Founder Jim Ratcliffe, who is also one of Britain's most successful industrialists. ***"As a business, INEOS supported the common market, but not a United States of Europe."***

As the result was announced in the early hours of June 24, Jim called on the British Government to focus on what needed to be done and not get distracted by recriminations.

"Brexit is a reality and we must prepare for complex and tough negotiations with our European friends," he said. ***"We must listen, we must be unwaveringly polite and retain our charm. But there is no room for weakness or crumpling at 3am when the going gets tough and most points are won or lost."***

He said 'rigour and grit' mixed with 'politeness and charm' were now needed from those negotiating Britain's exit from the European Union.

"Never forget that we have a decent set of cards," he said. ***"And generally Brits are liked and respected around the world."***

Jim said Europe needed access to the UK's market, which is bigger than Russia's, as much as Britain needed theirs.

"Mercedes is not going to stop selling cars in the UK," he said. ***"And London is one of the two key financial centres and that isn't going to change."***

The truth is that Britain does not yet know what impact Brexit will have on its economy.

"The betting money was on short-term pain and long-term gain," said Jim. ***"What's for certain is that we should be thinking even harder today how we might stimulate the economy."***

INEOS APPEALS TO JEREMY CORBYN AS LABOUR LEADER PLEDGES TO BAN FRACKING

FRACKING for shale gas in Britain will be banned if the Labour Party wins the next UK General Election.

Labour leader Jeremy Corbyn made the announcement at his party's conference in Liverpool in September.

The news was greeted with dismay by INEOS Shale which has a licence to explore more than a million acres in the UK for shale gas.

"We were deeply disappointed and surprised not to have at least had the opportunity to discuss the matter with him beforehand," said Gary Haywood, CEO of INEOS Shale.

Gary has now written to Mr Corbyn to try to understand the rationale behind his decision – and has offered to meet senior Labour politicians.

In his speech to the party conference, Labour MP Barry Gardiner said renewables were the future.

"This is not a shale gas versus renewables debate," said Gary. ***"As it stands, it leaves unanswered the question of how the UK will heat its homes, manufacture its products and keep the lights on when the wind isn't blowing."***

In his letter to the leader of the Opposition, Gary explained that gas was the basic raw material needed to produce a multitude of chemical products that were used in most everyday items.

He said INEOS, which employs about 4,000 people in the UK, believed it was better to better to source energy from Britain, where it could be regulated, than pay a series of unstable and illiberal regimes to do it for us.

To quote Gary Smith, GMB Scotland Secretary, ***"We are increasingly going to be dependent on regimes fronted by henchmen, hangmen and headchoppers for the gas we need. That isn't ethical and is surely an abdication of our environmental and moral responsibilities."***

LET'S MAKE IT HAPPEN

SHALE AND NUCLEAR ARE ONLY WAY TO KEEP LIGHTS ON, SAYS INEOS CHAIRMAN

THE provision and security of supply of energy is a key responsibility of any government. Keeping the lights on is up there with health, education, and law and order, but is, at times, not as well understood by the public, who demand a hot shower without always understanding the economics behind it.

But it is not just the general public to whom energy matters. The manufacturing industry requires a permanent supply to sustain production, production which support more than two million jobs.

Manufacturing has to remain competitive, and it needs to remain sufficiently competitive – by which I mean profitable – to promote investment. If not, industry will wither and die, as has happened to the bulk of the once proud British textile industry.

The same principle applies to manufacturing which relies upon competitive energy costs such as chemicals, steel, automotive, and many others.

If these sectors cannot remain competitive they will close and the jobs will disappear – as we have seen in the steel sector over the past 12 months.

Worse, this is already happening. Manufacturing has collapsed in the UK over the past 20 years. From a level close to Germany at about 23pc of gross domestic product (GDP) in the 1990s, UK manufacturing today stands at a paltry 9pc.

And what little manufacturing that we have left in the UK is saddled with some of the most expensive energy in the world.

Gas prices are 50pc higher than in America and electricity is twice what it costs in the US. Germany protects its manufacturing companies by exempting them from green taxes. Successive governments in the UK have instead ladled them on.

The present situation is exacerbated by the fact that the UK has had no coherent energy policy for decades.

As we see out the last days of coal-fired power stations which are simply too 'dirty' for modern environmental standards, we are well into the twilight years of North Sea gas and are sitting on an ageing fleet of nuclear power stations.

The Government has appeared to bet the bank in the past 20 years on windmills, despite the head of the renewables lobby recently admitting England just isn't windy enough for them to work.

If we take the country's total energy requirements, minus transport fuel, then we see that gas and nuclear completely dominate our supply at around 60pc.

Wind, which fluctuates widely from day to day, sits at only 3pc.

If we assume that coal will be phased out in the next few years then the burden on gas and nuclear only increases.

We are totally dependent today as a country on gas and nuclear. There are no viable alternatives on any sensible time horizon. But, and it's a big but, we are fast running out of gas in the North Sea and our nuclear fleet is ageing.

North Sea gas production peaked in the 2000s, and is now running at less than 50pc of its peak. In ten years' time it will be at less than 20pc.

So we must choose between Russian imports, expensive LNG imports, or develop a shale industry of our own, in which INEOS has a vested interest.

One shale in the US called Marcellus in Pennsylvania produces over two times the total UK consumption of gas, and drilling only started six years ago. Not only are there vast quantities of shale gas around, it is very cheap – it reduced the price of gas in the US by 75pc – and the UK would appear to be sitting on quite a lot of it.

The nuclear debate is more complex. Remarkably there are more than 400 nuclear power stations in the world and there are several technologies.

Technology designed by France's Areva will go into Hinkley Point, despite there being none of these type of reactors in operation yet. Two are being built in Europe, the first in Finland is nine years late and the one in France is seven years late. Both are three times over budget. There are also two being built in China but again both are several years late. This is not an encouraging picture.

There are other options, including one type being built by Westinghouse and Toshiba which has satisfied the notoriously stringent US authorities. There eight in construction of which four are in the US. Again they are a few years late but nowhere near as late as their French counterparts. There is also a conventional technology reactor designed by GE and Hitachi, of which four have already been constructed.

Today the UK has eight operating nuclear power stations, all of which are ageing.

We clearly need to invest in new nuclear capacity, and although there a number of options for different reactors, one thing is clear: we cannot manage without nuclear as nothing can reliably fill the gap.

Rather than the current financing agreement in place with EDF and their Chinese counterparts, the Government should consider paying for it up front and put it on the UK's balance sheet, because once the capital has been spent, the variable costs of producing electricity are very low and it can provide highly competitive power to manufacturing for many years to come.

For the foreseeable future, the UK is dependent on gas and nuclear for its primary energy needs to serve the general public and industry/commerce.

Our energy policy for the next ten years should give priority to exploiting shale gas safely and to building 'tried and tested' new nuclear. It really is not so complicated.



“ Germany protects its manufacturing companies by exempting them from green taxes. Successive governments in the UK have instead ladled them on”

Jim Ratcliffe, INEOS Chairman

KÖLN'S DEBT OF GRATITUDE

INEOS' DECISION TO BUY GERMAN SITE PAVED THE WAY FOR GOLDEN FUTURE



Just over ten years ago INEOS made a momentous decision. It bought BP's INNOVENE business for $9 billion. Part of the deal was the acquisition of a site close to Köln in Germany

THE future for BP's petrochemicals site in Köln looked uncertain.

BP had lost interest in manufacturing chemicals and was looking to either spin off or sell the business so it could focus on its more profitable core business of producing oil and gas.

But where BP saw no future for chemicals, INEOS saw huge opportunities for INNOVENE. And within months it had bought the oil giant's olefins and derivatives and refining subsidiary in a deal worth $9 billion – and, with it, the Köln site.

For the staff there was little time to be worried.

Within weeks, INEOS, a virtually unknown entity to most of them, had started to make positive changes to how the business was run.

The focus immediately shifted back to the core strengths of the site – safety, manufacturing excellence, and its customers.

"I remember being relieved because INEOS' approach was so different to BP's," said Dr Axel Goehrt, the former operational site services manager who is now Managing Director Production and Technical Matters. ***"Staff very quickly saw differences."***

There were new management structures and staff were tasked with cutting out avoidable expenses. Act like owners, they were told. Spend money as if it were your own, they were asked.

"INEOS was seen as straightforward," said Dr Patrick Giefers, BP's former legal and HR manager who is now Commercial Managing Director and Works Manager.

"There were no politics and in the early days it was very smooth to discuss any concerns with INEOS Capital which helped enormously because we could clarify any concerns very quickly."

While traditional chemical companies often tended to be conservative with massive overheads, INEOS was a refreshingly young company with a lean, keen management team.

For some, though, it did take longer to acclimatise to the fact that BP had sold the business to a company which was now, literally, indebted to the banks to the tune of $9 billion.

"The German people are careful and they are not used to debt," said Patrick. ***"For some, it was hard at first."***

What convinced them that INEOS' was the right...



company for the job was when it began to invest in the site.

Within six months INEOS had announced plans to spend around €40 million on expanding the cracker capacity at Köln, which would allow the site to produce about 100,000 extra tonnes of ethylene every year.

That extra ethylene would be used to either produce polyethylene or supply other INEOS sites via the ARG pipeline system.

Over the past 10 years that investment – that belief that the staff have the drive and know-how to make things happen – has continued.

Since INEOS acquired the site 10 years ago, it has invested just under €700 million in the plant and production has increased. The year BP sold the business, it spent almost €144 million alone on the site.

Process safety is now back where it should be – at the top of the site's priority list.

Since 2006 the OSHA frequency has constantly improved. So far the site's best year in safety was in 2013 when the frequency was as low as 0.13.

Its customer service team – then based in Belgium and the UK – was moved to Germany, which meant staff could talk directly with technicians and colleagues in the production plants.

INEOS has always spent its money wisely – on new plants, debottlenecking of infrastructure and making changes that will ultimately benefit the customers.

"We don't fly business class but INEOS looks after us in other ways," said Axel.

In 2013, it doubled the size of its isoamylene plant and cemented its position as a world-scale producer of a raw material that could be used in a wide range of specialty markets including fragrances, agrochemicals, peroxides, polymer antioxidants and hydrocarbon resins.



The project was done safely, efficiently and on budget.

"It was testament to the high operational and engineering standards upheld at the site," Karel Brabant, Operations Director of INEOS Oligomers, said at the time.

