

E-Cat Power - The Impossible Made Possible

24/7 Unlimited Sustainable Electricity from Nature

Throughout space, there is energy . . . it is a mere question of time when men will succeed in attaching their machinery to the very wheelwork of nature."

Nikola Tesla

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The Executive Summary

Imagine a world where clean, limitless energy is available anywhere, anytime. This may become a reality following the introduction of E-Cat Power, a new and revolutionary power source, soon to be available, providing 24/7 unlimited sustainable electricity generation from nature.

More than 130 years ago, Nikola Tesla predicted that one day we could tap into the ocean of energy surrounding us:

“Throughout space there is energy... it is a mere question of time when men will succeed in attaching their machinery to the very wheelwork of nature”. Full text in [Ref. \[E-1\]](#).

While highlighting the present challenges of the global energy situation, we, Leonardo Corporation, propose with this white paper that his prophecy has now become a reality.

How does E-Cat Power work?

An E-Cat Power generator utilizes a unique component we call the SKL NGU Power Cell.

Think of it like a solar cell, but instead of sunlight, this cell harnesses electricity from the vacuum energy of the [Zero-point energy](#) field, [Ref. \[E-2\]](#), the abundant energy source available throughout the universe.

NGU (Never Give Up) denotes our meticulous efforts behind this invention.

One NGU Power Cell (only 60 mm in diameter) can continuously generate 10W of DC electricity – 24 hours a day, 7 days a week for more than 10 years and without relying on fuel, weather conditions, or any external connection.

Just like with solar cells and solar panels, multiple NGU Power Cells can be combined into NGU Power Generators with capacities from watts to megawatts. And as with solar panels, the DC power from NGU generators can be converted to AC power using commercial inverters.

Why is E-Cat Power revolutionary?

Unlimited Clean Electrical Power

E-Cat Power provides 24/7 continuous and sustainable electricity without generating emissions or requiring fuel. (More in 3. Sustainability).

Flexible Power Generation

The superior power-density and modular, autonomous functionality allows for electricity generation directly at the point of need, including in mobile applications. (More in 2. Technology and Design and 4. Application and Integration.)

Cost-Effective

With low initial costs, no fuel expenses, and a long lifespan, E-Cat Power offers a competitive total cost of the generated electricity. (More in 5. Costs an Economy)

What's next for E-Cat Power?

The first public demonstration:

After more than 20 years of meticulous and persistent R&D, the E-Cat Power technology was officially presented at the global E-Cat Power Reveal on September 27, 2024 in Latina, Italy. At this event an E-Cat Power generator was shown to successfully charge the battery of a commercial EV (electric vehicle), a Renault Twizy 80, while it was driving.

(see <https://youtube.com/@ecatthenewfire>)

The result from September 27 is evident; E-Cat Power is now real and works.
(More in 7. Public Demonstrations 2024)

Commercial implementation

Leonardo Corporation will begin mass production of NGU Power Cells and NGU Power Generators when pre-orders reach the equivalent of 10 million 10W cells. Once this goal is achieved, large-scale production, which is already prepared, and deliveries will commence. This will also mean extended independent verifications of E-Cat Power in different applications can begin. This crucial step will obviously be necessary for confirming the capability, potential and the overall reliability and credibility of E-Cat Power. (More in 6. Implementation and Future)

How important is E-Cat Power?

We believe E-Cat Power has the potential to revolutionize various sectors, from powering homes and businesses to electrifying transportation and beyond.

In fact, we believe E-Cat Power may embody Nikola Tesla's vision of unlimited, clean electrical power available at any point of need and may ultimately prove to be a groundbreaking, revolutionary step towards a sustainable planet. We are proud to have played a role in turning Tesla's vision into reality.

We fully understand those who find the actual existence of something like E-Cat Power hard to believe. Still, we hope this paper will be useful for everyone interested in learning why E-Cat Power is likely to play an essential role in the emerging necessary transition to a low-carbon future.

The Renewable Energy Challenge

Before expanding our story on E-Cat Power we would like to draw your attention to our common immense global challenge.

