EVONIK
Leading Beyond Chemistry

C4INSIGHTS®

Evonik Oxeno News & Updates

"We do not shape our future on our own – it grows from the courage to take new paths together."

FRANK BEIßMANN, MANAGING DIRECTOR EVONIK OXENO

FOREWORD

Dear readers,

especially in challenging times like these, we firmly believe that it is essential to look beyond the current situation and keep our long-term direction and future resilience in focus. Especially now, it is crucial to not only maintain contact with our partners, customers, and suppliers, but to continue strengthening those relationships.

A good example of what such cooperation can achieve is our "Power2ValueChemicals" project, in which we are working with partners to make carbon dioxide (CO_2) usable as a raw material. It is a ground-breaking collaboration whose results are drawing global attention.

Ten years ago, we began converting FCC-C4 streams from refineries into value generating products outside the gasoline pool – another pioneering project. Today, the former pilot has become an indispensable part of the chemical value chain in the northern Ruhr region in Germany.

"Turnaround" may sound like a pause – but for us, it means full activity. Our Oxeno colleague Oxana Siegel and her turnaround team tell us, how collaboration and expertise form the foundation for safe plants and a strong future.

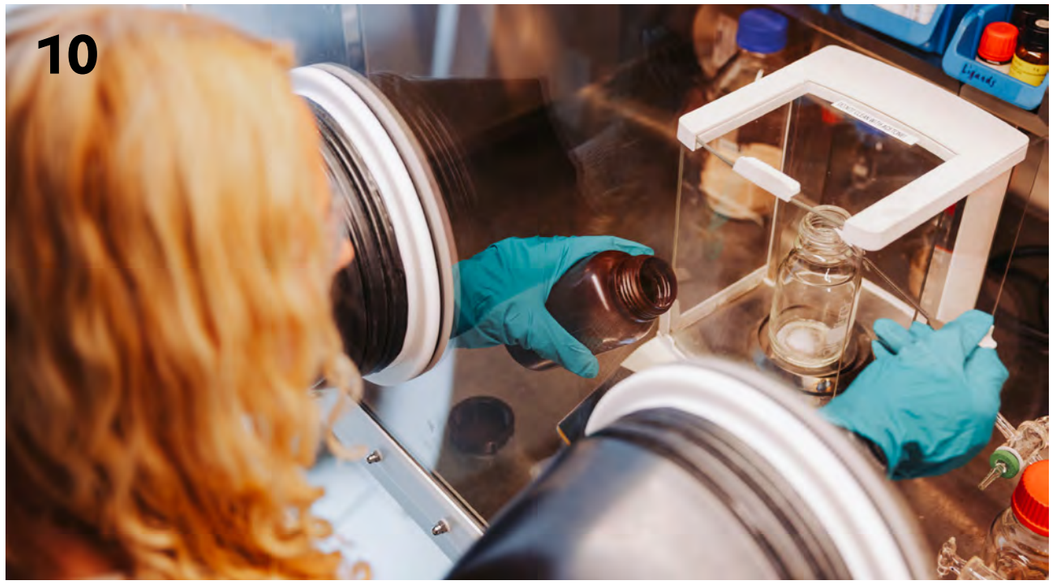
In that future, we will only be successful in the long-term, if we act transparently and responsibly. That is why sustainability is a success factor for us, a strategic pillar, and above all, a matter of credibility.

We safeguard not only our own long-term viability, but also that of our partners, customers, and suppliers through cooperation that is both reliable and flexible. This applies in particular to our decision-centric planning platform, which we developed and implemented together with a trusted partner.

We share our knowledge and experience in numerous associations. Through these networks, we also seek direct contact to provide various stakeholder groups with well-founded information. We engage in public discussions and answer questions from the community.

We do not shape our future on our own – it grows from the courage to take new paths together. By combining our strengths, we create solutions that enable us to shape the future of C4Chemistry – together!

Best regards, Frank Beißmann



CONTENT

A distinctive landmark of the project is the K2020 column. At a height of 90 meters, it is the tallest in the Marl Chemical Park. Its installation was spectacular: the column arrived in three sections and was welded together while suspended from a crane – a technical masterpiece. Today, the column does far more than just processing FCC-C4. It even helps stabilize the hot water network of the Marl Chemical Park. In doing so, it contributes not only to process safety but also to the site's economic efficiency – yet another example of this unit's versatility and sustainable value.

