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| Title | HyWatts Inc | 10/22/2024 |
| | by Oksana Riazantseva in SET Award 2025 | id. 48596036 |
| | info@hywatts.com | |

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| Original Submission | 10/22/2024 |
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| Which SET Award category are you applying for? (If you fit into several, please pick the one that seems the most relevant) | Clean Energy & Storage |
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| Registered name of company | HyWatts Inc |
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| Full name | Alex Ivanenko |
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| Position or title | Co-Founder & CEO |
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| E-mail address | ai@hywatts.com |
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| Your cellular/mobile number | +16504604488 |
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| Do you allow us to forward your contact details (name, email address) to SET/dena partners if they state their explicit interest in your Start-up (e.g. for your participation in other award programmes, events or funding opportunities)? | Yes, please! |
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| Link to website | www.hywatts.com |
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| Your company's social media handles | https://www.linkedin.com/company/hywatts/ |
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| E-mail address of the person responsible for communications and social media | ai@hywatts.com |
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| Country of registration | United States |
| In which city is your company headquartered? | Berkeley |
| Please provide a short (max. 340 characters including spaces) promotional text/'elevator pitch' in third-person (please use the name of your start-up instead of "we"). | HyWatts' power-plant-in-a-box™ delivers reliable, low-cost, zero-emission energy to power-intensive industries like EV charging stations and data centers. Combining on-site solar production with breakthrough hydrogen-based storage, HyWatts addresses a \$500B market, ensuring energy security and sustainability. |
| Please provide a more detailed description of your company in third-person (please use the name of your start-up instead of "we"). | <p>HyWatts is developing the Power-Plant-in-a-Box™, an innovative solution that integrates on-site solar energy production with hydrogen-based energy storage. This system utilizes a HTPEM Reversible Fuel Cell to efficiently convert solar energy into hydrogen and back into electricity, enhancing efficiency and reducing costs. The technology aims to offer reliable, renewable, and cost-effective power, ideal for applications such as EV charging stations, data centers, and more. This approach targets a \$500B market opportunity, aiming to mitigate the rising cost of electricity due to infrastructure limitations. HyWatts has secured 7 LOIs worth \$55M, with a potential \$3B pipeline, and has received significant grants and funding to support its development.</p> <p>The business model initially focuses on equipment sales for pilot projects, leveraging subsidies and incentives, and will transition to an energy-as-a-service model with long-term contracts.</p> |
| In short, what is your company's core product or service? | HyWatts' core product is the Power-Plant-in-a-Box™, which combines on-site solar energy production with proprietary hydrogen-based energy storage. This system uses a single HTPEM Reversible Fuel Cell to efficiently convert solar energy into hydrogen and back into electricity, providing reliable, low-cost, zero-emission energy. It targets high-growth industries like EV charging stations, data centers, and manufacturing. |
| Yes, we humanise energy! | checked |
| How does your start-up support a faster and fairer energy transition? | HyWatts supports a faster and fairer energy transition by developing its Power-Plant-in-a-Box™, which integrates on-site solar energy production with proprietary advanced hydrogen-based energy storage. This system aims to provide reliable, low-cost, zero-emission energy, addressing the needs of power-intensive industries like EV charging stations and data centers. By generating, storing, and converting energy on-site, HyWatts reduces reliance on the existing power grid, which is costly to upgrade, and minimizes environmental impact. This approach not only stabilizes power supply but also makes renewable energy more accessible and affordable. |