The Renewable Energy Challenge refers to the challenges and hurdles encountered in the necessary and complex transition of shifting our global energy supply from fossil-based to renewable energy sources and for the planet to meet the 1.5 °C degree Climate Goal, [Ref. \[R-1\]](#), [Ref. \[R-2\]](#). You can find a comprehensive roadmap for the wide range of actions now needed by the global community presented in the International Energy Agency (IEA) report: “Net Zero by 2050”, [Ref \[R-3\]](#).

Renewable energy sources refer to forms of energy that can be replenished naturally and have no or very low greenhouse gas emissions compared to traditional fossil sources such as oil, coal, and natural gas. Our most important renewable energy source is obviously the sun, whose energy can be harvested as heat directly, or via fire and also as electrical power, directly from solar cells, and indirectly via hydro, wind, and biomass.

According to the IEA, nuclear power, while acknowledged as non-renewable, will still play an important role in the transition because of its ability to produce stable, low-carbon power. Most countries already using nuclear power are planning for a hybrid power future, where the intermittent nature of renewables can be balanced by the more consistent and predictable nature of nuclear power.

Global Power Sourcing in 2022/2030

Despite the strong growth of solar and wind power in recent years, and building on the already significant contribution of hydropower, electrical power still only accounts for 20% of global energy consumption in 2022, and only 29% of that power was generated by renewable energy sources. [Ref. \[R-4\]](#).

Year	Hydro	Wind	Solar	Other	Nuclear	Coal	Gas	Other
2022	14.9%	7.2%	4.5%	2.7%	9.2%	35.4%	22.7%	3.4%

Renewable

Carbon free

Fossil

According to the IEA, [Ref.\[R-3\]](#), the current global targets for total renewable energy capacity fall short of what is needed, and the capacity would have to be at a minimum doubled by 2030 to reach climate targets. This fact makes the fast growth of renewable energy sources in transportation and heating critical to the energy transition.

We believe that E-Cat Power with its sustainable electricity from nature, will start to play an important role in the global energy transition, allowing redefinitions and acceleration of global targets towards 100% carbon-free power production.

Before further discussing the potential importance of E-Cat Power, let us first look at the main characteristics and limitations of the most common, [renewable](#) and [non-renewable/carbon-free](#) sources for electrical power now in use. The figures represent global electricity production share as of 2022, [Ref. \[R-4\]](#).

Hydropower (14.9%)

Characteristics: Hydropower uses the kinetic energy of falling water to generate electricity in turbines.

Limitations: Hydropower is highly dependent on water availability and requires the construction of dams or barrages, which can have significant ecological and social impacts. Limited suitable sites and high initial costs are also considerations, and the site of production lacks any flexibility.

Nuclear (9.2 %)

Characteristics: Nuclear power uses fission process: finite uranium releases heat which is used to produce steam which drives turbines, generating consistent, predictable electrical power.

Limitations: Not considered renewable but a low-carbon emission power source. Building new plants is time-consuming and very expensive. There are negative environmental impacts from mining, handling and storage of radioactive waste, and cooling water. There is a (very low) risk of nuclear accidents and toxic emissions. Nuclear materials can also be used for malicious purposes.

Wind Power (7.2%)

Characteristics: Wind power uses wind turbines to convert the kinetic energy of wind into electricity.

Limitations: Wind power is variable and depends on wind speed. Wind farms require significant land area and may face public opposition due to visual impact and potential impact on bird migration patterns. Offshore windfarms require new power transmission infrastructure. Wind power requires energy storage solutions for a consistent power supply.

Solar Power (4.5%)

Characteristics: Solar energy is obtained from the sun's radiation and can be converted into electricity using photovoltaic (PV) cells or concentrated solar power (CSP) systems.

Limitations: Solar power generation depends on sunlight availability, making it intermittent and location-dependent. Large installation areas and energy storage solutions needed to address fluctuations in supply and demand.

Biomass Power (2.3%)

Characteristics: Biomass is considered a carbon-neutral, renewable energy source that harnesses the stored chemical energy from the sun, which plants produce through photosynthesis. Biomass power is achieved by burning biomass and converting the heat into plannable electricity power by steam turbines.

