



YEARLY REPORT

2024



FOREWORD

BY WALTER STEINMANN & NORIS GALLANDAT

The world is undergoing a rapid geopolitical and economic transformation. The vision of global economic growth and prosperity driven by free trade is losing relevance, while the World Trade Organization (WTO), long a key supporter of such agreements and investments, is losing its influence. Instead, a multipolar new world order is emerging, where regional alliances strive to enhance their own competitiveness and prosperity.

As a small, open economy with deep international integration, Switzerland faces unique

challenges in this shifting landscape. Will we still find an attractive niche in this evolving economic system? Can we engage with major players such as the U.S., China, and the European Union on equal footing?

These questions are equally relevant for GRZ. Switzerland has traditionally excelled in research and development, the market launch of innovations, and the strategic use of international collaboration to produce high-quality goods under the "Swiss Made" label. Following this legacy, GRZ Technologies will continue

“SUCCESS REQUIRES COURAGE—THE WILLINGNESS TO APPROACH CHALLENGES FROM NEW PERSPECTIVES, EXPLORE ALTERNATIVE PATHS, AND EMBRACE CALCULATED RISKS IN THE PURSUIT OF PROGRESS.”

to work with global partners to develop and implement tailored solutions at scale for key emerging economic regions.

Many of our technologies have reached the pilot and demonstration stage. Early orders for small-scale production runs are emerging, signaling that scaling up is becoming a tangible reality.

At the same time, we remain committed to groundbreaking innovations in the hydrogen sector. Despite a challenging market environment and setbacks faced by major hydrogen players in the past year, we see strong potential for meaningful applications. We are developing products that address the growing demand for energy flexibility and storage, as well as enable the replacement of grey hydrogen with green hydrogen in industrial surroundings. Additionally, we are engaged in pioneering projects with the potential to significantly reduce CO₂ emissions in the industry.

A startup such as GRZ can only thrive with trust. We rely on the confidence and long-term vision of our shareholders, business partners, the scientific community, banks, customers, and, above all, our employees. This trust is built on years of commitment to scientific brilliance and technical excellence.

Beyond trust, success requires courage—the willingness to approach challenges from new perspectives, explore alternative paths, and

embrace calculated risks in the pursuit of progress.

We extend our sincere gratitude to our customers, shareholders, academic and government partners, banking institutions, and, most importantly, our employees., whose dedication and expertise are the driving force behind GRZ's innovation and success.

Together, we have already achieved a great deal. Together, we will continue to drive GRZ Technologies forward. And together, we will become a key player in the hydrogen market and the global energy transition.



Dr. Walter Steinmann, *Chairman of the Board*



Dr. Noris Gallandat, *Chief Executive Officer*

SALES & MARKETING

2024 presented unique challenges for GRZ Technologies' sales and marketing efforts. The broader economic slowdown and political uncertainties, particularly in key markets like Germany, created a hesitant environment for investment in new hydrogen technologies. Potential clients delayed projects, impacting timelines across the industry.

This challenging landscape prompted GRZ to proactively adapt its sales and marketing strategies. Rather than solely focusing on large-scale, government-supported projects, the company pivoted towards a more diversified approach. This involved identifying and engaging existing users of hydrogen across a wider range of applications, demonstrating the immediate, tangible benefits of GRZ's solutions within their specific operational contexts.

A key element of this adaptation was strengthening GRZ's market presence and direct engagement with potential customers. The company invested substantial efforts in mar-

keting to refine brand messaging and visual identity, ensuring consistency and aligning them with the diverse needs of customers. This included developing detailed, application-specific materials to clearly illustrate how GRZ's products can be integrated and deliver value in various sectors. Furthermore, GRZ significantly increased its presence at key industry trade shows and conferences, fostering direct interaction with potential clients and partners.

These strategic initiatives have already yielded positive results. The refined brand messaging and new marketing materials have been well-received by customers and partners. This positive feedback is reflected in increased engagement on social media, a raising number of direct inquiries, and a greater presence throughout the market.

With a strengthened brand, a growing partner network, and demonstrated success in key applications, GRZ is poised for continued growth and leadership in the hydrogen sector.





PROJECT & OPERATIONS

Significant strides were made in 2024 in the deployment and operational success of GRZ's solutions across a range of applications. Building on the foundational work of previous years, GRZ focused on demonstrating the real-world viability and benefits of its core technologies.

Key project achievements, coupled with continuous improvement in project execution, underscored GRZ's growing expertise and commitment to delivering reliable hydrogen systems.