The key to Köln's success is perhaps embedded in the German way of running assets and the British way of running a business.

"Quality matters to us," said Axel. ***"We look to the long-term quality of the assets. That's why we are benefiting from our grandfather's workmanship. Also the relationship with the unions and the works council is very constructive. Over the past 40 years we have not had a single strike."***

Looking ahead, INEOS is planning to invest even more in the site to help develop its portfolio of products with higher profit margins.

This year alone, about €100 million will be spent on expanding the plant and improving the infrastructure.

"INEOS would not be investing if they did not think they could get a return on that investment," said Patrick. ***"So the staff know what they have to do. INEOS is putting a lot of money our way. We now have to make sure we meet the expectations."*** ■



The INEOS site at Köln in Germany is the size of Monaco.

DO WE NEED **MANUFACTURING**?



INEOS Chairman and Founder Jim Ratcliffe recently spoke of the sad demise of manufacturing in the UK. INCH asked others whether he was right to be so concerned about the importance of manufacturing to a country's financial well-being

One thing is clear. Countries that lose their manufacturing base risk losing their ability to innovate. Against the background of an economic environment which has seen the erosion and offshoring of traditional industries in the face of global competition, the German model, or some parts of it, warrants careful consideration. Above all, we have to pay attention to other countries' policies and programmes and learn from them, just as we have in the past.
Charles Wessner, programme director with the Board on Science, Technology, and Economic Policy at the National Research Council

Manufacturing jobs are the foundation of our economy. Manufacturing creates the goods that bring in the income that supports the service economy. We cannot just cut each other's hair and sell each other hamburgers. The income to pay for those haircuts and burgers has to come from somewhere.
Campaign for America's Future

The health of the economy is critically dependent on the health of the manufacturing sector. Over the past several hundred years manufacturing has been the key to prosperity. The most powerful nations in the world are those that control the bulk of the global production of manufacturing technology. But it simply isn't enough to have factories and produce more goods. You have to know how to make the machinery that makes the goods. Without a robust revival in America's manufacturing sector, we can kiss our status as a great economic power goodbye.
Jon Rynn, author of Manufacturing Green Prosperity: The power to rebuild the American middle class

On a global scale manufacturing matters. Even though it has historically been associated with environmental damage, it now holds out the promise of easing some of the world's environmental problems. For instance, many goods can now be made using factory processes that involve virtually zero pollution and which allow for recycling once products are discarded. The power of manufacturing to stimulate new thinking has many broader benefits. Many of the innovations that have transformed our lives have evolved from manufacturing. Without the microchip, computer and server, there would be no Internet, Facebook or Google. Manufacturing is vital to Britain's future prosperity – but it is too often written off.
Peter Marsh, Founder of Made Here Now

For many decades, economists argued that manufacturing played a minor role in the modern economy. They were wrong. Over the past decade, more and more economists have confirmed that manufacturing is essential to innovation, and tightly linked to a nation's economic health and national security. Manufacturing is the engine that drives US innovation. It transforms laboratory research into new products and production processes that generate profits and make the world a better place. It creates new and vital industries, ranging from computers and wireless to biotechnology and solar power. As engineers and manufacturers develop new technologies, they build the capabilities to extend and innovate in new fields. Those innovations give manufacturers the performance or cost edge they need to compete in a crowded international marketplace.
Professor Thomas Kurfess, former assistant director for advanced manufacturing at The White House

Not only does manufacturing create value in products and services, but it creates good paying jobs. Production facilities also have an outsize impact in creating jobs among suppliers and service industries that support them. If you walk through a modern factory today, you immediately see that manufacturing is much more than putting tops on bottoms – it often employs sophisticated processes with a heavy dose of computer-driven automation. It is more knowledge work than manual labour. And perhaps most importantly, in new areas like advanced materials and biopharmaceuticals, manufacturing is closely linked to R&D and design in the early stages of production, so being able to make products sustains your ability to innovate over the long term. If you give up the former, you'll impact your ability to do the latter.
Willy Shih, Robert and Jane Cizik Professor of Management Practice, Harvard Business School



GERMANY'S SECRET

EXCELLENT APPROACH TO WORK GIVES GERMANY EDGE OVER EUROPEAN NEIGHBOURS

As the German economy continues to outperform its European neighbours, INCH asks what the rest of Europe can learn from the way it does business

GERMANY has long been described as the manufacturing powerhouse of Europe.

Last year its companies exported goods worth a record €1.196 trillion – up 6.4% from 2014 – and employment reached a record-breaking 43 million.

In December Robert E. Scott, a senior Economist and Director of Trade and Manufacturing Policy Research Economic Policy Institute, said while other industrialised nations had crumpled under Asian competition, Germany had increased exports to China and the rest of Asia – despite the fact that it had among the highest manufacturing wages in the world.

"If higher wages hurt manufacturing competitiveness, we'd expect Germany to be doing worse than the United States, but they are not," he wrote in an article for the Economic Policy Institute.

According to the latest figures from the World Bank, manufacturing in Germany accounts for 23% of the economy – compared to 12% in the US, 11% in France and 9.4% in the UK.

Dig deeper and you realise Germany's economic miracle is not left to chance or attributed to being in the right place at the right time. It is a result of their work ethic, a government that sees manufacturing as a good source of jobs and sound, lasting economic growth, and the ability and skills to produce goods of the highest quality.

"German companies are rarely the cheapest producers, yet the superior quality and performance of their products enables them to command premium prices and still boost exports," Charles W. Wessner, a programme director with the Board on Science, Technology, and Economic Policy at the National Research Council, wrote in an article for Mechanical Engineering.

British journalist Justin Rowlatt, the BBC's South Asia correspondent, spent several months in Germany with his wife Bee and two of their four children trying to discover what made Germany so successful.

Many conversations with his contacts in Germany revealed some home truths.

"One young German woman had worked in an office in the UK and had been horrified to see how little people worked," he said.

"When Germans talk to each other, it is about work. In the UK she said people were all on Facebook, texting their friends, emailing them, and making personal phone calls."

Justin worked for Faber-Castell, one of the world's largest and oldest manufacturers of pencils. The business is still run today by a direct descendent of the founder.

What it does, it does brilliantly.

"The secret of German success seems to be that they focus on one tiny bit of business but do it on a world scale," he said.



That is certainly true of Faber-Castell.

The business was founded 255 years ago by a cabinet maker who initially produced pencils in his spare time. Today the business runs 14 factories, employs about 7,000 people and sells in more than 100 countries.

"It is a typical mittelstand company," said Count Anton Wolfgang Faber-Castell who runs the business today.

Germans use the word mittelstand for the millions of medium-sized companies that employ a fifth of the German workforce and focus on niche products that command premium prices around the world.

These family-run businesses often stretch back for generations, and form the backbone of the German economy. They not only supply Germany's multi-national corporations but many are also exporters in their own right.

Tom Peters, an American writer on business management practices, said mittelstand companies were incredibly focused.

"The young men and women go through the apprenticeship system and learn that the goal is excellence," he said.

There is another good reason why they thrive. And that is, The Fraunhofer Society, a network of 67 government-backed research institutes with 23,000 employees.

"Fraunhofer supports an ecosystem for manufacturing innovation that has helped keep Germany an exporting juggernaut," Sujai Shivakumar, a specialist in innovation policy at the National Academies in Washington, told The Wall Street Journal.

The Fraunhofer Society provides first-rate, affordable, short-term research that smaller manufacturers would otherwise struggle to afford. These companies use the research to continually improve their processes and products – and, in doing so, stay one step ahead of the competition.

"Put simply, Fraunhofer helps manufacturers bridge the valley of death, which often occurs at a stage of production development where the potential return on investment is high but equally high levels of uncertainty prevent firms from investing significantly in R&D," said Michael Teiwes, head of PR at Fraunhofer.

Over the past 10 years Professor Dr Bernd Venohr, a German management consultant, has worked with numerous world-leading, medium-sized family businesses in Germany.

"They were sometimes called the 'hidden champions' but they are no longer hidden in an increasingly transparent global economy," he said.

He said they were successful because they understood – and believed – that sound growth and progress stemmed from real innovation, that superior value, not price, mattered to customers and that employees should be treated with respect not as 'easily to be replaced' resources.

"These key management principles really are universal truths for any business," he said. ***"But while they are easy to understand, they are not always easy to implement."***

He said that his recent study showed that about 1,650 German SMEs were leaders, at least among the top three companies, in the world markets for their products.

The US-based Manufacturers Alliance for Productivity and Innovation said the rest of the world could learn valuable lessons from Germany.

"The quality and extent of their vocational training to prepare young people for skilled manufacturing jobs is to be admired," said Kris Bledowski, Director of Economic Studies. ***"Theirs is a society that prizes engineering and exact sciences as aspirational goals in education."***

He does not believe Germany will be greatly affected by the economic slowdown in China.

"Last year exports to China were $97 billion or about 7.2% of Germany's overall exports," said Kris. ***"Germany's investment in China is miniscule compared to virtually any country in Europe. So, the impact will be rather small, overall."***

And that comes as no surprise to Justin.

"They don't take their success for granted and I think that's why the country is so good at focusing on the long-term," he said, ***"Their hard work, efficiency and orderliness springs from a deep sense of community and responsibility towards each other."***

And it is to the future they are looking.

Germany has launched Industrie 4, or as it is commonly known 'The Fourth Industrial Revolution', with the backing of the German government.

