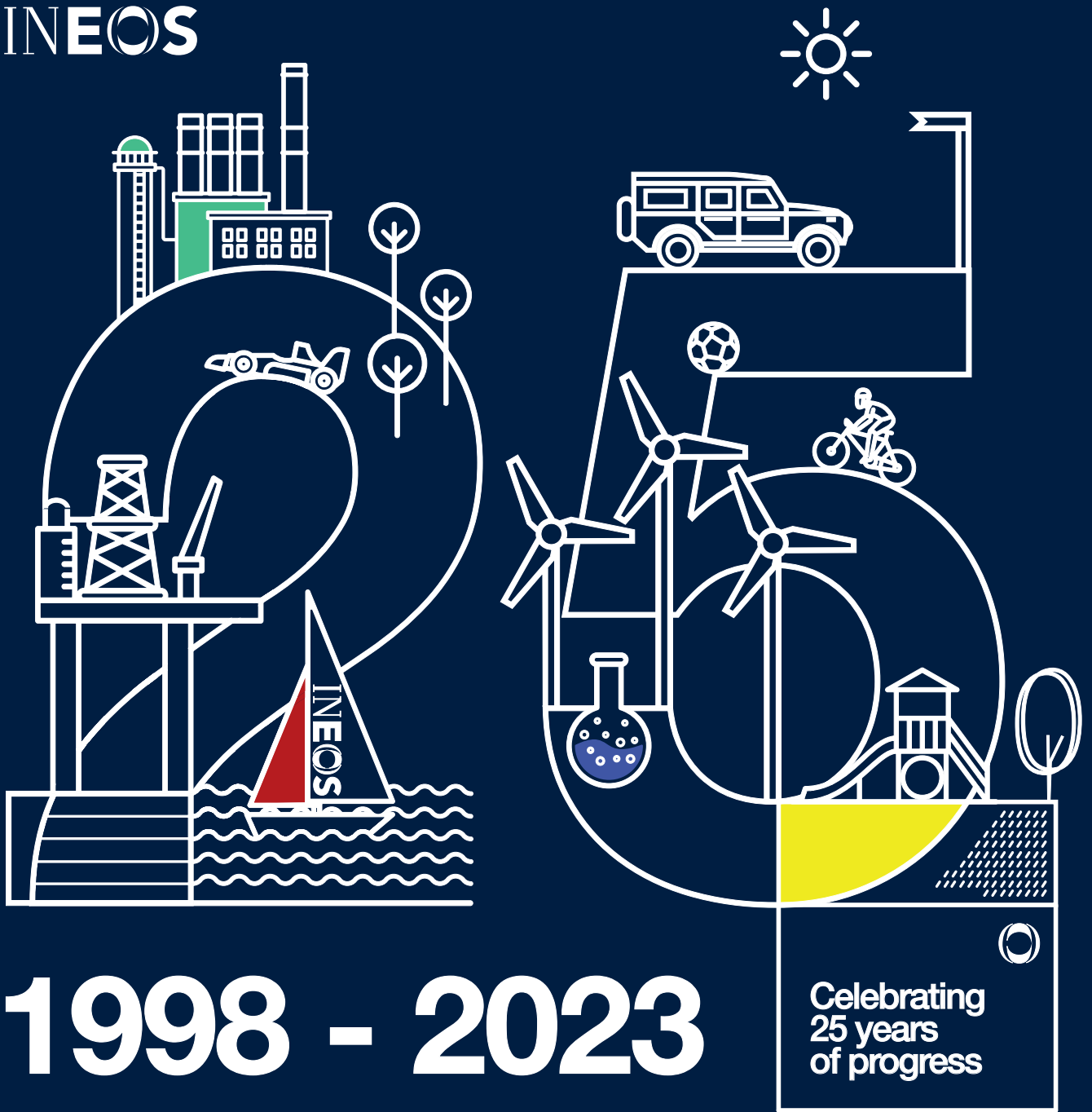


INEOS



1998 - 2023

Celebrating  
25 years  
of progress

# Enter the dragon

**INEOS in review 2022**

INEOS is now entering a new phase of expansion and growth

## Building on experience

INEOS is now entering a new phase of expansion and growth

Even against a background of volatile pricing, high energy costs and unprecedented supply chain issues, INEOS' plants have remained firmly on track.

"For us, I think this past year has been about resilience during the current downturn as well as geographic expansion, particularly in China," says Tom Crotty, Director of Corporate Affairs.

"What we saw in 2022 was the classic football analogy of a game of two halves," he says. "The first half of last year was a continuation of the boom times of 2021 and then in August we saw performance levels you'd expect to see in a significant petrochemical cyclical downturn."

Clearly, the impact of the energy crisis on INEOS was as for most energy intensive companies. Some plants had to be mothballed, for example, but these are now back online as energy prices readjust.

"There was an impact on our bottom line last year," says Crotty, "but the resilience we've shown really comes from our experience through 2008-2009."

"Back then, the company was threatened because of the banking crisis but now we're in a totally different position; we're debt light and covenant light. Our sheer scale and breadth means we can weather this storm without issues or threats to the organisation."

"We always use three words to describe our core values: grit, rigour and humour. They're the qualities that always get us through situations like these and have made us very resilient and robust," he adds.

With INEOS celebrating its 25th anniversary on 5 May 2023, it is this mindset that has allowed the business to not only navigate difficult conditions in the past but to emerge stronger through



innovation, new partnerships and ground-breaking projects.

Indeed, INEOS made the headlines last year when it announced four major deals with Chinese major SINOPEC. This included an historic agreement to acquire half its SECCO cracker plus a host of downstream investments from polyethylene to acrylonitrile butadiene styrene.

Expanding the footprint in Asia has long been an ambition, admits Crotty.

"If you analyse INEOS and look at where we are as a result of a lot of M&A activity over the years, the area where we have lower representation has been in Asia, which is where all the major growth is in petrochemicals," he says. "This is something we felt we needed to put right. We wanted to balance a portfolio that was around 50% Europe, 40% US and 10% Asia to something closer to equal thirds. By adding around \$10 billion of revenue in China, this latest deal will make a huge difference and move us significantly in that

direction."

But INEOS' ambitions have not been confined to Asia.

"Clearly the China deal is going to keep us busy for a while but that doesn't stop us continuing to look for other opportunities as well," says Crotty. "In the US, the Inflation Reduction Act creates real opportunities for green growth there as well. We've just agreed a big deal on renewable solar power for Chocolate Bayou, for example."

"A lot of these moves are about spreading risk, whether that's geographic or sectoral. We've learned over the last 25 years that you don't want to have all your eggs in one basket."

Back in Europe, the development of the landmark €4bn petrochemical complex, Project ONE remains in a protracted approvals and permitting process. The first sheet pile went into the ground in Antwerp, Belgium, in December 2022, but we await the start of the first cracker to be built in the region for more than two decades.



***“We always use three words to describe our core values: grit, rigour and humour. They’re the qualities that always get us through”***

**Tom Crotty,**  
Director of Corporate Affairs, INEOS

Once complete in 2026, it will be the most efficient in Europe, three times better than the average European cracker – and will eventually rely on green hydrogen and have a zero carbon footprint.

“The logic behind Project ONE is to build a modern, sustainable ethane cracker in Europe where there are already a lot of old, polluting plants. We’re doing the right thing for the environment but the opposition we’ve faced has been really frustrating,” he says. “The worry is that if we don’t address these issues then Project ONE will be the last big petrochemical investment in the region.”

Over in the Middle East, the three world-

scale Jubail 2 plants being built in the Kingdom of Saudi Arabia are also making good progress, with construction running on plan and to schedule, he says.

Despite the difficult trading conditions, the oil and gas business has also fared well with a solid performance. INEOS recently announced its entry into the US onshore oil and gas market with the \$1.4bn acquisition of oil and gas assets in Texas including around 2,300 wells and exploration leases across 172,000 net acres.

“Oil and gas had two pretty solid years in terms of performance and we continue to look for reinvestment,” says Crotty. “We

believe strongly that we’ll need gas for the next 30 years and we want to be part of that.”

Also particularly promising, he says, are the advances being made in carbon capture and storage through Project Greensand, Acorn, Zero Carbon Hull, Antwerp@C, and HyNet North West – the world’s first low carbon industrial cluster that will also be used for hydrogen storage (see page 14).

Project Greensand marked a major milestone in March 2023 when carbon dioxide (CO<sub>2</sub>) was successfully transported from Antwerp, Belgium, and injected under the Danish North Sea. This was the world’s first on-purpose, cross border project that has come to fruition, says Crotty. Initially starting out at pilot scale to prove the technology, with 1.6m tonnes/year being stored, this will eventually be ramped up to 8m tonnes/year – equivalent to half of Denmark’s total CO<sub>2</sub> reduction ambition.

Meanwhile, INEOS has also made its first foray into the global Liquefied Natural Gas (LNG) market through a long-term agreement with Sempra Infrastructure. The deal builds on the success of INEOS’ ethane imports into Europe and comes at a critical time for energy markets, providing much needed security of supply and reducing dependency on Russian gas. This allows exports of up to 1.4m tonnes/year of LNG from the US Gulf Coast for the next two decades.

“We’re building on the back of our experience in exporting shale gas from the US. We’ve built our expertise and got used to running fleets of ships with ethane around the world as a reliable source of competitively-priced feedstock,” he says. “Our logic was that if we can do it for ethane, we could make it work for LNG as well. Sempra is the first of what we hope will be a number of deals that will see us become a major player in the LNG business.”

The energy transition and push towards net-zero by 2050 continues to fuel INEOS’ appetite for innovation. By leveraging its capabilities as one of the world’s largest manufacturers and exploiting its resources and technologies, INEOS continues to cement its position as a leading advocate for the potential of hydrogen, dubbed the fuel of the future.

The first in a series of projects using green hydrogen generated by renewable energy is now underway, with INEOS making significant headway (see page 17).

Its efforts with sustainability, recycling and the circular economy contributed to yet another gold sustainability rating →

→ from EcoVadis, putting INEOS into the top 8% of companies in the sector. INEOS has also published its fourth annual Sustainability Report, showcasing its ongoing commitment to Environmental, Social, and Governance.

“This is all now becoming an essential part of doing business and we’ve got a great story to tell,” adds Crotty.

In terms of the consumer businesses, the INEOS Hygienics healthcare brand continues to enjoy success in a highly-competitive market. Now three years since its launch, with its hand sanitisers, sprays and wipes widely available on store shelves and online, new COO Rory Tait is looking to expand its offering.

“Ever since COVID-19 there’s been an increasing focus on high quality and effective hygiene and we think there’s a real niche in the market for us,” says Crotty. “We recognise that we’re not going to build a business on hand sanitizer alone so we’ve branched out and recruited a number of key people from the industry who are experienced in this area. We’ve since launched a range of soaps and cleaning products and are starting to market those pretty strongly.”

Also gaining traction is INEOS’ uncompromising 4x4 off-roader, the Grenadier. With healthy order books and a string of positive test drives and reviews, deliveries of the petrol and diesel models are starting to roll out across Europe. A staggered launch will see them reach US shores later this year, with an electric version to follow from 2026 (see page 22).

It is this drive and ambition that has helped INEOS establish itself as one of the world’s leading manufacturers over its 25 year history. Whether taking unloved assets, revitalising them and turning them into successful businesses or adding brands and business units and expanding into new markets full of growth potential, it has repeatedly proved that nothing is impossible.

“Looking at the last five years since our 20th anniversary, we’ve had the BP acetyls & aromatics acquisition, geographic expansion with our moves into the Middle East and China, expansion into the consumer business with Belstaff, Hygienics and automotive – and of course, our involvement in sport and community projects,” says Crotty.