FCC-C4: An idea that came at exactly the right time – and today sets new standards

Oxeno is the only company worldwide capable of converting FCC-C4 streams from refineries into value generating products outside the gasoline pool – and we have been doing so for more than 10 years. What began in 2015 as a pioneering project has since become an indispensable part of the chemical value chain in the northern Ruhr region in Germany.

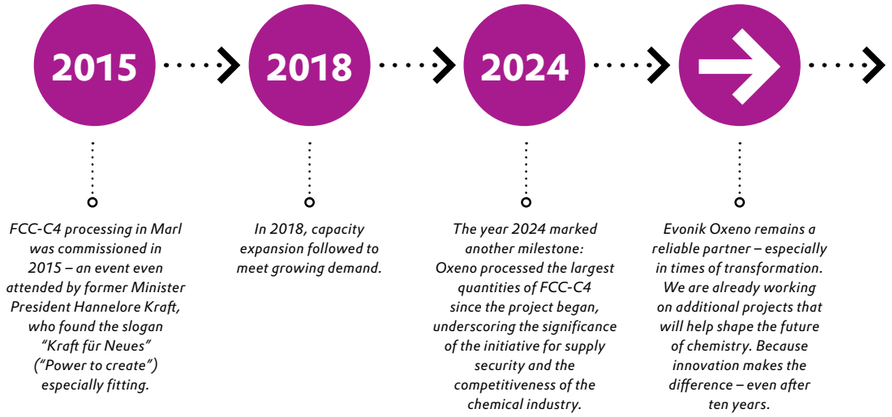
A LONG HISTORY – AND THE RIGHT MOMENT

The idea of processing FCC-C4 had already been discussed at Oxeno more than 15 years ago – multiple times, and just as often dismissed. The reason: a project must find just the right moment. Years ago, we faced a challenge: demand for C4 chemicals was increasing, while traditional sources were stagnating. FCC-C4 was available – but full of disruptive nitrogen, oxygen, and sulfur containing compounds for which no solution existed. The decision to launch the project was finally made on June 29, 2011. The project name "Zephir," inspired by a warm wind from the west, initially sparked a wide range of associations – from "luke-warm attempt" to "hot air." Yet all doubts were dispelled: Zephir became one of the most successful projects in Oxeno's history. "When we started, there simply were no analytical methods for liquefied gases that could measure the purities we envisioned. It was only after we developed our own methods that we realized what was ontained in our traditional raw materials – often more than the suppliers knew themselves," recalls Dr. Markus Winterberg, Head of Production & Technology at Oxeno. This knowledge and innovative spirit led to a process that is unique worldwide.

TECHNOLOGICAL INNOVATION AND UNIQUE CAPABILITY

FCC-C4 is an especially complex raw material that contains more than 50 unwanted nitrogen, oxygen, and sulfur containing impurities. These contaminants pose a major challenge, as they significantly reduce the efficiency of catalysts in production reactors. To address this, we developed a globally unique process: a multistage sequence of distillation, chemical conversion, and adsorption that removes the disruptive components almost entirely and makes the valuable unsaturated C4 compounds usable.

MILESTONES AND FACTS



SIGNIFICANCE FOR THE INDUSTRY

As the petrochemical industry reinvents itself and searches for pathways through its transformation, FCC-C4 is more important today than ever: Oxeno is the only company worldwide capable of converting FCC-C4 streams from refineries into products such as Butene-1, DINP, or high-purity n-Butane. This strengthens the competitiveness of the Marl Chemical Park and secures value chains – including for partners such as BP, whose FCC-C4 is processed at Oxeno.

COOPERATION STRENGTHENS THE SITE

"The project has now been implemented emphasizes the significance of mineral oil processing for the supply chains of the chemical industry. It is a good example for a cross company cooperation that strengthens competitiveness," said Frédéric Baudry, BP Europa SE (quote from 2015). This statement is more true today than ever: the pipeline connection to BP's refinery in Gelsenkirchen and the return of butane mixtures for material use are prime examples of partnership in action.