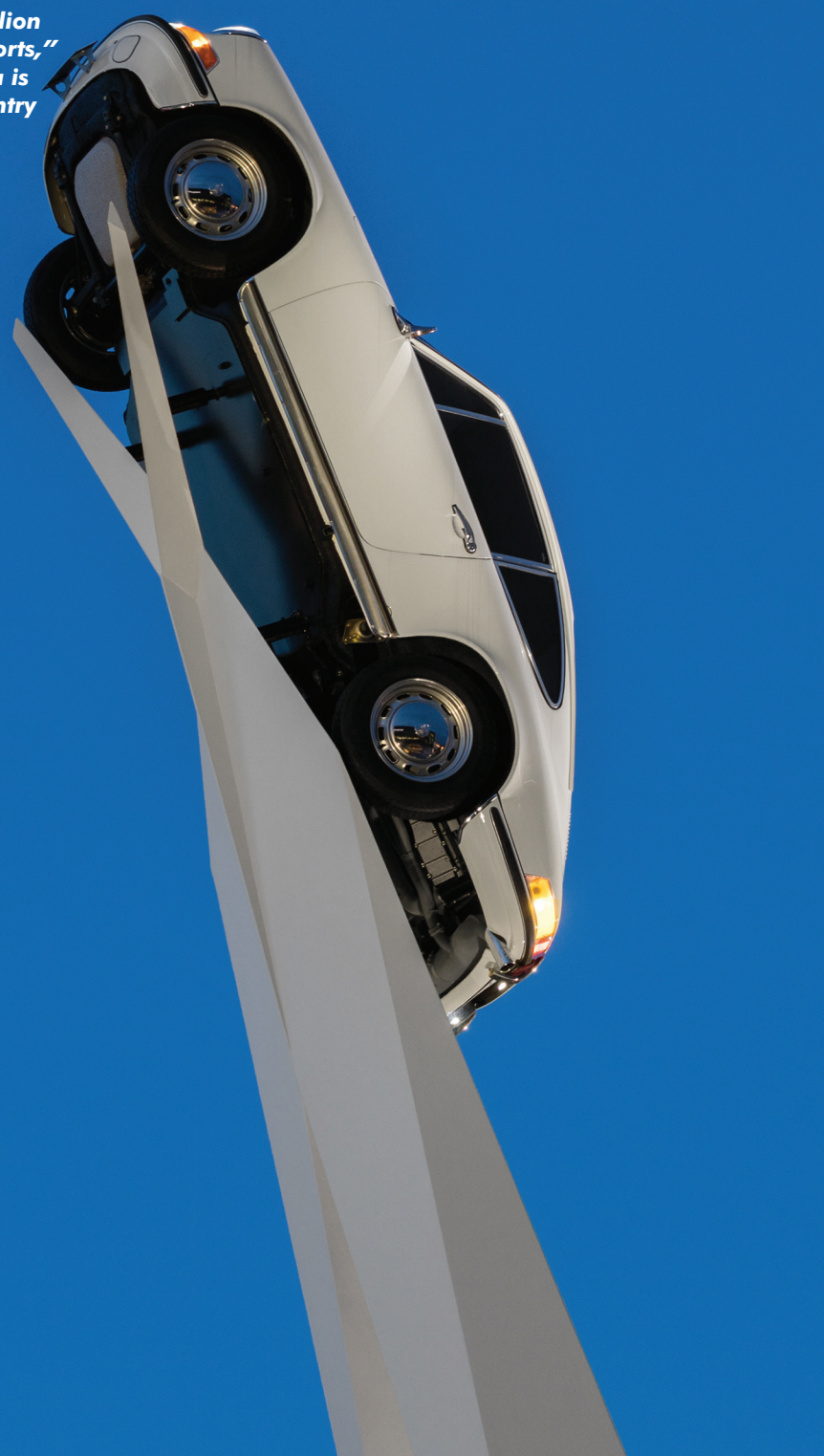
"We want Germany to stay a globally competitive high wage economy and believe Industrie 4.0's strategy will allow us to do it," said Professor Henning Kagermann from the National Academy of Science and Engineering.

Kris believes Industrie 4 – to create the factory of the future – was partly born out of fear of America's digital revolution that started spilling into manufacturing.

"It is fair to say that Germany's initiative and America's Industrial Internet concept are transatlantic cousins, albeit separated by language, traditions and business culture," he said. ***"But Industrie 4.0 is strictly about Germany. There is nothing European, international, or global about this policy. German taxpayers' money is being spent on helping domestic companies compete internationally."***

He said America's project – although based in the US – was open to anyone with a stake in the future of the industrial internet.

"It is global in its reach," he said.



" The American public associates Germany's economy with high-quality goods and precise engineering along with stable politics supported by exemplary democracy"

Kris Bledowski, Director of Economic Studies, US-based Manufacturers Alliance for Productivity and Innovation

NO ROOM FOR COMPLACENCY, SAYS VCI

GERMANY'S chemical industry may still be the envy of Europe – but it has been warned not to become complacent.

In a statement to the press earlier this year, German chemical trade association VCI President Marijn Dekkers said after an initially good start to the year, production had now stagnated, sales had dropped and jobs had been lost.

"It is not good news and the outlook is not promising either," he said.

Germany, he said, faced several challenges including a slowdown in the global markets, the cost of raw materials and energy and Britain's decision to become the first Member State to leave the European Union.

"It is too early for an appraisal at the moment," he said. ***"But the UK's decision is likely to have negative effects."***

Recent events have helped the German economy, notably the devaluation of the Euro and falling oil prices. But those were now 'wearing off', he said.

On the face of it, though, Germany still looks good compared to the rest of the world.

"We have been the world champion of exports for more than a decade, the foreign trade surplus for chemicals has been growing continuously and we are by far the major chemical industry location in Europe," he said. ***"We are still acting from a position of strength. But the emphasis is on "still". In the long run, there are more and more doubts whether Germany can defend its position as a chemical industry location."***

Germany, he said, needed to ensure it did not lose its competitiveness but it was in danger of doing so due to the expansion of production plants in America and the Middle East, rising energy costs in Europe, excessive EU regulations, the loss of businesses in the value chain, a lack of investment in Germany and two few incentives for research and development.

"German industry alone cannot make Germany a world champion in innovation," he said. ***"We need support from the political arena. We need to work as one."***

In VCI's recent report, The German Chemical Industry in 2030, which was conducted by Prognos AG, the VCI says political decisions made today will affect future developments and investments.

What it needs to grow, it said, is a climate free of bureaucracy and one that encourages innovation.

"For us to further invest, a stable planning horizon is needed, especially in energy-related legislation," said Dr Stephan Müller, Manager at INEOS Köln.



A LESSON FOR US ALL

GERMANY SHOWS HOW TO STOP SCIENCE BECOMING HISTORY IN SCHOOLS



For many science is a subject they studied in school, then confined to the history books. But that needs to change if the world is to find answers to some of the most troubling questions it has ever faced. Thankfully it is. Slowly. And one country that, perhaps, is making progress is Germany

THE world is waking up to the fact that science may well prove to be our salvation.

We face dwindling natural resources and a rising population which means society must agree where our planet is heading in the 21st century. For the science of today is often the technology of tomorrow.

What the world cannot quite agree on is how to convince today's generation of young people to see science as a career.

The alarm bells started ringing many years ago.

The European Commission warned in 2008 that not enough young people were opting to study science, technology, engineering or maths after the age of 16 – and feared if nothing were done, there would be a shortage of highly-skilled scientists, engineers and technicians.

It recommended radical changes in the way science was taught in schools, moving away from being able to reel off facts, which was largely blamed for the declining appetite for science, to a style which encouraged pupils to pose the questions and, in turn, increased their understanding.

Five years later, in 2013, 100-plus delegates from 58 countries were still talking about the problem at a global conference of science academies.

But Germany seems to have been trying to address the problem since 2006.

Freie Universität Berlin Professor Dr Petra Skiebe-Corrette founded TuWaS! in 2006 after she had seen a similar model working wonders in Sweden.

Today 144 schools in Berlin, where the campaign started, are involved.

Dr Anne-Gret Iturriaga Abarzua, Communications Manager at INEOS in Köln, was one of its champions when the Chamber of Commerce brought TuWaS! to Köln in 2008.

The TuWaS! programme encourages primary and secondary school children to ask questions rather than receive ready-made answers.

With Anne-Gret's passion for what could be achieved – and the financial backing of INEOS – schools quickly got involved.

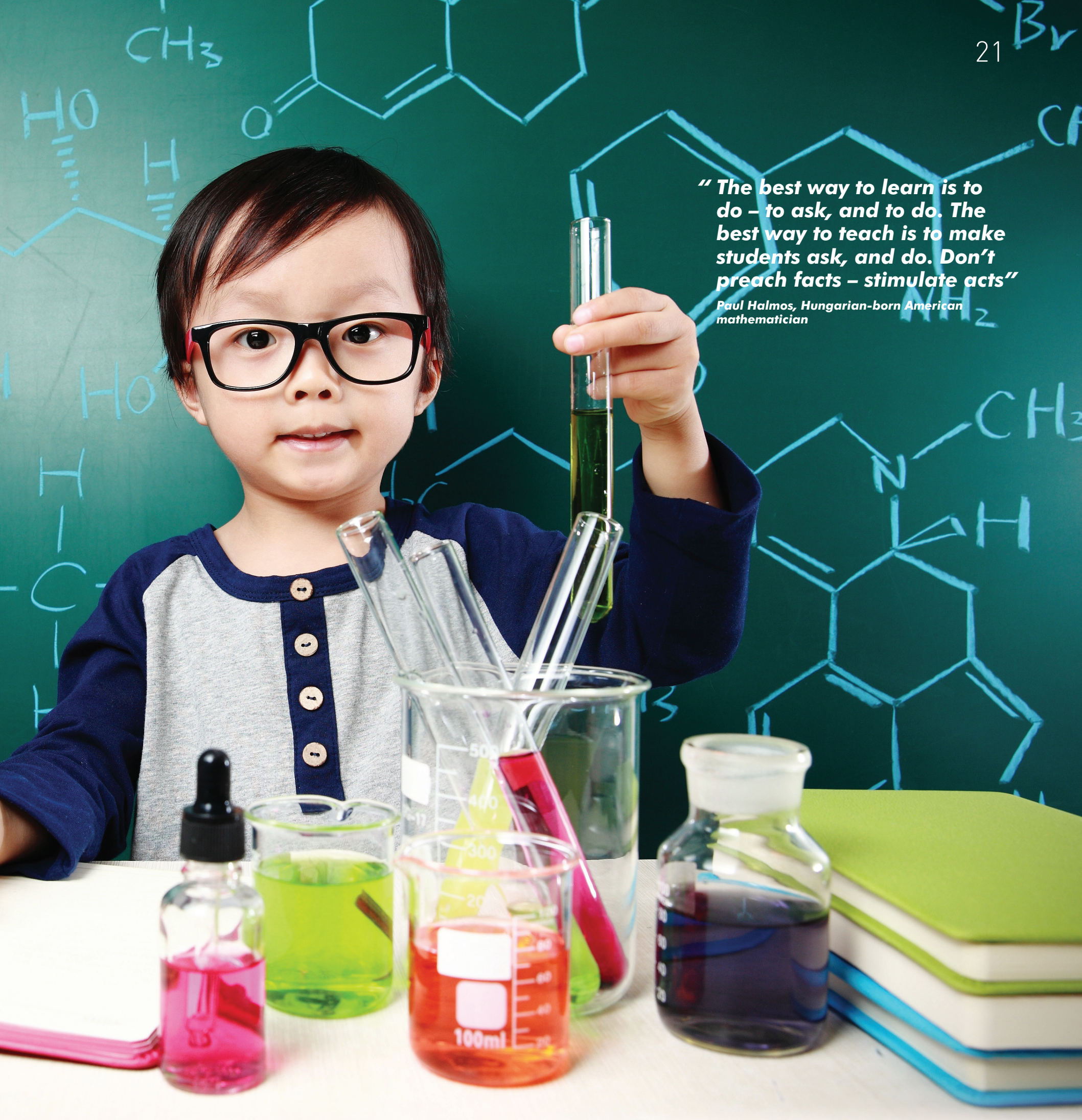
"We are now really seeing the impact of TuWaS!" said Anne-Gret who was invited by Professor Skiebe to speak at the 10-year TuWaS! celebration last month at the Brandenburg Academy of Science. ***"We have even got a logistics and storage unit for TuWaS! in Koln now."***

In Germany, inquiry-based science education is now part of the curriculum in many schools, and the TuWaS! programme for children aged 6 to 12 has now been formally adopted by four of the 16 federal states in Germany.