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| How does your innovation ensure that people in communities aren't left behind as transitions progress? | Our innovation ensures that communities aren't left behind during transitions by focusing on areas with underdeveloped infrastructure, such as the global south. We aim to leapfrog traditional centralized power production by deploying distributed microgrids. This approach not only accelerates economic development but also provides reliable, low-cost electricity, improving quality of life. Additionally, we leverage government subsidies and incentives to reduce costs for our partners, making our solutions more accessible and sustainable for diverse communities. |
| What is your company's USP? | HyWatts' unique USP lies in its breakthrough hydrogen-based energy storage technology. Unlike traditional systems that require separate electrolyzers and fuel cells, HyWatts combines both functions into a single component using its HTPEM Reversible Fuel Cell. This innovation significantly reduces capital expenditure (CAPEX) by 2x compared to current hydrogen technology and by 5x compared to Li-ion battery technology. Additionally, HyWatts' "power-plant-in-a-box™" offers reliable, low-cost, zero-emission energy, making it highly attractive for power-intensive industries. |
| How does your company incorporate sustainable practices in its internal processes and its product or service lifecycle? | <p>HyWatts is dedicated to sustainable practices across its operations and product lifecycle through several key initiatives. First, we commit to 100% renewable energy and green hydrogen, striving to decarbonize the economy. Our facilities and equipment rely on green energy, employing hydrogen fuel cell and electric vehicles, thus minimizing our environmental footprint.</p> <p>Second, we implement remote monitoring to maximize efficiency and operational uptime, complemented by collaboration with local B2B partners for maintenance. This reduces travel, carbon emissions, and supports green economy jobs, fostering workforce development.</p> <p>Third, while core functions like stack manufacturing remain in-house to ensure scalability, we outsource non-essential processes to partners. This strategic division reduces transportation emissions and bolsters the local economy by localizing manufacturing efforts.</p> <p>Fourth, our HTPEM RFC technology enhances water efficiency by recycling water into steam and vice versa, minimizing the necessity for demineralized water. Operating between 160-200°C allows the use of non-potable water, lessening environmental impact and potentially providing clean water as an additional output.</p> <p>Lastly, we prioritize hydrogen safety, ensuring our systems responsibly handle this safe and non-toxic energy source, mitigating environmental and health risks. These comprehensive efforts ensure our operations and products remain aligned with our sustainability objectives.</p> |
| In which stage is your company? | Seed Stage |

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| What type of clients do you target? Select all that apply: | Large corporates Mid-sized companies Public sector |
| What is your long-term desired business model or main revenue channel? Select the most important channel(s): | Direct sales B2B Indirect sales (through resellers) Service and maintenance Technology or IP licensing and royalties |
| Who are your top three competitors? | 1. Iron Air Batteries (like Form Energy) 2. CO2 Storage (like Energy Dome) 3. Li Batteries (like Tesla) 4. Flow batteries (such as ESS) 5. Thermal Storage (such as Antora) Along with advantages in cost, physical footprint, and other factors, HyWatts' critical differentiator is its ability to provide both energy storage and green hydrogen, which is not possible with other technologies. Additionally, HyWatts' HTPEM Reversible Fuel Cell technology reduces CAPEX significantly compared to traditional hydrogen systems. |
| In the last 12 months, how many appearances did your company make in national or international press, including news articles, thought-pieces, etc.? | 4-10 |
| If possible, please provide weblinks to the top three most influential/visible articles your company appeared in. | https://www.h2-view.com/feature/h2-view-introduces-hywatts/2113320.article/ https://evmagazine.com/charging-and-infrastructure/ev-revolution-wont-start-without-improved-infrastructure |
| How many awards or prizes has your company previously won? | 0 |
| | Milestones Please provide dates for the following milestones. |
| When did you incorporate your business? (MM/DD/YYYY) | 8/19/2023 |

When did you start to develop your core technology/service?
(MM/DD/YYYY)

When did you start (or expect to start) sales operations?
(MM/DD/YYYY)

Human Resource and Company Structure In this section, please give us an insight into your resources and structures.

How many founders are still active in the company?

Does one of your founders/co-founders identify as female?

Please give a short bio for each of your founders.