Limitations: Biomass energy production can lead to deforestation and compete with food production. Efficient collection and processing methods are needed, and emissions from biomass combustion can contribute to air pollution.

E-Cat Power (0%)

Characteristics: E-Cat Power provides 24/7, unlimited, sustainable electrical power by using its unique NGU Power Cell for direct extraction of DC electricity from Zero-point energy field, which is always present anywhere in the universe.

Limitations: The theory behind E-Cat Power is still not generally accepted by science and its revolutionary characteristics have not yet been independently verified. E-Cat Power still lacks any record for long term reliability in professional operation. The manufacturing capacity needed to balance the expected fast growth is also not yet available and the necessary expansion of production capacity is expected to consume significant time and resources.

What may we ask from a Renewable Source of Power?

We propose, with the assistance of GPT-4o, that the most important demands on an ideal source of electrical power, could be summarized as:

- Environment Responsibility
- Economic Efficiency
- Security and Stability
- Accessibility and Flexibility

How may the overall published performance of E-Cat Power potentially fulfill these demands?

Environmental Responsibility

A high degree of environmental responsibility implies that the energy source has a minimal negative impact on the environment during its complete lifecycle, manufacturing, operation, and recycling.

E-Cat Power offers a high environmental responsibility; it does not generate any emissions or harmful radiation and does not produce any toxic or radioactive waste. The manufacturing of the E-Cat Power NGU Power Cell resembles the manufacturing of microcircuits and offers 100% recycling.

Economic Efficiency

For any energy technology to become widely used, it must have an economic efficiency that is competitive with other existing energy technologies.

E-Cat Power offers a low initial cost/kW and no running fuel cost, as with biomass, nuclear and fossil, and no intermittency in production, as with wind and solar. Assuming an estimated 24/7 operational lifetime of more than 11 years, overall economic efficiency is expected to become highly competitive.

More details in 5. Costs and Economy.

Reliability and Security

The level of energy security refers to how reliable and predictable a power source is and how well it can withstand unpredicted disruptions due to technical faults, adverse weather conditions, natural disasters, geopolitical conflict, or other incidents.

The fundamental characteristics of E-Cat Power provide a high degree of energy security. E-Cat Power's basic design allows for fully decentralized electricity generation and does not require any connection to the central electrical grid. Once started, an E-Cat Power NGU Generator is expected to produce stable power 24/7 for an estimated 100,000 hours without default maintenance.

Flexibility

A power source with high flexibility can be easily adapted to bring the requested amount of power to the actual point of need, stationary or mobile.

E-Cat Power may become the ideal technology for mobile applications. It has a very high power density, by volume and weight, and can operate in severe climate conditions. This should E-Cat Power generators ideal for use in moving vehicles and in remote and less developed geographic regions. More details in 4. Application and Integration.

Conclusion:

From the above review, the characteristics of E-Cat Power seem to approach those of an ideal renewable electrical power source and as such, is a new, unexpected but powerful tool to meet the renewable energy challenge.

1. History and Science

The History of E-Cat Power

The innovative E-Cat (Energy Catalyzer) technology used by E-Cat Power to revolutionize the production of clean, renewable electricity, is the brainchild of Italian inventor Andrea Rossi, [Ref. \[1-1\]](#). His journey into this groundbreaking innovation was sparked by the March 1989 announcement by renowned physicists Martin Fleischmann and Stanley Pons claims of anomalous heat generation from an Electrochemical cell. This discovery, which they presented as 'cold fusion,' immediately captured the attention of the global scientific community and media.

Among those intrigued by the Fleischmann and Pons announcement was Rossi, who then embarked on a mission to replicate the Fleischmann and Pons effect. Despite initial unsuccessful attempts, Rossi's interest in exploring ways to produce anomalous energy remained undeterred. In pursuit of this goal, he relocated to the USA in 1996 and established Leonardo Corporation. His relentless experiments then led to his first observation of anomalous heat in 1997 - a significant first milestone in his research journey.