Teachers attend a one-day seminar during which they are taught the natural science and technical experiments first. They then return to the classroom, armed with a school year's worth of experiments and the confidence to teach them.

As the biggest industrial employer in Köln, INEOS is still heavily involved.

"As a global chemical company, we know the importance of scientific and technological education early, and that is when they are six," said Anne-Gret. ***"These partnerships help us as a company, as an industry and also as a developed industrial country to attract young people – especially girls – who are curious, enthusiastic and motivated to make the world a better place through science."***



" The best way to learn is to do – to ask, and to do. The best way to teach is to make students ask, and do. Don't preach facts – stimulate acts"

Paul Halmos, Hungarian-born American mathematician

INEOS in Köln is the biggest financial supporter in the Rhineland sponsoring almost half of the 70 schools which have adopted the TuWaS! programme. INEOS employees act as ambassadors, and have so far reached more than 6,000 children.

"INEOS is heavily involved but it doesn't want to shoulder the burden completely," said Anne-Gret. ***"We want more companies to help shoulder the responsibility."***

But the influence of TuWaS! does not end there.

Anne-Gret is now keen to introduce TuWaS! to other German-speaking countries such as Austria and Switzerland.

And INEOS is now considering whether or not a similar programme could be introduced into British schools.

INEOS currently sponsors the Royal Society of Chemistry's, Chemistry Olympiad to inspire thousands of young people across the UK to take up careers in science.

It would certainly be welcomed by the Royal Society and the Confederation of British Industry which jointly produced a guide for businesses and teachers in May to help them form beneficial bonds.

It said businesses needed to work more closely with schools.

"Most young people attribute their decision to pursue STEM subjects to an inspirational teacher, so working with teachers is the best way to secure the UK's future STEM workforce," said Professor Tom McLeish, chairman of the Royal Society's Education Committee.

Neil Carberry, CBI Director for employment and skills policy, said many firms did already work closely with schools in their communities, but more could always be done to inspire pupils to pursue these critical subjects.

"Many industries rely on a supply of science talent, at both graduate and technician level, but shortages are appearing that will hold our economy back," he said.

Whatever happens in the UK, INEOS will continue to support the TuWaS! programme in Germany.

"Our secret is all about building relationships," said Anne-Gret. ***"We want to attract the best of the best, create an understanding for industry and raise our profile at the same time."***

" Every kid starts out as a natural born scientist and then we beat it out of them. Thankfully a few trickle through the system with their wonder and enthusiasm for science intact"

Carl Sagan

" We cannot teach people anything. We can only help them to discover it within themselves"

Italian astronomer Galileo

" If you cannot explain it simply, you don't understand it well enough"

German-born physicist Albert Einstein

DOUG'S COOL OFFICE

POLAR EXPLORER GIVES INEOS AN INSIGHT INTO LIFE ON THE EDGE OF CIVILISATION



Some may wonder what a man who spends most of his life at the ends of the earth can teach those of us who spend their lives mostly in an office. A lot, it seems, as INCH found out

NEITHER place sounds like heaven on earth.

The South Pole is the coldest, driest, remotest, windiest place on Earth. It is a lifeless, frozen desert with gusts of winds up to 90 miles an hour and is ringed by the world's roughest seas.

The North Pole is all sea ice, constantly shifting, and miserably cold.

But Doug Stoup, a modern-day explorer, spends most of his life at one or the other. To him, it's the office.

"I prefer the cold because you can always put on more clothes," he said.

Last month the man, who has guided INEOS Chairman Jim Ratcliffe and his two sons, George and Sam, to both poles, took time out from planning his next expedition to talk to the team at INEOS' new London HQ in Hans Crescent about taking risks in life and business.

"Organisation and preparation are the key to the success of any expedition," he said. ***"I mitigate the risk. I can either accept the risk or turn around and walk away which I have done many times. I don't have any problems doing that because I don't have a death wish. Or I can transfer the risk and say 'George, you go first.'"***

Although many in the audience laughed, Doug went on to explain.

"I don't just sit there and watch the sky," he said. ***"I watch every turn that he makes and learn from it."***

For Doug, being the best in business is also about taking risks, trust, teamwork, seeking new challenges and trying to do things differently. And it's an approach he has seen many times at INEOS.

"A lot of the stuff INEOS does has a lot to do with pushing boundaries, and taking calculated risks," he said. ***"And it is the reason the company is one of the most innovative and best in the world. I try to surround myself with a great team and so does INEOS."***

Doug's love affair with the South Pole began in 1999 when he was in his early 30s.

"As a boy I never thought I would set foot in those places," he said. ***"My dream was to climb and ski the highest mountain in Antarctica. But it was just a dream."***

Inspired, though, by the likes of Sir Ernest Shackleton, Captain Scott and Sir Douglas Mawson, he realised it was possible if he wanted it badly enough.

"I realised you can do anything you want to do if you put productive growth towards that dream," he said.

In 1999, as he stepped off the plane on to an ice runway, he was overwhelmed.

"I just looked out over this vast nothingness," he said. ***"I fell in love with the place and really could not wait to get back."***

During that first trip to the South Pole, he also discovered he was able to help others.

Ever since then he has been guiding people to the ends of the earth – both for pleasure or in the pursuit of scientific discovery.

Many of his companions are CEOs.

"They understand risks because they run their own worlds and make decisions every day but any experience they have in the business world really doesn't apply in the Antarctic," he said. ***"Money doesn't apply either."***

What matters is that they are willing to listen, learn quickly, and prepare for what lies ahead – both mentally and physically.

"The only thing they cannot imagine is the cold," he said. ***"And they will only understand that when they actually get there. You can perspire so much that your goggles freeze to your face."***

“ A lot of the stuff INEOS does has a lot to do with pushing boundaries, and taking calculated risks“

Polar explorer Doug Stoup



To prepare for his epic adventures, Doug often gains weight, knowing he will be burning 10,000 calories a day as they cross ice that would have been water a week earlier.

“You can lose 2,000 calories by just standing still,” he said.

He is a great believer in the resilience of the human body.

“It’s the mind that needs conquering,” he says. ***“If you train, you should be able to push your body to the limit. It is a mental barrier. You have to tap into that mental toughness if you want to stay one step ahead.”***

Doug is often asked whether he would guide an expedition to the summit of Mount Everest, which at 29,035 ft is the world’s highest mountain.

But he’s not convinced it is for him.

“I am not sure I could do it because there are a lot of people who really don’t belong there,” he said. ***“You need to know when to stop and make the right decision for you own safety. It is not always about reaching the summit at all costs.”***

He believes leaders in all walks of life share many qualities.

Compassion, an ability to understand other people’s personalities and thinking on the run are all important, says Doug.

“Strong personalities know how to adapt to both their environment and others,” he said. ***“To be a great leader, you also need to understand all the elements that are happening out there and take on board other people’s comments.”***

Apart from the cold, the floating ice, the winds, is there anything else to fear?

Yes, he says, polar bears.

“They can smell a seal from eight miles away so they can certainly smell me when I have not showered in a month and a half,” he said.

Despite his meticulous planning, things can go wrong.

“Even as someone who has more experience of the poles than anyone on the planet, I still make mistakes,” he said. ***“My goggles once froze on my head, I have suffered from snow blindness and once when I broke a tooth, I had to pull it out with pliers.”***

Can he see himself retiring?

No, he says. Not yet.

The father with three sons still has too much to see and do.

“Maybe one day one of them will take over from me,” he said.

MY HEROES

THE three men who continue to inspire Doug Stoup all lived at the turn of the century.

One died and two survived against all the odds.

“They are still my mentors,” he said. ***“They were true men who knew how to suffer.”***

Sir Douglas Mawson staggered alone 165 miles back to his ship after one of his companions fell into a crevasse and the other died of food poisoning during an expedition in 1912.

Captain Scott and his two remaining companions, pinned down by a storm, froze to death in their tent 150 miles from base camp after reaching the South Pole in January 1912.

Three years later Sir Ernest Shackleton lived to tell the tale after his ship ‘Endurance’ became trapped in ice and sank. His crew had already abandoned the ship to live on the floating ice. The following year, Shackleton and five crew members went to find help. In a small boat, they spent 16 days crossing 1,300 km of ocean to reach South Georgia and then trekked across the island to a whaling station. The remaining men from the ‘Endurance’ were later rescued. Not one member of the crew died.

“They are the true heroes,” said Doug. ***“Once we have reached the South Pole, I call someone and they come and pick us up.”*** ■

MOULDING THE **FUTURE**

STYROLUTION HIGHLIGHTS WORK TO SAFEGUARD LIFE AS WE KNOW IT FOR TOMORROW'S GENERATION

Energy-intensive businesses, which rely on fossil fuels to either power its plants or provide them with vital raw materials, cannot afford to treat sustainability as an afterthought. Those that do, risk becoming history. INEOS, which sees sustainability as essential to its long-term success, would rather make history

SUSTAINABILITY is fundamental to how INEOS does business.

More important than that, it drives innovation.