“At INEOS, we never sit down and discuss where we’re going to be in 10 years’ time. We still take a pragmatic approach and remain fleet of foot, looking for good deals when they arise.”

By **Andy Brice**

# Looking back, looking forward

In the space of 25 years, INEOS has grown to become one of the biggest manufacturing companies in the world. A leader in petrochemicals and the oil and gas industry, recent years have also seen its expansion into burgeoning consumer markets and elite sport. No matter the sector or the specialty, the INEOS ethos of grit, rigour and humour has been applied throughout. Today, with the business also leading the way in terms of sustainability, best practice and philanthropy, INEOS is surely at risk of losing the mantle of being the largest company that no one has ever heard of.

By **Andy Brice**

**1998**

INEOS founded on 5 May after management buyout of INSPEC and acquisition of a former BP site in Antwerp Belgium



**2015**

North Sea gas fields bought from DEA Group and Fairfield Energy. Forms INOVYN JV with Solvay



**2014**

Buys Sasol’s solvents business and remaining shares of Styrolution



**2013**

Scotland’s Grangemouth plant restarts after strike. Survival plan and additional investment agreed



**2016**

Dragon Ships transport ethane from US to Europe – part of a \$1bn project. Headquarters returns to the UK. Buys Solvay’s stake in INOVYN



**2017**

Buys assets from Dong Energy to become Top 10 oil and gas company in the North Sea. Acquires Forties Pipeline System and Kinneil Terminal from BP. Announces Grenadier 4x4 off-road vehicle, buys clothing brand Belstaff and Swiss football club, FC Lausanne-Sport



**2018**

Invests £110m to challenge for the 36th America’s Cup and forms INEOS Team UK. Announces Pro ONE – Europe’s first cracker in 20 years



## INEOS - the secret to success

*“INEOS continues to set the standard on how to operate chemical assets. INEOS is recognized as a hugely successful company in a very difficult industrial sector. Many of the assets would not exist today if INEOS hadn’t bought them”*

**David Brooks,**  
INEOS Acetyls CEO

*“The company is inspirational in the sense it always does something ‘entertaining’, something that’s not been explored before”*

**Gerd Franken,**  
Chairman,  
INEOS  
O+P Europe

*“I never cease to be amazed at the appetite for growth and approaching risk. INEOS is not reckless but very good at making calculated decisions. A lot of companies get that wrong”*

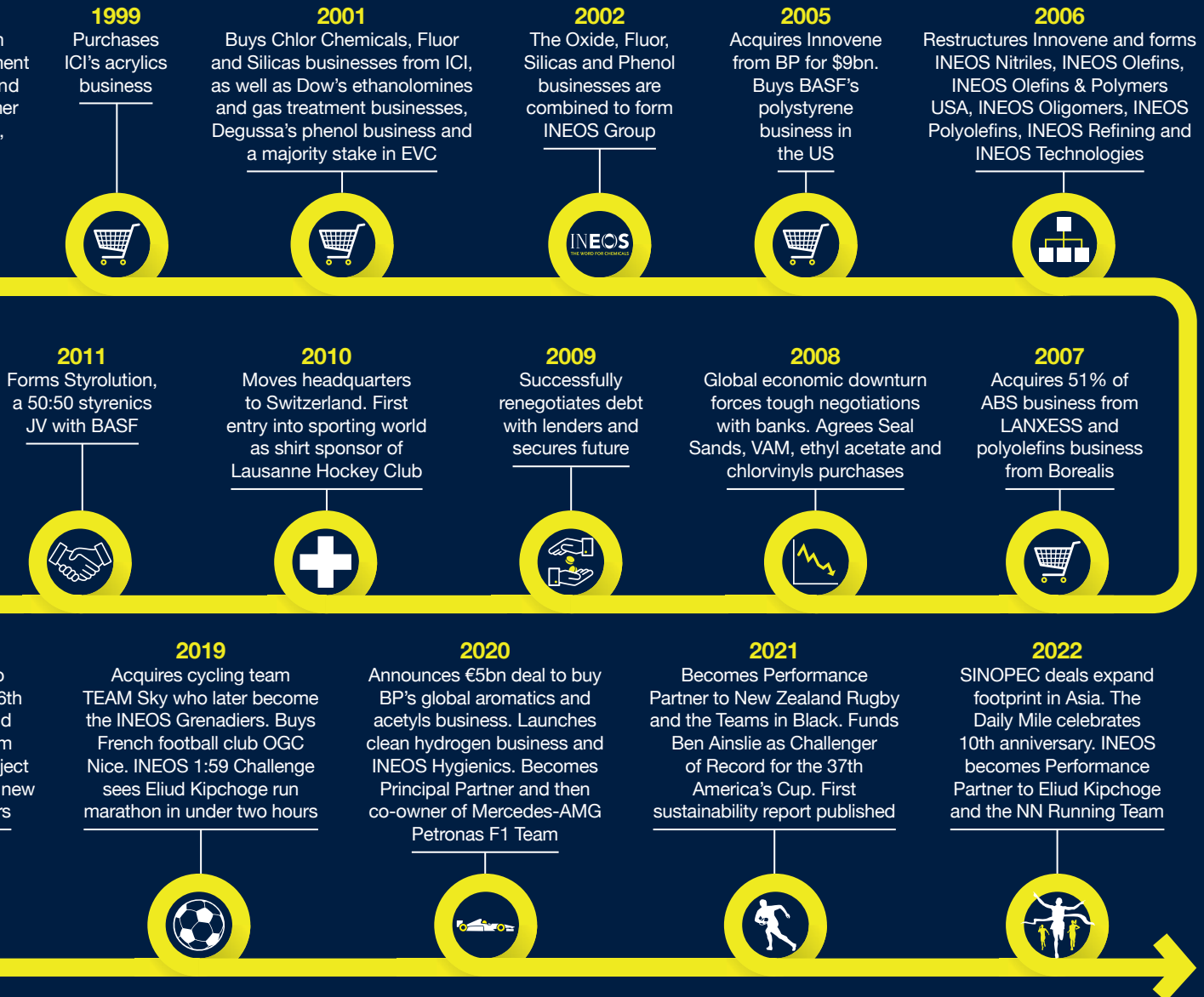
**Joe Walton,**  
CEO INEOS  
Oligomers

*“I’ve seen huge changes but a lot has remained the same – the same owners and the same roadmap to acquire businesses, turn them around and integrate them into INEOS”*

**Andrew Gardner,**  
CEO FPS

*“The driv entri and He’s kno buy, the opp*

**Har**  
CEO  
Phen  
INEO



**ESS**  
The main driver is the entrepreneurship vision of Jim. He's very good at knowing what to do, the value of the asset and the opportunities"

**as Casier,**  
D INEOS  
mol and  
OS Nitriles

*"Even though we've got bigger and bigger, we've tried to retain a focus as a small firm. We know where every penny is spent and why. We are more than just a petrochemicals company. People recognise INEOS as a name associated with doing things well, whatever those things are"*

**Rob Ingram,**  
INEOS CEO  
O+P Europe North

*"We're very entrepreneurial, have grown with acquisitions and are willing to take risks. We're not frightened of trying new things to see if they work. The owners decide very fast – and that unleashes the power of INEOS"*

**Mike Nagle,**  
CEO INEOS  
O+P USA

*"It's staggering what the owners have done in the past 25 years. They've made very wise, bold and fast acquisitions. They are very pragmatic, don't waste time and analyse things at a level that is important but don't get lost in small details. I used to say nothing they say or do would surprise me, but they do"*

**Bob Learman,**  
Chairman INEOS Oxide,  
INEOS Oligomers,  
O+P USA

*"Joining INEOS is like getting on a rollercoaster in the exhilarating sense. We're a very nimble company and decision making and delegation is very clear. The business is very streamlined, which gives a much more effective way of taking strong decisions"*

**John McNally,**  
CEO Project ONE

*"INEOS uses a federal model and each board being accountable for running their own business is key. They own the success and take responsibility for making things happen. Our focus is on things we can control rather than worrying about the things we can't"*

**Stuart Collings,**  
CEO INEOS O+P UK

## Entering a new era

**After 25 years of growth and expansion, INEOS has established itself as one of the world's leading chemical companies. And there are no signs of its progress slowing as it looks to build its presence in Europe and the US, increase its footprint in Asia while continuing on the path to net zero**

The past year has been one of progress and transition for INEOS' petrochemical businesses.

Throughout 2022 and early 2023, the group took significant strides in terms of acquisitions, asset expansion and further improving its sustainability and environmental credentials. Yet it was a challenging time too, as the industry continued to face strong headwinds from rocketing energy costs, supply chain disruption and the impact from Russia's invasion of Ukraine.

Not one to shy away from challenges over its 25 year history, INEOS has ridden the storm and continued to look for new opportunities, while maintaining a strong grip on its operating costs and margins.

That combination of ambition and endurance led it to make one of its most momentous moves to date, notably the agreements last year with Chinese state-owned giant SINOPEC which will

transform the company into a truly global player and enable access to the world's fastest-growth region (see page 10).

"This is the first time that INEOS has acquired a major petrochemical complex in China. It is quite a milestone," says Gerd Franken, Chairman of INEOS O&P Europe, adding that the site in Shanghai is "truly spectacular".

Equally significant, INEOS O&P Europe has made good headway on its flagship ethane cracker project at Antwerp, Project ONE. INEOS Capital gave the final investment decision in March 2022 and in June, the Flemish Minister of Environment granted the environmental permit, clearing the way for construction to start. And after months of preparing and levelling the ground, a symbolic sheet pile went into the ground on 15 December 2022.

INEOS O&P Europe has also announced plans to spend €30m on converting its plant in Lillo, at the Port of Antwerp in

Belgium, to enable the production of either mono- or bi-modal grades of high density polyethylene (HDPE). This, says Rob Ingram, CEO INEOS O&P Europe North, will allow a shift away from making single-use plastics into producing more durable products, such as high-pressure pipes and electrical conduit, as well as further enabling the incorporation of more recycled material.

Meanwhile, INEOS O&P UK also intends to start up its KG cracker expansion this year. Stuart Collings, CEO INEOS O&P UK, says work has been continuing steadily on the project that has added a tenth furnace, lifting capacity to more than 700,000 tonnes/year.

Another highlight for Collings has been the company's ability to minimise energy use and costs in an extremely volatile and high-priced environment, as well as maintaining an "excellent" safety performance. "Last year wasn't about step changes to the business but about doing the main things and doing them very well, with a focus on safety, jobs and people," he says.

That ethos also holds true for the Forties Pipeline System (FPS), run from Grangemouth in Scotland by CEO Andrew Gardner. INEOS continues to work on injecting new life into the system so it can run to 2040, or possibly longer.

Gardner proudly says the system offered 100% availability last year, even as INEOS retired one of the site's three trains in order to keep costs more affordable for customers. He notes that FPS' costs are now down 35% compared with 2017 under the previous owner.

The focus in the years ahead will be more of the same – fixing where necessary, reducing the cost per barrel and decarbonising operations.

INEOS Nitriles, meanwhile, is planning



to invest a “substantial” sum in a world-scale acetonitrile plant at its key operating site in Cologne, Germany. The company is the world’s largest producer of the substance, which is a co-product of

acrylonitrile (ACN) and primarily used as a solvent in producing pharmaceuticals, agrochemicals and fine chemicals. The project has got the final go-ahead and the 15,000 tonne/year plant should go into production at the end of 2024.

