



Progress Report 2024

**CLEAN ENERGY FROM
INFRARED RADIATION**

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1. EXECUTIVE SUMMARY

In the short time since the beginning of its operations, Oxhy has made significant progress in its development and innovation journey, reinforcing its position as a pioneering company in the Energy Harvesting sector. In line with its mission, the company has continued to evolve Oxhycell technology, beginning to demonstrate its potential applications in both consumer and industrial markets. With the support of our investors and the success of our funding initiatives, we have achieved important results that confirm the validity of our strategic and technological approach.

During its first year, 2024, Oxhy has reached numerous milestones, including:

- **Characterization:** A deeper understanding of the oxyhydroelectric effect from both scientific and engineering perspectives, achieved through work carried out in our laboratories as well as in collaboration with external labs.
- **Technological Development:** Miniaturization of Oxhycell down to 20 mm³ and the completion of modular wafers with 7x7 cell configurations, representing a crucial step toward miniaturization and standardization.
- **Advanced Prototyping:** Creation of the first modular demonstrator, the “Oxhy Modular Set” featuring a dedicated PowerCore for applications such as ALS sensors and IoT systems.
- **Market and Partnerships:** Receipt of over 540 expressions of interest and the finalization of 4 letters of intent with leading companies in target sectors.
- **Funding:** Successful completion of the initial phase of the pre-seed round, raising €1M; in addition, the company obtained the “Campania Startup” grant and approval for “Smart&Start” financing, which will provide an additional contribution exceeding €600K.

The purpose of this report is to provide an update on the current technological, commercial, and financial development status of the company. It outlines the milestones achieved, the resources utilized, and the next strategic steps that will bring us closer to our vision of global leadership in Energy Harvesting.

2. Strategic Objectives

Oxhy's main goal is to transform the invisible energy of infrared radiation into Energy Harvesting solutions for a variety of market segments through revolutionary technologies based on the Oxhydroelectric Cell, known as Oxhycell. This technological breakthrough translates into a clear, well-defined strategy that guides all company activities, in line with the vision of becoming a global reference point and revolutionizing the Energy Harvesting sector, and the mission of promoting innovative, sustainable, and efficient solutions for clients and partners based on this technology.

Summary of Strategic Objectives

- **Technological Innovation:** Continue improving the efficiency and stability of Oxhycell, complete miniaturization for consumer and industrial microelectronic applications, and develop new patents to expand the technology portfolio.
- **Market Leadership:** Position as a global leader in Energy Harvesting, initiating penetration into target markets such as microelectronics, IoT, and industrial waste heat recovery.
- **Environmental Sustainability:** Provide solutions that reduce the environmental impact of traditional power supply technologies, promoting a future based on clean and renewable energies.
- **Commercial Expansion:** Establish strategic partnerships with OEM manufacturers and launch pilot projects in key sectors to demonstrate the practical value of the technology.
- **Team Development:** Strengthen the team with international-level talent and enhance internal training to support company growth.
- **Financing and Growth:** Complete the fundraising round and consolidate access to private and public funds to support the corporate roadmap.

Achieved Objectives

- **Technology:** Achieved Oxhycell miniaturization to 20 mm³ with modular wafers (7x7 cells) and completed the design of modular demonstrators for IoT and ALS sensor applications.
- **Market:** Received more than 540 expressions of interest and signed 4 letters of intent with industry-leading companies.

- **Financing:** Successfully completed the first phase of the pre-seed round, raising €1M, concluded the Campania Startup grant project, and secured approval for the Smart&Start contribution with a total value of over €600,000.

Ongoing Objectives

- **Technology:** Continue characterizing, miniaturizing, and industrializing the technology, standardize the Oxhycell production process, and optimize modular configurations for industrial demonstrators.
- **Market:** Implement the Go-to-Market strategy, expand strategic partnerships, and launch the first pilot projects in industrial Energy Harvesting and Microelectronics.
- **Team:** Attract talent in Research/Development/Engineering and business development to support scaling activities.