"The chemical industry isn't always seen as being part of the solution to today's challenges but ours is a sector that can have enormous influence on what the world does now, on the way it progresses in the future and on how to do this sustainably," said Greet Van Eetvelde, INEOS' Head of Energy & Innovation Policy.

With a rising population, a growing pressure to use resources more efficiently, companies like INEOS have to be – and are – at the forefront of creating a society that satisfies today's generation without compromising the needs of tomorrow's.

For INEOS, sustainability is not just about safeguarding its licence to operate in towns and cities throughout the world. It believes operating responsibly and reliably is the only way for it to grow.

"For us it is a business decision," said Kevin McQuade, CEO of INEOS Styrolution. ***"It is our lever for growth."***

His business recently published its first quantitative GRI G4 report on sustainability, which complies with the standards of the Global Reporting Initiative (GRI), the acknowledged benchmark reporting standard in this field.

"Sustainability has become increasingly important all over the world," said Petra Inghelbrecht, Global Sustainability Manager at INEOS Styrolution. ***"Looking for new products and new ways of doing things that overcome the technical challenges of sustainability keeps our business one step ahead."***

INEOS Styrolution is a market leader in styrenics, its business helps to shape what's happening in the outside world.

"Styrenics are all around us," said Kevin. ***"We depend on them to make everyday life more colourful so when we look to the future, we see so many exciting opportunities to work alongside our customers in jointly developing sustainable solutions."***

Styrenics are durable, lightweight, water-resistant, long-lasting and recyclable and can be found in fridges, washing machines, televisions, cars, buildings, toys, sports equipment, packaging and health care products.

As such, the opportunities to make a real difference – and have an impact on society – are huge.

INEOS as a company is a known trendsetter in joining forces with business partners to form industrial clusters. Together with local third parties it often shares resources and utilities and creates industrial symbiosis.

"It goes to the very heart of corporate sustainability," said Greet.

Like many of INEOS' businesses, INEOS Styrolution already works hand in hand with many leading institutes and scientists and partners to develop new, innovative solutions.

One such partner is the University of Bayreuth in Germany.

Professor Hans-Werner Schmidt, who works in the university's Department of Macromolecular Chemistry, said INEOS Styrolution's approach was different to most corporations.

"It goes well beyond traditional corporate sponsoring of a university chairman or graduate research," he said. ***"It is a pioneer in its approach to R&D concepts and partnerships, like ours with INEOS Styrolution, prove it."***

Norbert Niessner, Director of Global R&D and Intellectual Property, said these collaborative efforts and partnerships were vital.

"We see our partnerships as a way to steadily grow our innovation pipeline in both size and value, especially when it comes to creating styrenics solutions that contribute to a sustainable future," he said.

All these developments, though, are carried out with safety for all – both inside and outside the company – very much in mind.

"Chemical products, such as styrene, can involve risks when not handled properly so safety is rightly at the heart of our business," said Kevin.

INEOS Styrolution is also proud of the work it is doing to reduce its impact on the environment.

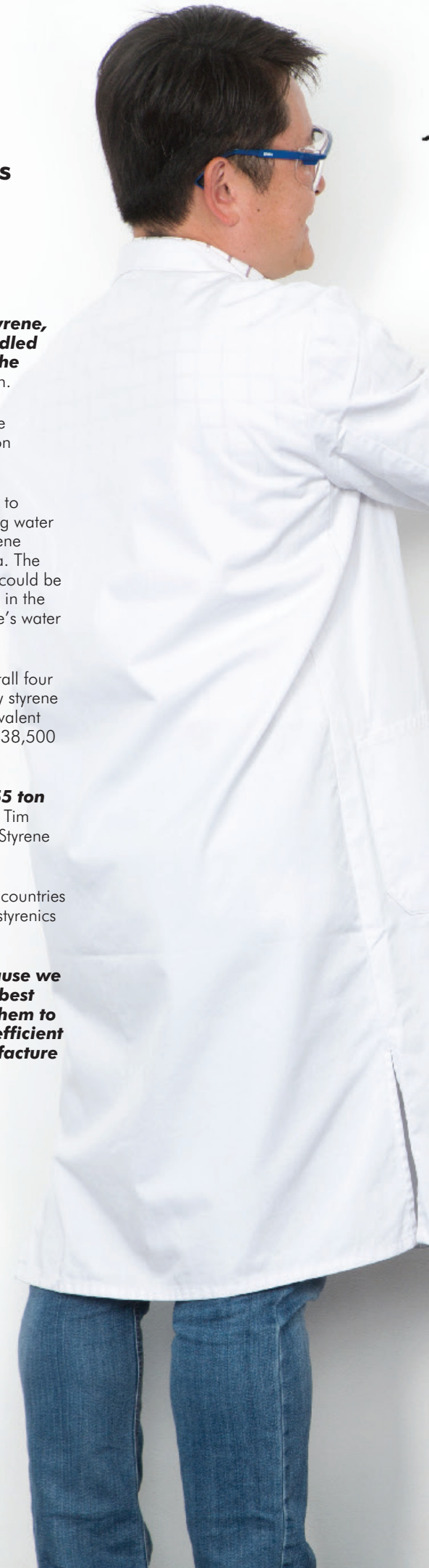
In its report, it highlighted its decision to install a state-of-the-art closed cooling water system at its North American polystyrene production plant in Decatur, Alabama. The system, which meant the same water could be repeatedly used to cool down strands in the strand bath, more than halved the site's water consumption.

It also championed its decision to install four new heat exchangers at the Texas City styrene monomer plant which saved the equivalent amount of energy needed to power 138,500 cookers.

"The investment resulted in a 55 ton reduction in CO_2 per day," said Tim Brown, Technology Manager Global Styrene Manufacturing.

Industry leaders from more than 100 countries currently rely on INEOS Styrolution's styrenics products.

"They do business with us because we always strive to offer them the best solution," said Kevin. ***"We help them to be more innovative and more efficient than their competitors to manufacture products at a lower cost."*** ■





MAN AND MACHINE

IN PERFECT HARMONY

CHRIS FROOME WINS THIRD TOUR DE FRANCE TITLE ON REVOLUTIONARY BIKE

The world of cycling has moved on a pace since Italian-born Maurice Garin won the first Tour de France in 1903, as INCH discovered during its journey into the past, the present and the future

IT is regarded as one of the most brutally challenging cycle races in the world. But while the riders' determination to win the Tour de France may not have changed over the past 113 years, the technology certainly has.

Italian-born Maurice Garin won the first race on a red, white and blue Tricolour bike and pocketed 20,000 French francs. Victory, though, seemed somewhat bitter-sweet.

"I suffered on the road," he said after crossing the finishing line on July 19, 18 days after setting off from a café in Montgeron on the outskirts of Paris. ***"I was hungry, I was thirsty and I was sleepy. I cried between Lyon and Marseille."***

This year's favourite to win the world's biggest bike race was Team Sky's Chris Froome, who grew up in Kenya where he used to sell avocados off the back of his bike for pocket money.

He was determined to win – and that he did, in impressive style, when he rode triumphantly into Paris on Sunday July 24 in the famous yellow jersey and became the first Briton to win three Tour de France titles.

He – and his supporters - had suffered a slight scare on day 19 of the 21-day race when he slipped on a treacherous wet descent 10km from the line, crashed and had to borrow teammate Geraint Thomas' bike to the finish.

"I lost a bit of skin obviously and banged my knee a bit," he said after finishing. ***"But I was just grateful that I had got that four-minute advantage to play with. It gave me a breathing space."***

Froome's winning bike was the DOGMA F8, a revolutionary machine designed by Pinarello to literally slice through the air.



"When you push on the pedals, the power goes straight through the bike," he said after testing it for the first time in Nice, France. ***"It does not flex. It does not move. Whatever power you are putting into the pedals, goes on to the road."***

What made this bike so incredibly light, yet strong, was Pinarello's decision to use Toray's new T11001K Dream Carbon with Nanoalloy Technology.

To the layman, it is the carbon fibre that Boeing is using in its state-of-the-art 787 fleet.

"Using this we were able to increase the stiffness by 12% while reducing the frame weight by 120 grams to 860 grams (1.9lbs)," said a spokesman for Pinarello.

Toray, the world number one in the manufacture of carbon fibre, said Pinarello was the only bike brand to be using it.

"In designing the DOGMA F8, one of our objectives was to raise the bar yet again," said CEO Fausto Pinarello. ***"We wanted to improve on the improvements we made to Chris Froome's last bike."***

The DOGMA 65.1 had been the most titled bike on the planet and universally recognised as a benchmark in the world of high-end road bikes.

All that changed as Froome became the first man since Miguel Indurain in 1991 to successfully defend his title.

He believes that man and machine have never been more compatible.

"It doesn't matter how many wind tunnel tests we do, the ultimate test remains with the rider," said the spokesman. ***"He is the one who will live, fight and sweat on the bike."***

INEOS, as the company which supplies Toray with acrylonitrile, the core ingredient needed to make carbon fibre, was also watching with interest.

THE FIGHT FOR SURVIVAL

INEOS APPEALS TO EU COMMISSION TO CUT FURTHER, NEEDLESS REGULATIONS

The European chemical industry is operating in a climate of uncertainty and fear as it braces itself for more regulations and further demands from the European Union's policymakers

ONE of the pillars of the European economy – and society's best chance of creating tomorrow's low carbon economy – could be in danger of collapse.

INEOS fears Europe's policymakers want the impossible – and won't get it without listening to industry.

"It really is becoming a strangling reality to work in Europe as an energy-intensive industry," said Greet Van Eetvelde, INEOS Manager of Cleantech Initiatives. ***"The petrochemical industry has helped Europe to grow into one of the most industrialised and wealthy regions in the world. It is a 'pocket of prosperity'. But with a stroke of the pen, literally, the European Commission is writing its own death sentence."***

The problem is this. Energy-intensive industries are already operating under intense pressure in Europe due to spiralling energy costs compared to America, the Middle East and China.

Burdensome EU initiatives to cut emissions are another increasing area of concern.

Combined, they threaten the very existence of the chemical industry in Europe – and are at odds with the EU's goal of raising manufacturing's GDP contribution to 20% by 2020.

"Europe is currently at risk of losing its strong manufacturing base, never mind reaching the 20% manufacturing share of GDP target," said Dr Peter Botschek, CEFIC's Director of Energy and Climate Action. ***"The EU's policy framework needs to enable, not penalise, efficient manufacturing growth."***

Among the latest reforms to alarm Europe's chemical industry is the EU's flagship plan for cutting carbon, the Emissions Trading Scheme which is aimed at big business.

