Bluestreak

A NEWSLETTER BY QAPTIS
APRIL 2024

INDUSTRY

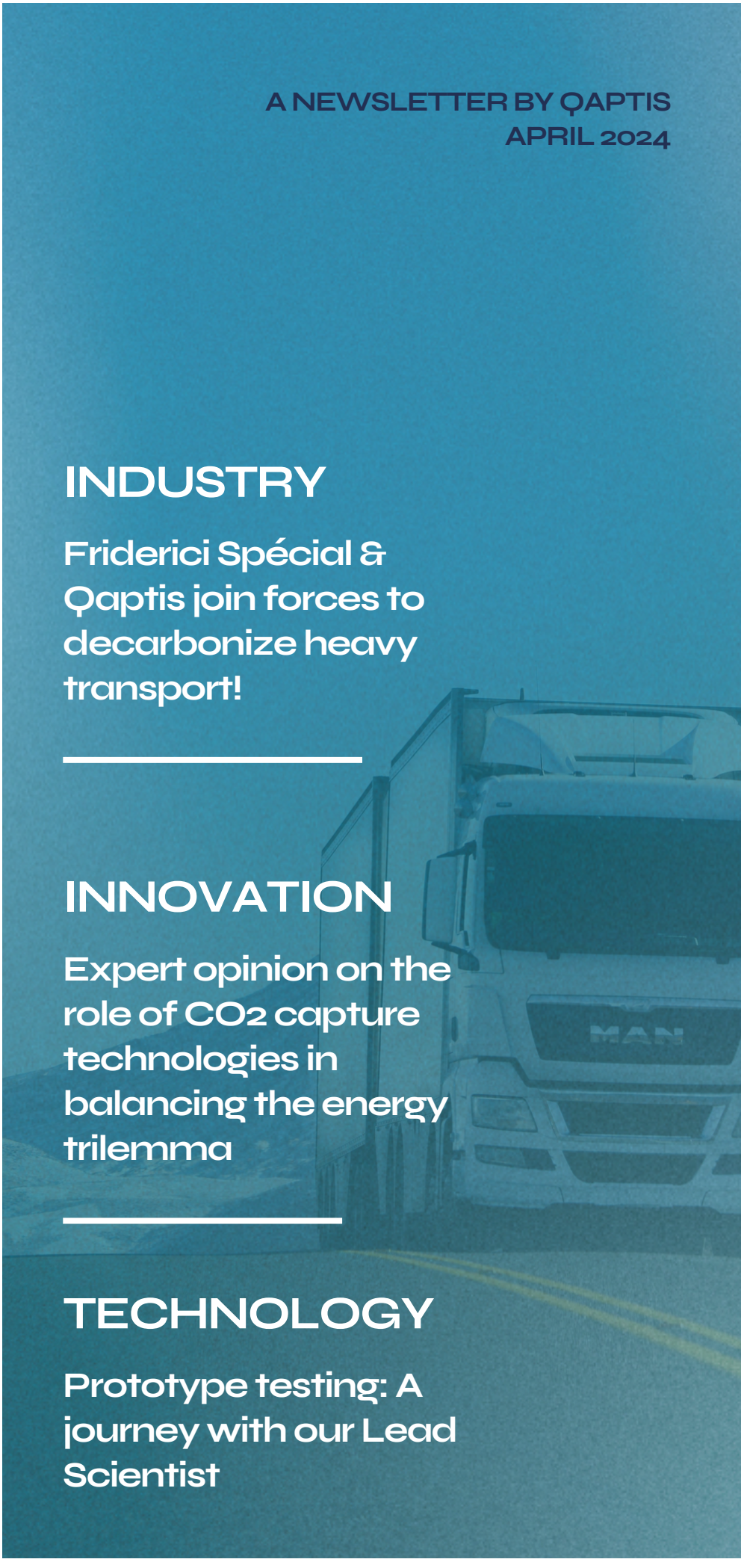
Friderici Spécial & Qaptis join forces to decarbonize heavy transport!

INNOVATION

Expert opinion on the role of CO_2 capture technologies in balancing the energy trilemma

TECHNOLOGY

Prototype testing: A journey with our Lead Scientist



Welcome to the Qaptis newsletter, where you can stay up-to-date on the latest company news and insights. Looking to decarbonize your business with smart carbon capture technology? We can help.