Future Objectives

- **Technology:** Integrate Oxhycell technology into commercial systems and begin production with OEM partners for consumer and industrial applications; further miniaturization and characterization.
- **Market:** Strengthen the targeted go-to-market strategy to accelerate penetration into target markets.
- **Financing:** Prepare the next fundraising round to further support growth.

All of Oxhy's activities are closely aligned with the company's vision and mission. Each strategic objective aims to strengthen the company's position as a leader in technological innovation, environmental sustainability, and improved energy efficiency. Oxhy is committed to creating tangible value for its stakeholders through cutting-edge solutions, making a significant contribution to the evolution of the Energy Harvesting sector.

3. Technological Progress

Oxhy's progress has been tangible since the beginning.

3.1 R&D Innovation

Oxhy's Research and Development activities have made significant progress recently, consolidating the path toward the industrialization of Oxhycell technology and improving its performance.

- **Oxhycell Miniaturization Progress:** Significant milestones have been achieved in miniaturization, with cells reduced to a volume of 20 mm³. These units, organized into modular wafers of 7x7 cells and further assembled in multilayer configurations (up to 7 layers), represent an important step forward in product scalability for both consumer and industrial electronics applications.
- **Improvements in Efficiency, Stability, and Lifespan:** The most recent iterations have led to an increase in Oxhycell's overall efficiency (up to 2 microwatts per cell) and greater operational stability, ensuring more reliable long-term performance. The lifespan of the cells has been further optimized through extensive testing in controlled environmental conditions, demonstrating their resilience and prolonged functionality.
- **New Patents Filed or Under Development:** Oxhy has completed the filing of a patent concerning an updated version of Oxhycell and its use as an IR sensor. The company has also finalized an agreement for the acquisition of a European patent for low-temperature energy recovery and is currently working on the intellectual property protection of a new integrated system. These patents strengthen the company's technology portfolio and pave the way for new commercial applications.

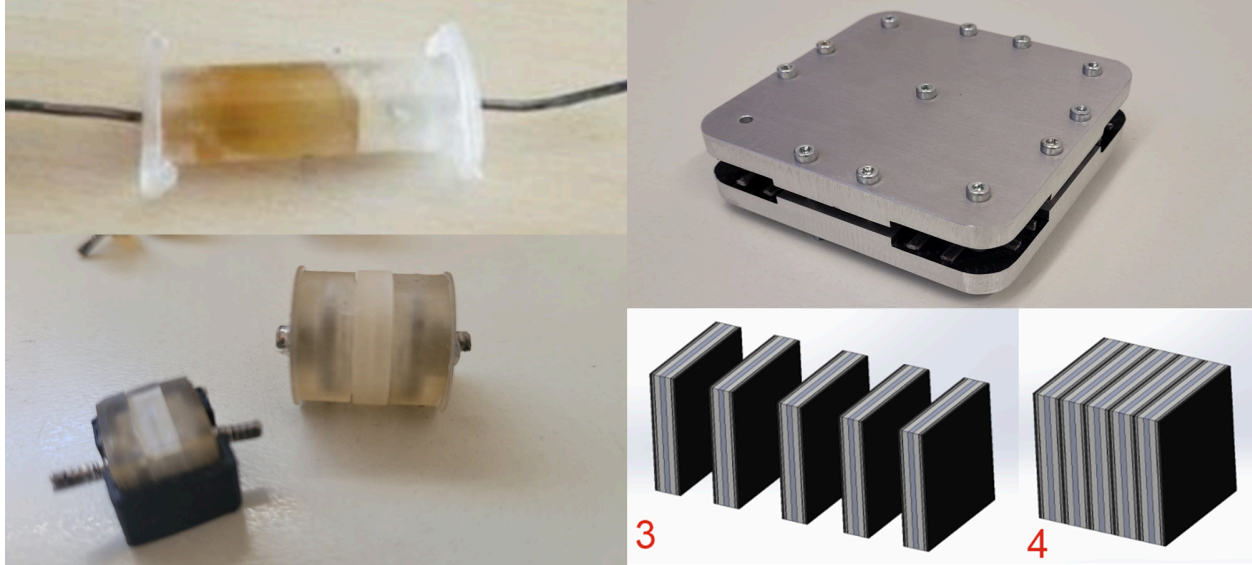


Figure 1. From the initial prototype to the wafer, we have identified a miniaturization process down to a 1 mm³ cell. Here we show three of the four iterations of Oxhycell's engineering development compared to the original cell (top left) available before the start of our development program.