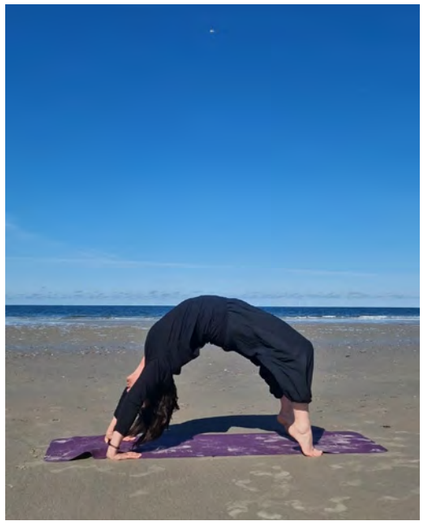
Over the past ten years, only one fundamental change has been made to the unit: the processing capacity for FCC-C4 was significantly increased after just three years, in 2018. This shows that the project was well thought-out from the very beginning, with experts working closely together and anticipating many scenarios in advance. No wonder many participants say, "This was the best project I ever worked on." The year 2024 also set a new record: we processed the largest volume of FCC-C4 since the plant was commissioned – a milestone for a raw material that, just ten years ago, was still considered unprocessable in chemical operations.

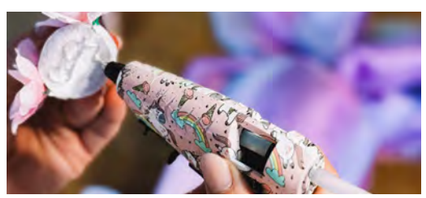
#OXENOinAction

ELATUR® CH IN YOGA MATS

For Susanne, a chemical laboratory technician and trained yoga instructor, her yoga mat is an essential companion. "Yoga helps me stay balanced and keep my inner center," Susanne says with a smile. "It allows me to stay calm even in stressful situations and focus on what truly matters."

In many high-quality yoga mats, our plasticizer ELATUR® CH ensures pleasant flexibility and long-lasting comfort. It combines what matters in daily work with what matters on the mat: balance, stability and consistency.





VESTOPLAST® IN HOTMELT ADHESIVES

In Germany, it is tradition to give first graders a decorated "Schultüte" cone for their first day of school. For her godchild, Christina from Customer Service Specialties crafted an artistic unicorn themed cone.

To guarantee every detail stays firmly in place, VESTOPLAST® comes into play – our versatile polymers for hotmelt adhesives. VESTOPLAST® is a range of amorphous poly-alpha-olefins that give hotmelt adhesives their strong bonding power and optimal cohesion properties. They ensure that decorations stay secure and craft projects turn out reliably.

Turning climate gas into valuable material – innovation for a more sustainable chemistry

Dr. Andreas Vorholt, chemist and group leader at the Max Planck Institute for Chemical Energy Conversion, together with Prof. Dr. Robert Franke, chemist at Evonik Oxeno and coordinator of the "Power2ValueChemicals" project.

The chemical industry is undergoing a paradigm shift: moving away from fossil raw materials and toward more sustainable alternatives. At Oxeno, we are committed to this path – together with strong partners from industry and research. As part of the "Power2ValueChemicals" project, we are working to make carbon dioxide (CO_2) usable as a raw material, thereby creating the foundation for high value specialty chemicals.

YOU CAN FIND OUR ELEMENTS ARTICLE ON THIS NEW PROCESS HERE

THE IDEA: CO_2 AS A RESOURCE INSTEAD OF AN EMISSION

CO_2 is considered a climate gas – but in future, it could become a valuable building block for chemistry. The goal of the project is to produce carbon monoxide (CO) from CO_2, which until now has been obtained from natural gas. CO is a key raw material for products such as fragrances, lubricants, pharmaceutical intermediates, and polymers. With this approach, we accomplish two things at once: we bind CO_2 in products and reduce dependence on fossil resources.

TECHNOLOGY MEETS PRACTICE

The path from vision to reality is demanding. In "Power2ValueChemicals," the entire process chain is being tested – from the electrolysis of CO_2 to the production of a market ready product. Valeric acid methyl ester, an important fragrance ingredient for the perfume industry, serves as the demonstrator. The pilot units of our partner Siemens Energy supply the required CO, while Oxeno evaluates methoxycarbonylation on a technical scale.
In parallel, we analyze energy demand, costs, and environmental impacts across the entire life cycle to ensure industrial feasibility.