Cefic is the organisation that represents 29,000 large, medium and small chemical companies in Europe.

It said the chemical industry already had a long track record of improving its energy and resource efficiency, all of which had reduced greenhouse gas emissions by 54% since 1990 despite a 70% increase in production.

And it had achieved them through investment and innovation.

"That innovation is crucial and will be indispensable to ensure further improvements and develop breakthrough technologies to create a low carbon and energy efficient European chemical industry," said its president Kurt Bock. ***"A thriving chemical industry is an essential part of the solution for the challenge of climate change and a key driver for achieving the EU's objectives regarding jobs, economic growth and investment."***

Critics say the newly-proposed EU reforms are fundamentally flawed and would ultimately penalise the most efficient companies.

"It just makes no sense," said Dr Botschek. ***"Companies that already meet the highest standards cannot do any more. Yet by 2025 even the most efficient undertakings will have to buy allowances for their own growth. The best performers will not be rewarded but will be burdened with undue carbon costs."***

He said those higher carbon costs would inevitably erode margins and hinder the industry's ability to provide a sufficient return on investments in the long-term.

And there is already evidence of that.

Despite increasing global demand for chemicals, China now holds the top ranking in worldwide chemicals sales, a position once held by Europe.

"It should be acknowledged that investments in production facilities are made for the long-term," said Dr Botschek. ***"Energy-intensive industries faced with the promise of a substantial long-term increase in their energy costs will think twice before making these decisions."***

He said the best way for the EU to encourage investment in low-carbon technologies was to create a more competitive environment for industry so it had money to invest.

"Energy-intensive industries cannot pass their carbon costs to consumers without losing market share to their non-EU competitors," he said.

If the EU continued to act unilaterally, he argued, it would make non-EU countries a more attractive place to invest, lead to job losses and stifle growth in Europe. Furthermore such actions could lead to higher emissions in companies that are less efficient than those within the EU.

The chemical industry is not the only one worried by what's on the horizon.

European steelmakers are also calling for the Commission to ensure its post-2020 proposals to change the Emissions Trading System do not lead to unfair costs which their global competitors don't face.

According to a recent study, the proposed reforms could cost the steel industry alone about €34 billion.

INEOS has been lobbying whoever will listen in an attempt to galvanise support against the proposed reforms which it believes will cost its European businesses more than €1 billion.

Energy Intensive does not mean energy inefficient.

"The industry is already highly efficient and changing European laws will not change the laws of physics," said Greet. ***"Any further reduction in our emissions and energy use is only possible via relocated production, which does nothing to reduce global emissions. Unfortunately, the European Commission seems to operate in a growingly decoupled way from the industrial reality."***

INEOS wants to work with policymakers during the ordinary legislative procedure to improve the Commission's carbon leakage proposals.

CEFIC is also working actively with the Alliance of Energy Intensive Industries, which represents over 30,000 European companies and four million jobs, towards a fair and efficient reformed ETS to enable the most efficient companies to grow in Europe.

"Global demand for chemical products is predicted to double by 2030 with much of this growth being in Asia," said Kurt. ***"Therefore, the question for policymakers is: 'What part can EU legislators play in helping to ensure chemical products are continued to be produced in the EU?'"*** ■

" It really is becoming a strangling reality to work in Europe as an energy-intensive industry,"

Greet Van Eetvelde, INEOS Manager of Cleantech Initiatives

WHAT DOES THE FUTURE HOLD?

THE European chemical industry is one of the few European manufacturing sectors that is still truly a world leader.

It employs 1.16 million people, exports goods worth €140 billion, and is the foundation for the wider manufacturing sector.

But it is losing ground as it prices itself out of global markets.

Figures show that the chemical industry's global market share has fallen from 32% in 1993 to 17% in 2014 when it became a net importer of petrochemicals for the first time due to falling exports and increased imports from Asia.

"Worryingly for the future, investment has stagnated in Europe over the past decade, while increasing tenfold in China and almost fourfold in the USA due to the shale gas boom," said Greet Van Eetvelde, INEOS Manager of Cleantech Initiatives.

CEFIC said Europe must remain competitive if policymakers wanted it to continue being innovative.

Climate change policy leadership in Europe, it said, should not come at the expense of losing industry to another country with less stringent regulations, arguing that it would actually lead to an increase in global carbon emissions and funds for much-needed innovation would dry up.

"European deindustrialisation is not and should never be seen as a viable option on the journey to decarbonisation," said a spokesman.

" INEOS does not operate in a vacuum. Our responsibility does not end at the company gates"

Kevin McQuade, CEO of INEOS Styrolution

CARING FOR OUR COMMUNITIES

INEOS WORKS HARD TO KEEP COMMUNITIES INFORMED, SAFE AND HAPPY

With 67 manufacturing plants in 16 countries, INEOS must be doing something right. But that doesn't mean, it takes its success for granted. Far from it, as INCH discovered

AS INEOS has grown, so too has its responsibility towards those who live and work close to its manufacturing sites.

It believes its licence to operate complex, potentially hazardous petrochemical plants hinges on how it is perceived in the community.

"We do not operate in a vacuum," said Kevin McQuade, CEO of INEOS Styrolution. ***"Our responsibility does not end at the company gates. We want to be a good and valued neighbour and maintain people's trust."***

Each of INEOS' sites has a co-ordinated approach to building and strengthening relationships with those who live, work and play nearby.

Regular community forums at some of its sites, including Köln in Germany and at Grangemouth in the UK, give the public the opportunity to listen to INEOS' plans for the future, ask questions and air any concerns.

"We try to explain ourselves using clear and non-technical language. Because we have built up a good long-term relationship over the years, people are reassured. They may sometimes not like to hear what we have to tell them, but it is important we explain the context" said David East, Communications Manager at INEOS' site in Grangemouth.

Dr Anne-Gret Iturriaga Abarzua, Head of Communications at INEOS Köln, said the regular meetings at the Köln plant with representatives of the Köln-Worringen Community Forum were always constructive, open and honest.

"They enable us to provide updates on our business and introduce plans for the future," she said. ***"But more importantly they provide a platform for local people to ask questions."***

In addition to the regular forums, both Grangemouth and Köln host ad-hoc meetings if specific issues need to be discussed, and Köln invites local people to tour the site by bus every month to see for themselves exactly how INEOS operates.

Talking to local communities about what INEOS is doing and planning matters to both sides.

"We take our role in society very seriously," said Christine Schönfelder, Vice President Corporate Communications, Investor Relations, Advocacy and Change Management at INEOS Styrolution. ***"We want to be a trusted part of the community where we operate."***

INEOS Upstream – INEOS' newest business – is currently talking to communities in England about its plans to explore parts of the UK for shale gas.

"It is a very controversial and contentious issue," said Tom Pickering, INEOS Shale, ***"But we want to show the community that we do understand they might be worried, we do care and we will listen."***

Being a trusted part of the community does matter a great deal to INEOS – and that's why you will often find INEOS employees helping charities, competing in sporting events or helping to develop and educate young people.

Many of INEOS' sites also work alongside schools and colleges to promote a healthy interest in science, technology and engineering – and, in doing so, hopefully inspire the next generation of scientists and engineers.

"As a successful company, we want to give something back to society," said Christine. ***"The way we do our business is as important as the business we do. Operating with integrity and with ethical standards is our way of doing business."***

INEOS businesses and sites have embraced social media which has opened up new channels of communication with the wider community. They are using the Internet, Facebook, Twitter and LinkedIn as a way to inform local communities and, just as importantly, receive feedback.

"Because of its immediacy, social media is a great way to respond to events where speed is of the essence," said Anne-Gret. ***"In these circumstances it enables us to gain trust and establish ourselves as the single point of authoritative information."***

Grangemouth's Community Liaison Group, which includes local councillors, police officers and the local head teacher, used to meet four times a year but decided, amongst themselves, to cut it down to two.

"For us, it will always be a wonderful opportunity to speak face-to-face with representatives from the local community, share our plans, be open and honest about our performance and to hear their views and thoughts," said David. ***"It helps that we have members who have been members of the group for a long time, and many who are ex-employees. It's all about building and maintaining relationships."***

But it's not just about communication.

INEOS' successful, worldwide GO Run For Fun campaign aimed at inspiring tomorrow's generation to be active and its work in German primary and secondary schools through TuWas! are equally as important.

"All these things will certainly shape our profile as a trustworthy, sustainable and honest company for many years to come," said Anne-Gret.



JUST THE JOB



INEOS INVESTS ITS TIME AND MONEY TO RECRUIT THE BEST OF THE BEST

A company is only as good as its people. But first you have to find them. Here INCH looks at what INEOS is doing to attract – and retain – the best

MANUFACTURING is becoming ever more complex and highly-skilled employees are becoming increasingly sought after.

The problems are global and well documented; the action and solutions less so.

In April last year Michael Collins, President of MPC Consulting, told Industry Week magazine that it was time to act.

"We have done enough 'shortage of skills' surveys," he said. ***"We know what kind of skills and training programmes are needed. It is time for corporations to quit stalling and make the commitment to long-term training by seeing it as an investment, not an expense."***

As a company, which needs a continuous supply of highly-skilled, highly-disciplined and motivated employees to survive, INEOS has always believed in the importance of training and development, and knows it cannot afford to wait for government initiatives to solve the deepening crisis.

And it is a deepening crisis.

In America, a looming shortage of skilled workers could cut short its manufacturing renaissance.

"Over the next decade, nearly 3½ million manufacturing jobs likely need to be filled," said a spokesman for US-based Manufacturing Institute. ***"But two million of those jobs are expected to go unfilled due to the skills gap."***

In a poll conducted last year by the Foundation of Fabricators & Manufacturers Association, 52% of American teenagers said they had no interest in manufacturing, seeing it as a 'dirty, dangerous place that requires little thinking or skill'.

The UK fared no better. In October the UK-based Manufacturing Institute said teachers needed to understand that manufacturing was a good career.

"We are in the middle of a war for talent and it is concerning to see that this is beginning to hold manufacturing businesses back," said Chief Executive Dr Julie Madigan. ***"Just to stand still, UK manufacturing will need hundreds of thousands of recruits in the next 10 years."***

In March this year business group EEF also highlighted the problem, saying Britain's manufacturers were struggling to recruit skilled workers and keep pace with global technology.

