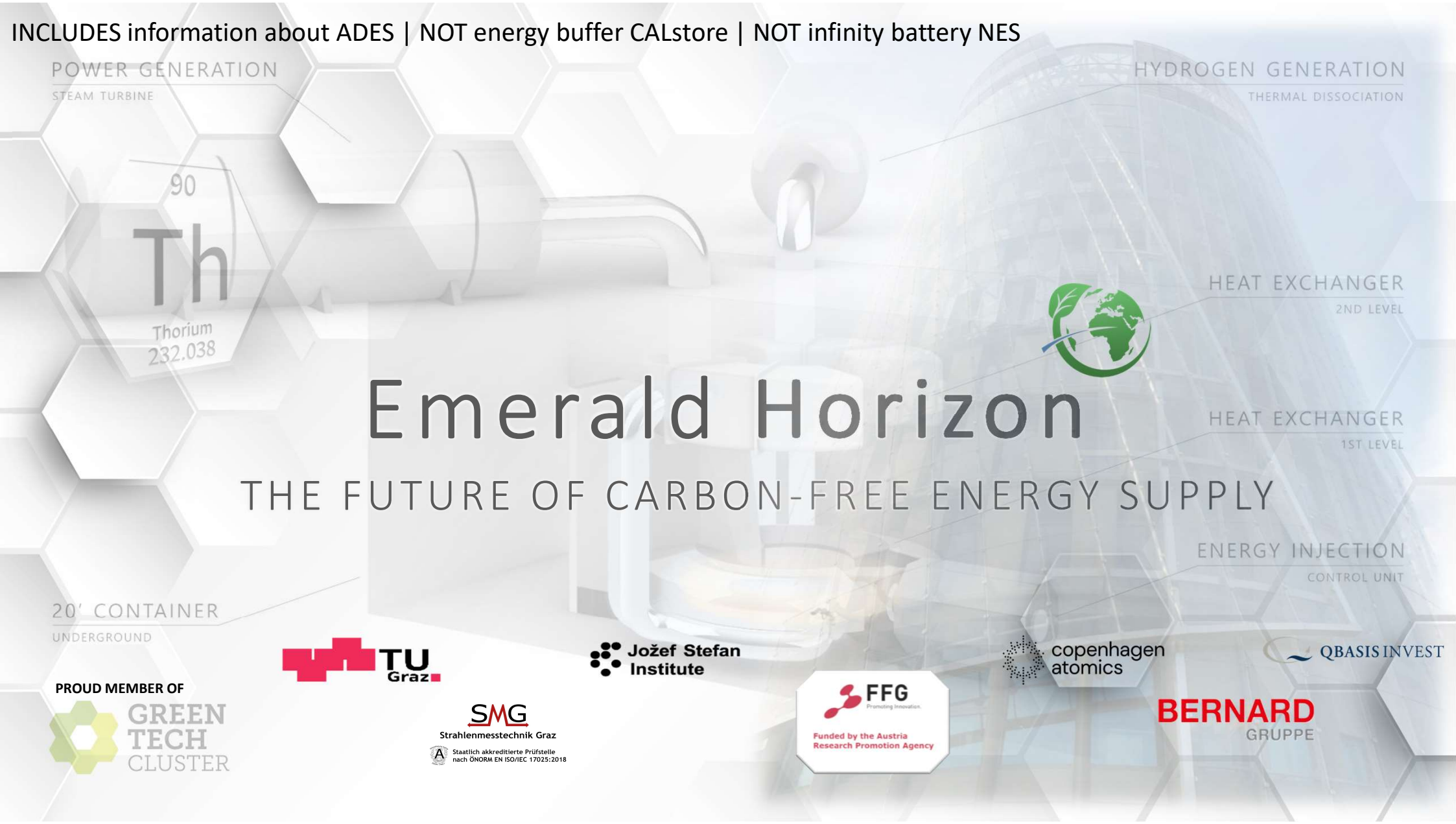
INCLUDES information about ADES | NOT energy buffer CALstore | NOT infinity battery NES



Emerald Horizon

THE FUTURE OF CARBON-FREE ENERGY SUPPLY

PROUD MEMBER OF GREEN TECH CLUSTER

TU Graz

Jožef Stefan Institute

SMG Strahlenmesstechnik Graz
Staatlich akkreditierte Prüfstelle nach ÖNORM EN ISO/IEC 17025:2018

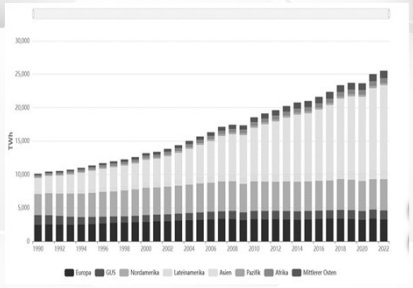
FFG Promoting Innovation
Funded by the Austria Research Promotion Agency

copenhagen atomics

QBASIS INVEST

BERNARD GRUPPE

Executive Summary



- **Problem:**

✓ Securing energy production for the next generations is one of the greatest challenges of our time

✓ There is currently no solution to generate safe, CO2-free electricity without fossil fuels on a scalable base

- **Solution: A (Accelerator) D (Driven) E (Energy) S (Source) – ADES**

✓ **CO2-free** & cost efficient energy (contracting - energy as a service)

✓ **25 MW(th) constant** - non-volatile power - plus extra buffer system to follow the energy load profile during a day (CALstore & integrated AI)

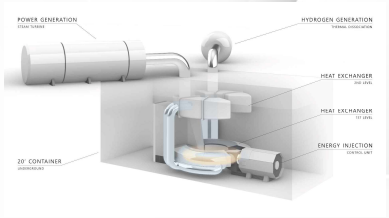
✓ **Self-sufficient** – integrated storage quantity for at least 20 years (no refuelling required like OIL | GAS | COAL | WOOD | URANIUM)

✓ **No risk of explosion**, harvests Thorium nuclear energy (100%) without criticality (passive safety #1) with OFF / NOT OFF button (passive safety #2)