3.2 Development of Prototypes

The prototyping activities have focused on developing innovative modular demonstrators and validating them in real-world application contexts.

Updates on Modular Demonstrators and the "Oxhy Modular Set":

The first prototype of the "Oxhy Modular Set", a modular demonstrator designed to showcase the potential of Oxhycell technology in real-world applications, is nearly complete. This system provides a tangible view of the technology's modularity and versatility, featuring a "PowerCore" to power devices such as ALS sensors, IoT devices, displays, and lamps.

Test Results and Technological Validations:

The modular demonstrators have successfully undergone a series of laboratory tests confirming their reliability and adaptability. In particular, specific configurations for both industrial and consumer Energy Harvesting scenarios have been validated, demonstrating the technology's ability to meet initial efficiency and scalability requirements.

Applications Demonstrated with the Prototypes in Target Sectors:

The prototypes have shown the ability of Oxhycell to power:

- **ALS sensors** for controlling brightness in indoor environments and electronic devices.
- **IoT devices** such as microcontrollers, displays, and Bluetooth antennas, demonstrating compatibility with connected technologies.
- **LED lighting systems** powered by low-consumption solutions, highlighting a sustainable alternative to traditional batteries.

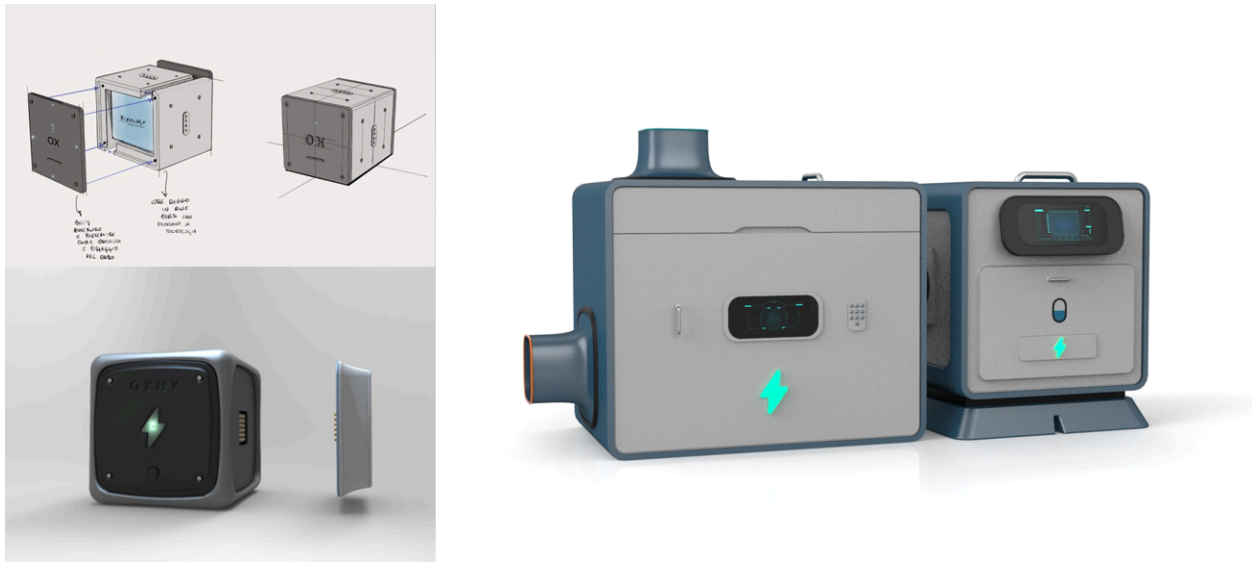


Figure 2. The first two prototypes under development: a) The Modular Set with PowerCore and modules; b) The ORC+Oxhycell energy recovery system in an industrial setting. A video presentation of the latter project, which is crucial for our go-to-market strategy, can be viewed at [this link](#). You can see a demo of the first version of the PowerCore recharging a capacitor, powering a microcontroller with Bluetooth communication, and an ALS ambient light sensor at [this link](#).