But it's not all doom and gloom.

Companies, like INEOS, are fighting back. And winning.

At INEOS Köln in Germany, O&P in the US and Grangemouth in Scotland, successful apprenticeship schemes are reaping real results.

Germany is perhaps the country that has been making real headway.

"People who get a job here say they feel like they have won the lottery," said Dr Anne-Gret Iturriaga Abarzua, Head of Communications at INEOS Köln. ***"We take care of our people and we don't have a problem recruiting. We don't need to spend a lot on advertising. We don't worry about the future but we are not complacent either."***

Andreas Hain, head of apprentice training at the German site, said every year about 1,800 young people applied for about 60 jobs.

All are asked to take part in an online questionnaire. From those almost 500 are invited in and interviewed for at least an hour each.

"We do invest a lot of time and effort," said Anne-Gret. ***"But this is a high investment so we need to get it right, because if they start working for us, they stay. We have quite a lot of people who have been here for 45 years."***

Once INEOS has chosen its 60 apprentices – and all are likely to be highly motivated, enthusiastic, open-minded souls with an interest in their communities – they are treated as part of the INEOS family.

"We take care of them from the moment they come in," said Anne-Gret.

The apprentices learn on the job and attend the college on site. All the teachers are ex-workers.

"It means we can mould them in the way we want and bind them together in the company," said Anne-Gret. ***"We want them to understand the company's culture."***

Finding people who understand a company's culture and ethos – and practise it by example – is key to any organisation that wants to grow and prosper in today's competitive world.

In 2008 INEOS joined forces with Forth Valley College and Heriot Watt University in Scotland to launch its five-year modern apprenticeship scheme Engineers of the Future.

The scheme, which was modelled on the success of INEOS' Köln site, combined a full university education with relevant, workplace experience.

"The concept of work experience placements, as part of a university education, was nothing new but the thinking behind it, was," said Robin Westacott, director of the Engineers of the Future programme.

The work experience created 'work ready' graduates familiar with the site's processes and procedures, and focus on safety.

"We want them to understand INEOS' culture so that when they go down to the site to do their on-site training, that culture is already embedded," said Kenny MacInnes, deputy head of engineering at Forth Valley College.

Jennifer Prentice, Duncan Paterson and Mark Skilton were among the first graduates to complete the bespoke course. All now work full-time for INEOS.

"The quality of these graduates showed clearly that the rationale for the programme had been fully achieved," said Gordon Milne, Operations Director at INEOS Grangemouth. ***"They set the bar very high."***

INEOS Olefins & Polymer USA's college recruiting campaign is also paying dividends. It has been so successful that it has effectively helped the business to establish a 'talent pipeline' for the future.

"We have been able to bring in and develop some terrific people who, have and will, continue to contribute to our company's success today and in the future," said HR Director Sam Scheiner. ■



UNIVERSAL APPEAL

GO RUN FOR FUN HOPES TO MAKE A WORLD OF DIFFERENCE AS ITALY AND NORWAY JOIN THE CAMPAIGN



As charity campaigns go, GO Run For Fun has been a runaway success. But founder INEOS chairman Jim Ratcliffe is not one to rest on his laurels, as those who know him, know only too well

INEOS' simple campaign to get children fit by encouraging them to run for fun has reached yet another milestone.

This summer more countries than ever have hosted GO Run For Fun events, the latest being Italy and Norway.

"It really does now have a truly international feel," said Ursula Heath, INEOS Group Communications Officer, who works on the campaign.

So far more than 220 events have been hosted in Germany, Switzerland, Holland, America, Belgium, France and the UK with the £1.5 million donation set aside by INEOS when it launched the campaign three years ago. At the time founder INEOS chairman Jim Ratcliffe said his target was to reach 100,000 children.

"We smashed that target months ago," said Ursula. ***"But our reach is still growing, and we're not about to give up now. If anything our ambitions have got bigger."***

Although INEOS' original donation is drawing to an end, with the growing appetite for getting children outside and running for their health and wellbeing, the GO Run For Fun team is excited about the possibilities for the future.

"We are continuing to stage these high energy, hugely popular fun runs but we're increasingly looking to work closer with schools to provide the motivation and materials to teach healthy active living all year round," said Ursula.

The team is now headed up from within INEOS by John Mayock, a former Olympic athlete who has staged nationwide school sports programmes.

"The GO Run For Fun campaign has gone from strength to strength," he said. ***"We now have more countries, more children, countless events and have won the support of more than 150 world-class sporting ambassadors."***

Numerous sponsors are supporting the campaign and negotiations with potential partners to help fund the campaign will continue.

INEOS will also continue to support former Scottish headteacher Elaine Wyllie's ground-breaking Daily Mile initiative, which is growing apace, by working closer with participating schools.

"The two campaigns not only share a similar goal, but complement each other," said Ursula.

The Daily Mile encourages children to get into the habit of running by taking part in a mile-long run in school every day. GO Run For Fun is the big event – the one that inspires children to give it their all.

"GO Run For Fun is like a circus when it comes to town," said John. ***"And it leaves a lasting impression on the kids."***

But both share a similar ethos and vision.

"Children are encouraged to enjoy running, no matter their speed, ability or experience," said Ursula. ***"And that's the reason why both these campaigns will have a positive impact on the activity levels and health of the next generation."***

With Jim Ratcliffe's vision buoyed by the success of the campaign so far, the next era of GO Run For Fun is going to be an exciting one to watch.



"GO Run For Fun is like a circus when it comes to town, and it leaves a lasting impression on the kids"

John Mayock, former Olympic athlete

CHAMPION! ZAK CANNOT BELIEVE HIS LUCK

AS days go, July 14 was quite a day in nine-year-old Zak Schuster's life.

The Swiss schoolboy had stopped off at London's Olympic Stadium with his parents in the hope of seeing where athletes Mo Farah and Usain Bolt had won gold medals in the 2012 London Games.

But instead he stumbled across INEOS' GO Run For Fun event which was being staged inside the iconic venue for the very first time in the hope of inspiring British children to run for fun.

Zak's mum Janet asked if he might take part.

"We don't normally accept late entries but we could not refuse him," said Ursula Heath.

Zak was given a spare number, one of the charity's trademark pink T-shirts and lined up with 4,000 other children ready to run the 2km race.

"He was so excited," said Janet.

As the gun went off, the young runner, who is the Swiss Group of International Schools' cross country champion, led the charge, eventually crossing the line first, and breaking the tape.

"That moment is something he will never forget," said Janet.

Later the schoolboy, who has had a passion for running since he was five, met former Olympic hurdler Colin Jackson and athletes Richard Kilty and Emilie Diamond.

Zak's mum, Janet, who teaches PE at a Swiss international school, said he could not believe his luck.

"He is still talking about it," she said. ***"In fact we all are. The whole event was just so inspiring and meeting some sporting heroes was the icing on the cake. They could not have been nicer. They took time to chat with him, posed for photographs and signed his T shirt."***

As the signatures on his T-shirt eventually fade, the memories won't.

"This will have a huge impact on his running," said Janet.

More than 160,000 children throughout the world have now taken part in one of INEOS' GO Run For Fun event.



Zak Schuster

WHY INEOS IS A GOOD INVESTMENT

BOND OF TRUST PAYS DIVIDENDS FOR INEOS AND ITS INVESTORS

INVESTORS want a safe pair of hands. But that doesn't mean always playing it safe, as Peter Clarkson, head of investor relations at INEOS, is keen to point out

INVESTORS have grown to love INEOS as the company itself has grown over the past 17 years.

On the face of it, it's understandable. It has risen from humble beginnings in 1998, when it employed 400 people and turned over £200 million, to become a company employing 17,000 people across 67 sites in 17 countries with global sales of a cool $40 billion.

"To our investors we have become a 'must have' investment," said Peter Clarkson, Head of Investor Relations at INEOS. ***"INEOS bonds can be found in the portfolios of most managed funds because it has continued to provide investors with an excellent return, and consistently meets and exceeds its promises time after time."***

But to really understand why the appetite to share in INEOS' success is growing, you have to look beyond the balance sheet, impressive though it is.

For what INEOS has become an expert at is turning unwanted, inefficient businesses back to profit where others have simply failed.

And that is down to the way the company is run.

"Many of the old blue-chip companies manage by committee, but that doesn't happen in INEOS," said Peter. ***"People, even new graduate employees, are given clear individual responsibility, and report to a very focused business board, who can make major decisions very quickly."***

INEOS actively encourages its staff to think like owners and spend money as if it were their own.

"INEOS is different," said Peter. ***"The underlying mood is always restless. INEOS is always looking for opportunities and that is good news for anyone wanting to invest."***

As a company, INEOS thinks big. It dreams the impossible. But, more importantly, it makes things happen.

At this year's annual investor days in London and New York, Peter detailed some of the initiatives – big and small – that continued to give INEOS its well-deserved reputation as a company that was comfortable taking calculated risks.

He talked about INEOS' ground-breaking decision to buy 12 North Sea gas fields for £490 million while all around seem to be selling up.

He spoke about the incredible ships, which are now bringing low-cost ethane from America to Norway – and soon Scotland – to give INEOS' European gas crackers the edge over its competitors.

"We are very comfortable with where we are, but there is much more we can do," he said.

The investors – and there were almost 200 at this year's investor days – are keen to hear INEOS' views of the market, its predictions for the price of oil, and in particular naphtha, which it uses to feed some of its crackers, the impact of low-cost US shale gas and what major projects are planned.

"They usually want to know about anything and everything that has a major influence on our cash flow," said Peter.

What investors have discovered is that a year in the life of INEOS is never dull.

For INEOS Group, INEOS Styrolution and INOVYN, 2015 proved to be a record year thanks to favourable markets due, in part, to the failure of its competitors.

INEOS capitalised on that by running its plants hard, maximising the high margin business that was to be had.

"Everyone knows that the global petrochemical industry's assets are ageing and becoming increasingly unreliable and expensive to maintain," said Peter. ***"But we are good at maintaining our assets in a safe and reliable condition, whilst controlling capital expenditure. The reliability factor has really paid dividends over the past couple of years."***

INEOS' cracker in Koln, Germany, for instance, is 99% reliable despite its age.

"It is like a well-cared for Mercedes with 100,000km on the clock," said Peter.

When money is spent, it is spent wisely on projects that will make money for INEOS to invest elsewhere.