1. Sam Ruben, MBA/MPA, Co-Founder and Chief Business Development Officer at HyWatts, MBA/MPA in Sustainable Management, Presidio Graduate School, BA, Vassar College
Sam Ruben is a driven and accomplished innovator, entrepreneur, and co-founder of Mighty Buildings/BuildTech VC. With an MBA and an MPA from Presidio Graduate School, Sam has taken on the Climate Crisis as a core member of the World Economic Forum G20 Sustainability Taskforce. Using his expertise and experience building cross-sector partnerships, he works towards innovative solutions for a more sustainable future for people, planet, and prosperity.
2. Alex Ivanenko, PhD, CEO and Co-Founder at HyWatts, B.S. & M.S. Engineering with Honors, PhD Electrochemistry, Saratov State Technical University.
Alex Ivanenko is an innovator, serial entrepreneur, and thought leader in fuel cell technology with a PhD in Electrochemistry.
He is a former Founder & CEO of the Silicon Valley-based manufacturer of H2 fuel cells for aviation HyPoint (acquired by ZeroAvia in 2023 by a nine-digit figure), and has been recognized for accomplishments in driving sales and developing business strategies at 3M and Owens Corning.

Total number of employees (excluding interns, freelancers and contractors) one year ago:

Total number of employees (excluding interns, freelancers and contractors) today:

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| Total number non-male employees today: | 2.0 |
| In how many offices around the world are employees located? | 1 |
| Current number of positions of management in total? | 3.0 |
| Number of employees female or no specified gender in positions of management today. | 0.0 |
| How many full-time employees own at least 4% of company shares (excluding company founders)? | 2 |
| According to SDG-5, how do you implement diversity and inclusion through your company policies? | <p>We are currently still quite small with an 9 person team. We recognize that we have work to do in improving our diversity, especially in racial and gender given that of those 9 only 1 is a person of color and only 2 identifies as female. In other areas, we are doing quite well - namely in the fact that only 1 member of our team is a native born US citizen, with the remainder of the team having been born in Eastern Europe and Africa. We are also proud that one of our team is the first in their family to have gone to college. As we grow we are including DEI considerations into our hiring and are looking forward to continuing to improve the diversity of our team.</p> <p>Please note For the next section, we define 'operational partners' as the total sum of active founders plus employees who own at least 4% of company shares.</p> |
| What is the average availability (%) of active founders for the company project? | 100 |
| How many of your active founders have previously been entrepreneurs? | 2 |
| How many of your active founders have extensive (min. five years) experience in your target market? | 2 |

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| What is the total amount personally invested by operational partners in the company to date? | 100,000+ |
| What is the total proportion of shares still owned by active founders? (%) | 90.0 |
| Do you have professional investors as shareholders? | Yes |
| If yes, how would you describe the type of investors? | Business angels VC capital or private equity funds Family offices |
| Does your company have a structured Board of Directors or an Advisory Board? | Yes |
| If yes, how often do board meetings take place? | Annually |
| How many full-time employees do you plan to recruit in the next 12 months? | 8.0 |
| How many full-time employees do you plan to recruit in the next 24 months (including the above)? | 25.0 |
| How many international offices do you plan to open in the next two years? | 2 |

Commercial Activity Let's talk revenue & commerce!

For this section, please provide answers in € Euros. Please write out numbers in full. DO NOT use dots or commas in the numbers.

How would you describe your current commercial maturity?

First users, paid trials or customers

Please provide monthly revenue figures for the following time period: one year ago

0.0

Please provide monthly revenue figures for the following time period: Last month

40000.0

Please provide monthly revenue figures for the following time period: Target in two years

1400000.0

Please provide figures for the number of paying customers or users for the following time periods: one year ago

0.0

Please provide figures for the number of paying customers or users for the following time periods: Last month

2.0

Please provide figures for the number of paying customers or users for the following time periods: Target in two years

4.0

What is the current contribution of your core revenue stream to your company's revenue? (%)

>80%

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| How much revenue do you generate each month from your largest client or customer? | 40000.0 |
| If possible, please provide some examples of your target/key customer base. | Our target/key customer base includes: 1. ZEV Charging Stations: Initially focusing on rural areas and existing truck stops. 2. Data Centers, Warehouses, and Community Microgrids: Planned expansion by 2027. 3. Utility Scale Storage: Targeted by 2030 and beyond. |
| From the above, what or who is your main target market? | ZEV charging stations in rural areas, focusing on existing truck stops and new stations. |
| How big is your main target market? | 1000000000000.0 |
| How many international offices have you opened in the last 12 months? | 1 |
| What contribution to company revenue (%) has international business made in the following time period: one year ago | 0.0 |
| What contribution to company revenue (%) has international business made in the following time period: from company founding to today | 0.0 |
| What contribution to company revenue (%) will international business make in the following time period: from now until two years' time | 40.0 |