These developments place Oxhy in a strong position for the next stage of industrialization and reinforce its value proposition in the target markets.

4. Market Traction

4.1 Strategic Partnerships

Oxhy is currently in the process of developing its Minimum Viable Product (MVP) and is working to identify and build strategic relationships with key partners, both in industry and research. The primary goal at this stage is to find collaborations that can support technological acceleration and access to target markets once TRL 6 is reached.

Collaboration Surveys

We are exploring partnership opportunities both in Italy and abroad, focusing on OEM manufacturers and leading companies in fields such as microelectronics, IoT, and home automation. At the same time, Oxhy is in discussions with research institutions to initiate collaborations that strengthen the scientific and technological validation of Oxhycell.

Objectives for 2025

The year 2025 will be critical for turning these early explorations into concrete pilot projects and formal partnerships. The work carried out in 2024 aims to lay the groundwork for these initiatives, building an ecosystem of strategic alliances that will support the commercial launch of the technology.

Collaboration Network

We are working to establish a network of partners that includes companies operating in target markets and cutting-edge research institutes. This synergistic approach will allow us to accelerate time-to-market, maximize the technology's impact, and ensure the scalability of Oxhycell applications.

At Oxhy, we recognize the importance of forming the right collaborations at this early stage to ensure long-term success. Creating strategic partnerships is central to our vision and represents a fundamental step in transforming our innovative technology into practical, large-scale solutions.

4.2 Commercial Results

Oxhy's commercial progress reflects a growing market focus on the innovative solutions our technology offers.

- **Number of Expressions of Interest Received:** In just a few months, we have collected over 540 spontaneous expressions of interest from companies, organizations, and institutions across various sectors. This figure confirms both the relevance of Oxhycell technology and its market potential.
- **Commercial Pipeline and Acquisition of New Contacts:** Oxhy's commercial pipeline continues to evolve, with a steady increase in qualified contacts and strategic partners. These include IoT device manufacturers, lighting companies, major industrial players, and firms in industrial automation.
- **Initial Revenues Generated or Projected:** Although Oxhy is still in a pre-revenue phase, projections indicate significant future revenue potential from licensing the technology and selling modular platforms to industrial partners. Upcoming pilot projects represent the first step toward acquiring paying customers and expanding internationally.

This progress highlights that Oxhycell technology is not only innovative but also nearly ready to meet a real and growing demand in the Energy Harvesting market and high energy-efficiency applications.

5. Financial Status

5.1 Fundraising Results

Oxhy has successfully completed its pre-seed round, raising €1 million, which enabled the launch of key technological and commercial development activities. The company is now entering the second phase of the pre-seed round (Pre-seed +) to support its ambitious technological development objectives and advance the technology to TRL 6 and Business Readiness Level (BRL) 7. Ongoing discussions are underway with private investors and venture capital funds both in Italy and abroad, with the aim of raising an additional **€3.5 million** by the summer of 2025.

5.2 Expenses and Investments

The funds raised during the pre-seed round were primarily allocated to the following areas:

- **Research and Development (R&D):** Investments in the miniaturization and optimization of the Oxhycell, as well as the development of modular demonstrator prototypes.
- **Prototyping:** Creation of the first modular demonstrator (Oxhy Modular Set) and its corresponding standardization process.
- **Marketing and Business Development:** Building a network of strategic contacts in target markets and developing the Oxhy brand positioning.
- **Team Expansion:** Recruiting new key personnel to strengthen scientific, technical, and commercial activities.

A percentage breakdown of expenses by type is provided in the table below. Data refer to the end of August 2024 and represent slightly over 54% of the total amount raised in the first phase (€1 million) having been utilized.