“We will be able to produce acetonitrile in Europe and reduce the region’s supply dependency on the US and China,” says Hans Casier, CEO INEOS Nitriles.

Casier is also CEO of INEOS Phenol, which has just finished building a new cumene plant in Marl, Germany. The plant is ramping up production to reach full capacity of 750,000 tonnes/year and will replace an older unit at the site, which will close.

INEOS Nitriles and sister company INEOS Oligomers have also been involved in a major project in Saudi Arabia, where a total of \$2bn is being invested in plants producing 425,000 tonnes/year of ACN and 420,000 tonnes/year of linear alpha olefins (LAO) in Jubail.

A key condition for INEOS to move ahead with its plans was reached when Total and Saudi Aramco, partners in the



**“This is the first time that INEOS has acquired a major petrochemical complex in China. It is quite a milestone”**

**Gerd Franken,**  
Chairman of INEOS O&P Europe

Amiral joint venture, took a final investment decision (FID) at the end of 2022 to proceed with constructing the \$5bn petrochemical complex. INEOS’ plants are part of the complex but will remain in its total ownership.

Casier expects to move into a full front-end engineering and design (FEED) study on the ACN plant this autumn, which should be finished by the end of 2024, allowing for final board approval. Startup is scheduled for the end of 2027 or beginning of 2028.

INEOS Oligomers CEO Joe Walton says early-stage engineering is also well advanced on the world-scale LAO unit. Walton describes the project as a “window of opportunity” for INEOS, anticipating that output from the LAO plant will mostly serve Saudi Arabia and the Gulf Cooperation Council (GCC) region. “We also expect this plant to attract new derivative facilities to build next to us,” he says.

Over in the US, INEOS Oligomers will also implement a phased expansion of its high-viscosity PAO plant in LaPorte, Texas,

which will be fully effective by mid-2025 and raise capacity by 50% to over 35,000 tonnes/year.

The extra capacity will meet the significant and fast-growing global demand for high-performance lubricants used in wind turbines.

While demand in wind turbines is good in Europe, Walton says it is booming in China, where the country has accelerated its buildout of wind farms. In addition, there is also a lot of interest in LAO to make film resins used in solar panels, which protect against degradation.

The expansion follows the startup in June 2022 of a 120,000 tonne/year low viscosity PAO plant, also in Texas at Chocolate Bayou. INEOS says the plant is the world’s largest single PAO train and positions the company as the world’s biggest merchant supplier of low viscosity PAO.

The US Gulf Coast could also be the location for a world-scale acetic plant and associated derivatives. INEOS Acetyls has started a feasibility study and CEO David Brooks says it is now finalising site selection and expects an FID before the end of 2023. Startup could be scheduled for 2027-2028, he adds.

Also in the US, Styrolution is expecting to bring online its 100,000 tonne/year acrylonitrile styrene acrylate (ASA) →

## Project ONE

For almost five years, INEOS has been working to obtain a permit in Flanders for Project ONE, an ethane cracker that will fundamentally renew the petrochemicals cluster in Antwerp with an environmental footprint less than half that of the best similar plant today. The cracker will produce ethylene, one of the most widely used basic chemicals for countless and indispensable applications that each of us, without thinking about it, uses. By anchoring production of basic raw materials locally, we also increase the chances

of next steps in the value chain being retained here with high-quality manufacturing jobs.

We are obviously disappointed by the decision of the Council for Permit Disputes in Flanders to annul the permit for Project ONE. We are now, in consultation with our stakeholders and advisors, carefully studying the decision to understand it and to review our options.

Using state of the art technology, Project ONE will be the most energy-efficient and raw materials efficient ethane cracker in Europe with by far

the lowest carbon emissions. We have been working on this groundbreaking and unique project for five years now and our efforts were recognized as our permit request was given the green light, first by the Province of Antwerp in December 2021, and reconfirmed – after an appeal – by the Minister of Environment Zuhal Demir in June 2022.

Project ONE is the only greenfield investment of its kind and largest investment in European chemistry in 25 years. A ‘future-proof’ plant too, capable of becoming climate-neutral by running 100% on low-carbon hydrogen as soon as it is available. A project that brings fundamental innovation to the chemical cluster in Antwerp, the economic engine of Flanders. Such plants are now being realised elsewhere in the world. In the United States alone, 20 Project ONES have been recently built.



**“Project ONE is the only greenfield investment of its kind and largest investment in European chemistry in 25 years”**

**John McNally,**  
CEO of Project ONE

→ polymer plant in Bayport, Texas during the second quarter of 2023.

Across the Atlantic, the company has also started up its 50,000 tonne/year acrylonitrile-butadiene-styrene (ABS) line in Wingles, France, following the conversion of an existing polystyrene (PS) line. The Wingles site is now the company's third for ABS in Europe, alongside Antwerp and Cologne, with a further ABS plant scheduled to start up in Ningbo, China.

INEOS INOVYN, meanwhile, is continuing towards greater diversification of its product portfolio, planning a further step increase in its European specialty polyvinyl chloride (PVC) production, lifting capacity by 220,000 tonnes/year, compared with 2015. CEO Geir Tuft says INOVYN is targeting niche, high-value applications, which will serve new markets and applications in automotive and wind turbines, as well as creating more sustainable PVC grades with less need for additives when converted to final products.

For INEOS Enterprises, growth last year was mostly about acquisition, notably ASHTA Chemicals as it was for INEOS O&P USA with the acquisition of PE pipe extrusion assets of Charter Plastics, both in the US.

ASHTA Chemicals is now part of INEOS Enterprises and has been renamed INEOS KOH. The business operates plants producing 100,000 tonnes/year potassium hydroxide (KOH) and 65,000 tonnes/year

chlorine at Ashtabula, Ohio, close to the INEOS Pigments facility.

Chairman of INEOS Enterprises, Ashley Reed, says the \$315m purchase of ASHTA is an excellent strategic fit for supplying chlorine feedstock for its titanium dioxide production, as well as providing new KOH marketing opportunities in the US.

INEOS Enterprises has a diverse range of businesses and Reed says it is continually seeking to add to the portfolio. "We've got a number of active opportunities on the boil as we move forwards," he says.

The takeover of Charter Plastic's assets in Titusville, Pennsylvania was carried out by WL Plastics, a wholly owned subsidiary of INEOS O&P USA since November 2016. WL Plastics says the deal further diversified its portfolio, expanded its customer base and allowed it to enter new regional markets.

"It is a nice addition," says Mike Nagle, CEO of INEOS O&P USA, who adds that WL Plastics is now building a second HDPE pipe manufacturing facility in Lubbock, Texas, which is due onstream in the middle of 2024.

Overall, INEOS businesses generally enjoyed a good performance last year. It was a year of two halves for many, characterised by a strong first six months, with demand then slowing towards the end of the year. Some, however, did exceptionally well, in particular INEOS Oxide, Oligomers and O&P USA, says Bob Learman, Chairman of the three

businesses. "Oligomers had its best-ever year, Oxide its second-best and O&P USA its third," he notes.

Geir Tuft also notes a "fantastic year with record results" at INOVYN; the company is now seeing the benefits of restructuring after buying out partner Solvay along with the investments made to date.

It is the same scenario for INEOS Aromatics. "Not only did our earnings exceed budget for the second year running, we were one of a minority of businesses that beat previous year's EBITDA performance, says CEO Stephen Dossett. "We also surpassed our fixed cost savings target, significantly improved our safety, health and environment performance, reduced our working capital needs and ran our assets more reliably than previous years."

However, he notes there is still more to do. "We have some work to do on the organisation, build up some of the support structures and people development, and also weather the current difficult trading environment."

It is unclear how long the difficult trading conditions will linger.

As history has proven, whatever the markets throw at INEOS, the lean and efficient operating model adopted by all its businesses demonstrates not only the group's resilience, but a readiness to seize new opportunities as, and when, they arise.

By Elaine Burridge



*"We are now moving into other product segments and will launch more bio-based products in 2023"*

**Tobias Hannemann,**  
CEO of INEOS Oxide





# Stepping up sustainability efforts

INEOS will spend more than €6bn to back its overall sustainability plans, part of which is to develop new products and technologies to support the path towards a true circular economy. Many of the products INEOS makes are essential to modern life and the group is continuing to forge ahead with creating bio-based feedstocks and securing renewable raw materials.

It therefore comes as no surprise that several INEOS companies such as Oxide, Phenol, INOVYN, Styrolution and O&P USA have announced multiple sustainability initiatives in the past year or more.

INEOS Oxide, for example, has launched a bio-attributed ethylene oxide and CEO Tobias Hannemann says it has had good uptake from the cosmetics and consumer goods sectors. “We are now moving into other product segments and will launch more bio-based products in 2023,” he notes.

INEOS Phenol has introduced its first bio-attributed product line for phenol, acetone and alphas-methylstyrene as well. Called Inviridis, it is made from bio-attributed cumene at sites in Antwerp, Belgium and Gladbeck, Germany – first sales have already been made into various applications.

For INEOS INOVYN, its sustainable



methacrylate copolymer NAS ECO and styrene acrylonitrile copolymer Luran ECO (both certified by ISCC Plus), PS ECO 260 MR85, two specialty Novodur ABS grades with recycled content, and bio-based Styrolux and Styroflex styrene-butadiene copolymer grades.

“We’re working on having eco-grades across our entire portfolio and we’re nearly there,” says INEOS Styrolution CEO, Steve Harrington. “We want them to be drop-in, virgin-like grades so our customers don’t need to change their moulding conditions.”

A deal with waste management company Indaver will give Styrolution access to styrene produced

from post-consumer waste, enabling the production of food contact-grade PS from recycled feedstock. Indaver is planning to build a depolymerisation facility in Antwerp with start-up scheduled for 2024.

Another agreement with SK picglobal in South Korea will also give Styrolution renewable styrene from the former company’s plant in Ulsan. Plans are for SK picglobal to start producing and supplying the styrene upon obtaining ISCC Plus certification, expected sometime in 2023.

Meanwhile, working with INEOS O&P USA among others, fast-food chain McDonald’s conducted a successful trial in Savannah, Georgia on using clear cups sourced from a 50:50 mix of post-consumer waste plastic and bio-based materials.

INEOS O&P USA says ongoing trials with one of the world’s largest restaurant companies “presents a significant step forward in developing renewable products, reducing emissions and waste”.

CEO Mike Nagle highlights a significant move to secure renewable power for its Chocolate Bayou site, which consumes huge amounts of energy. The company has agreed a purchase agreement with NextEra Energy Resources to take the entire output from a 310MW solar plant to be constructed in Bosque County, Texas.

The INEOS Hickerson Solar Farm will be built, owned and operated by a subsidiary of NextEra. Construction is scheduled to start in the first quarter of 2024 with commercial operations slated to start by December 2025.

Nagle says output is projected to cover the net purchased electricity load of all 14 of the company’s manufacturing, fractionation and storage facilities in the US, also allowing for future growth and expansion.

*“We’ve got a number of active opportunities on the boil as we move forwards”*



**Ashley Reed,**  
Chairman of INEOS Enterprises

epichlorohydrin, Reodrin, has gained ISCC-Plus certification. The company says it is the first ISCC Plus-certified producer of epichlorohydrin, which should enable far reaching deployment along the value chain.

INOVYN is continuing to gain traction in the market with its Biovyn PVC, a drop-in product made entirely from renewable feedstock and certified by the Roundtable on Sustainable Biomaterials.