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| From the list below, select the main regions where you plan to have sales operations within the next five years? (Select up to three regions) | North America Middle East (West Asia) and North Africa Eastern Europe Western Europe Sub-Saharan Africa |
| Have you established any sales partnerships with businesses abroad in the last 12 months? | Yes |
| If yes, please specify which: | <p>Yes, in the last 12 months, HyWatts has established several international sales partnerships. Notably, in December 2023, we partnered with German chemical producer BASF to enhance renewable energy products using our high-temperature proton exchange membrane, Celtec-Z. Additionally, in October 2023, we partnered with Sunbo Unitech to integrate their hydrogen electrolyzer systems into our product designs and potentially serve as an exclusive distributor for their products in selected countries.</p> <p>Additionally, HyWatts has established several sales partnerships abroad, including with businesses in the UK and South Africa. Notably, we have an LOI with Manston Airport in Southern England and are in conversation with an EV charging station developer in South Africa.</p> |
| | Product Development This section covers your technology, R&D and intellectual property. |
| | Technological Maturity |
| Please classify the technical maturity or readiness of your core product/service for the following time period: one year ago | Proof of concept |
| Please classify the technical maturity or readiness of your core product/service for the following time period: up to today | Functional prototype |

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| Please classify the technical maturity or readiness of your core product/service for the following time period: in the next two years | Stable and deployed product or service |
| Overall, how technically complex is your core product or service? | Average complexity |
| Do you plan to develop and launch new products or services in the next five years? | yes |
| What is the current stage of development of the new products or services? | First development phases and testing |
| Please provide a short description of the new products or services, including planned launch date. | HyWatts is developing the Power-Plant-in-a-Box™, which combines solar energy production and hydrogen storage using a high-temperature proton-exchanged membrane (HTPEM) Reversible Fuel Cell. The system MVP is scheduled for deployment in December 2024. Additionally, HyWatts plans to test its first 5-kilowatt (kW) stack prototype in January 2025. These innovations aim to enhance efficiency, cut costs, and provide a reliable, renewable power solution. |
| What contribution (%) to total company revenue do you expect the new products or services to make within the next five years? | >40% |
| How many full-time employees currently work in technical roles at your company? | 5.0 |
| Do you have any established collaborations or sub-contracting relationships with third parties? | Yes |

Intellectual property Please provide figures for intellectual property (IP) for the following time periods.

Number of patents or other forms of registered IP applied for since launch: 2.0

Number of patents or other forms of registered IP granted since launch: 0.0

Number of patents or other forms of registered IP applications planned for the next 24 months: 2.0

Finance & Funding Again, for this section please answer to the nearest amount in EUR.

What is your average level (%) of recurring revenues? 25-50%

When do you plan to breakeven? After more than 24 months

How would you classify your current funding strategy? Mainly external-funding and equity

Since launch, how many funding rounds have you completed, excluding friends and family? 1

Since launch, what is the total amount of funds raised, including equity and debt? 1200000.0

If applicable, what was the post-money valuation of the last equity funding round? 11000000.0

Are you currently looking for funding? Yes

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| What is the current funding target? | \$1000000 |
| How much equity and debt finance do you plan to raise in the next two years? | 10000000.0 |
| If applicable, how will you use the additional funds over the next two years? | Product development Hiring and payroll International expansion |
| | Key Growth Challenges What are the biggest risks to your business or challenges to your growth? Please provide a realistic self-assessment using the scale where 1 represents no risk or challenge and 10 represents serious risk or challenge. If the challenge is not applicable to your business, then please select 1. |
| Acquiring or hiring the right skills for the business: | 4 |
| Getting access to business support or mentoring: | 6 |
| Landing first clients or customers: | 6 |
| Converting trials or pilots into long-term revenue generating contracts: | 2 |
| Entering international markets: | 5 |
| Protecting intellectual property rights: | 2 |
| Improving existing products or services and developing new ones: | 4 |
| Getting access to private funding (equity or debt): | 6 |
| Getting access to grants or loans from public bodies: | 6 |