✓ **Minimum fission products & very short half-life** and no (0%) transuranic waste of Plutonium 239 or Uranium 235 (known as “nuclear waste”)

Executive Summary

R&D Progress



2019 — Needs analysis and concept

2021 — Project development and financing

2022
- Team
- Partners
- Office
- Laboratory

2023-24 — Construction of the prototype ADES and its by-product CALstore (modular high-temperature liquid-salt energy storage)

2026 — Completion of demonstrator CALstore and transition to serial production

2029 — Completion of demonstrator ADES and transition to serial production

Funding

2019 — Foundation

2021 — Financing round 1A (protoype NES & contracting)

2022 — Financing round 1B (prototype ADES)

2023 — Financing round 2A (expected inflow EUR 25M)

2024 — Financing round 2B (expected inflow 9* EUR 25M)

<-> — Green bond to finance serial production CALstore | later ADES

2029 — Expected IPO (depending on ideal market conditions +/-1yr)

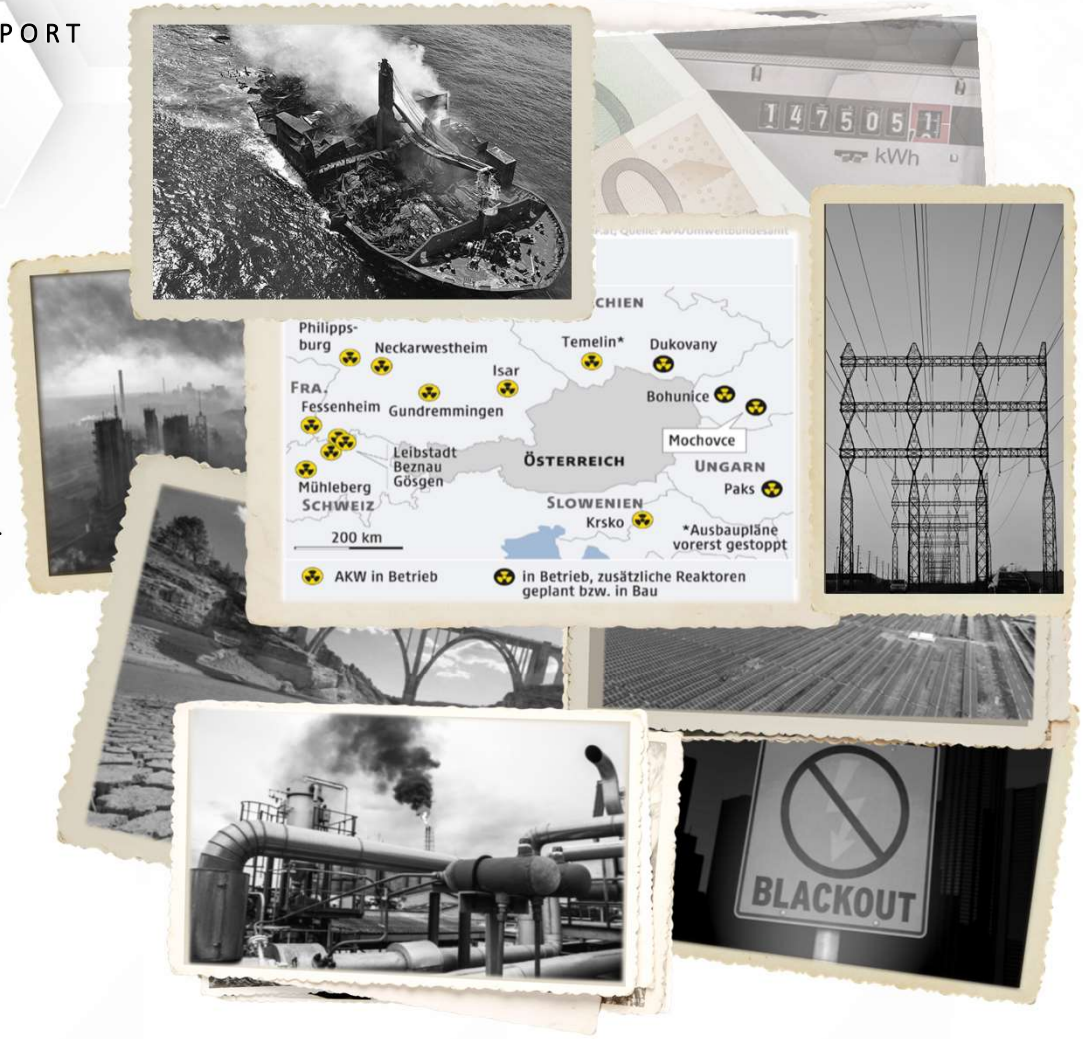
THE PROBLEM - NEED-ANALYSIS … all these RISKS could be avoided!

RISK-OIL BASED TRANSPORT

RISK-CHAIN REACTION BASED NUCLEAR ENERGY

RISK-COAL BASED HEAT PRODUCTION

RISK-CONSTANT REQUIREMENT OF NATURAL RESOURCES



RISK-DEINDUSTRIALIZATION

RISK-MIGRATION OF PEOPLE FROM EMERGING MARKETS

RISK-POPULAR UPRISING

RISK-VOLATILE RENEWABLES

RISK - LOSS OF CRITICAL INFRASTRUCTURE

CRITERIA FOR A SOLUTION

NO CHAIN REACTION

NO RISK OF EXPLOSION

NO MELTDOWN RISK

NO PLUTONIUM OR URANIUM 235

NO RESOURCE DEPENDENCY (LI, uranium, oil, etc.)