And INEOS Styrolution has developed several drop-in, bio-based grades. These include amorphous styrene methyl



## Full of eastern promise

It was only ever a matter of when – not if – INEOS would expand its presence in China in a big way

Up until last year, INEOS had pockets of production scattered across China that were gained through various acquisitions. Things rapidly changed in 2022 when the company became a partner in one of China’s largest joint ventures, and possibly the first ever “signed” agreement in the country without a face-to-face meeting because of the COVID-19 pandemic.

In all, INEOS agreed to four separate petrochemical joint ventures with SINOPEC. The first three were announced together in July 2022, marking a significant reshaping of INEOS’ production and technology in China. Combined, the agreements are worth \$7bn and are expected to generate a return of approximately \$10bn from 7m tonnes/year of capacity.

Under terms of the first part of the deal, INEOS has taken a 50% share in SINOPEC subsidiary Shanghai SECCO Petrochemical, which has production

## Huge potential for Asian Acetyls

LOTTE INEOS Chemical announced plans in April 2023 to build a new VAM plant in Ulsan, South Korea. Named VAM3, the extra capacity will add 250,000 tonnes/year, taking total output to 700,000 tonnes/year when it starts up by the end of 2025.

The company has acquired additional land next to the existing plant on the site and has now started front end engineering design work with LOTTE Engineering & Construction.

David Brooks, CEO INEOS Acetyls, says the investment will support its customers’ growth

plans in both Northeast Asia and globally. INEOS Acetyls has previously undertaken some debottlenecking of its acetic acid production in China and South Korea, as well as agreeing on new build opportunities with SINOPEC.

Brooks explains that slightly more than half of the world’s acetic acid capacity is located in China, which exports some of its supply to other markets in Asia, as well as to India. He says annual market growth for acetic acid in Asia over the next five to 10 years will be nearly 7-8%, the highest in the world.

capacity in the Shanghai Chemical Industry Park (SCIP) of 4.2m tonnes/year, including for ethylene, propylene, polyethylene (PE), polypropylene (PP), styrene, polystyrene (PS), acrylonitrile, butadiene, benzene and toluene.

As part of the second agreement, INEOS agreed to set up a 50:50 joint venture with SINOPEC with the intention of increasing acrylonitrile butadiene styrene (ABS) capacity up to 1.2m tonnes/year to meet rapid demand growth in China.

INEOS Styrolution was already in the process of building a 600,000 tonne/year ABS plant in Ningbo. This production facility, which is scheduled to go into operation by the end of 2023, will become part of the joint venture. The partners will also work together on two more ABS plants of 300,000 tonnes/year each, based on INEOS Styrolution's Terluran technology. One of these units will be built in Tianjin. The location for the third has not yet been decided.

The ABS joint venture in China was a key milestone last year for INEOS Styrolution. CEO Steve Harrington notes that building its Ningbo ABS plant as a standalone project in the absence of a local partner was already "quite unique", but believes that the partnership with SINOPEC will bring great synergies and even more opportunities in the future.

"This venture is transformative for us in terms of our growth journey. Long term, China is a great bet," he says.

A third deal between INEOS and SINOPEC centres on PE, with the companies proposing to set up an equally-owned joint venture to build a 500,000 tonne/year high density polyethylene (HDPE) plant in Tianjin, as well as at least two future 500,000 tonne/year HDPE plants to produce INEOS pipe-grade under licence. The Tianjin plant is expected to be fully operational by the end of 2023.

This was followed in December 2022, with an announcement that INEOS and SINOPEC has made a fourth agreement under which INEOS is acquiring a 50% share in the existing Tianjin Nangang Ethylene Project from SINOPEC. This project comprises a 1.2m tonne/year ethane cracker, which is due to start up in early 2024, along with the downstream HDPE derivative plant. The ABS unit will follow approximately 12 months later.

David Thompson, CEO of O+P Asia, says the agreements represent a huge

## Capacity boost for aromatics in Indonesia

INEOS Aromatics completed a project at its purified terephthalic acid (PTA) facility in Merak, Indonesia, in March 2022, increasing capacity and reducing CO<sub>2</sub> emissions at the same time.

The project raised output from 500,000 tonnes/year to 575,000 tonnes/year and cut carbon emissions by 15% per tonne by installing a larger oxidation reactor, reconfiguring the reactor's heat recovery system and revamping the process air compressor train.

The company says the \$70m investment improved the reliability

and competitiveness of the plant, which was originally operated by BP's petrochemical business that INEOS took over in January 2021.

For INEOS Aromatics CEO Stephen Dossett, a particular highlight this past year was finally being able to visit his new team in Indonesia and Taiwan in person, his trip having been delayed because of the COVID-19 pandemic. "I came back full of ideas and opportunities for how we might grow our footprint in Asia and now, with China reopened for business, I can't wait to get back and complete the journey later this year," he says.



*"This venture is transformative for us in terms of our growth journey. Long term, China is a great bet"*

**Steve Harrington,**  
CEO of INEOS Styrolution

step forward for INEOS and already the company is discussing further opportunities with SINOPEC "We have developed an excellent rapport with SINOPEC and have a very good relationship. My role is to build on that and there are things in the pipeline already," he says.

As well as the HDPE and ABS projects, INEOS is looking at other derivatives to add value, as well as securing an increased supply of ethane feedstock to bring a competitive advantage to the China-based crackers. Currently, there are no facilities to receive ethane shipments at SCIP, nor at the Tianjin cracker being built, but these can be added, Thompson says.

In addition, INEOS is planning to upgrade certain production at SCIP by retrofitting modern technology that it already uses at its site in Cologne, Germany, where the company makes olefins and polymers, along with other petrochemicals. Thompson says INEOS is looking at how to integrate the China production into its global sales network and optimise its position locally.

Another major move by INEOS in Asia last year was the purchase of the entire asset base of Mitsui Chemicals' phenols business in Singapore. INEOS Phenol agreed to pay \$330m for the business on Jurong Island, which brings more than 1m tonnes/year of capacity, annual revenue of about \$750m and has 120 employees.

The purchase, which closed in April 2023, gives INEOS Phenol its first foothold in Asia, complementing existing manufacturing in Germany, Belgium and the US. The Singapore capacity comprises 410,000 tonnes/year cumene, 310,000 tonnes/year phenol, 185,000 tonnes/year acetone, 20,000 tonnes/year alpha-methylstyrene and 150,000 tonnes/year bisphenol A.

"This deal is a fundamental and strategic move for us," says INEOS Phenol CEO Hans Casier. "We are the world's largest producer of phenol and we've been looking to either build or acquire in Asia. We now have local production and will be able to leverage the Asia assets across our global network."

By Elaine BurrIDGE

# Focused on the energy transition



It has been a busy two years for INEOS Energy, the business created at the end of 2020 to compete in the energy transition and build on INEOS' activities in the oil and gas sector.

These activities have expanded steadily since INEOS' acquisition of assets in the North Sea in late 2015. And 2022 has been no exception, with deals signed to acquire oil and gas assets in the US and to bring US natural gas to Europe.

In the North Sea, output is being boosted from existing and new fields, and there has been considerable investment in hydrogen and carbon capture and storage (CCS) technology and projects.

INEOS' move into oil and gas was prompted initially by its desire to establish a thriving domestic energy business in the UK and Europe to support its large petrochemical base and enhance energy and feedstock security – much as shale has done in the US in recent decades, explains INEOS Energy CEO David Bucknall. Successive investments have resulted in a high quality portfolio of oil and gas production in the UK and Danish sectors of the North Sea.

Now, with government and regulatory pressures to reduce industry's carbon emissions, especially since the Paris COP21 meeting in 2015, INEOS Energy has espoused the role of helping support the global energy transition required in coming decades to hit net zero targets.

As a company, INEOS is committed to achieving net zero by 2050, but it maintains that in the interim, to meet society's demands for industrial products, it will invest further in oil and gas while at the same time developing decarbonisation technologies such as hydrogen and CCS that help reduce CO<sub>2</sub> emissions.

Brian Gilvary, Chairman of INEOS Energy, points out that INEOS has in recent years rebalanced its oil and gas mix more towards oil (70:30) by divesting some high-cost, mid-life Norwegian assets and acquiring the Danish assets of HESS Corporation in the North Sea.

As a result, last year it gave the go-ahead to begin new oil and gas production in the Solsort West field from two wells. First production is expected in Q4 2023 and the gas produced will be sufficient to cover 10% of Denmark's consumption.

At the same time, says Bucknall, output from existing North Sea fields in the UK will be increased, by investing in a compression project that will increase gas flow from the wells. Gilvary adds that further expansion in the UK offshore sector is difficult at present but INEOS will

steward operations here until the UK fiscal regime allows it to invest again.

In a further move to bolster natural gas supply in Europe, INEOS Energy signed a long-term offtake agreement with US-based Sempra Infrastructure last December to buy 1.4m tonnes/year of liquefied natural gas (LNG) from Sempra's new export terminal in Port Arthur, Texas.

The LNG will be shipped across the Atlantic and initially landed and regassed at GasUnie's facility at Brunsbuettel in Germany under a further long-term contract.

INEOS will market the LNG globally as well as supply its own industrial needs in Europe. Gilvary comments that by securing the key areas of the value chain across the Atlantic, INEOS "will help alleviate structure energy issues in Europe".

First deliveries are expected in 2027 and the volume may be increased by a further 0.2m tonnes/year when Phase 2 of the Sempra facility comes onstream.

The deal, says Bucknall, will bring around \$10bn worth of gas across the Atlantic over the period of the contract and will bring some price stability to INEOS and EU gas customers, as the selling price will reflect the more stable US price rather than the more volatile EU one.

A large proportion of the natural gas will be used by INEOS and third-party contract customers, with the balance traded in the market.

Just a few months ago, INEOS moved to acquire its first oil and gas position in the US, with the \$1.4bn purchase of Chesapeake Energy's assets in the Eagle Ford shale field in south Texas. The deal brings INEOS 2,300 wells and 36,000 barrels of oil equivalent/day in output, as well as exploration rights across 172,000 acres of land.

The acquisition, says INEOS, is part of its strategy "to build a global integrated portfolio fit for energy transition while offering high-quality energy solutions to its customers". Bucknall says INEOS will bring its production expertise to bear to increase output from the field, focusing on INEOS' strength as an operator rather than drilling risky exploration wells.

Away from actual oil and gas expansions, INEOS Energy has been making investments in hydrogen and CCS – the two cornerstones in its CO<sub>2</sub> abatement approach for the energy transition. The Greensand CCS project in the North Sea has just successfully completed its proof of concept stage and INEOS is also pursuing CCS in Houston, Texas, in a 12-strong industry consortium



**"We have made massive steps forward in energy transition and have a robust sustainability framework in place with our plant roadmaps to net zero"**

**Brian Gilvary,**  
Chairman of INEOS Energy



(see page 14).

In hydrogen, INEOS' INOVYN business is investing in green hydrogen production via electrolysis and the Grangemouth complex in Scotland is planning a major blue hydrogen facility using steam reforming of natural gas, with CCS to abate the byproduct CO<sub>2</sub>.

Also in the hydrogen sector, it has made a £25m investment in the HydrogenOne technology fund, which says Bucknall, helps give it a view of the developments in the hydrogen sector and will deliver dividends in the future. "It's a pure financial play that we can expect a capital return on. It may take time, but there are already some decent revenues in the portfolio companies."

"We have made massive steps forward in energy transition and have a robust sustainability framework in place with our plant roadmaps to net zero," adds Gilvary. "It will become a competitive advantage for INEOS."

Bucknall also emphasises the importance INEOS Energy's trading activities, in oil and gas as well as power,

carbon credits and, in future, hydrogen. "To survive the energy transition we need a healthy trading and marketing organisation to get the most out of what we produce," he says.