The meticulously chronicled history of Andrea Rossi and E-Cat from 1986 to 2014 is detailed in Mats Lewan's book *An Impossible Invention*, [Ref. \[1-2\]](#). The book provides an in-depth look into the initial trials, tribulations, and triumphs of Rossi's first, almost three, decades with E-Cat.

In addition, Rossi has since March 2010, actively on his blog, the Journal of Nuclear Physics, [Ref. \[1-3\]](#), been engaged with the public almost daily, commenting on questions and suggestions related to the E-Cat and its refined transformation into E-Cat Power.

His commitment to transparency and public dialogue in the blog has already undoubtedly contributed to a wider understanding of this novel technology. The blog archive, presently holding more than 66,000 posts, should be a unique source for future research about the history and development of the amazing technology of E-Cat Power.

The work of Andrea Rossi on the E-Cat has rarely been covered in worldwide media. There have been occasional mentions on it in few newspapers and magazines, but overall, the coverage has been very light. Rossi's claims and theory lie far outside the mainstream of modern science, and are therefore most often ignored or dismissed. One clear exception is the independent website [E-Cat World](#), [Ref. \[1-4\]](#), that since April 2011 has regularly covered the development of E-Cat Power and related subjects.

The Science behind E-Cat Power

E-Cat Power is already by several considered something that may redefine the boundaries of science and technology. The science underpinning E-Cat Power is based on over 40 years meticulous research into energy recovery from plasma. The inventor, Andrea Rossi, has proposed a theoretical model in his paper "[E-Cat SK and long-range particle interactions](#)", [Ref. \[1-5\]](#), to explain the theory of the E-Cat plasma generator, the core of E-Cat NGU Power Cell.

In this paper, and drawing upon the seminal work of pioneers like Nikola Tesla, Paul Dirac, Kenneth Shoulders, Hal Puthoff and Norman Cook, Rossi explores new understandings of the electron structure and proposes a mechanism to extract electromagnetic energy from the vacuum energy of the [Zero-point energy](#) field, [Ref. \[E-2\]](#). the abundant energy source available throughout the universe.

The revolutionary theory on how E-Cat taps energy from ZPE has already created significant interest from the scientific audience and the "E-Cat SK and Long-range Particle Interactions" article from 2019 has already reached 134,000 in total readings, more than 99.9% of the 1.5 million publications on ResearchGate.

In summary, the E-Cat NGU Power Cell operates using E-Cat Technology, a proprietary method of electricity production using advanced properties of the electron to harness electricity from the vacuum energy of the [Zero-point energy \(ZPE\)](#) field, the abundant energy source available throughout the universe. Ref. [E-2].

We believe E-Cat Power to be a significant leap forward in the field of renewable energy, promising a future where clean and abundant energy could be a reality for all.

2. Technology and Design

While the details of the advanced E-Cat Power Technology applied in E-Cat Power are still proprietary, the overall functionality and application show similarities with the operation of solar cells in solar panels. Here is how it works:

The E-Cat NGU Power Cell

An E-Cat Power generator utilizes a unique component called the NGU Power Cell. Think of it like a solar cell, but instead of sunlight, this cell could harness electricity from the vacuum energy of the [Zero-point energy \(ZPE\)](#) field, an abundant energy source available throughout the universe. Ref. [E-2].

NGU (Never Give Up) denotes our meticulous efforts behind this invention.

From the outside, the NGU Power Cell appears like a flat, white, plastic cylinder 30 mm high and 60 mm wide, with two extending 5 cm output voltage wires and the E-Cat logo on top. (image 1 below). The inner design is proprietary, although a miniature xenon vacuum tube and a powerful AI controller should be considered vital components.

One NGU Power Cell may continuously generate 12V /10W of DC electricity – 24 hours a day, 7 days a week for more than 10 years and without relying on fuel, weather conditions, or any external connection.

Just like solar cells and solar panels, multiple NGU Power Cells can be combined into NGU Power Generators with capacities from watts to megawatts.

And as with solar panels, the DC power generated by NGU generators can be converted to AC power using commercial inverters. The E-Cat Power NGU datasheet, Ref. [2-1], details the technical performance, including the compliances tested and certified by a global certifying organization.