SECURE ENERGY SUPPLY

NO UNCONTROLLED NUCLEAR WASTE > 100.000 YEARS

+ USP – „WOW“ - effect

ZERO CO_2 EMISSION

NON-VOLATILE ENERGY

NO LARGE POWERLINES

HIGH POWER DENSITY

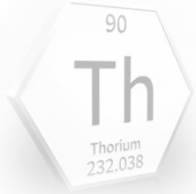
HIGH PROFITABILITY WITH GLOBAL IMPACT

LOW LAND-USE REQUIREMENTS FOR SYSTEMS

AFFORDABLE HEAT ENERGY > HYDROGEN or ELECTRICITY

+ "Proof of concept"

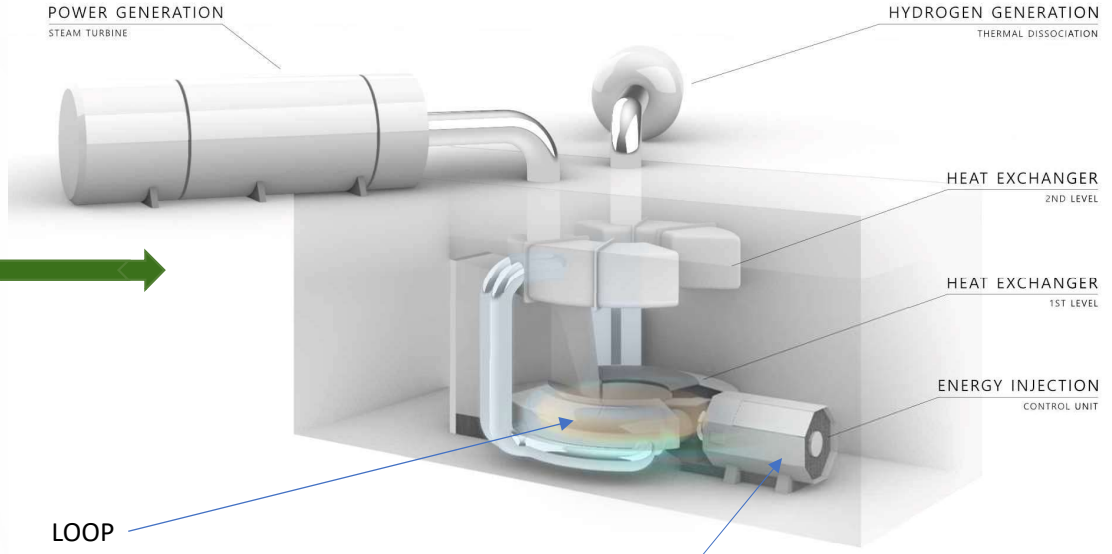
SOLUTION ADES - A (Accelerator) D (Driven) E (Energy) S (Source) – ADES



HEAT GENERATOR
Direct use of high temperature as process heat possible

HYDROGEN GENERATION
750-900 degree heat allows direct conversion of heat to hydrogen (thermal dissociation)

POWER GENERATOR
New compact version of „heat to electricity“ (15 times smaller)



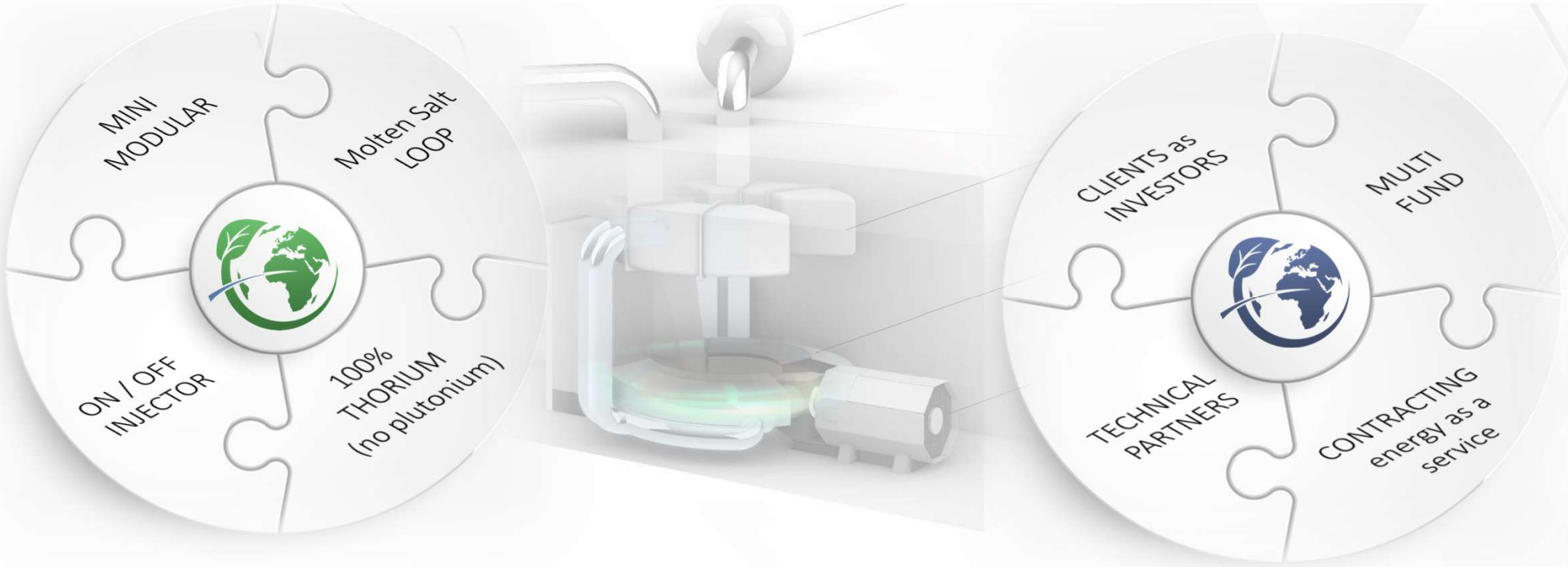
LOOP
Molten salt in a new geometry using corrosion-free materials. Entails 100% pure Thorium & salt with high heat buffer characteristics

INJECTOR
Accelerator – instead of a large circle particle accelerator, ADES uses a new compact version which can be switched off and not off