It allows INEOS to supply its internal customers and adds an extra dimension to the business that can add value, he adds. It also helps manage risk, especially from price shocks such as those experienced after the Russian invasion of Ukraine.

Gilvary notes that the presence of the trading desk in INEOS Energy was critical in assessing and managing the risk in the US-EU Sempra LNG deal, which took 18 months of planning to set up.

The message is clear – INEOS Energy will continue to invest in oil and gas. The demand is there both internally within INEOS and from external customers, and margins are strong. But at the same time, it will seek to reduce CO<sub>2</sub> emissions and manage the energy transition required by net zero targets. Further deals can be expected, says Gilvary, so watch this space.

By **John Baker**

# Major landmark for CCS

**INEOS celebrated the injection of the first carbon dioxide (CO<sub>2</sub>) into storage beneath the Danish area of the North Sea in March 2023 as part of the INEOS-led Project Greensand initiative**

The successful culmination of the proof-of-concept stage shows the technology works for the Greensand project and paves the way for investment in a large-scale carbon capture and storage (CCS) operation in Europe, notes Mads Weng Gade, head of INEOS Energy Denmark.

Project Greensand is an international 23-strong consortium led by INEOS with partner Wintershall DEA of Germany which aims to capture and store up to 8m tonnes/year of CO<sub>2</sub> in the Siri area owned by INEOS and Wintershall and operated by INEOS.

It is supported by the Danish government through its Energy Technology Development and Demonstration Programme. At the end of 2021, the Danish Energy Agency awarded the project a grant of €26m.

CO<sub>2</sub> will be captured from industrial emitters in Denmark and other north European countries once the capture and transport infrastructure has been developed.

The CO<sub>2</sub> injection achieved in March was a world first, as the liquid injected had been transported cross-border from Belgium to the Danish North Sea and injected purely for climate purpose. The permit was for up to 15,000 tonnes injection in this pilot phase, supplied from INEOS Oxide in Belgium and shipped by container and then special ship from the plant to the port of Antwerp and then across some 500-600km of sea to the injection rig in the North Sea.

Once fully up and running, the amount of CO<sub>2</sub> storage potential will be equivalent to 40% of Denmark's total emission reduction target. The country has set a date of 2045 to achieve net zero carbon.

The project has attracted wide international attention and the first

injection was marked by a ceremony in Esbjerg, Denmark. It was attended by Denmark's Crown Prince Frederick and addressed by video link by Ursula von der Leyen, the European Commission President, who noted that, "This is a big moment for Europe's green transition and for our cleantech industry."

CCS is attracting lots of positive sentiment right now, says Gade, both from industry and governments, and there optimism that the huge investments required to establish a commercial value chain for CCS will attract government support and subsidies. The Project Greensand injection is a sign of tangible progress and shows CO<sub>2</sub> emitters that CCS can be done, says Gade. But a bit like the wind energy industry, the effort will need to be subsidised at first, he adds.

The next steps for INEOS are to fast-track a project to scale up the injection capability, with the aim of being able to store 0.5m-1.5m tonnes/year of CO<sub>2</sub> by 2025-2026 and then to build out to up to 8m tonnes/year capacity by 2030. At the same time, explains Gade, work is beginning to attract emitters as customers to the injection scheme.

"To proceed we need to be clear there are customers in Europe," he says. Gade is hopeful these will be found in Scandinavia, Germany and even Poland. INEOS is already in dialogue with potential customers.

INEOS will also consider using the CCS storage itself to help meet its own carbon reduction targets, but it has other projects under development that it could feed CO<sub>2</sub> into.

To take Project Greensand from here, Gade explains, three key developments are required. "We need more ships of the right size and scale [to transport the waste



CO<sub>2</sub>], we need more CO<sub>2</sub> capture capacity [at emitters], and INEOS needs to increase capacity at the North Sea field."

It all depends, he adds, on the scale that can be achieved. "We will target a small but fast project initially, but if we need to invest more later, we can do so."

The final investment decision (FID) for a full-scale project is expected to be made in the first half of 2024, which would make carbon storage operational from around 2025-2026.

Project Greensand is not the only CCS project INEOS is actively involved with. It is planning to capture CO<sub>2</sub> at its Grangemouth facility and store it under the North Sea through the Acorn initiative being proposed for the northeast of Scotland. And it is a partner in a large CCS consortium in the Houston Area in Texas, US, and in a CCS proposal for the Port of



Antwerp, known as Antwerp@C.

At Grangemouth, INEOS has plans for a large methane-to-hydrogen facility (see page 16), which would produce large amounts of CO<sub>2</sub> as byproduct. This would be captured and transported via existing pipelines to the planned Acorn terminal at St Fergus on the coast, from where it would be shipped out and injected into the depleted Golden Eye North Sea field.

The Acorn project, headed up by Storegga and supported by Shell and others, is still awaiting government funding, but the UK recently announced £20bn more funding for CCS projects over the next 20 years, offering hope that Acorn will be funded shortly.

The project is currently shortlisted for support, after two other projects involving CCS in the northwest and northeast of England were given the go-ahead in 2021.

If it is put on the official government list for development – so-called Track 2 status – it could be operational by 2027, says Storegga.

Andrew Gardner, Chairman of INEOS Grangemouth, explains that INEOS is already doing a lot of work to benefit the Acorn project. It has been assessing the feasibility of repurposing two of the four natural gas pipelines that run southwards from St Fergus, where North Sea natural gas is landed.

These, which are owned by the National Transmission System (NTS), are only running at 25% capacity today as North Sea production has declined. One pipeline, he says, could take CO<sub>2</sub> north after collection from Grangemouth and other industrial emitters, and one could be used to carry hydrogen south from a planned natural gas-to-hydrogen facilities

at St Fergus as part of Acorn as the start of a national hydrogen network.

The aim for INEOS, says Gardner, is to reduce the carbon footprint of the Grangemouth which is a huge energy user, by using hydrogen to fuel power plants and other facilities on the site and at the same time enable CO<sub>2</sub> capture when needed to achieve decarbonisation targets. Linking the site to the NTS CCS and hydrogen system alone could cost £100m, he adds.

Grangemouth would provide the base load of CO<sub>2</sub> for the Acorn system, but once Track 2 status is given it would be possible for INEOS and Acorn to encourage additional industrial emitters to invest in carbon capture and storage, he says, thus making the CCS scheme more cost effective.

In Houston, INEOS is one of 12 →



→ companies that are supporting the large-scale deployment of CCS to help decarbonise the oil and gas and the petrochemical industry in the region, including BASF, Dow Chemical, ExxonMobil, Linde, LyondellBasell, Shell and others.

Their collective efforts in the Houston CCS Alliance could, it is estimated, capture and store around 50m tonnes/year of CO<sub>2</sub> by 2030, and 100m tonnes/year by 2040. The partners alone could capture and store 75m tonnes/year CO<sub>2</sub> and there are ongoing discussions with other industrial operations in the area to add even more capture capacity.

The project envisages captured CO<sub>2</sub> being stored in the US Gulf Coast region in rock formations below the land or seabed to the south of Houston.

But, as in Europe, the consortium stresses that deployment of CCS will require the collective support of industry, communities and government, in terms of regulation and funding from the latter. This is looking promising in the US following President Biden's announcement of the Inflation Reduction Act (IRA) which promises huge funding for climate change projects.

The Biden administration is releasing \$2.5bn in federal funding to help develop carbon capture projects, with \$1.7bn to up to six carbon capture projects where emissions are transported and stored geologically. An additional \$820m is targeted towards large-scale pilot projects that can be used to capture emissions from the power and industrial sectors.

This funding announced in February this year is part of a \$12bn package

for carbon capture projects included in the Infrastructure Investment and Jobs Act signed into law by Biden in 2021. These projects are also able to claim an increased tax credit under last year's IRA, with facilities storing carbon dioxide underground eligible for an \$85/tonne tax credit.

In Antwerp, INEOS and six other companies have committed to developing a carbon capture scheme for production facilities in the Port of Antwerp and build a CO<sub>2</sub> liquefaction and export terminal so the CO<sub>2</sub> can be shipped to offshore storage sites. The project has been designed to offer open access infrastructure. The project will be one of the first and largest multimodal open access CO<sub>2</sub> export facilities in the world, says the Port of Antwerp.

At the end of last year, the European Commission said it would allocate €144.6m to Air Liquide, Fluxys and the Port of Antwerp under its Connecting Europe Facility for Energy (CEF-E) financing programme. The financing will support construction of the shared CO<sub>2</sub> transport and export facilities. The award is an important step towards the final investment decision, which is expected in 2023.

The Port of Antwerp has reserved a site for the terminal at a strategic location in the port and will construct new quay infrastructure for the mooring of CO<sub>2</sub> ships.

The export hub will have an initial export capacity of 2.5m tonnes/year and aims to increase this to 10m tonnes/year by 2030. Air Liquide and BASF will be the hub's first customers.

By John Baker

## Hydrogen key to net zero ambitions

**INEOS believes there is major potential in hydrogen, both as a business opportunity and as a key component in the decarbonisation of its energy production and chemical processes – to help it achieve its net zero carbon emission targets**

Since creating the INEOS hydrogen business unit in late 2020, the company has embarked swiftly on a number of projects to develop its expertise in hydrogen production and sound out the marketplace for hydrogen use in heat





Image: Shutterstock

and Belgium, with later investment also planned for the UK and France.

At the same time, INEOS is developing plans to construct a number of large blue hydrogen projects using steam reforming of methane with carbon capture and storage (CCS), most notably at its Grangemouth site in Scotland but also in the US, at Chocolate Bayou and Green Lake in Texas.

The INEOS Hydrogen business and the green hydrogen effort form part of INEOS INOVYN, the company's chlor-alkali and vinyls business unit.

Geir Tuft, CEO of INEOS INOVYN, explains INEOS' aim is twofold – to develop a hydrogen asset base so it can sell and trade hydrogen, and to help decarbonise INEOS' processes and products using either green or blue hydrogen with carbon capture.

Hydrogen's use as an alternative fuel and as process feedstock will help INEOS sites across the world meet their goals for carbon reduction, as set out in their individual roadmaps to net zero.

But, he adds, development and investment in new technology and markets is costly, and government funding will be critical to the roll out of this green alternative. Aid will be needed not just for capital expenditure but also in operating costs, as the new greener hydrogen will have to compete with existing production from refineries and industrial processes – so-called grey hydrogen.

Its use as a fuel, for example, to →

generation, transportation and industrial applications.

It is no newcomer to hydrogen, however. INEOS already produces around 450,000 tonnes/year of hydrogen, for example, as coproduct in its chlor-alkali electrolysis units and ethylene and acetyls plants. Currently, hydrogen is sold as feedstock or used internally as a fuel.

The aim is to build on this position with the new green hydrogen investments produced by electrolysis of water, says Wouter Bleukx, Business Director Hydrogen for INEOS INOVYN. He points out that with 1GW of installed electrolyser capacity in its chlor-alkali business, INEOS is already Europe's largest operator of such plants.

INEOS has pledged to spend €2bn in Europe over the next 10 years to develop green hydrogen production using established and electrolysis technologies and non-fossil fuel electricity. The first plants will be built in Norway, Germany,

## Acetyls has plans for hydrogen

INEOS' acetyls business, with manufacturing at Hull in the northeast of England, is also looking at how to use its by-product hydrogen and move along its roadmap to net zero, says David Brooks, CEO of INEOS Acetyls. The business is developing a two-armed approach with projects called Prometheus and Novus. Prometheus aims to decarbonise the acetic acid plant, while Novus is aimed at creating a new third-party hydrogen sales business. The acetyls process produces huge amounts of hydrogen, seen in the past as a problem by-product and sold and

dealt with accordingly, explains Brooks.