The E-Cat NGU Power Generator

An E-Cat NGU Power generator could be considered the ultimate DC power source. It may continuously supply sustainable electrical power from W to MW without a connection to any external energy source.

The desired DC power and voltage are achieved by interconnecting (in parallel and/or series) the required number of the basic NGU Power Cell (12V-10W) in a similar way as is done with solar cells in solar panels.

A basic 12V-100W NGU Power Generator made from 10 pcs of parallel connected NGU Power Cells is already available for preorder.

E-Cat Power generators with larger power can be created by combining the required number of NGU 100W generators.

Due to the superior power density of the NGU Power Cell, a complete 1MW NGU Power Plant could even be fitted in a standard container with a size 20 feet and a 2MW NGU Power Plant in a 40 feet size. Both versions are already available for preorder.

Recently we also could present a medium power design, a 3kW NGU Power Generator made from the interconnection of multiple 100W-NGU generators. (image 2).

From our tests so far, it seems an NGU Power Generator is capable of producing completely decentralized electricity at any point of use in normal land environment. The potential applications in air, subwater and space has to be subject for thorough research.

Consequently, an NGU Power Generator can also be used in real mobile applications, e.g. charging an EV battery while driving as was already presented in the first week of October on YouTube, X, and E-Cat World. (see <https://youtube.com/@ecatthenewfire>)



Image 1



Image 2

3. Sustainability

The sustainability of an energy source refers to its ability to meet present and future energy needs without causing significant harm to the environment, society, or the economy.

A sustainable energy source should minimize negative impacts and contribute positively to the well-being of current and future generations.

The environmental sustainability of E-Cat Power involves three main factors:

Resource Availability:

This involves considering whether the energy resource is renewable (i.e., it can regenerate within a human timescale) or non-renewable (it has a finite quantity).

Like Solar Power, E-Cat Power does not consume any fuel or water but extracts electricity from an inexhaustible energy source in nature. While a solar cell extracts electricity from the solar light, an E-Cat NGU Power Cell extracts electricity from the Zero-point energy field, which is available everywhere. [Ref. \[E-2\]](#).

When exchanged, after an estimated lifetime of more than 100,000 hours of operation, the NGU Power Cell could be 100% recycled by the manufacturer.

Environmental Impact:

This includes the resource's impact on air, water, and soil quality, its carbon footprint, the amount of waste it generates, and its effects on biodiversity and ecosystems.

The NGU Power Cell does not produce any noise, emissions, hazardous radiation, or waste during operation and is designed to be 100% recycled by the manufacturer after an estimated lifetime of 100,000 hours.

The NGU Power Cell carries a CE mark and is globally certified as Safe with Non-Hazardous content. The list of certified compliances is published in E-Cat Power NGU Datasheet, [Ref. \[2-1\]](#).

Energy Efficiency:

This refers to the amount of valuable energy obtained from the resource compared to the energy expended to extract, process, and use it, the Grey Energy.

One NGU Power Cell is expected to generate 10W consistent electrical output during at least 100,000 hours. As a result, the total electrical energy per NGU Cell is estimated to be larger than 1MWh while the Grey Energy of the NGU Cell is estimated to be less than 1 kWh.

Comparing the Environmental Sustainability of Renewable Power Sources:

Awaiting a first independent scientific evaluation of the sustainability of E-Cat Power we recently, using the previous page as input, asked Chat GPT4o with for a potential rating (1-5) of E-Cat Power compared with other renewable power sources.

Here is the rating extracted from the GPT chat, [Ref. \[3-1\]](#):

	Environmental Impact	Resource Availability	Energy Efficiency
Solar power	4/5	5/5	3/5
Wind power	4/5	4/5	4/5
Hydropower	3/5	4/5	4/5
Biomass	3/5	3/5	3/5
E-Cat Power	5/5	5/5	5/5

Disclaimer:

The above ratings presented for E-Cat Power are subjective and still provisional while presently based only on provided assumptions and limited, not yet independently verified, data from the E-Cat Power NGU Datasheet. The ratings will be updated after scientific independent verifications of the actual performance are published.