INNOVATION REQUIRES COLLABORATION

This project is a prime example of successful collaboration: Oxeno contributes its expertise in largescale processes and catalyst chemistry, Siemens Energy provides the electrolysis technology, and the Jülich Research Center together with the Max Planck Institute for Chemical Energy Conversion contributes cutting edge scientific research. Together, we optimize the processes – from catalyst development all the way to scaleup.

Dr. Elfriede Simon, Researcher at Siemens Energy.

Prof. Dr. Robert Franke, chemist at Evonik Oxeno and coordinator of the "Power2ValueChemicals" project

A FACE OF INNOVATION: PROF. DR. ROBERT FRANKE

Behind this pioneering development stand dedicated individuals. Professor Dr. Robert Franke, chemist at Oxeno and coordinator of the project, is passionately driving forward the vision of a greener chemistry. His credo: "We have to consider the entire value chain – it is the only way we can truly move away from fossil raw materials." Under his leadership, a practice-oriented network is emerging that demonstrates how future technologies can be transferred into industrial reality.

OUTLOOK

The tests are still underway, but the direction is clear: with "Power2ValueChemicals," Oxeno is paving the way for a more sustainable chemical industry. The results will show how climate relevant CO_2 can be transformed into valuable materials – and how innovation and partnership can jointly create solutions for the challenges of tomorrow.

SUSTAINABILITY WITH PURPOSE:

How Oxeno shapes change

Dr. Martin Kirchner, Director Business & Sustainability Transformation at Evonik Oxeno

Anyone who meets Dr. Martin Kirchner, Director Business & Sustainability Transformation, immediately senses one thing: sustainability is not a trendy slogan for him – it is a conviction. He has been working on this topic since 2007, and his experience strongly shapes Oxeno as well. "For us, ustainability is a success factor and a strategic pillar," says Kirchner. " But above all, it is a question of credibility. We can only be successful in the long-term if we act transparently and responsibly – together with our partners and our employees."

Sustainability, he continues, is an integrated concept based on the understanding that the environment, people and the economy are all interconnected. "It would be a serious mistake to focus on only one of these three dimensions."

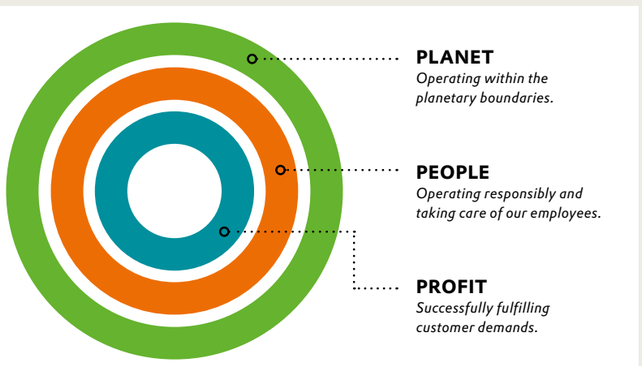
A SIMPLE MODEL WITH BIG IMPACT

To illustrate this logic, Kirchner likes to use the model of concentric circles:

- On the outside: the planet.
- Building on that: the people.
- At the center: the economy.

"For companies, this means that profitable business is only sustainable when ecological and social considerations are integrated into economic decision-making. Otherwise, we undermine our own foundation."

SUSTAINABILITY UNDERSTANDING OF EVONIK OXENO – MODEL OF THE CONCENTRIC CIRCLES



This forms Oxeno's understanding of sustainability and guides how we operate in everyday business.

WHERE SUSTAINABILITY BECOMES VISIBLE

One example? Efficiency projects in production ensure that less energy and fewer raw materials are required. What used to be considered primarily a cost issue is now also a matter of emissions – and therefore of long-term viability.

Or the use of alternative raw materials: bio-based, bio-circular, or circular feedstocks are an important lever in reducing the CO_2 footprint of our products. "This helps our customers achieve their climate targets," says Kirchner. "And at the same time, it clearly differentiates us in the market."

Social aspects also play a central role: the health and safety of employees, neighbors and stakeholders. "This is not only a value in itself," Kirchner explains, "it has a proven impact on motivation, our attractiveness as an employer and on our collaboration with external partners."

Sustainability creates measurable value. What was once a fringe topic has now become a constant companion: on political stages, in customer discussions, in supply chains, in conversations about ompetitiveness.