"In a net zero environment, having hydrogen and how you use it is hugely important. Prometheus will effectively switch our use of gas as a fuel to hydrogen and we will see about 80% reduction in CO<sub>2</sub> emissions on the plant."

"In making that switch, we take a massive step to becoming net zero. Our ambition for the site is to be net zero by 2028. By not selling hydrogen to third parties but using it internally for fuel rather than natural gas, we will cut emissions hugely."

→ replace natural gas in INEOS' ethylene dichloride (EDC) reactors in Norway would double the energy cost and result in €3/kg of added product cost.

The first hydrogen electrolysis plants are now progressing and are able to attract state subsidies, confirms Tuft. Initial work suggests that capital costs are somewhat higher than at first thought but INEOS is keen to gain experience and eventually optimise operations and scale-up electrolyser size to gain economies of scale.

It is still an immature market, explains Bleukx, but INEOS wants to develop a number of different small projects to gain experience in the market and with the technology. Besides three projects in Europe, INEOS is studying a 100MW electrolyser facility in the US within the INEO Olefins and Polymers business.

In Rafnes, Norway, INEOS is planning to build a 20MW electrolyser powered by zero-carbon electricity to produce green hydrogen for use as a fuel replacement in vinyl chloride monomer (VCM) production at the site. The project is currently moving into the front-end engineering and design (FEED) stage, confirms Tuft.

The project will cut CO<sub>2</sub> emissions by around 22,000 tonnes/year by reducing the carbon footprint of INEOS' operations



at Rafnes and could serve as a hub to provide hydrogen to the Norwegian transport sector. The oxygen also produced in the electrolyser will be used in the oxychlorination step in ethylene

dichloride production.

In Germany, at its Koln site, INEOS is planning a 100MW electrolyser to produce hydrogen for use in production of green ammonia. Bleukx explains that the

## Grangemouth's goal is to decarbonise

Plans for significant hydrogen production at Grangemouth are driven mainly by the need to decarbonise the site, which is a large producer and consumer of energy and has stretching net zero carbon emission targets set by the Scottish government for 2045.

Andrew Gardner, Chairman of INEOS Grangemouth, explains that reducing the carbon footprint of the complex is essential if INEOS is to keep the plants running after this date, to continue to provide the products society and consumers continue to demand.

The goal, he adds, is to reduce emissions savings of more than 60% across the site by 2030, by electrification of production processes and shifting from natural gas to hydrogen as a fuel for the power plants on the site, the Petroineos refinery and INEOS' ethylene cracker and downstream process plants.

Investment in a low-carbon hydrogen

plant is the cornerstone of the site's roadmap to net zero. Last year, it asked engineering design contractors to tender for the design of the world-scale plant, which takes methane and steam reforms it to hydrogen and carbon dioxide.

The project will also require an extensive hydrogen network to be built across the site, and further infrastructure to enable third-party access to the hydrogen to help support development of a local hydrogen hub.

Carbon dioxide captured during production will be piped offsite to St Fergus in the north of Scotland to be injected into storage caverns in expired North Sea oil and gas fields (see page 14). This project, known as Acorn, is led by Storegga and backed by Shell and other partners and is currently awaiting for the UK government to give its approval and financial support.

INEOS expects to deliver 1m tonnes/

year of CO<sub>2</sub> to the Acorn carbon capture and storage (CCS) scheme once the hydrogen plant is up and running.

Acorn is currently the third CCS project in the UK, with the two front runners already approved. Gardner is hopeful the project will get the government green light in due course, but says INEOS is pressing on with its hydrogen plans in the meantime.

INEOS already produces coproduct hydrogen at Grangemouth and has recently partnered with Scottish energy company SGN to trial a hydrogen distribution network close to the complex. Hydrogen will be supplied to SGN and transported in a disused natural gas pipeline from Grangemouth to Granton, 29km away. Gardner says it will help determine how the UK's existing transmission network can be repurposed for hydrogen gas.



## Transportation trials and storage underway

With the hydrogen it already produces, INEOS is dipping its toe in the transportation sector. It has partnered with VT Group in the Netherlands to build Europe's first bulk liquid chemical barge powered by low-carbon hydrogen. This will transport raw materials between INOVYN sites in Antwerp and Jemeppe, Belgium.

And in France, INEOS is in the process of commissioning a hydrogen-powered truck to transport polyvinyl chloride (PVC) from INOVYN's plant in Tavaux to Benvic's compounding plant in Dijon.

In the UK, explains Wouter Bleukx, CEO of INEOS Hydrogen, INEOS is investing in a new facility at Runcorn to upgrade and compress its existing low-carbon hydrogen supply to

make it suitable for use in truck and bus fleets. The 5 tonnes/day of fuel-cell quality hydrogen will be sufficient to power 1,000 buses or 2,000 trucks. Runcorn currently makes 7,000 tonnes/year of hydrogen.

The compressed hydrogen can also be used in generators for use at festivals and on construction sites, if green electricity is required, adds Bleukx.

Similar units are planned in future for France and Germany, adds Geir Tuft, CEO of INEOS INOVYN.

INEOS is also planning a large underground hydrogen storage facility in Runcorn as part of the UK's HyNet hydrogen and carbon capture and storage project, currently approved by the UK government.

hydrogen produced will replace a seventh of the natural gas being used to feed the steam methane reformer (SMR) for ammonia production.

Hydrogen will also be made available to other producers on the site and in the local region. When complete, the project will result in a reduction of carbon emissions at Koln by more than 120,000 tonnes/year. The feasibility study for the project is being supported by €770,000 funding from North-Rhine Westphalia.

And in Antwerp, Belgium, INEOS will provide green hydrogen from a 5MW electrolyser to feed into a novel power-to-methanol project, which will also use captured CO<sub>2</sub> as a feedstock. A proposed industrial-scale demonstration unit at Lillo would produce 8,000 tonnes/year of sustainable methanol, saving 8,000 tonnes/year of CO<sub>2</sub> if the feasibility study proves successful. The methanol will be used by customers in the Port of Antwerp.

Antwerp promises to become somewhat of a leader in the new hydrogen economy. INEOS has two other projects here: it has joined with Fluxys to help develop a hydrogen network with open access in the port area, and has partnered with energy company Engie to use 10% hydrogen in the natural gas feedstock for a cogeneration plant on the INEOS Phenol site at Doel in the port area. This will be increased to 20% if trials are successful.

Thirdly, INEOS is planning to use hydrogen as a fuel in its new ethylene



Green hydrogen will be produced at INOVYN's Rafnes site

cracker now being built in Antwerp. Once enough hydrogen is available, says INEOS, the cracker will have a zero carbon footprint.

As a potential customer of 100,000 tonnes/year of hydrogen the cracker – known as Project ONE – could be decisive in the scope of the planned Fluxys network and an important catalyst in the hydrogen market in Antwerp, says INEOS.

For the green hydrogen sector to really progress, says Bleukx, there are four hurdles to overcome: capex needs

to come down considerably; legislation needs to be much more pragmatic; there needs to be much more renewable energy – wind, solar and nuclear; and the demand-side needs to be stimulated and developed.

The goal, he says, is to drive down the cost of the green hydrogen so it can compete effectively in the market. Then it should find markets as a chemical feedstock, in transportation and as an alternative or adjunct to natural gas.

By **John Baker**

# Recycling plans gain momentum

**INEOS continues to make progress in its recycling efforts but there is still much to be done across the industry and value chains if Europe is to reach the recycling goals set out in its Green Deal initiative**

To improve the recycling of plastic packaging, as an example, INEOS has constructed a pilot plant for machine direction orientation (MDO) at its R&D labs in Brussels, Belgium. The technology heats and stretches polymer films to improve their physical and barrier properties.

Using the multilayer MDO process, INEOS O+P Europe will work with partners to develop, design, and produce polyethylene and polypropylene-based flexible packaging film using fewer polymers, increasing recyclability of the end product. Rob Ingram, CEO of INEOS O+P Europe North, says it is the only raw material supplier to have invested in the technology, making INEOS “unique in the market”.

Another important step was joining the Digital Watermarks Initiative Holy Grail 2.0, which aims to address and improve how plastic waste is sorted into different types, improving the quality of the stream. The innovative technology applies a watermark

on plastic products that is detected by special cameras linked to high-speed waste sorting systems.

Work also continues on advanced recycling to handle the plastics that are not suitable for mechanical recycling. INEOS O+P Europe is planning the construction of a unit in Cologne, Germany, with processing capacity of 100,000 tonnes/year, diverting hard-to-recycle plastics waste from landfill and incineration.

“The material will be as good as virgin material, opening up applications for using recycled plastics in areas such as food contact that mechanically recycled plastic cannot address,” says Ingram. The project is still being evaluated, but development work will continue throughout 2023, he adds.

Outside of Europe, INEOS Styrolution has made a “groundbreaking” move to recycle acrylonitrile butadiene styrene (ABS) in China. Working with local recycler GER and Chinese appliance manufacturer Midea, INEOS Styrolution is taking post-consumer ABS waste from items such as refrigerators and washing machines and recycling it back into its ABS ECO grades for reuse.

“No other styrenics company has developed a closed-loop system for ABS,” says INEOS Styrolution CEO Steve Harrington.

INEOS Styrolution is also collaborating with Agilyx and Technip Energies on the development of a 100 tonne/day advanced recycling facility where polystyrene waste will be recycled to purified styrene in Channahon, Illinois, US. The partners are now working on a design and engineering feasibility study, which will form the basis for a financial investment decision to move forward with construction. Engineering work is expected to be completed this year.

Also in the US, INEOS Aromatics has made great strides on the advanced recycling of polyester. Stephen Dossett, CEO of INEOS Aromatics, says a pilot plant was commissioned in Naperville,



Image: Stock

Illinois last year and detailed work is now underway to commercialize “this exciting new process”. He explains that unlike other advanced plastic recycling processes, INEOS Aromatics’ technology works at relatively low temperatures – about 200°C – and is very selective, generating high yields of polyethylene terephthalate (PET) feedstocks purified terephthalic acid (PTA) and mono ethylene glycol (MEG).

Polyvinyl chloride (PVC) is already one of the most recycled polymers in Europe through the industry-led VinylPlus initiative where INEOS INOVYN is leading the way. Last year, almost a third of all PVC waste – over 800,000 tonnes – was mechanically recycled through this system, says Geir Tuft, INEOS INOVYN CEO.

In order to address the remaining waste not suitable for mechanical recycling, INEOS INOVYN has also been putting a lot of resources into developing different advanced recycling methods. Over the past two years, Project Circle has been looking at different methods to recycle PVC from various post-consumer waste streams, ultimately allowing for the recycled materials to be included in INEOS INOVYN’s product range.

In 2022, the company sanctioned the installation of pilot units for two technologies – dissolution and gasification. Dissolution technology VinylLoop was originally developed by Solvay, INEOS’ former joint venture partner in INOVYN.

“These technologies are a major part of us solving the full PVC recycling challenge, including dealing with some of the legacy additives in heritage PVC, for example lead and certain phthalates that are now banned in several jurisdictions,” says Tuft. “We’re making progress, but there is still a lot of work to be done and INEOS INOVYN is leading the way in the PVC industry.”