CH-030: INDUSTRIAL-SCALE METAL HYDRIDES HYDROGEN COMPRESSOR HYCO

In partnership with Messer Schweiz AG, the world's largest metal hydride hydrogen compressor continued its operation in Visp, Switzerland. This project, designed to compress 30 kg_{H2}/h from 10 to 200 bar, directly challenges traditional mechanical compression. Throughout 2024, the HyCo compressor underwent multiple test runs, demonstrating the reliability and efficiency of GRZ's thermochemical compression technology powered by waste heat. Ongoing data collection through 2025 will further quantify its long-term advantages. The metal hydrides hydrogen compression technology was demonstrated at an industrial scale never done before, successfully filling industrial hydrogen trailers.



CH-030: Industrial-Scale Metal Hydrides Hydrogen Compressor HyCo

CH-080: HYCO HRS DEPLOYMENT

A major milestone was achieved with the full-scale deployment of the HyCo Hydrogen Refueling Station (HRS) for Auto AG in Rothenburg, Switzerland. This project, a real-world application for truck and bus refueling, demonstrated the system's capabilities and generated strong interest from customers and industry media. Auto AG utilizes on-site solar power to produce green hydrogen, creating a self-sufficient and sustainable refueling system. The HyCo HRS enables safe, efficient, and compact hydrogen handling, reducing both costs and emissions. The successful deployment and operation of the HyCo HRS with Auto AG serves as a crucial foundation for the planned commercialization and standardization of the HyCo HRS product line in 2025.



CH-080: HyCo HRS Deployment

CH-170: DASH C-SERIES FOR INDUSTRIAL BUFFER STORAGE

Supporting Gruyère Hydrogen Power SA (GHP) in their pioneering hydrogen production project in Bulle, Switzerland, GRZ provided both engineering services and a containerized DASH C-Series storage system. This system – boasting a capacity of 200 kg_{H2} – was successfully operational in 2024. It provides on-demand green hydrogen storage, absorbing hydrogen directly from the electrolyzer and decoupling production from end-user demand. This low-pressure storage solution enhances operational flexibility and supports GHP's goal of producing 200,000 to 300,000 kg_{H2} annually.



CH-170: DASH C-Series for Industrial Buffer Storage



DE-050: DASH Power for Energy Optimization

DE-050: DASH POWER FOR ENERGY OPTIMIZATION

Alongside the fischer group, a leading stainless steel tube producer in Achern-Fautenbach, Germany, GRZ implemented the DASH Power-500-3500 system. This project addresses the fischer group's need to optimize power consumption during peak demand and to efficiently store surplus hydrogen produced on-site. The DASH Power system provides energy optimization, reducing costs and enhancing energy independence.

These projects demonstrate GRZ's growing expertise in delivering and operating complex hydrogen systems. The experience gained, combined with a continued focus on standardization and process improvement, has resulted in enhanced project execution capabilities.

HR & BOARD OF DIRECTORS

GRZ experienced a year of evolution in its human resources landscape during 2024. The number of employees remained almost constant throughout the year. While the company successfully welcomed talented individuals to the team, including key leadership positions, it also experienced some departures, reflecting the dynamic nature of the hydrogen sector and the broader economic climate.

The company continued to prioritize diversity within its workforce, recognizing the value of different perspectives and backgrounds. The team includes individuals from across the globe, bringing with them a broad range of technical and scientific expertise. A collaborative and inclusive work environment remains a core value. In addition, efforts to improve gender diversity and inclusion progressed well in the past year.

The Board of Directors remained unchanged in 2024 and is composed of the following members:

- Dr. Walter Steinmann (Chairman)
- Dr. Noris Gallandat (Vice-Chairman)
- Prof. Andreas Züttel (Co-founder)
- Hans Peter Fischer (representative of the fischer group)
- Markus Müller (representative of Hyundai Motor Company)

While recruiting technical talent remains a challenge in the current market, GRZ has seen some positive trends, with a greater number of qualified candidates becoming available. Looking ahead to 2025, a key focus for GRZ will be to enhance employee retention and ensure the highest standards of work quality. Initiatives from 2023, including team outings and a tailored incentive package, will be reinforced.