For Oxeno, this topic is anything but new. The company has been deeply engaged in sustainability for many years – long before it became a global requirement. But what happens to sustainability in economically challenging times? In conversations, questions and comments increasingly arise, such as:

- "Can we even afford sustainability right now?"
- "Isn't that something for good times?"
- "I'll focus on sustainability when I have time and budget."
- "And in the end, doesn't price matter most?"

Kirchner shakes his head. "In the end, it's always about balancing the three dimensions of sustainability," he says. Especially in challenging economic times, it is completely normal for companies to focus more on the profit perspective. "It wouldn't be in the spirit of sustainability if a company ended up insolvent." He puts it very pragmatically: not every initiative can be implemented immediately; some simply have to wait. "From my point of view, that's absolutely fine," says the Director Business & Sustainability Transformation. "The only thing that matters is that medium and long-term goals must not be called into question." And: "We cannot stop our activities – we may simply need to focus on tasks that are less cost intensive for the time being."

GOALS THAT SET THE DIRECTION

That is why Oxeno continues to think ahead. "We are consistently working to reduce the CO_2 footprint of the entire value chain," says Kirchner. This includes:

- By 2032, Scope 1 and Scope 2 emissions are planned to be reduced by 40 percent compared with 2022. Measures: heat integration, renewable energy, energy efficiency.
- By 2050 at the latest, Oxeno aims to achieve a Net Zero network and offer a fully sustainable product portfolio.
- Primary data from suppliers: even today, Oxeno provides high-quality sustainability data – based on an externally certified lifecycle assessment model. By 2032, primary data coverage is to reach 100 percent.

"Transparent and consistent data will become more important than ever," says Kirchner. "Only those who know their own data can truly support their customers."

SUSTAINABILITY IS NOT A PROJECT

But Kirchner does not hide the fact, that sustainability always comes with challenges. The process requires change, new approaches, courage and pragmatism. Above all, however, it requires endurance. "Sustainability is a marathon, not a sprint. It can only succeed if we shape it together – with people who remain curious and who have an appetite for the future."

Turnaround: When operations pause so that the future can keep moving forward

A turnaround may sound like downtime – but for us, it means peak activity. Oxana Siegel and her turnaround team demonstrate how collaboration and expertise form the foundation for safe plants and a strong future.

Oxana Siegel, Turnaround Manager at Evonik Oxeno Antwerp

"A turnaround sometimes feels like an anthill: movement everywhere, yet everyone knows exactly what to do."

OXANA SIEGEL
Turnaround Manager at Evonik Oxeno Antwerp

When our plants fall silent, it is not a sign of calm. On the contrary: that is when everything runs at full speed for us. These so-called turnarounds are among the most exciting phases in plant operations. We use this time to prepare our units for the future, and such a task can only be accomplished as a team. One person who keeps the overview is Oxana Siegel. As Turnaround Manager in Antwerp, Belgium, she coordinates planning and execution, shares her knowledge and ensures that everyone involved works hand in hand.

In Antwerp, a MTBE line and our Butadiene unit went through a comprehensive inspection in 2025. Around 100 pieces of equipment were inspected, 90 safety valves were calibrated, and 180 safety related instrumentation and control systems were checked and overhauled. On top of that, there were catalyst replacements, column packing renewals and the overhaul of a compressor. Sounds like quite a project? It is.

The turnaround team begins planning at least two years before the shutdown to avoid bottlenecks and reduce costs. Of course, not everything always goes according to plan – and that's when flexibility is essential. For Oxana Siegel, these situations are the most exciting part of her job: responding

flexibly, rethinking approaches and finding solutions together that may even turn out better than the original plan. This time in Antwerp, the schedule was adjusted at short notice, the shutdown was moved forward, and the shift model was revised. Changes like these are only possible through rapid coordination between the various specialist disciplines and partner companies, as adjustments also affect the planning of the personnel deployed.

Some tasks are particularly time critical, such as last year’s overhaul of around 130 sensors. After removal, they were transported by truck from Antwerp, Belgium, to Marl, Germany, where the Technical Service Evonik Marl (since January 1, 2026: SYNEQT) carried out the refurbishment. Afterwards, they were sent back to Belgium. This requires perfect coordination. Tobias Laiblin, Head of Technology in Antwerp, emphasizes the importance of collaboration: “The entire team – from Technical Service to Production & Technology, all the way to Supply Chain and Marketing – worked together exceptionally well.” For him, it is clear: “Commitment and expertise are the heart of a successful turnaround.”