Solution ADES – MOST IMPORTANTANT FACTS THAT MAKE ADES UNIQUE

ECOLOGICAL SAFETY
„Inspired by MED TEC“

ECONOMIC EFFICIENCY
„Inspired by FIN TEC“



SOLUTION: A (Accelerator) D (Driven) E (Energy) S (Source) – ADES - The energy source of the future

General features:

- Compact **energy module** for multiple use cases ELECTRICITY | HEAT | HYDROGEN
- **CO2-free** energy output, **self-sufficient** – integrated storage quantity for at least 20 years (no refuelling required like OIL | GAS | COAL | WOOD |URANIUM)
- **Cost efficient** energy with zero purchase costs (contracting - energy as a service)
- High & near-term availability - modular design for **serial production** |unique combination of largely existing and **proven components**

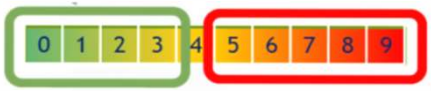
Tech features:

- **Constant** - non-volatile power energy output: ~25 MW (thermal) heat for direct use or convertible into electricity or hydrogen
- Extra **buffer system** to follow the energy load profile during a day (CALstore & int. AI)
- ADES is designed as an amplifier to achieve **high security** with internal energy supply to act as a generator
- The entire ADES module fits into a 40-foot container – inside it is a **molten salt loop** with thorium (100%, no uranium added) and an **OFF or NOT OFF injector**

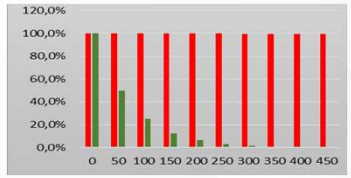
SOLUTION: A (Accelerator) D (Driven) E (Energy) S (Source) – ADES - The energy source of the future

RISK FEATURES

- ✓ No risk of explosion, harvests Thorium nuclear energy (100%) without criticality (passive safety #1) with OFF / NOT OFF button (passive safety #2)
- ✓ Minimum fission products & very short half-life and no (0%) transuranic waste of Plutonium 239 or Uranium 235 (known as “nuclear waste” RED)- ADES use only GREEN area



Nuclear power plant atomic waste half-life vs ADES waste half-life (unoptimized)



SOLID BASIC RESEARCH

- ✓ 2 Nobel prize laureates
- ✓ 1 National laboratory
- ✓ Several proven components or sub-concepts ➔

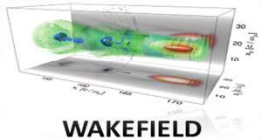
SOLID IMPLEMENTATION

- ✓ 3 institutes and 3 specialist firms (see partners)