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A message to Qaptis' community

Dear member,

Welcome to the first edition of our newsletter! We're excited to kick off this quarterly tradition and share with you all the awesome stuff happening at Qaptis.

This newsletter is more than just a way to stay connected; it's your go-to for updates on what we're up to, insights from leading experts within our amazing community, and a sneak peek into our journey within startup life. Think of it as your backstage pass to all things Qaptis. As we navigate the ups and downs of startup life, we want you to be right there with us, and share our successes, challenges, and everything in between.

Your support means the world to us, and we're always eager to hear your thoughts and feedback. Feel free to drop us a line anytime - we're here for you!

Thanks for being part of our community.

Warm regards,

Masoud Talebi Amiri
CEO, Qaptis



Latest news

Friderici Spécial & Qaptis join forces to decarbonize heavy transport!

Qaptis and Friderici Spécial SA, a Swiss leader in road transport, announced the signing of a strategic partnership.

As part of the partnership, our CO_2 capture prototype arrived in Friderici Spécial's warehouse in Tolochenaz, Vaud, Switzerland.

Start of CO2 capture tests on our first prototype

Since then, we embarked on a campaign of bench tests to refine the technology before integrating it into a Friderici Spécial truck.

Once mounted on heavy vehicles, Qaptis' system is poised to become one of the first mobile devices of its kind, revolutionizing the freight industry and supply chains.

Link to the joint press release.





© EPFL

Our COO and co-founder, Théodore Caby, talks more about our technology in this interview from EPFL

New technology can collect CO_2 from a truck's exhaust pipe

Qaptis makes strides in capturing CO_2 from heavy-duty vehicles

Here is how we are making it happen:

› Capturing carbon: Our Alpha carbon capture skid successfully cools exhaust, captures heat and removes CO_2.
› Going green: Independent testing confirmed the captured carbon is suitable for liquefaction, a key step for storage and reuse.

Second generation: Building on this success, the next-gen skid is in production, featuring:

› Self-contained operation: No power drain from the vehicle engine!
› Compression and storage: Captured CO_2 is compressed and stored on-board.
› Liquefaction: A new system liquifies carbon for easier transport.
› Improved efficiency: The design captures more CO_2 while processing higher exhaust flow, all in a smaller package.

Testing for the second unit is expected to begin late summer.

Capturing CO_2 on the go, stored for good

Canal Alpha paid us a visit to see our prototype in action and chat with our co-founder Théodore Caby!

Watch the report (French) for key insights on:

› Why our innovative technology is a good way of limiting the spread of carbon in the air by capturing it directly from truck exhaust gases.
› Why decarbonizing trucks is tough due to expensive low-carbon vehicles and major infrastructure required.
› How Qaptis technology will retrofit existing trucks, boosting profitability, meeting climate goals, and keeping transporters competitive.
› How we will recycle the captured CO_2 waste through the carbon value chain (CCUS) and carbon dioxide sequestration solutions in particular.

Les chercheurs chassent le CO2 pour décarboner la Suisse

Transforming waste heat into sustainable power

At Qaptis, innovation is at the heart of everything we do. In our relentless pursuit of sustainable solutions, we have evaluated numerous concepts for harnessing waste heat to power the future of carbon capture. After careful consideration, we are thrilled to finalize negotiations with an expert OEM to bring our selected concept to life.

Why waste heat, you may ask?

Well, internal combustion engine processes often generate it. Left unutilized, this waste heat contributes to energy inefficiency and environmental harm. However, with our innovative approach, we are turning this waste into valuable electrical energy.

By capturing and converting waste heat into power, our solution not only addresses the pressing issue of energy wastage but also provides a clean and efficient source of energy to drive Carbon Capture Units (CCUS). This means that not only are we reducing carbon emissions by capturing CO_2, but we are also doing it in a way that minimizes additional environmental impact.

Our collaboration with expert OEM ensures that the manufacturing process is executed with the highest standards of quality and precision. We are combining our expertise in waste heat utilization with their proven track record in manufacturing excellence to deliver a solution that is not only innovative but also reliable and scalable.