For us at Oxeno, turnarounds are more than an obligation - they are our commitment: we invest in the future of the European chemical industry, especially at a time when other petrochemical plants have to be shut down. We rely on safety, efficiency and collaboration. So that the future can keep moving forward – today and tomorrow.

Tobias Laiblin, Head of Technology at Evonik Oxeno Antwerp

Turnarounds for large chemical plants are comparable to a vehicle inspection (like TÜV in Germany). They are required by law and necessary for the continued operation of the units. Depending on the regulations, plants are shut down every five to six years and the equipment, piping, valves and control systems are inspected for quality and proper function. At the same time, these shutdowns are also used for routine maintenance, overhauls or modifications.

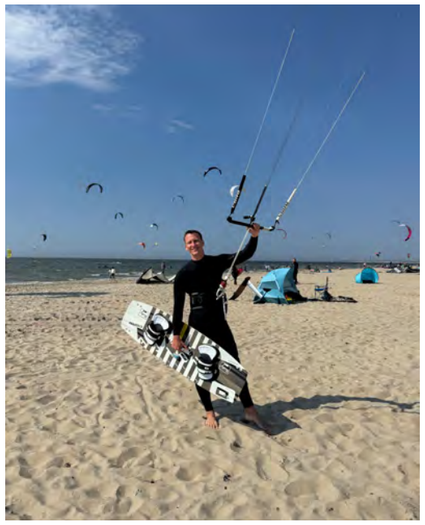
#OXENOinAction

BUTADIENE IN NEOPRENE SUITS

Whether summer or winter – Daniel, Marketing Manager Specialties, takes every opportunity to go kitesurfing. Modern neoprene wetsuits make this possible.

Their base material is chloroprene, produced from Butadiene, one of Oxeno’s key products.

The result is a material with high flexibility, durability and heat retention – making water sports possible in almost any weather.
“The forces of the wind and the sea still fascinate me to this day and bring a smile to my face every time I’m out kitesurfing,” Daniel says, describing his passion.



BUTENE-1 IN DRINKING BOTTLES

Christoph, Marketing Manager VESTOPLAST®, took part in the 24-hour “Rad am Ring” race with his four-person cycling team. Always with them: a simple but essential water bottle that securely carried the timing chip through every lap. The material behind it is Butene-1, used to produce robust and durable plastic bottles.

The team completed an incredible 24 laps together, each 26 kilometers long and with 550 meters of elevation gain.
At the finishing line Christoph was exhausted but happy: “What made the difference was team spirit – fast handovers, nighttime shifts in pairs and a camp, where everyone supported each other. On the racetrack or in industry – success happens when people work together.”

Dr. Hendrik T. M. Fischer, Director Advocacy & Regulatory Marketing at Evonik Oxeno

LEARN MORE ABOUT OUR ASSOCIATION WORK

Hendrik Fischer sits with two colleagues from other companies in the conference room on the 13th floor of Rue Belliard, the headquarters of the European Chemical Industry Council, Cefic. They have upcoming meetings with the European Committee for Standardization, followed later by sessions at the European Commission here in Brussels. The topic at hand is an important case concerning fuel standardization and its impact on future European legislation – a matter on which the experts must align scientifically and strategically. "I also look back fondly on my working meetings at the European Parliament in Strasbourg or the sessions of the Risk Assessment Committee in Helsinki, where I was able to present our positions and scientific facts to elected representatives and experts from environmental authorities," Fischer recalls.

With his flowing beard and mischievous smile, the Director Advocacy & Regulatory Marketing may at first glance resemble the stereotype of a typical chemist who never left the university. But that impression is misleading. After completing his chemistry studies, he decided to become active in association work. "I take great joy in explaining chemistry to people, clearing up misunderstandings and showing the opportunities it offers – whether it's to authorities, the market or children and young people." Correspondingly, while completing a degree in environmental management, he was responsible for product safety at another company before joining Evonik in 2017. Since 2022, he has also devoted himself more intensively to STEM education for children and teenagers. Working together with colleagues is part of his everyday routine: he represents Oxeno in many of the 17 German, European and international associations in which we are active. And that is, quite simply, teamwork that extends across company boundaries.