By Elaine Burridge



***“We’re making progress, but there is still a lot of work to be done and INEOS INOVYN is leading the way in the PVC industry”***

**Geir Tuft,**  
CEO of INEOS INOVYN



Hygienics has expanded its product range

## Hygienics makes its move

Leveraging its experience with producing hand sanitisers during the COVID-19 pandemic, INEOS Hygienics has now turned its sights onto the personal care and household products sector, aiming to become a major player in a market that is worth over €4.6bn in Northern Europe alone.

The hygiene segment is already dominated by large multinational companies, but Chief Operating Officer Rory Tait says the big brands are “entrenched players who have underinvested in their products and are ripe for disruption”.

He explains that demand for sanitisers virtually disappeared as life returned to

some sense of normality last year once COVID-related lockdowns were eased and regulations requiring sanitisation in public places were lifted. Tait says the sanitisation market is now 10% smaller than it was pre-pandemic, spurring INEOS Hygienics to decide in mid-2022 it would diversify into a brand that protects against infection and broader hygiene.

The company has now developed a range of products that addresses the two key vectors of germ transmission – hands and surfaces.

First to be launched last year across the UK, France and Germany was a range of antibacterial hand soaps. Tait says INEOS Hygienics’ promise of science and

performance led it to develop soaps that offered four times more moisturisation than rival brands, as well as more long-lasting fragrance, enabled by phytoncide technology.

The next vector INEOS Hygienics has addressed is surfaces and the company is gearing up to launch a range of products in mid-2023 that are suitable for surfaces, laundry and dishes – again in the UK, France and Germany. Tait expects to expand into other geographies later in 2024, while there are also plans to progress into other product categories where good hygiene is relevant, such as deodorants and body wash.

A key part of INEOS Hygienics’ strategy is to redefine value for the consumer in all its product launches. For example, its focus on performance has led it to create surface products that can be used on all surfaces around the home, unlike traditional cleaners that are designed for specific rooms, so only one product is needed instead of multiple versions to keep homes hygienic. Another example is a laundry detergent specifically designed to provide superior cleaning during cold temperature washes to save money and energy during the wash cycle.

Another big milestone in 2022 was the launch of its Go Humans Academy, an online streaming service to bring to life INEOS Hygienics’ purpose of helping people live better and longer. To that end, INEOS Hygienics is partnering with its sports ambassadors, doctors, psychologists and nutritionists to create a suite of modules designed to help educate people in becoming healthier and to promote mental and physical wellbeing.

By Elaine Burridge

## Revenue boost for Belstaff

Belstaff CEO Fran Millar says 2022 was a year of consolidation and growth as the clothing retailer continued to seek and acquire new customers, also diversifying its channel mix with a keen focus on enhancing its wholesale presence and distribution strategy.

“We’ve made big strides and huge improvements,” says Millar, pointing out that the business posted double-digit revenue growth in 2022 and hit £74m, the highest revenue in its 100-year history. She adds that the focus this year is to continue improving its

e-commerce platform and refit existing stores so they are more aligned with Belstaff’s evolving product offering.

A key aim for 2023 is also to ensure that all Belstaff’s stores are as profitable as possible. Millar says Belstaff is reappraising its presence in the German market, where it has a large customer base and brand awareness. The company also has plans to open another full-priced store somewhere in mainland Europe and is currently considering Barcelona, Spain, to tie in with the upcoming 37th Americas Cup

competition.

At some point in the future, Belstaff wants to expand into Asia, where historically British heritage brands have good traction. But Millar is keen to get the entry right – you only get one chance, she says. It is likely Belstaff will enter the South Korean market first, then extend into Japan, and from there into China.

By Elaine Burridge



# Grenadier hits the road

An expedition like no other. That was INEOS' description of its global media event held for the motoring press in the first quarter of 2023. And the description is certainly very apt for INEOS' own journey in building its Grenadier 4x4 offroader, given that the group's experience in manufacturing chemicals is vastly different to building a car from scratch.

That difference was particularly marked last year as INEOS Automotive faced several challenges. INEOS prides itself in its procurement expertise in the chemical industry, but the car industry is a very different ballgame, as the automotive team discovered.

The automotive sector has a complex supply chain and suffered from severe shortages of components last year due to several factors, the biggest being the ongoing impact from the COVID-19 pandemic and the Russia-Ukraine war.

"As a new entrant building its first car, we didn't really understand and suppliers weren't giving us their full attention," concedes Ashley Reed, Chairman of INEOS Automotive.

Nevertheless, despite the difficulties in sourcing components – around 2,400 in total from 400 different suppliers – the first Grenadier models started rolling off the production line in increasing numbers from October 2022.

One of the key changes last year was a refreshed and "strengthened" leadership team, targeted with taking INEOS Automotive to the next stage

of its evolution, essentially becoming a sustainable and profitable business. Lynn Calder officially took over as CEO in December and Hans-Peter Pessler, a former senior executive from Magna Steyr that manufactured the G-Wagon for Mercedes, became Chief Operating Officer.

Earlier this year, 140 journalists put the Grenadier through its paces during Expedition 1.0, a 32-day, 1,200-mile drive from John O'Groats in Scotland to the car's namesake, the Grenadier pub in Belgravia, where the vehicle was conceived.

Calder says she is really pleased with reviews by the motoring press so far. Top Gear was full of praise: "Amazing off-road, surprisingly good on-road, fantastic interior", while Autoexpress rated its offroad capability as "seriously impressive". Car Magazine added that the vehicle was "a great start" and the "newly assembled INEOS Automotive team have done a good job".

"In general, people really got the point of what we were trying to achieve with the car," says Calder. "The team really nailed the offroad capability, but what really surprises a lot of people is how enjoyable it is to drive on road."

There were a few less-positive comments, mostly relating to the steering that Calder says INEOS will seek to optimise, although she adds that the

steering system along with the ladder frame and solid beam axles, is "what gives the Grenadier its uncompromised off-road capability".

The UK, Europe, Australia, New Zealand and South Africa are the first markets to receive the car, with INEOS Automotive also gearing up to launch Grenadier in the US in the fourth quarter of 2023.

Grenadier will be sold there through dealers, as legally required, while in all other markets it is available through agents. Calder expects to have 150 agents in place across the UK and Europe by the end of 2023 – helping to meet targeted sales of 30,000 vehicles per year.

Production of a pickup version, with a double cab and slightly longer wheelbase, is well advanced and also due to launch later this year. "We think it will be very well received, especially in markets like Australia and the US," adds Calder. Design and engineering of a battery electric model is also progressing, with production slated to start in 2026.

A hydrogen version could be another option in the future and INEOS has already built a first Grenadier demonstration model. However, cautions Calder, although INEOS is excited about hydrogen as a powertrain option, timing of further development will remain uncertain until there is clear direction on hydrogen infrastructure.

While the many challenges faced in entering the automotive sector have, at times, been overwhelming for the team, INEOS Automotive has certainly achieved the vision of INEOS Group Chairman and CEO Jim Ratcliffe – to build an uncompromising 4x4.

"There are not many successful entrants into the automotive industry," says Reed. "The Grenadier is a great quality car and INEOS is gaining a lot of credibility and positive kudos for that."

By Elaine Burridge

Jim Ratcliffe's dream has become a reality





## Another daily mile-stone

Few would have thought that children running around a field at a primary school in Stirling, Scotland, would grow into the phenomenon it is today. Yet The Daily Mile, having marked its 10th anniversary in 2022, has extended its global footprint and now has more than 4m children participating across 90 countries.

In April 2023, the initiative reached another landmark in the US, with 1m children across all 50 states and Washington DC taking part.

The sheer scale of The Daily Mile today would have been unimaginable to founder, Elaine Wyllie, when she started the program in 2012.

"I had no expectation whatsoever that it would take off like it has," she says. "The

provocation was that the children at my school weren't fit, so I suggested taking a class out for a run around the field every day for 15 minutes."

Within the first month, she had seen a noticeable change in both their physical health and mental wellbeing. Above all, the children thought it was fun and enjoyed being outside each day, running or jogging at their own pace.

"The children wanted to keep doing it and then other classes started to join in," she says. "We could see we had something that was universal: the children loved it; it was sustainable; it cost nothing; and it was transferable to other schools. There were no barriers to entry and it was clear it could work across different countries, continents

and cultures."

Numerous studies have proven that those 15 minutes a day of self-paced exercise are beneficial for pupils' mental, physical, social and emotional health. Today, with INEOS' support, around 18,000 schools and early years settings are using The Daily Mile to help improve pupils' fitness and health.

"INEOS is a driving force in elite sport and brought their vision, ambition, determination, and grit to The Daily Mile. We've since had Eliud Kipchoge and the All Blacks come and participate with the children, and we've had Mercedes F1's George Russell and Lewis Hamilton get involved as well," says Wyllie. "That's the beauty of being part of INEOS – you never know who's going to come onboard next. It's just been unbelievable."

"I'm very ambitious for The Daily Mile and believe it should form part of the health and wellbeing curriculum in every school," she adds. "It can change children and schools; it improves focus and behaviour and increases happiness."

By **Andy Brice**

## Forgotten 40 is life changing

The scheme has had a significant impact on children's lives



Now in its final year of funding, INEOS' Forgotten 40 project continues to demonstrate the immeasurable impact it has had on the lives of so many underprivileged children across the UK.

The brainchild of INEOS owner Sir Jim Ratcliffe, the project was launched to alleviate poverty and help primary school children and their families who are struggling financially and in desperate need of support. The name of the initiative, Forgotten 40, refers to the 40% of primary school children in the UK who are currently living below the poverty line.

After a successful rollout to 20 carefully selected primary schools as part of a pilot programme in 2020-2021, INEOS subsequently added a further 80 schools from some of the most deprived areas of the UK, pledging each £20,000 a year for three years that they could spend on the children as they liked.

"A lot of the funding being put →

→ into education right now is linked to attainment or achievement. Instead, we wanted headteachers to be able to look at their individual schools and communities and see what it was that the children and their families really needed,” says Sheila Loughlin, one of the five former teachers helping to manage the initiative.

“The schools have been inspired and feel very privileged to be entrusted with £20,000 and have the autonomy to spend it as they want. One headteacher told us it had helped them give the children their childhood back.”

Each school has carefully assessed the specific needs of their children and communities and while some of the money has been used to buy basic items like clothing and shoes for the children, or put it towards food and fuel, there have also been opportunities to find more creative ways of spending it, says Loughlin.

“The schools have been able to provide the children with cultural experiences and trips that they just wouldn’t have had the chance to do before. There have been visits to beaches, forests and zoos. Some have had therapy dogs and spent their money on children’s mental health. One school even bought a small caravan on the coast where parents and their children could stay for their first ever holiday.”

With their budgets already stretched, the Forgotten 40 scheme has been a welcome relief for the headteachers involved. Launched against a backdrop of a global pandemic and widespread economic uncertainty, the schools themselves have certainly never been under greater strain, says Loughlin.

“It’s become very clear over the last three years that it’s getting more and more challenging for schools,” she says. “As the other services and support falls away, schools are having to pick up everything from food and clothing to social care and mental health.”

The feedback for the project has been overwhelmingly positive and the effect on the children themselves has been lifechanging.

Loughlin and the rest of the Forgotten 40 team regularly meet with the headteachers to share stories and ideas, and highlight common challenges.

As the project draws to a close, it is hoped that these experiences can help shape future government funding so even more schools have the ability to alleviate the impact of poverty and better support young children and their families.

By **Andy Brice**



## Six Rivers model proves sustainable

**Such has been the success of INEOS’ Six Rivers conservation project that it has not only spawned a host of juvenile salmon that now swim in Iceland’s waterways but an entirely new initiative in Tanzania as well**

Six Rivers Iceland started in 2019, the not-for-profit conservation programme hoping to reverse the rapid decline in the North Atlantic salmon population, which has fallen to a quarter of the levels seen in the 1970s.