The upcoming prototype, set to launch in 2024, marks a significant milestone in our journey towards a more sustainable future. By harnessing waste heat to power Carbon Capture Units, we are not just mitigating environmental damage; we are pioneering a new era of green technology that promises to revolutionize the way we approach carbon emissions.

Curious about the Circular Carbon Economy and reducing transport emissions? Reach out: info@qaptis.com!

Support from Swiss Climate Foundation

We are thrilled to announce that Qaptis has been selected as one of the 11 innovative Swiss projects to receive support from the Swiss Climate Foundation.

“Protecting the environment. Strengthening the SME,” guided by this motto, the Foundation is dedicated to preserving our planet, fostering climate-friendly initiatives, and empowering SMEs in Switzerland and Liechtenstein. Its support will be instrumental in enabling Qaptis to further advance its technology and make a tangible impact on climate change mitigation efforts.

More on this.

Qaptis is part of Swisscleantech network

Exciting news: we are very pleased to share that Qaptis has joined Swisscleantech!

Swisscleantech is a network of over 600 forward-thinking companies from diverse industries, all committed to building a sustainable future. Together, we are driving positive change in business, politics, and society, working towards a carbon-neutral Switzerland. Qaptis is proud to contribute with our innovative CO_2 capture technology, helping to accelerate this crucial shift.

Expert opinion



Role of carbon capture technologies in balancing the energy trilemma.

Eric Aboussouan,
Cargill Ocean Transportation

As economies and industries set ambitious sustainability targets, they face significant challenges around the energy trilemma. The energy trilemma refers to the three interrelated challenges that energy systems face:

1. Energy security

This aspect of the trilemma concerns ensuring a reliable and secure supply of energy to meet present and future needs. It involves factors such as diversifying energy sources, enhancing infrastructure resilience, and minimizing disruptions in energy supply.

2. Energy equity,

With focus on providing universal access to affordable and reliable energy services. This includes ensuring that energy is accessible to all socio-economic groups, reducing energy poverty, and addressing disparities in energy access between regions and communities.

3. Environmental sustainability

This involves minimizing the negative environmental impacts of energy production and consumption, particularly by reducing greenhouse gas emissions. This aspect of the trilemma emphasizes the transition to cleaner and more sustainable energy sources and technologies.

Balancing these three dimensions of the energy trilemma is complex and often involves trade-offs. For example, enhancing energy security through increased fossil fuel production may conflict with environmental sustainability goals by exacerbating climate change. Similarly, prioritizing environmental sustainability by rapidly transitioning to renewable energy sources could potentially affect energy equity if it leads to higher energy costs for certain groups. Addressing the energy trilemma requires integrated and holistic approaches that consider the interconnectedness of energy security, equity, and sustainability goals.

This is where carbon capture technologies play an important role in helping to balance the energy trilemma. Carbon capture is an important component of decarbonization because it offers a way to mitigate emissions from industries that are challenging to decarbonize. Overall, integrating carbon capture into decarbonization strategies diversifies the toolkit available for addressing emissions across various supply chains, and offers a pathway towards achieving ambitious climate goals.

However carbon capture is controversial and carries significant challenges for several reasons:

Cost

Implementing carbon capture technologies can be expensive, both in terms of upfront investment and ongoing operational costs including the storage of the carbon. Critics argue that the resources required for carbon capture could be better spent on renewable energy or other sustainable solutions.

Energy intensive

Some carbon capture methods require significant amounts of energy, which could potentially offset the emissions reductions achieved. Critics argue that this negates the environmental benefits and makes carbon capture less efficient.

Risk of delaying action

There's concern that relying too heavily on carbon capture and therefore fossil fuels could delay the transition to cleaner energy sources.

Storage and leakage

Storing captured carbon dioxide underground carries risks of leakage, which could potentially negate the benefits of capturing it in the first place. Critics also raise concerns about the long-term stability and security of storage sites.

This is where mobile carbon capture technology play an important role. At a smaller scale it does address some of those challenges and risks, especially on cost and energy intensity. With transportation to account for close to 30% of total carbon emissions, mobile carbon capture technology provides a promising pathway for road, and potentially sea modes of transportation.

While the use of zero carbon fuels combined with the electrification of the large part of the road transportation fleet are the long term solutions to decarbonize this sector, it will take decades before it can be deployed at scale. In the meantime, mobile carbon capture technologies will help to balance the energy trilemma.