THORIUM
USAF 50s

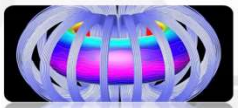
MOLTEN SALT REACTOR
OAKRIDGE 60s

THTR-300
Germany 1983-89



WAKEFIELD
CHIRP 2010+

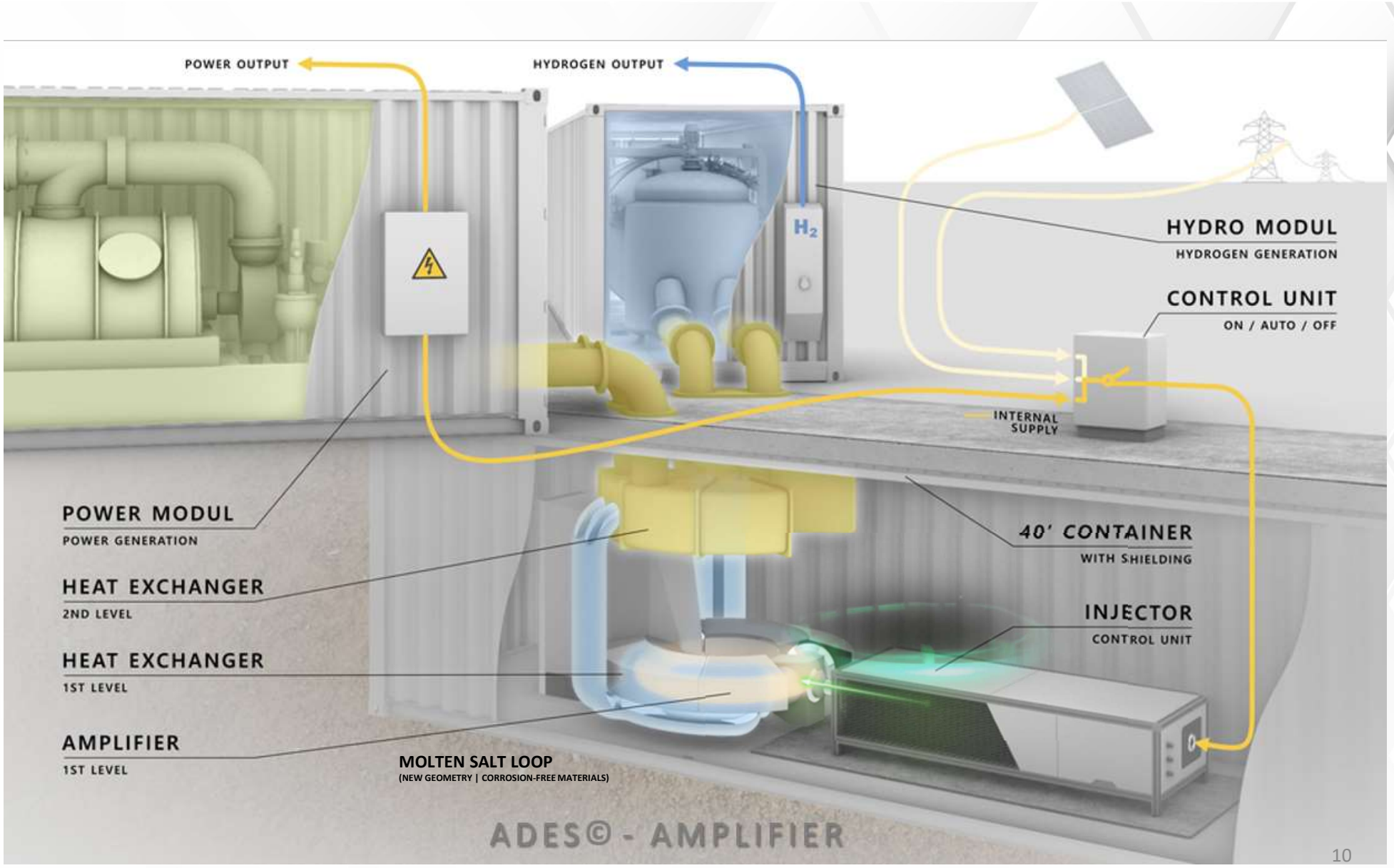
ADES
acclerator driven energy source



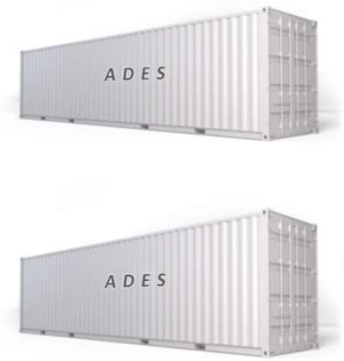
FUSION
ITER 50s+

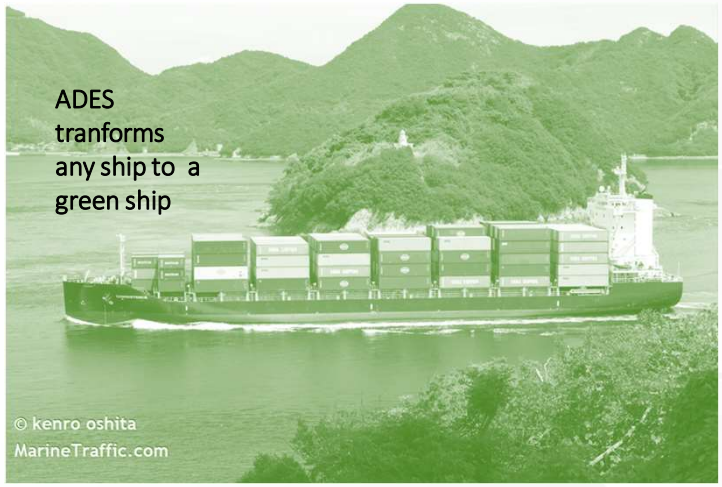
ACCELERATOR
CERN 50s+

AMPLIFIER
Carlo RUBBIA 80+90s


POWER OUTPUT
HYDROGEN OUTPUT
H_2
HYDRO MODUL
HYDROGEN GENERATION
CONTROL UNIT
ON / AUTO / OFF
INTERNAL SUPPLY
POWER MODUL
POWER GENERATION
HEAT EXCHANGER
2ND LEVEL
HEAT EXCHANGER
1ST LEVEL
AMPLIFIER
1ST LEVEL
40' CONTAINER
WITH SHIELDING
INJECTOR
CONTROL UNIT
MOLTEN SALT LOOP
(NEW GEOMETRY | CORROSION-FREE MATERIALS)
ADES© - AMPLIFIER

ADES – First USE CASE: container ship power specification





ADES power supply with:

- **no carbon emission** – compared to emissions of 8M [kg/anno] for a conventional 10.000[kW] Diesel-engine with 2,8[kg/l] for 3.000.000 liters of MGO, HFO combusted per year
- **no refuelling** for a long period of time (20 years) – Thorium is a high energy-density energy source
- servicing is remote-controlled
- basic installation: 2 ADES on board

Vessel type	Dimensions (length x width)	Num Container
Small feeder	100m x 23m	up to 1.000TEU
Feeder	200m x 30m	up to 2.500TEU

The nominal power-range of the **Diesel-engine** of a feeder is between:**9.400 – 19.800 kW** (for 1.200-2.500TEU)
➔ **2 x ADES**
for 20.000 kW of nominal power (efficiency of 40%)
a thermal power of 50.000kW (50 MW) is needed!

ADES – Second USE CASE energy to supply one city

energy-supply by 1 ADES:

electric:
100.000 [MWh/year] = 360 [TJ/a]

heat:
130.000 [MWh/year] = 473 [TJ/a]

sum:
230.000 [MWh/year] = 540 [TJ/a]

Thorium needed: 10kg/year

energy-demand large scale: 10.000 detached houses

electric:
50.000 [MWh/year]

heat:
130.000 [MWh/year]

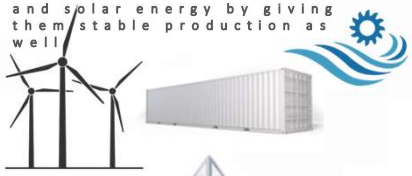
new electric features like e-mobility
50.000 [MWh/year]
sum:
230.000 [MWh/year]

ADES – Multiple USE CASES

ADES protects life

ADES modules can make a hospital self-sustaining - *i.e. used without* energy from other sources

ADES enhances wind, water and solar energy by giving them stable production as well