With Iceland among the last remaining havens for wild salmon, INEOS Chairman Sir Jim Ratcliffe, himself a keen fisherman, pledged investment into protecting their habitat and working with the local communities to ensure the fish could thrive. The project now manages several rivers, including the Selá, Hofsa, Sunnudalsá, Hafralónsá and Midfjardara in the north east of the country.

“A year ago, Iceland recorded a 40 year low in returning salmon. North Atlantic salmon is in peril across the region, and we want to make sure that doesn’t have a significant impact there,” says Peter Williams, Group Technology Director of INEOS, and Head of Investor Relations.

“Our overall aim is to make sure that salmon numbers don’t decline. We want strong, sustainable Atlantic salmon population supported through ongoing conservation and research and paid for by the income from fishing on the rivers,” he says.

Over the past year, Six Rivers Iceland has continued to make great strides –

from the creation of salmon ladders that enable access to breeding grounds, to the planting of trees and plants to generate biomass in the rivers for the salmon to feed on. New parts of the river are being opened up and tagging has allowed huge amounts of data to be gathered about their behaviour and movements as they mature into a smolt, adapt to salt water, and move to the sea.

“We’re opening up new parts of the river by relocating adults before they spawn and now have cohorts of juvenile salmon coming through that will hopefully help sustain and grow the population,” adds Williams.

The research was recently shared at the third International Salmon Symposium on the Future of Atlantic Salmon that took place in Reykjavik in April 2023. The two-day event featured leading experts and academics from Iceland, Norway, Denmark, North America, Ireland, Africa, and the UK who discussed challenges, opportunities and best practice.

“Six Rivers Iceland is a long-term project but with some good short term actions,” says Williams. “We’ve shown that you can work with local communities and reinvest income to pay for conservation, so that in due course it’s a self-sustaining model that can be transferred to different regions.”

Indeed, in 2022, the project was extended beyond Iceland with the launch of the new Six Rivers Africa project in southern Tanzania.

“Although quite a different project and a wildly different environment, the principles are the same,” he says.

It aims to support and protect a large conservation area within a former game reserve and to help the local fish flourish. Work has already started on environmental DNA work on the rivers to map the species in the area.

By **Andy Brice**



# Sports teams seek the X factor

Team principals, managers and coaches came together at the operations centre of the Mercedes-AMG Petronas F1 Team in March 2023 to hear INEOS Sports' vision for greater collaboration and integration across sports, dubbed INEOS X.

"INEOS X is a structured programme that tries to connect all of the INEOS sports teams to share best practice, improve knowledge and boost performance," says James Morton, INEOS X Programme Director and Professor of Exercise Metabolism at Liverpool John Moores University. "Our vision is to become the most innovative and collaborative performance network in global sport."

"The better you are, the harder it is to get better," adds INEOS' Director of Sport, Sir Dave Brailsford. "People are pushing the boundaries of performance all the time but how do we stay ahead of the competition? The worst we should be is as good as the best. We have within our grasp the potential of creating an internal programme within the INEOS sports teams that could be the envy of the world."

Morton joined the team in October

2022 to support Brailsford as they tried to connect the teams and individuals to build a multi-disciplinary community to share ideas and solve problems.

Over the space of a few months, Morton led a scoping exercise and interviewed a cross section of people in different roles within the INEOS sports network. The aim was to identify the many different approaches, concepts and philosophies that existed, while also highlighting common challenges.

The 35 interviews also revealed the key communities of practice within each sport – those individuals involved in the different teams who held similar positions, such as the coaches, human performance specialists, performance engineers and sports medicine practitioners.

"Essentially, with INEOS X we're looking sideways across the sports to help people learn from one another," says Morton. "The point of this programme is to benefit from the 'power of peers'. Of everyone we interviewed, 80% of them had only ever worked in one sport. That means they only know one way of doing things, which actually highlights the issue and the benefits of INEOS X."

Morton has since launched a six-month pilot programme as a proof of concept to determine how the various sports can work more closely and better interact.

As part of the process, a range of different online and in-person learning activities have been scheduled each month, with the different communities invited to get together to share ideas and knowledge.

As an example, representatives from OGC Nice and the Mercedes F1 Team joined the Grenadiers in May when they race in the Giro d'Italia. Some of the cycling team will later be heading to Kenya, Africa, to visit the renowned Kaptagat camp – Eliud Kipchoge's Kenyan training centre, to learn about altitude training.

"What we have today is pretty extraordinary; we have great assets and are delivering great results," concludes Jean Claude Blanc, INEOS Sport CEO, "but what we're trying to do here is build a global sports platform and put together all these different pieces to gain awareness for the INEOS brand and businesses. I see this is a fantastic opportunity."

By **Andy Brice**



Discussing the INEOS X concept at the Mercedes F1 operations centre in Brackley, UK



Image: C. Gregory

New challenges,  
same ambition

## Doing all the leg work



Image: C. Gregory

Pedal power is returning to next America's Cup competition, with the racing boats making use of a squad of specially-trained cyclors – or cycling sailors – to propel them through the water at speeds of up to 50 knots.

The concept of cycle-power helped Team New Zealand win the Cup in Bermuda in 2017 and the latest rule changes mean legs are once again going to be employed to power the AC-75 boats rather than arms.

Fortunately, INEOS Britannia finds itself in the unique position of being able to access the insight and skills of not only the Grenadiers cycling team but a host of other athletes, coaches and engineers from across the INEOS Sports group, says Ben Williams, Head of Human Performance.

“The Cyclor Project has been trying to transfer our knowledge from 36th America's Cup, where we were doing upper body hand cranking, to understanding how we convert our current athletes to lower body,” says Williams, who is working across both the sailing and cycling teams. “We'd be naive to think we could reinvent the wheel overnight by looking at it for ourselves. The one thing

about the America's Cup is you don't have a lot of time. I think that's where the main competitive advantage will be. I think we gain time.”

“That's what's really exciting about INEOS Sport, that we can mobilize really quickly, with a lot of smart people with a lot of knowledge and we can implement in our own environments quite quickly if we get on the phone and discuss those areas.”

Britannia recently joined the Grenadiers on a training camp in Mallorca to take part in testing and trials, while the Mercedes F1 team has been helping to determine the best design solution to accommodate the eight-strong crew of five sailors and three rowers on the boat.

The sharing of ideas and cross-pollination of knowledge has been fundamental to the project's progress so far, he says, helping with the biomechanics, aerodynamics and talent ID aspects of creating a winning team of cyclors.

Much of the past year has been spent researching an optimal solution to the challenge from both an engineering and physiological perspective – from generating the power onboard the boat to assessing the needs of the crew in terms of physiology, physiotherapy, and strength and conditioning.

By **Andy Brice**

## All hands on deck

The 37th America's Cup taking place next year may mean a new venue, new boats and a new team – but one thing has not changed, INEOS Britannia's ambition to finally bring the coveted Auld Mug back home.

The publication of the 86-page Protocol outlining the rules for the next competition has meant a change of tack for the British challengers. The boats are now lighter, the foils larger and the crew smaller. Besides the AC75 they will be racing in, Ben Ainslie and his team will also have a smaller AC40 foiling monohull at their disposal that will be used for the Youth and Women's events.

Another 40 foiling monohull test boat, the T6, has also been unveiled – designed and built-in collaboration with Mercedes-

AMG F1 Applied Science, a division of the Mercedes-AMG Petronas F1 Team.

Since September 2022, the team has been based at its winter training camp in Palma, Mallorca and will stay there throughout the spring to practice in the T6 test boat before eventually relocating to Barcelona, Spain – the location for the 37th America's Cup.

"One of the biggest landmarks for us has been the launch and development of T6, our one and only test boat for this next America's Cup that has a number of benefits for the team," says Ben Ainslie, CEO and skipper of INEOS Britannia. "It's the first boat that our new partnership with INEOS, Britannia and the Mercedes Formula One Team have designed and built. That gives us invaluable insight into the challenges of designing and building our race boat for the next America's Cup and helps us to analyse and fine tune our design tools to ensure they are as accurate as they possibly can be."

"We were incredibly fortunate to be part of the INEOS Sports group and that provides a huge amount of resources

against a very broad spectrum of sports performing at the very highest level in sports," he says. "Mercedes Formula One has unrivalled success in the F1 world, and that's been a huge learning experience and opportunity for INEOS Britannia to tap into that. We also have very close collaboration with the Grenadiers, one of the world's leading cycling teams, and the obvious benefits from the cyclists that are now incorporated in the America's Cup yacht design."

"We're looking forward to sailing on the America's Cup race course for the first time, learning more about the conditions in Barcelona," adds Ainslie. "And of course, we have two America's Cup warm up regattas in the AC40 one-design boat. That will be a great opportunity for the teams to line up against one another and to race for the first time in anger. No doubt they'll be plenty of learnings from that, which all teams will take through to the America's Cup next summer in Barcelona."

By Andy Brice

## A game changer for OGC Nice

This season has been one of transition for OGC Nice, with changes to the management and structure of the club aiming to realise its long-held ambitions of being named among the footballing elite.

OGC Nice has been making good progress under new manager Didier Digard, who led them on a long unbeaten run in the league at the start of the year and to the quarter finals of the Europa Conference League for the first time in 63 years.

"Our objective is to become a top six Ligue 1 club and be able to qualify regularly in European competitions. We therefore need to step up the way we operate," says CEO Fabrice Bocquet. "That means working hand in hand with Florent Ghisolfi, recently recruited high level Sport Director, reinforcing different aspects of the club in terms of expertise – everything relating to fitness, medical and all other aspects of optimization of performance."

Bocquet's priority since taking the

role in November 2022 has been putting a framework in place to achieve these goals, building on the club's culture and becoming fully part of the "INEOS ecosystem".

Supported by new INEOS Sport CEO, Jean-Claude Blanc and Sir David Brailsford, Bocquet and the management team are focused on a plan to help make the club more competitive by addressing all aspects of sports performance, business operations and brand development.

"All these pillars are very important for us going forward for the development of the club," says Bocquet. "Today, OGC Nice is more a regional brand known at the French level but the objective for us is to grow."

"We have embarked immediately on a program to improve the Club training centre. We also need to develop the business side of the Club through new commercial and sponsorship activities," he says.

He is also keen to tap into INEOS' ethos of shared learning and wants to collaborate with its other sports teams to draw on their expertise.

This includes plans to become more closely integrated with Swiss side FC Lausanne-Sport, cultivating a talent pipeline and sharing ideas and best practice.

There are many synergies across the different sports and specialties that can



be harnessed, he says, such as the performance and nutrition knowledge of the Grenadiers and the commercial expertise of Mercedes F1, for example. Similarly, he also hopes to work with the Britannia sailing team and the New Zealand All Blacks in the near future.

"For me, this is just the beginning – there is so much untapped potential," he says. "Since I've joined, I can feel the ambition at the club in terms of sports strategy, investments and infrastructure projects. We're not just trying to reproduce what's been done in the past but think outside the box. None of us want to stick with the status quo; we want to break boundaries."

By Andy Brice

Founded in 1998, UK-headquartered INEOS has grown to become one of the world's largest chemical companies. It comprises 34 businesses, employs 26,000 people globally and achieved annual sales in excess of \$65bn. The vertically-integrated chemicals producer has 194 manufacturing sites in 29 countries, and boasts a diversified portfolio serving the petrochemicals, oil & gas and consumer markets.

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