Startup life

Qaptis Team Gathering 2023: Cheers to a memorable celebration!

End of last year, we hosted our team gathering with our family, friends, advisors, partners, and investors to commemorate our company's remarkable journey. Together, we have transformed our vision into reality, trying to push boundaries every day. Here is to many more years of shared success and growth!





Venture Leaders Graduation Ceremony



In early 2024, our CEO and co-founder, Masoud Talebi Amiri, joined fellow Swiss startups at the Venturelab ceremony in Zurich to celebrate a successful 2023! The event followed the previous investor roadshow in Munich, Germany, in which Qaptis participated as one of *Swiss National Cleantech Team 2023*. Venturelab is promoting Swiss innovation around the world and fostering connections within the Swiss startup ecosystem. We can only recommend to be part of this inspiring community. To find out more, click here.

Testing of our Alpha prototype: A journey with our Lead Scientist, Dr. Emanuele Piccoli

November 2023

Arrival of the prototype in Switzerland and first tests at Friderici Spécial. Demonstration tests with Japanese partner.



An exciting appearance

December 2023 - January 2024

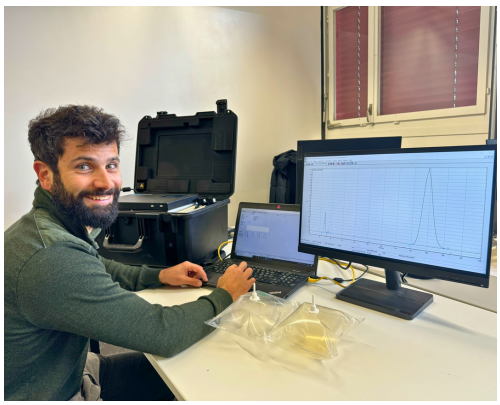
Cold arrived, but tests are still successful.



Cozy lunch breaks

February 2024

First full gas analysis. Our CO_2 product has purity of more than 99%!



Gas chromatography results show very high CO_2 purity

Net Zero Logistics Summit

Coinciding with its 100 years anniversary, Walter Group hosted a two-day summit on net-zero logistics in Austria. Prominent figures from industrial leaders and academia, gathered to discuss the status and future of net-zero logistics.





© WALTER GROUP

Our CEO was invited to present and discuss the role of mobile carbon capture technologies in decarbonizing this sector. We had great exchanges with both internal decision makers at Walter Group and leading global actors. More information and the list of participants can be found on the event's website.

Swiss Team day

On February 21st, our Swiss team came together for a festive meal that reflected our diverse backgrounds. We celebrated Emanuele's birthday and participated in a colorful team building activity that boosted our creativity and team spirit. Our favorite KPI? The smiles on our team's faces!

Admire our masterpieces below! Which one do you think we brought back?







Latest events we attended:

February 28, De Vigier Selection Day Top 50 - With Masoud Talebi Amiri

March 21-22, Hello Tomorrow - With Théodore Caby & Emanuele Piccoli

March 25-27, ChangeNOW - With Théodore Caby

Upcoming events to meet us!

April 4 - May 31, Circular Valley Accelerator Program

April 15 - July 9, remove Accelerator

April 25, Rencontre FSE-Vaud

Get in touch with us at info@qaptis.com !

Follow us on LinkedIn.

Further readings

› Le Matin: Quand la pollution des camions peut se transformer en engrais

› Blick: Un camion qui émet 90% d'émissions CO2 en moins? Bientôt possible grâce à une startup de l'EPFL

› Interesting Engineering: Tech captures and stores truck exhaust as liquid CO2 to cut emissions

› Switzerland Global Enterprise: Friderici Spécial and Qaptis team up to pioneer CO2 capture in heavy transport

› GEO France: Un nouveau système permettrait de capter et stocker le gaz d'échappement des camions sous une forme liquide

› 24 heures: Les pionniers de la seconde révolution industrielle

› La Dépêche: Une start-up suisse propose une technologie innovante pour réduire l'empreinte carbone des camions de fret

› La Télé Vaud Fribourg: Une machine pour capturer le CO2 des camions

Feedback & suggestions

We hope you enjoyed this newsletter!
We would love to hear your thoughts for articles on topics you are interested in.
Email us and say hello.
— The Qaptis team