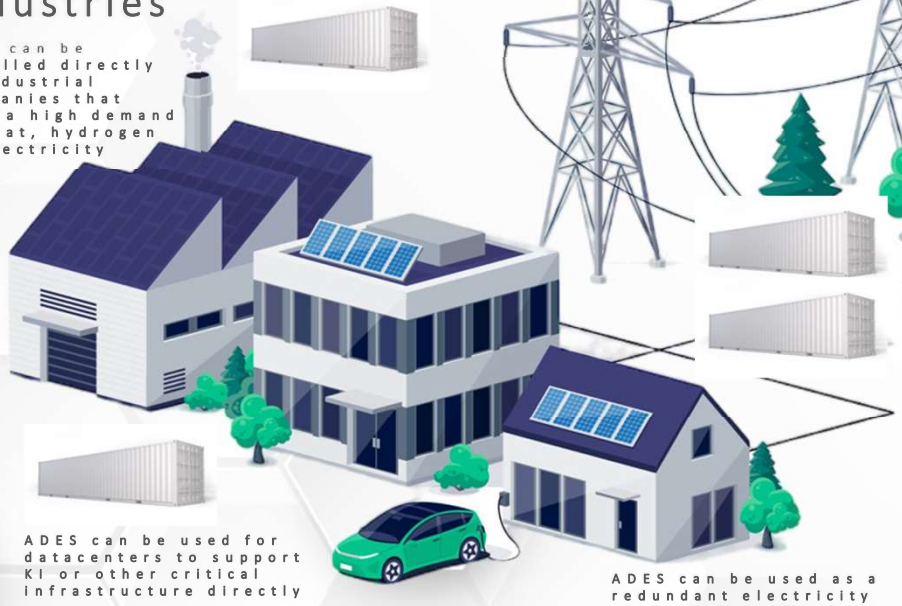


The end of conventional nuclear power plants

ADES modules can replace conventional (Oil | Gas | Coal) and risky nuclear power plants. The infrastructure can still be used – the modules only enhance the existing plants

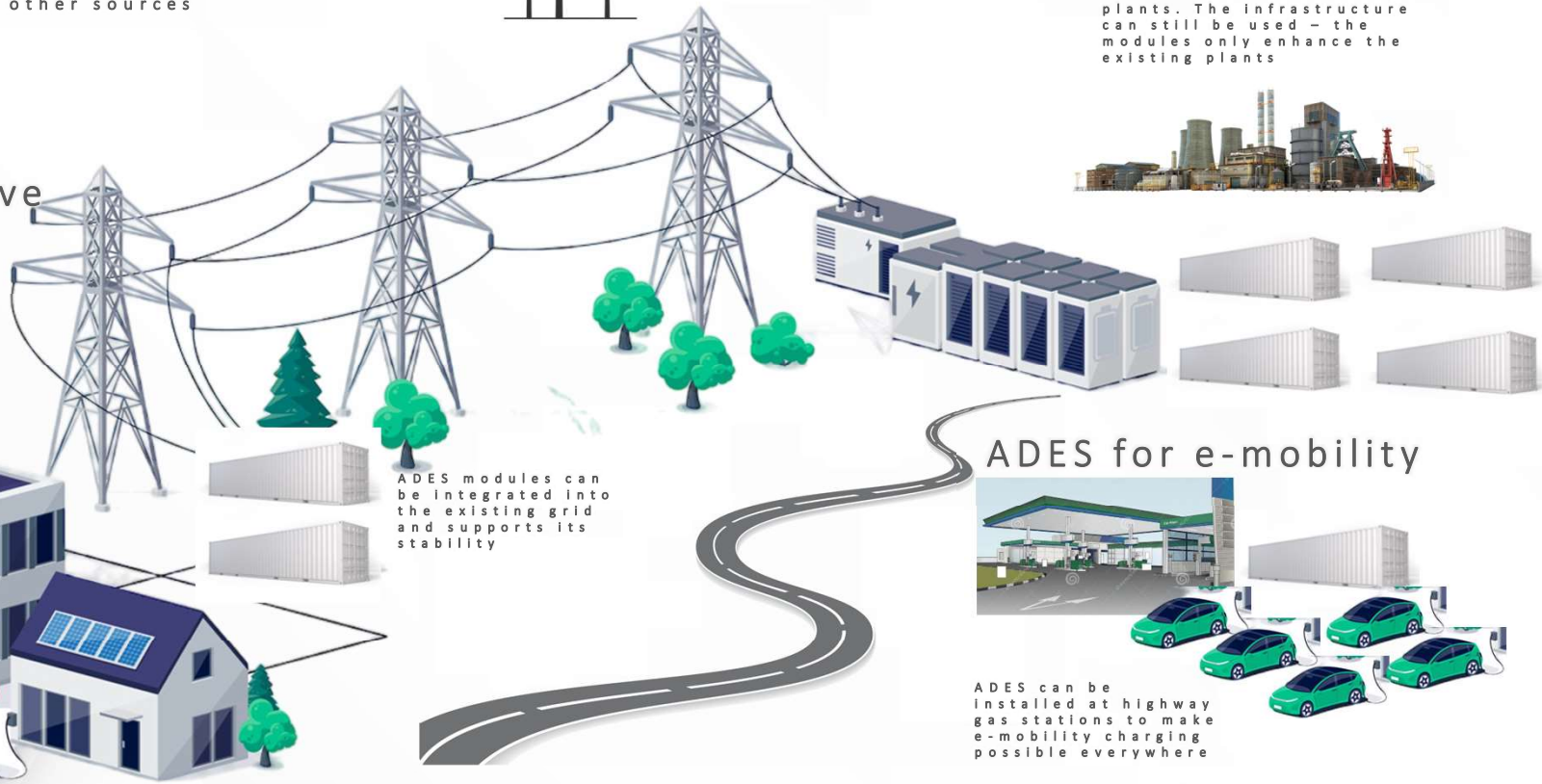
ADES for energy-intensive industries

ADES can be installed directly at industrial companies that have a high demand of heat, hydrogen or electricity



ADES can be used for datacenters to support KI or other critical infrastructure directly

ADES can be used as a redundant electricity support to make the conversion to carbon free real estates possible



ADES modules can be integrated into the existing grid and supports its stability

ADES for e-mobility

ADES can be installed at highway gas stations to make e-mobility charging possible everywhere

ADES can be brought to any place in the world at any time -emerging markets e.g.