The projections for the remaining funds include completing:

- Further development and optimization of prototypes,
- Validation activities in target markets,
- Development of initial strategic partnerships.

Additional financial requirements will be defined based on the growth opportunities identified over the coming year.

5.3 Public Funding

Oxhy has benefited, or is about to benefit, from significant public contributions to support its innovation journey:

- **Smart&Start Italia:** Application no. SSI0004946 has been approved, providing a grant of €419,444.71 (of which €125,883.41 is non-repayable) to finance technological development activities and the implementation of the business plan.
- **Campania Startup:** Oxhy has completed the "Cella Ossidroelettrica" project under the 2023 Campania Startup call and has submitted all expenditures for reimbursement. The final disbursement of the non-repayable grant provided by the Campania Region totals €197,319.96.

Additionally, Oxhy is evaluating participation in new public funding opportunities in both Italy and at the European level, with the aim of securing further resources to support its ambitious technological and commercial growth plan.

6. Team

Despite the complexity of the challenge, Oxhy has managed to achieve significant results in a short time. This success has been made possible by implementing an innovative approach to technology development, carried out by a well-structured interdisciplinary team that is gradually expanding.



Figure 3. Where we are today. Our offices and labs are located in the Città della Scienza complex in Naples.

Team Expansion and Strengthening

Over the past few months, Oxhy has continued to invest in strengthening its team, recognizing the central role of people in achieving company objectives. In addition to the founding group, new key professionals have been added to enhance technical, scientific, and commercial skills, providing broader coverage of the strategic areas needed to advance the project.

New Hires and Strategic Collaborations

Oxhy has initiated strategic collaborations with top universities and research centers to support research and development activities. In particular:

- **Collaboration with the University of Naples Federico II** for the co-financing of an industrial PhD focused on developing advanced materials for Oxhycell.

- **Ongoing partnerships with technology innovation centers** for the creation of prototypes and technological validation tests.
- **New additions to the R&D team**, hiring specialists in advanced materials, electrochemistry, and systems engineering.

On the industrial front, Oxhy is consolidating relationships with OEM partners and leading companies in target sectors, ensuring ongoing exchanges of expertise and feedback to improve the applicability of its technology.

Acquired and Strengthened Expertise

These new hires and collaborations have made it possible to expand and consolidate expertise in:

- **Advanced Materials Research:** Development and characterization of materials, electrodes, and assembly systems to improve Oxhycell's efficiency and stability.
- **Prototyping and Technological Development:** Implementation of pre-industrial prototyping processes and design of modular demonstrators for target markets.
- **Business Development and Marketing:** Strengthening the commercial pipeline and creating targeted strategies to penetrate key sectors.
- **Complex Project Management:** Enhancing organizational and operational capabilities to manage the project's rapid progress and strategic partnerships.

To date, the Oxhy team includes 12 collaborators in addition to two members of the Advisory Board. The details are provided below.

LEADERSHIP TEAM



Francesco P. Tuccinardi

Chief Executive Officer

Ingegnere aeronautico con un forte background ed esperienza nel trasferimento tecnologico e in amministrazione aziendale. Ha contribuito allo sviluppo delle tecnologie alla base di [Oxhy](#).



Roberto Germano

Chief Technical Officer

Fisico della materia condensata con rilevante esperienza nella ricerca e nel trasferimento tecnologico. Ha scoperto l'Effetto [Ossidroelettrico](#). E' anche un divulgatore su temi tecnico-scientifici.



Graziano Terenzi

Chief Strategy Officer

Pioniere delle tecnologie emergenti e imprenditore di Startup con un background in scienza e ingegneria dei sistemi di Intelligenza Artificiale. Ha co-fondato e diretto Startup di successo nel settore IT.



Otello Natale

Operations Supervisor

Ingegnere aeronautico. Cavaliere della Repubblica e Maestro del Lavoro. E' stato Direttore R&D di Alfa Romeo Avio e AD di EMA, società di Rolls Royce da centinaia di milioni di fatturato.