4. Application and Integration

E-Cat Power offers several unique characteristics that could make it a preferred technology in a wide range of electrical applications:

- **Clean and Sustainable:** The NGU Power Cell is already globally certified as non-hazardous. It produces no sound, waste, or emissions and can be 100% recycled.
- **Reliable and Efficient:** The NGU Power Cell is expected to deliver constant 10W power 24/7 during more than 10 years with high efficiency and without any fuel or input.
- **Scalable and Flexible:** NGU Power Cells are combined in the same way as solar panels to create decentralized Power Generators for any amount of power, to be placed stationary or mobile at the point of use.
- **Cost-Effective:** The actual cost of electricity per kWh is expected become highly competitive in practical applications.

In practice, the basic E-Cat NGU Power Cell could be seen as a type of 12 V(default), super-capacity, pre-charged, and internally current-limited (8.3 A) battery equivalent, capable of continuously providing a maximum of 10W of electrical power. It comes with a 3-year full warranty and an estimated long lifetime of at least 100,000 hours of continuous operation. Like with batteries and solar panels, higher power and/or voltage is achieved by interconnecting several NGU Power Cells in parallel and series.

Chapter 2. Technology and Design and the E-Cat Power Datasheet include further details on the NGU Power Cells and NGU Power generators.

Integration of E-Cat Power

Once NGU Power Cells begin mass production, we expect E-Cat Power to become integrated into a wide range of electrical systems and equipment, such as:

- **Power grids:** NGU Power generators for home and business, prepared for grid connection via standard inverters, are already in design. In addition to the 10W NGU Power Cell, factory-mounted Power Generators ranging from 100 W up to MW NGU Power Plants (in 40-foot containers) are available for preorder since more than a year.
- **Microgrids:** NGU Power generators will be integrated into decentralized, mobile microgrids to provide reliable, sustainable electricity to off-grid and remote locations, including backup power due to outages and disasters.
- **Solar Power systems:** The first official demonstration of an NGU Power Generator adapted for direct integration in modern solar systems is scheduled for Q4 2024.
- **Electrical Appliances:** Manufacturers of separate electrical appliances with defined power need may use integrated NGU Power Cells to ensure reliable power at a stable predicted cost per kWh.
- **Mobile chargers:** From smartphones to tools.
- **Mobile power generators:** Various mobile NGU generators will fulfill the need for stable sustainable power at any point of use.

- **EV vehicles:** NGU Power Generators can be adapted for continuous charging the batteries of battery-powered EVs, on the road, off-road, on snow, or on water.

The first public demonstration of an E-Cat powered EV took place on September 27th, 2024 where a Renault Twizy 80 EV with a 3 kW E-Cat Power generator on board drove for over six hours not only keeping the battery charged, but increasing the state of charge over time. Further details are presented in 7. Public Demonstrations 2024.

5. Economy and Cost

E-Cat Power is poised to significantly influence the current cost structures in the energy industry. The main economic advantages of electricity made by E-Cat Power stem from a competitive LCOE (Levelized Cost of Electricity), Ref. [5-1], combined with substantial savings due to 24/7 operation in fully decentralized location and without no mandatory network grid connection.

The ability to produce virtually unlimited power at the point of use will have a major impact on costs for both users and producers, while reducing the need for further private and public investments in power transmission infrastructure. In addition, the high level of sustainability is expected to contribute to lower public environmental costs.

We believe E-Cat Power carries the long-term potential to become a preferred, cost-effective source for generating sustainable electricity. Preliminary calculations indicate that already the first-generation E-Cat Power systems may offer a stable reduction of the present residential average cost/kWh.

For cost analyzing the use of E-Cat Power we propose use of LCOE, Ref. [5-1], the standard metric for estimating and comparing electricity production costs from a particular power source. When calculating LCOE you get the cost of power production, per kWh or MWh, by dividing the total lifecycle costs of a power generation installation by the total electricity generated over its lifetime.