Current R&D process

2019

Needs analysis and concept

2021

Project development and financing

2022

Team, partners, office, laboratory

TU Graz
Graz University of Technology

Institut für Wärmetechnik

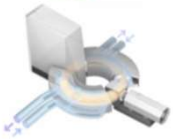
BERNARD

Jožef Stefan Institute

SMG
Strahlenmesstechnik Graz
Staatlich akkreditierte Prüfstelle nach ÖNORM EN ISO/IEC 17025:2018

copenhagen atomics

2023



Construction of the prototype ADES and its by-product CALstore (modular high-temperature liquid-salt energy storage)

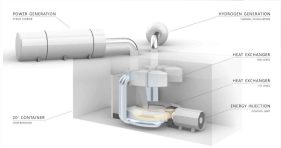
- Materials research
- Process and system developments
- Process and system tests
- Prototype construction
- Prototype testing

Worldwide patent for infinity battery NES

FFG – with highest possible funding-rate by the government

FFG
Promoting Innovation
Funded by the Austria Research Promotion Agency

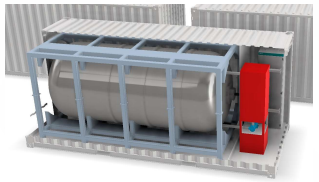
2026



Transition of ADES prototype to ADES demonstrator

Production of NES under license of 2 or 3 battery producing companies

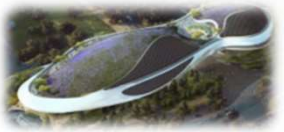
Completion of demonstrator CALstore and transition to serial production



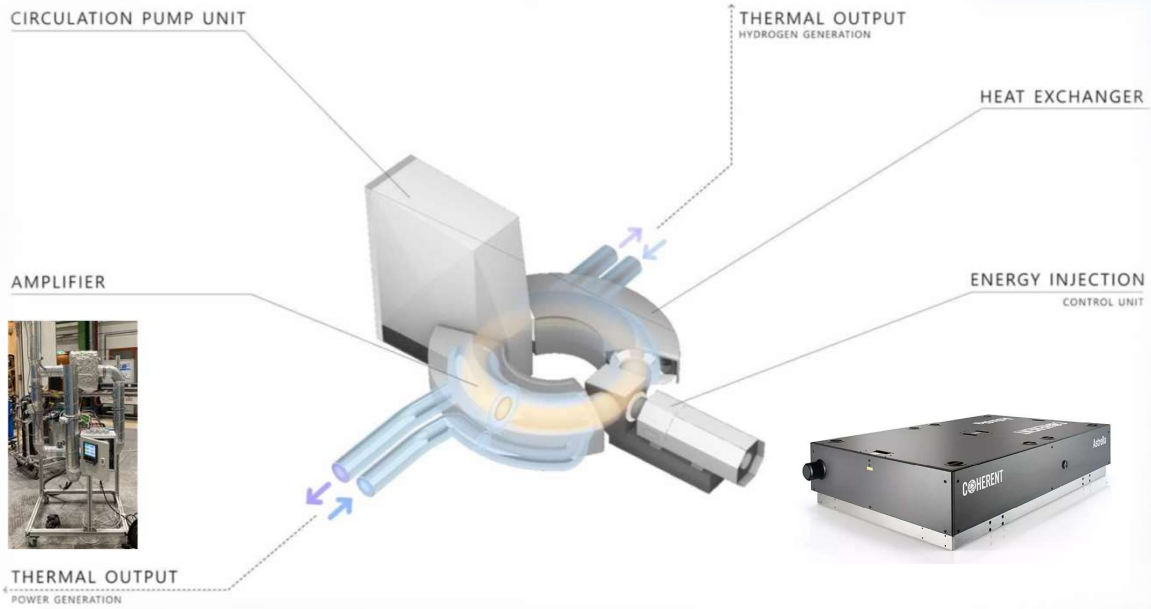
2029

Completion of demonstrator ADES

Transition to serial production ADES

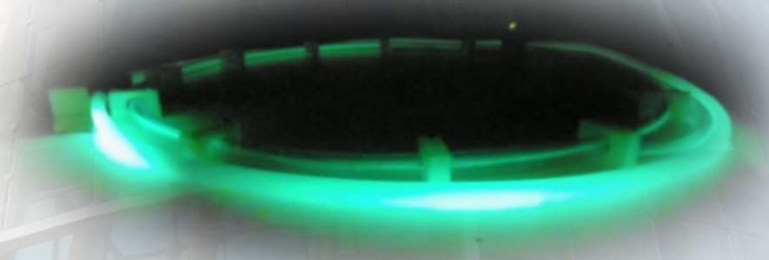


PROTOTYPE – already under construction



Real foto© copenhagen atomics –
producing pumping elements for ADES

SAFETY CONFIRMATON:
First real video of ADES prototype 0.1 illustrates basic principles: with injection (from left) energy level increases (represented by green light) – no injection: immediate shut down, which is the significant difference to the self-sustaining chain reaction in recent NNPs – even next generation NPPs (version 3+4) are based on chain reaction. ADES nuclear energy generation is fundamentally new – no criticality because of external neutronic control.



Future developments & use of funds

Expand labs and infrastructure
Material selections, supply chains, storage facilities, and investigations

- Salts, inhibitors
- Cladding materials (stainless steel, ceramics,...)
- Auxiliary materials (gases, liquids,...)
- Supply chains & storage locations (also external)

Component/process and system developments

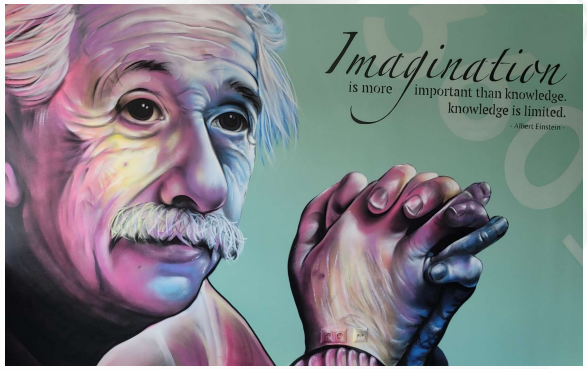
- Amplifier unit - TORUS: vessels/storage systems; pumps/motors/drives; transfer systems & heat exchangers
- Control unit - INJECTOR: particle accelerators
- KI Development to optimce the Incetor dimming
- MSRT & sensor technology (temperature, flow, salt quality, particle currents, radiation measurements,...)
- APPLICATION: Re-energy systems: storage, turbines/generators, distribution.
- SIMULATION - DIGITAL TWIN - permanent dual development and evaluation.