Prof. Giuseppe Vitiello

Scientific Advisor

Influente fisico teorico. Prof. Emerito di Fisica Teorica presso l'Università di Salerno. E' una delle menti più brillanti a livello mondiale sulle applicazioni macroscopiche di QED.



Guido Grossi

ESG Advisor

Giurista, economista e divulgatore. Già Direttore dei Mercati Finanziari e Tesoriere di BNL, è stato nel CdA di numerose aziende. E' attivo in diverse iniziative di promozione sociale.

IL TEAM OXHY



Pierluigi Tuccinardi

Investor Relations



Gabriel Malandra

Research Physicist



Alessia Calabrese

Molecular Biologist



Stefano Staccone

PhD, Director of Engineering



Alessandro B. Lazzarini

PhD, Electronic Engineer



Valentina Mello

Industrial Designer



Mattia Raimo

Lab Technician



Antonio Marrapese

Business Development Manager

Future Outlook

In the coming months, Oxhy plans to further expand the team by:

- Recruiting additional experts in various operational areas,
- Launching new collaboration programs with international research centers,
- Continuously training existing staff to bolster expertise in key fields.

Oxhy is aware that the success of the project depends on building a highly skilled, interdisciplinary, and motivated team, and will continue to invest in people as the cornerstone of its development.

7. Success Metrics

The key metrics for our startup at this pre-seed stage focus on three fundamental areas: **product development**, **market validation**, and the **acquisition of strategic resources**. At this point, we have defined a series of Key Performance Indicators (**KPIs**) that we systematically monitor across all operational areas. These metrics allow us to evaluate the results achieved and direct our activities toward the set strategic objectives. Below is the current status of the main KPIs:

1. Product Development Metrics

- **Percentage of Demonstrator (MVP) Completion in Relation to Development Objectives: 26%**
Calculated as the ratio between the percentage of completed features and the total percentage of all planned features.
- **Number of Product Iterations: 4**
Calculated as the number of iterations completed to advance the functionalities of the oxyhydroelectric cell up to now.
- **Average Time per Iteration: 2.75 months**
Calculated as the ratio of the total months of development to date to the number of product iterations.

2. Market Validation Metrics

- **Market Interest Score: 39%**
Calculated as the ratio between the sum of enthusiastic responses and the total number of positive expressions of interest collected.
- **Expressions of Interest: 524**
Calculated as the total count of spontaneous inquiries sent to the company's email, including those submitted via the website contact form.
- **Number of Requests for Additional Information (EOI): 47**
Calculated as the total count of explicit requests for further product details.

3. Acquisition and Networking Metrics

- **Number of Strategic Partnerships: 4**
Calculated as the total number of formalized collaboration agreements.

- **Number of Investor Expressions of Interest: 376**
Calculated as the total number of expressions of interest from both small and large potential investors.
- **Investor Interest Conversion Rate: 22%**
Calculated as:
(Number of investments received / Total Number of Expressions of Interest received)×100)
- **Letters of Intent/Term Sheets: 4**
Calculated as the total count of letters of intent and term sheets received from customers, partners, or potential investors.

4. Financial and Operational Metrics

- **Monthly Burn Rate: approximately €60,000**
Calculated as the ratio of total capital spent to the number of months.
Note: The month count consolidates October, November, and December 2023 into a single period due to still-limited expenditures in the early phase of activities.
- **Runway: approximately 11 months**
Calculated as the ratio between remaining capital and monthly burn rate (from September 2024).

We have also defined metrics for the next phase. Further details can be found in the document “Metrics and Traction,” available upon request.

8. Future Prospects

Next Steps in the Technological and Commercial Roadmap

Oxhy is at a critical stage of its development journey, with clear yet ambitious goals that will guide the coming months. On the technology front, the main steps planned include:

1. **Completion of TRL 6 (and BRL 7):** Through the optimization of Oxhycell prototypes and testing in operational environments, we aim to validate the technology for industrial and consumer microelectronics applications.
2. **Development of New Demonstrators:** We will create additional versions of the demonstrators, including modular ones for ALS sensor applications, IoT devices,

lighting systems, and industrial energy harvesting. These demonstrators will allow us to explore specific use cases and showcase the adaptability of our technology.