The LCOE sample calculations below assume the current published price (\$25) of the 10W NGU Power Cell with a 10% reduction for large systems, the performance and lifetime from the NGU Power Cell Datasheet, and recent best estimations of additional cost factors:

LCOE factors		Residential	Industrial
Installed Power (IP)	[kW]	3	1 000
Power Efficiency 1)	[%]	>95	>95
Initial System: 2)	[\$/kW]	3 000	2 700
Replacement: 3)	[\$/kW]	1 800	1 600
Installation:	[\$/kW]	30	27
Site Building:	[\$/kW]	50	45
Maintenance:	[\$/kW/year]	30	27
Grid Network: 4)	[\$/kW/year]	60	57
Grid Export: 5)	[\$/kW/year]	0	0
Uptime Efficiency (UE):	[%]	99	99
Yearly Production:	[MWh]	24.7	8,100
Calculated Lifetime (LT):	[year]	20	20
Lifetime Production: (LTP) 6)	[MWh]	5,000	163,000
E-Cat Power LCOE:	[\$/kWh]	< 0.1	< 0.1

- 1) Value depends on the actual efficiency of the grid inverter, typical around 97%.
- 2) E-Cat Power NGU generators, inverters, and systems components excl VAT.
Green Energy subsidies are NOT included.
- 3) Cost of full replacement (after 10 years/ 87 000 hours) of recycled E-Cat Power system components.
is 30% of initial system.
- 4) Native Grid Network for power peaks > Installed Power, increased reliability and possibility for grid export.
- 5) A typical grid export income will reduce LCOE. Not included in this calculation.
- 6) $LTP=IP*UE*365*24h*LT$, VAT and taxes *NOT* included

Disclaimer:

It should be noted that the calculations presented here are based on the provided assumptions. Actual financial results using E-Cat Power need further detailed analyses and independent verification from practical cases.

6. Implementation and Future

E-Cat Power First Reveal and Pre-Orders

The first ever public demonstration of E-Cat Power, took place at a racetrack in Latina, Italy on September 27th, 2024. At this E-Cat Power first reveal was shown a 3 kW NGU Power Generator installed in a commercial EV and its ability to successfully maintain the charge of the battery while driving, actually increasing the charge level from 68 per cent at the beginning of the test, to 83 per cent after six hours of driving. This event offers a compelling illustration of E-Cat Powers' potential to revolutionize the energy sector and contribute to a more sustainable future.

Following the reveal, we expect a significant surge in global demand for E-Cat Power. Preorders are projected to increase noticeable and we expect growing interest from a diverse range of entities to pursue partnerships and collaborations for technical and commercial exploration. Obviously, this scenario should well fit with our strong commitment for swift implementation of E-Cat Power technology to the public benefit.

Since March 2023, Leonardo Corporation has been accepting non-binding, no-pay pre-orders for E-Cat NGU Power Cells and Generators via the website ecathenewfire.com.

The commercial sales and distribution of NGU Power Cells and NGU Power Generators, currently exclusively handled Online by Leonardo Corporation, will by time be gradually extended to include a wide range of partners all over the world.

Initially, we already last year set the pre-order target equivalent to 10 million 10W NGU Power Cells to be reached before starting large-scale production and delivery. To manage the startup, Leonardo Corporation has also already established a high-capacity manufacturing system, including in-house production of key components and a strategic outsourcing network for selected parts.

Partnership and Licensing

Keeping continuous improvement in focus, Leonardo Corporation is presently, with selected partners, occupied with optimizing the reliability, functionality and effective cost of the E-Cat Technology to make it fully fit a first range of potential applications.

We are now also inviting for further cooperations, partnerships, and licensing agreements with interested companies and organizations, e.g.:

- Larger public and private producers, distributors, and consumers of electrical power.
- Manufacturers and distributors of energy systems and equipment.
- Manufactures of electrical products and appliances.
- Public and private institutions within the renewable energy sector.

Some obvious examples of companies suitable for licensing E-Cat Power would be manufacturers of electric vehicles, heating systems, cooling systems, lighting, mobile power, and battery charging.

Specified interest in cooperation, partnership and licensing should be addressed to info@leonardocorp1996.com

Leonardo Corporation is presently not actively seeking external funding.