INTELLECTUAL PROPERTY

The maintenance and strengthening of GRZ's intellectual property's portfolio are of paramount importance for the successful growth of our company. A strong emphasis is set on the professional management of our patent portfolio, which occurs in collaboration with a specialized patent attorney. The patent portfolio now includes ten patent families, registered globally and covering a wide range of aspects, ranging from material composition to design features and control processes. In the past year, all patent families were pushed towards accep-

tance in the relevant countries. A particular success was the acceptance through a fast-track process of our patent on the composition of alloy for the DASH storage, which was accepted in several key markets. Furthermore, two new patents were filed as a result of a joint, collaborative effort with Hyundai Motor Company on the development of the HyCo system for the refueling of vehicles. Overall, GRZ's IP situation was substantially strengthened in the past year, setting up a sound basis for commercial growth in the upcoming years.

PROJECTION & OUTLOOK

GRZ Technologies enters 2025 with a renewed focus and a clear strategic direction. While 2024 presented industry-wide challenges, it also provided an opportunity for GRZ to adapt, refine its approach, and solidify its commitment to its core mission: replacing fossil-based energy systems with safe, cost-efficient, and sustainable hydrogen solutions.

A key element of this adaptation was the strategic shift from a primarily technology-focused approach to a customer-centric one. By prioritizing the specific needs and operational contexts of its clients, GRZ aims to deliver tailored hydrogen solutions that provide tangible value and accelerate the transition to clean energy.

This customer focus is reflected in GRZ's refined brand messaging, its expanded partner network, and its commitment to providing detailed, application-specific information. This strategic shift is driven by a dedicated and diverse team with unique expertise in the field of hydrogen.

By speaking our customers' language and highlighting their needs, GRZ is better equipped than ever before to provide the best in hydrogen technology.

Building on this foundation, GRZ's primary goal for 2025 is to regain the momentum lost due to the 2024 market slowdown and to translate its technological advancements into tangible commercial success. This will involve a concerted effort to secure new projects, expand its market reach, and further strengthen its relationships with key partners globally.

As a global leader in hydrogen solutions, GRZ is committed to supporting a gradual transition to a net-zero planet by 2050. We are driven by a purpose: to create lasting value for the planet, its people, and global prosperity through innovative hydrogen energy solutions. Brilliance is at the core of GRZ's technology, driving our commitment to a sustainable future.



A WORD FROM PROF. ANDREAS ZÜTTEL

HYDROGEN IN CHINA: OPPORTUNITIES FOR SWISS INNOVATION

China leads the world in renewable energy, photovoltaics, batteries, and hydrogen. Meanwhile, Europe faces setbacks in the hydrogen sector as the U.S. shifts its focus back to fossil fuels.

China is investing heavily in hydrogen production and infrastructure. Major cities like Beijing, Shanghai, Chengdu, and Guangzhou are spearheading pilot projects and industrial clusters. With a strong emphasis on renewable energy integration and hydrogen-powered transportation, China presents vast opportunities in hydrogen storage and applications. Today, it is the world's largest producer of both green and blue hydrogen. Beyond producing renewable energy technologies—such as photovoltaics and batteries—for global markets, China is also the world's largest installer of these technologies and the fastest-growing adopter of renewables.

For GRZ Technologies, China offers a compelling opportunity to commercialize cutting-edge hydrogen solutions. By leveraging Swiss expertise in innovation, GRZ can contribute to China's growing hydrogen ecosystem while benefiting from its manufacturing efficiency. Collaborating with Chinese companies enables synergies that accelerate product development and innovation tailored for both Asian and European markets. Each party can rely on its strengths—Switzerland's advanced technology

and China's large-scale industrial capacity—to drive progress and scale solutions effectively. Collaboration avenues include joint R&D initiatives, technology licensing, and strategic partnerships with Chinese hydrogen enterprises. Additionally, government programs, such as Sino-Swiss innovation platforms and trade associations, can facilitate market entry and regulatory frameworks.

By combining Switzerland's technological expertise with China's industrial efficiency, GRZ Technologies can accelerate commercialization while advancing the global energy transition. This collaboration creates a win-win scenario, where both sides together drive innovation, expand markets, and achieve sustainable growth in the hydrogen sector.



Prof. Dr. Andreas Züttel,
Co-founder and Director, GRZ Technologies SA

A photograph of a modern industrial building with blue vertical metal siding. A large white sign is mounted on the corner of the building, featuring the GRZ Technologies logo in black and blue. The logo consists of the letters 'grz' in a bold, lowercase, sans-serif font, followed by two blue circles stacked vertically. Below the logo, the word 'TECHNOLOGIES' is written in a smaller, uppercase, sans-serif font. The building is set against a clear blue sky with some light clouds. Several outdoor lights are visible on the roofline of the building.

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