3. **Improvements in Miniaturization:** The roadmap calls for further advancements to reduce the size of Oxhycell even more, enhancing its efficiency and versatility.

Upcoming Initiatives

To accelerate the visibility and adoption of Oxhycell technology, we have several strategic initiatives planned:

- **Participation in International Trade Shows:** Oxhy will attend key industry events, including fairs dedicated to innovative technologies, IoT, and Energy Harvesting, to promote the technology and build new commercial connections.
- **Demonstrator Presentations:** We are preparing more advanced versions of our demonstrators— a modular system capable of showcasing Energy Harvesting applications in both consumer and industrial fields. This will be an essential tool for attracting new customers and partners.
- **Testing Programs with Strategic Partners:** We intend to collaborate with target companies to test Oxhycell technology in real-life scenarios. The first pilot programs are expected to begin in 2025.

Corporate Growth Plans

Oxhy's growth will be driven by a targeted scalability strategy, both technologically and commercially:

- **Market Penetration:** Our goal is to establish Oxhy as a global leader in the Energy Harvesting sector, initially focusing on high-potential market segments such as microelectronics, IoT, and industrial energy harvesting.
- **Team Development:** We will continue to attract top international talent to strengthen our internal expertise and accelerate technological and commercial development.
- **Scalability Initiatives:** Oxhy will work to expand its customer base, establish new strategic partnerships with OEM manufacturers, and secure additional funding to support its growth.

Long-Term Vision

With a clear plan and concrete objectives, Oxhy aims to solidify its position as a global reference point in Energy Harvesting, revolutionizing how energy is generated and used across numerous sectors. Our innovative technology is the key to a sustainable future.

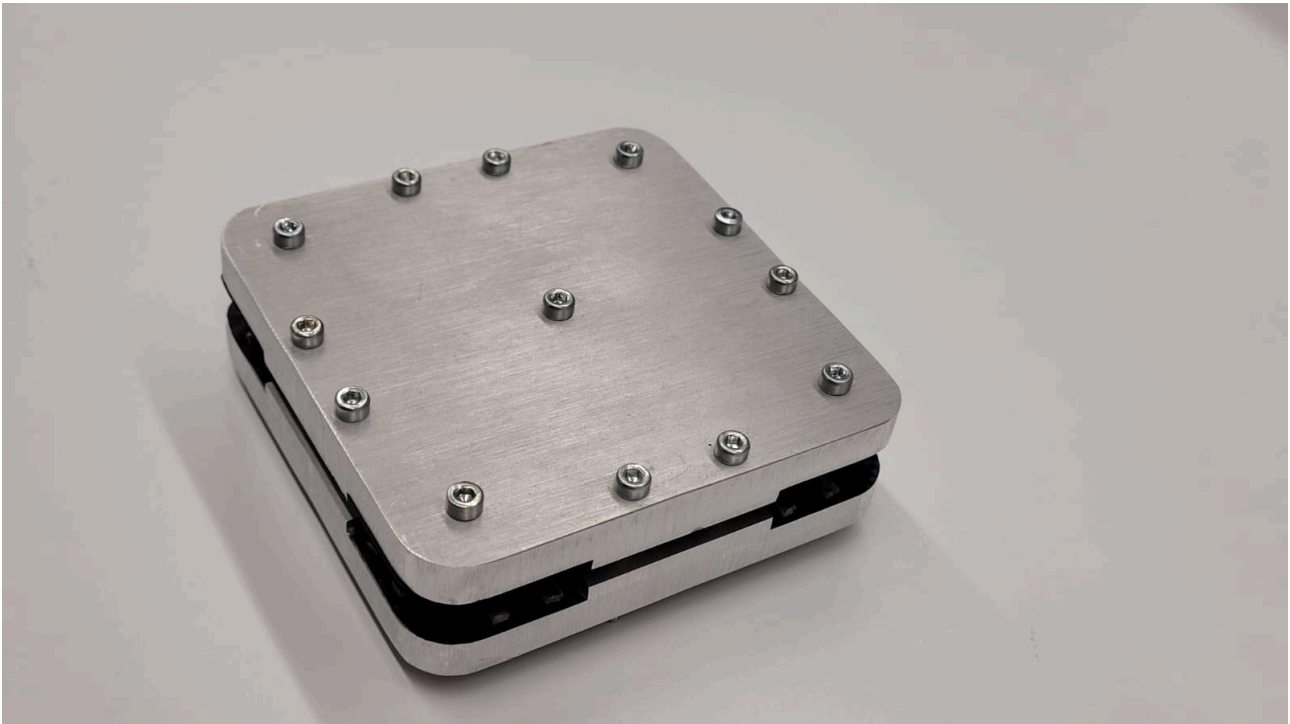
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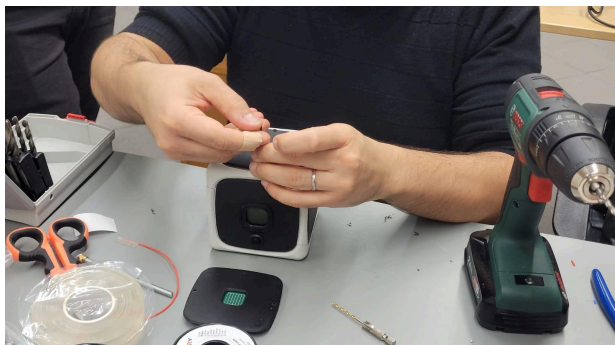
Thanks to the valuable support of our investors, Oxhy has made significant strides toward realizing its vision. We have achieved important milestones both technologically—advancing miniaturization and improving the efficiency of Oxhycell—and commercially, by starting to build a network of strategic partnerships and exploring new target markets. Every investment received so far has been used to strengthen the foundations of a project that has the potential to revolutionize the Energy Harvesting sector.