"The projects are always well targeted and cost-effective," said Peter. ***"Even the smaller projects add value."***

INEOS has worked hard to ensure investors are treated as part of the team. Every week all investors and analysts are sent a market update with a summary of what has been happening in all of INEOS' major markets.

"It is very unusual in the world they invest in but we believe they value that transparency," said Peter. ***"It also helps to reduce the amount of time needed to renegotiate and secure better interest rates when we launch new bonds. Investors often feel they don't need to attend an investor day because they understand the company so well."***

That openness means a bond refinancing deal can now be done in days instead of weeks.

"We have absolutely no trouble selling our debt because of our reputation," said Peter.



" Köln is like a well-cared for Mercedes with 100,000km on the clock"

Peter Clarkson

IN THE HEADLINES

NEWS FROM AROUND INEOS

Styrenics sell-off

INEOS has agreed to sell one of its businesses to a Polish company for €80million. Its expandable polystyrene business INEOS Styrenics will soon be run – subject to approval – by Synthos, one of the largest manufacturers of chemical raw materials in Poland.

Expandable polystyrene is heavily used to package goods and also by the construction industry to insulate homes and offices because it is light, strong and long-lasting.

Tomasz Kalwat, CEO of Synthos, said the acquisition would ensure expandable polystyrene remained the insulation material of choice for its customers.

INEOS Styrenics currently makes EPS, as it is known, at two manufacturing sites in France and one in the Netherlands. Research, development and product testing is carried out at a purpose-built site in the Netherlands, which is also home to the business' customer service team and its logistics and finance staff.

Synthos, whose headquarters are in Oświęcim, was the first European manufacturer of emulsion rubbers and is a leading manufacturer of polystyrene.

INEOS Styrenics is a part of the INEOS Enterprises portfolio of business. INEOS Enterprises' job is to actively seek market opportunities to acquire, develop and sell chemical businesses.

Green light for new US plant

INEOS has given the final backing for a new world-scale plant to be built near Houston in Texas.

When it becomes operational in November 2018, the plant will produce 420,000 tons of linear alpha olefins (LAOs) every year – 20% more than INEOS Oligomers had originally planned.

The decision to increase production at INEOS' Chocolate Bayou site has been driven by America's shale gas boom, which has slashed the cost of energy and raw materials, and customer demand.

LAOs are used in a huge range of products including shampoos, packaging, pipes, tyres and agrochemicals.

The new plant will also help INEOS' growing polyalphaolefin business because it will make the raw materials the business needs to manufacture high performance synthetic lubricants.

The wind industry relies on these high viscosity oils to improve the performance and reliability of wind turbine gearboxes. In the past the industry has been plagued by gearboxes failing, leading to a loss of production.

INEOS Oligomers is already the world's largest producer of PAOs but this latest investment represents a major step forward in the company's ambitious growth plans for its LAO business.

By the end of 2018 the global LAO production capacity of INEOS Oligomers, which has other plants in Canada and Belgium, will be about one million metric tons a year.

JIM'S £25 MILLION GIFT TO BUSINESS SCHOOL

INEOS chairman Jim Ratcliffe has donated £25 million to the London Business School where he earned his MBA.

The money will secure the future of the Regent's Park building for the next 125 years. ***"I owe a lot to the London Business School,"*** said Jim. ***"It is one of the best business institutions in the world."***

Jim obtained his MBA in 1980 while working for Exxon Chemicals as a chemical engineer. Eighteen years later he founded INEOS which is now one of the biggest petrochemical companies in the world with 17,000 employees and sales of more than $54 billion.

Professor Sir Andrew Likierman, Dean at the London Business School, described the donation as 'incredibly generous'.

"This will mean that future generations of students will have the benefit of studying in one of London's most beautiful and historically important buildings," he said.

As a thank you, the London Business School has also named its main Nash terraced building as The Ratcliffe.

INEOS acquires WL Plastics

INEOS O&P USA has acquired a company that is reaping the benefits of America's shale gas boom. It has acquired 100% of the shares of WLP Holding Corp, one of the largest and fastest-growing high density polyethylene (HDPE) pipe manufacturers in North America.

Pipes, which are made from HDPE, don't leak or rust and, if properly designed and installed, don't need maintaining for 100 years.

As such, they are in demand from oil and gas producers.

"The growth in HDPE pipe for oil and gas really did explode with the development of shale oil and gas exploration," said Dennis Seith, CEO of INEOS O&P USA.

But INEOS sees other avenues for growth as US cities grow and need to replace ageing sewage and water systems. ***"The unique properties of strength, flexibility, weight and durability along with ease of handling make HDPE pipes the perfect choice,"*** said Dennis.

The Fort Worth, Texas-based company currently produces HDPE pipes at plants in Kentucky, South Dakota, Utah, Texas, and Wyoming with one in Georgia currently being built.

"We are very pleased to have acquired this business," said Dennis. ***"It is well-positioned to serve the growing North American pipe market and will complement our existing portfolio of olefins and polymer products."***

Mark Wason, CEO of WL Plastics, said INEOS and WL shared a similar ethos.

"We are both committed to safety, quality, manufacturing excellence and customer service," he said.

He believed INEOS would help WL Plastics to strengthen its position in the market place.



INEOS Styrolution makes its first acquisition

INEOS Styrolution, already viewed as a global leader in styrenics, has signed a deal that further strengthens its position in the world.

It has bought the global K-Resin® styrene-butadiene copolymers (SBC) business of current JV owners Chevron Phillips Chemical and Daelim Industrial Company. The plant is located in Yeosu Petrochemical Complex, the largest petrochemical complex on the southern coast of South Korea.

CEO Kevin McQuade said the acquisition – INEOS Styrolution's first – would strengthen its ability to offer specialty styrenics products to its customers, and increase its production capacities in Asia.

"Our customers will benefit from our ability to supply and support their worldwide demand from our expanded geographic footprint, with SBC manufacturing and research and development centres in all major regions," he said.



INEOS Styrolution currently employs about 3,100 people and operates 15 production sites in nine countries.

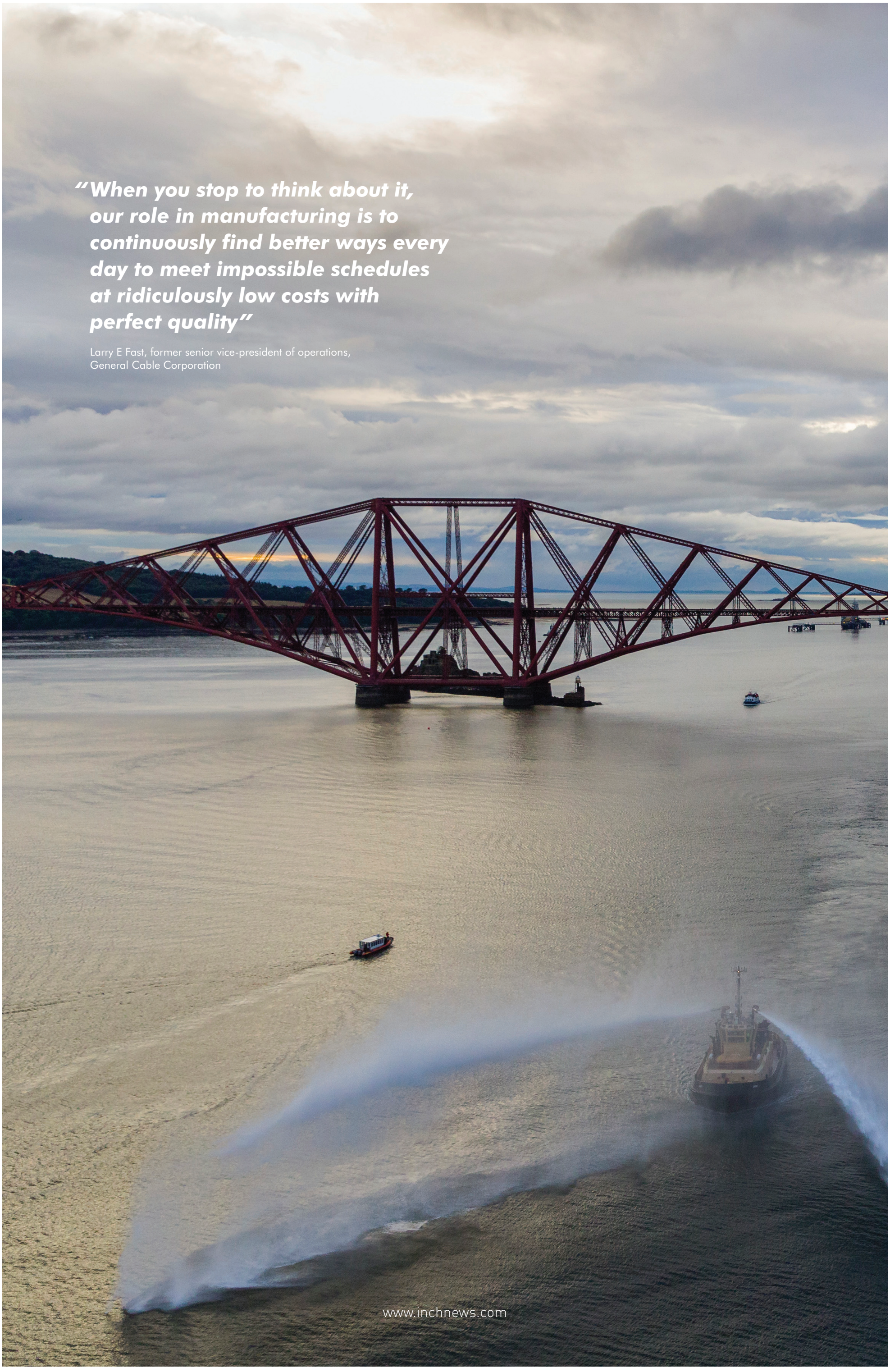
K-Resin® SBC and INEOS Styrolution's existing SBC brands Styrolux® and Styroflex® complement each other well. The combined business will offer a broad selection of SBC products to customers across the globe.

The acquisition, once completed, also underlines INEOS Styrolution's commitment to focus on measures that will expand its footprint in higher-growth industries, styrenic specialties, and emerging markets.

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"When you stop to think about it, our role in manufacturing is to continuously find better ways every day to meet impossible schedules at ridiculously low costs with perfect quality"
Larry E Fast, former senior vice-president of operations, General Cable Corporation
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