What is the future importance of E-Cat Power?

We believe that the successful first demonstration at the E-Cat Power Reveal in Latina, Italy, September 27th, 2024, actually will impact on the existing plans for our future global energy supply.

Some areas where E-Cat Power should have an important positive influence:

- **Decarbonization of the Energy Sector**

E-Cat Power generates electricity without carbon emissions or waste, which could significantly contribute to the decarbonization of the energy sector.

- **Clean Energy Accessibility and Affordability**

Given the low cost of electricity generation with E-Cat Power, it can make energy more accessible and affordable worldwide,

- **Clean Energy Independence**

Since E-Cat Power can generate electricity at the point of use, it will reduce dependence on transmission lines and centralized power grids.

- **Clean Electrification of Various Sectors**

E-Cat Power is a clean, efficient, and affordable energy source that will accelerate the electrification of various sectors, such as transportation, heating, data processing and industrial processes.

- **Innovation and Job Creation**

The development, manufacturing, installation, and maintenance of E-Cat Power may drive innovation and create new jobs, contributing to economic growth.

- **Natural Resource Conservation**

Since E-Cat Power utilizes Zero-point energy (ZPE), it does not deplete any finite natural resources for fuel. This would promote the sustainable use of resources and biodiversity conservation.

Disclaimer:

It should be noted that the future success of E-Cat Power will depend on many factors, such as regulatory approval, public acceptance, compatibility with existing infrastructure, and the ability to scale up production to meet global energy demand. It would also require rigorous scientific validation to confirm its safety, reliability, and performance under various conditions.

7. Public Demonstrations 2024

This White Paper presents information about E-Cat Power, a new source of electrical power. As we fully understand our message is quite hard to believe we planned several public demonstrations for 2024 showing E-Cat Power in practical applications.

Demo 1 - The E-Cat Power Reveal on September 27, 2024:

The first ever public demonstration of a E-Cat Power Generator in an application showing a dedicated NGU Power Generator keeping the charge of an EV in motion

The demonstration took place on September 27 at a 0.6 km round test track in Latina, Italy in the presence of international representatives from media, industry, and institutions. The demonstration used two identical electrical vehicles: Renault Twizy 80.

One of the vehicles (EV1) was equipped with an integrated 3kW EV-adapted NGU Power Generator, capable of charging the EV battery while driving. The other (EV2) was in factory-standard condition.

The cars were simultaneously started, after documented state of charge (SoC) and driven at constant speed, around the track with short pit stops for drivers to switch. The standard vehicle (EV2) was driven until it stopped because the battery was fully depleted, while the E-Cat vehicle (EV1) was manually stopped after 6 hours with 83 per cent SoC.

Both cars were weighed, the interiors inspected, and SoC recorded before the test by an EV-specialist. The entire demonstration was recorded by multiple photo and video cameras in preparation for the global presentation on October 4th, 2024.

Results of Demo 1:

Due to the readings recorded by the present EV specialists, the mobile E-Cat NGU Power Generator gave evidence to be able to successfully maintain and even increase the SoC charge of the battery of EV1 during driving.

	Readings at Start			Readings at Stop		
	Time[min]	Dist.[km]	SoC[%/kWh]	Time[min]	Dist.[km]	SoC[%/kWh]
EV1 (E-Cat)	0	0	68	380	201	83
EV2 (Standard)	0	0	98	140	74	0

The overall result of the EVent demonstrates that a NGU Power Generator, made by assembled 10 W NGU Power Cells, can be used to generate constant, electrical power, without any input and while in motion. This opens for EVs with unlimited range and a future where transportation finally moves away from fossil fuels. The NGU Power Generator was same time demonstrated as ready to enter the mainstream as a universal, flexible generator of clean electricity.

The links to video recordings from the demonstration can be found at [Ref. \[7-1\]](#).

A summary video of the test can be seen here: https://youtu.be/HTtwclcJBpI?si=e6OqdMjwQ_Mkunq6

Leonardo Corporation has scheduled further tests for different applications that will probably take place in Q4 2024.

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