Managing cash flow, financing day-to-day operations and investing in corporate development:

3

Adapting and complying with changing policy and regulation:

6

Partner Program: Free Electrons 2025 Here's your chance to apply also for the Free Electron Program 2025. Free Electrons is a global innovation program, where some of the largest energy utilities and startups from around the globe work together to deliver pioneering solutions and co-create the future of energy. The program focuses on working to pilot projects, commercially deploy products, facilitate investment opportunities, learning and development. Learn more about the Free Electrons program [here](#) and discover how you can disrupt the market with your solution. Find the terms & conditions [here](#).

Would you also like to apply for the Free Electrons 2025 program?

yes

What do you hope to gain out of being in the Free Electrons program? How do you think the utility partners can help you achieve your goals? Please mention any specific utility partners that you would like to work with.

Utility partners can significantly help us achieve our goals by providing the necessary infrastructure and support for our technology deployment. We are currently in active conversations with several utility companies, including Duke Energy, SoCal Gas, and Pacific Gas and Electric, eNel. These partnerships are crucial as they recognize the potential of our technology and are excited about its promise, even though they typically require a higher Technology Readiness Level (TRL) than we currently have.

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| Please describe your ideal pilot with a Free Electrons utility partner (include estimated time & resources required and anticipated cost associated with suggested pilot) | <p>Our ideal pilot with a Free Electrons utility partner would involve deploying our Power-Plant-in-a-Box™ system. This system integrates on-site solar energy production with hydrogen-based energy storage, utilizing a single HTPeM Reversible Fuel Cell to convert solar energy into hydrogen and back into electricity.</p> <p>Estimated Time & Resources Required:</p> <ul style="list-style-type: none">- Feasibility Study: 2-3 months- System Deployment: 3-6 months- Resources: Engineering team, project management, and collaboration with the utility partner for site preparation and integration. <p>Anticipated Cost:</p> <ul style="list-style-type: none">- Feasibility Study: ~\$70k (based on previous studies)- System Deployment: Costs will vary depending on the scale, but initial pilot projects have been estimated in the range of \$300k-\$1M. <p>This pilot aims to demonstrate the system's capability to provide reliable, renewable, and cost-effective power, potentially stabilizing the power supply and reducing environmental impact.</p> |
| Please select up to two categories that best describe what your business focusses on. | <p>Grid Planning, Optimisation and Stability</p> <p>Energy Storage</p> |
| I accept the Terms & Conditions of the Free Electrons program | <p>checked</p> |
| I took note of the Data Protection Declaration by Free Electrons | <p>checked</p> |
| <p>Documents Please upload your pitch deck and company logo.</p> | |
| <p>Please upload your pitch deck as a PDF with no more than 15 slides (!) (If you submit more than 15 slides your application will be discarded).</p> <p>1Bn_HyWatts_Deck_-_Fall_2024_copy.pdf</p> | |
| <p>Please upload your company logo (minimum: 300dpi)</p> <p>HyWatts_Vertical.png</p> | |
| <p>Picture of the founders or your product</p> <p>Untitled_20.jpg</p> | |

Link to company
video/pitch video
(optional)

<https://www.youtube.com/watch?v=tb4R-yhc2M8>

How did you find out
about the SET
Award?

SET website

I affirm that the
presented business
concept and/or its
realization is based
on the company's
own ideas and that
the company
maintains the rights
to use these ideas

checked

Additional privacy
notice

checked

I took note of the
Data Protection
Declaration by dena

checked

If you are interested
to receive updates
from dena, please
select

a. Sign up to the
Start-up Energy
Transition (SET)
Newsletter

checked

b. Consent to be
contacted by the
German Energy
Agency (dena) about
all products and
services

checked

c. Consent to be
contacted by the
German Energy
Agency (dena) ONLY
about events and
networks

checked

d. Consent to be checked
contacted by the
World Energy
Council about future
events, programs
and surveys