Oxhycell technology is not only an innovation in the Energy Harvesting market but also a potential game-changer for multiple industrial and consumer sectors. Our mission to transform the invisible energy of infrared radiation into a readily available, sustainable, and accessible resource aims to fundamentally change how the world generates and uses energy. The applications of our technology range from IoT to home automation, from smart lighting to electronic devices, with a potential impact that goes far beyond mere technological improvement—we are creating a platform for a more sustainable energy future.

Looking ahead, Oxhy's journey requires even closer collaboration with stakeholders, and in particular with our investors. We invite everyone to continue being an active part of our journey by sharing ideas, opportunities, and visions. We firmly believe that together we can accelerate the shift toward a more innovative and sustainable future. We remain open to ongoing dialogue and involvement to build, with your support, a lasting and positive impact.

EXHIBIT A: MISCELLANEA





CONTACT INFORMATION

Collaborate with Oxhy and Be Part of the Future of Energy!

We are always looking for partners, collaborators and investors who share our vision for a sustainable future based on energy innovation. If you would like to explore collaboration opportunities, discuss investments, or simply learn more about our project, do not hesitate to contact us.

Direct Contact

- **Email:** info@oxhy.it
- **Telephone:** +39 7352529 - 532 (Orari: Lun-Ven, 9:00 - 18:00 CET)

Visit our Offices

Oxhy S.r.l.

Via Coroglio, 57/104

Napoli, Italia

You can find us at the Polo della Città della Scienza in the "Campania Newsteel" Incubator, a hub dedicated to innovation and sustainability

Follow us Online

- Website: www.oxhy.it
- LinkedIn: [linkedin.com/company/oxhy](https://www.linkedin.com/company/oxhy)
- YouTube: <https://www.youtube.com/@OXHY-tw9uo>
- Telegram: <https://t.me/OXHYcommunity>

Note for Investors

Oxhy offers unique investment opportunities to enter a rapidly growing sector, that of Energy Harvesting. Contact us to receive our Investor Pack and discuss how we can generate value together.

Online Contact Form

Visit the "Contact Us" section on our website <https://www.oxhy.it/> to send us a message directly. We usually respond within 48 business hours.