As part of this work, he not only participates in meetings but also frequently works through files, regulatory proposals and documentation. At the moment, he is particularly focused on a dossier concerning a classification proposal for an important product submitted by a European environmental authority. This means first understanding the scientific evaluations of the substance provided by his colleagues in Product Safety. In parallel, he tries to assess the potentially far-reaching implications of the new classification in order to enter discussions with a well-informed perspective. And "on the side," he handles the organizational tasks that come with such a project: budgets, timelines, legal questions, project coordination.

He explains frankly: "We actually support many proposals more often than some might think – when they make sense. That's why we also bring in our own proposals, for example in our work at CEN, the European standardization organization in which we actively participate. Beyond the scientific content, it's crucial to be heard at all. And that takes a great deal of joint work and perseverance." His contacts within the committees and his broad network are just as important for successful political and association work as the solid scientific foundation behind it, Fischer notes. The basis of his work is the conviction that Oxeno shares its knowledge and insights and puts them at the service of the entire petrochemical industry. And not only through publications such as our white paper, but also through active engagement in various associations. "We stand for open communication," says the 46-year-old. "As a company and as a member of these associations, we engage in societal discussions and answer questions."

What is important to him: "We are not aiming for one-sided influence or manipulation. Just like the entire petrochemical industry, we want to contribute to informed opinion forming among diverse groups – policymakers, journalists, administrators, citizens, and other stakeholders on a wide range of topics and issues that matter to them. And always in a way, that ensures we are truly understood."

This commitment is anything but a one-way street: "In these conversations, we learn what is on people's minds – their concerns, their hopes and the issues shaping public debate." In his day-to-day work, Fischer also learns about points of discussion that matter to our partners upstream and downstream. "In some cases, we can offer our support, sometimes interesting opportunities for collaboration arise or I can refer the topic to one of our other specialists," Fischer explains.

SHARING KNOWLEDGE AS A TEAM AND EXPLAINING CHEMISTRY

Helsinki, capital of Finland

More flexibility for smarter decisions

"The close collaboration between all areas at Oxeno has long been the core of our planning. By moving into the cloud, we can leverage this interaction even more effectively: for more reliable processes, faster response capabilities, and a supply chain that supports our partners in the best possible way – even in challenging situations."

Stefanie Siepe, Vice President Supply Chain Management, at Evonik Oxeno

An integrated Verbund (production network) like the one at Oxeno, with two sites and many plants, can only be planned and controlled collectively. Accordingly, everyone involved – from Production to Logistics, Raw Materials Procurement, and Marketing & Sales – contributes information to ensure the best outcome for all.

At Oxeno, we believe that planning should support decision-making rather than slow it down. That is why we have further developed our decision-centric planning platform and moved it into the cloud. The result: more flexibility, faster scenario simulations and improved adaptability, when markets shift.

Since 2021, we have relied on decision-centric planning to evaluate dozens of scenarios every day. Four years later, we have refined this process even further. With the new platform, simulations are faster and more intuitive. We can model complex situations, optimize our supply chains and integrated processes and react in real time to changes in raw material availability, market dynamics or logistical challenges.

"Moving the planning platform into the cloud gives us the agility we need to stay ahead," says David Kochanek, Supply Chain Solution Manager at Oxeno. "We can make better decisions faster and that means we are ready for whatever comes next. And throughout, we do everything we can to work with our partners to achieve optimal product flows and maximum reliability." For us, it's about working smarter, not harder. For our customers, it means a reliable, future ready supply chain and a partner who is prepared to navigate change together. That is our guiding principle.

YOU CAN FIND OUR LATEST PRESS RELEASE ON THIS TOPIC HERE.

Shaping change in the petrochemical industry positively

Innovation, cooperation and a shared understanding of transformation are essential to shaping a strong and more sustainable future for the petrochemical industry in Europe. How this can be achieved is outlined by Oxeno in the English language white paper "Challenges and Opportunities During the Transformation Process in the Petrochemical Industry – Strengthening European Supply and Value Chains." The position paper also describes the current situation of the industry and clearly identifies the underlying reasons.

HAVE WE SPARKED YOUR INTEREST? YOU CAN REQUEST YOUR WHITE PAPER HERE.

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