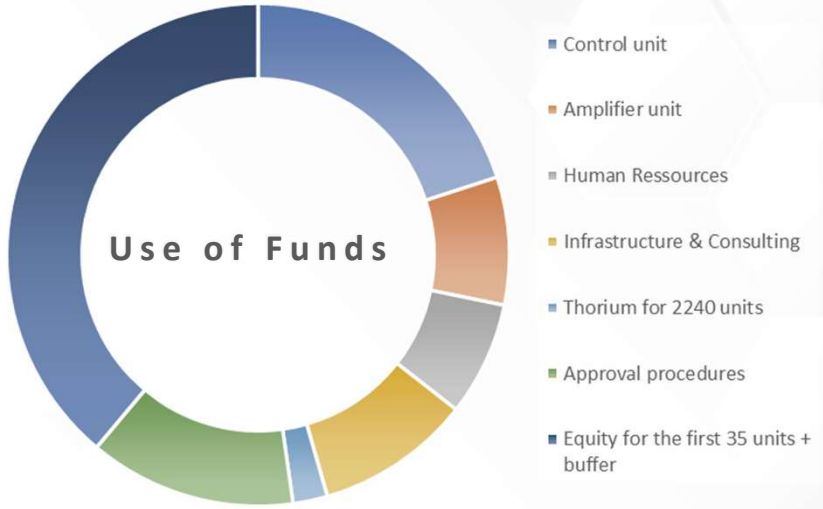
Component/process and system testing

- Laboratory test units - internal and external with partners
- Test procedures for performance measurements at high temperatures
- Prototype construction, based on the component/process and system tests
- Prototype testing - operational behavior and long-time performance testing
- Licensing & approval procedures with competent authorities (national & international)
- Cooperations, permanent expansion and establishment national & international;

Extra buffer system CALstore

- AI development and testing to follow the energy load profile during a day in interaction with ADES integrated AI and the output modules of heat, electricity or hydrogen





MARKET POTENTIAL - target above 2200 energy modules (ADES)

nuclear power plants

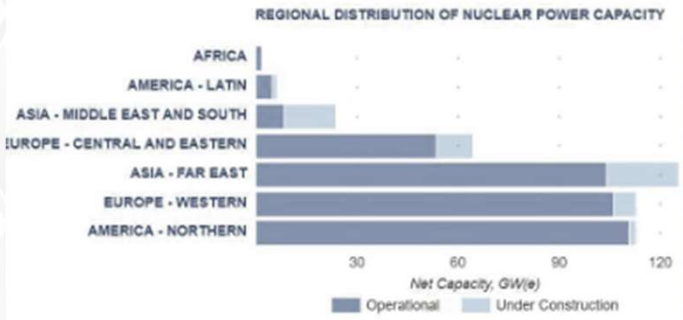
440 NUCLEAR POWER REACTORS IN OPERATION

389 340 MW_e TOTAL NET INSTALLED CAPACITY

54 NUCLEAR POWER REACTORS UNDER CONSTRUCTION

57 441 MW_e TOTAL NET INSTALLED CAPACITY

18 554 REACTOR-YEARS OF OPERATION



caloric power plants

coal 1451

gas 2798

oil 1075

other power plants

hydro-power - 3215
geothermal-power - 97
solar PV - 40
solar thermal - 52
waste-power - 489
wind-power - 658

Emerald Horizon market potential 2031-2035 – „There is plenty of market!“

100 (= 900 energy modules)	200 (= 1200 energy modules)	100 (= 400 energy modules)

COMPETITOR COMPARISON - overall

BAD = - GOOD = +	FOSSILE: gas, petrol, coal	SOLAR: wind, PV, hydro	NUCLEAR classic	NUCLEAR MSR-Gen4	ADES
NO CO2	-	+	+	+	+
SPACE REQUIREMENT	-	-	+/-	+	+
RAW-MATERIAL	-	+	-	+/-	+
NUC-WASTE	+	+	-	+/-	+*
VOLATILITY	+	-	+	+	+
SAFETY	-	+	-	+/-	+
SUM	**--**	**++**	**++/-**	**+++**	**++++*++**
RANKING	**5**	**3**	**4**	**2**	**1**

*transmutation option

COMPETITOR COMPARISON - nuclear

Technologies with a development horizon of 10+ years that have been made visible (press releases, databases, platforms) and are serious competitors to Emerald must show affinity in the following categories:

1. High energy density
2. Liquid salt transfer technology
3. High temperature technology (> 500°C);
4. Scalability for energy source and storage
5. Modular mechanical engineering solution with potential for industrial series production
6. Energy source and/or storage for nuclear energy without chain reaction
7. Primary energy source thorium (no uranium or plutonium)

There are technological competitors, in the segment of SMRs (Small Modular Reactors) to which Emerald's ADES can be partially assigned, in individual areas, but none that cover all 7 areas described above.

Name	Design organisation	Headquarter (city/region)	Country	Thermal power (MWth)	Outlet temperature (°C)	Spectrum (thermal/fast)	Fuel type
ARC-100	ARC Clean Technology	Saint John, New Brunswick	Canada	286	510	Fast	Metallic U-Zr alloy
CAREM	CNEA[1]	Buenos Aires	Argentina	100	326	Thermal	UO_2 pellets
ACPR50S	CGN[2]	Shenzhen	China	200	321.8	Thermal	UO_2 pellets
ACP100	CNNC[3] and NPIC[4]	Hainan Province	China	385	319.5	Thermal	UO_2 pellets
Nuward	EDF[5]	Paris	France	540	307	Thermal	UO_2 pellets
BWRX-300	GE-Hitachi/ Hitachi-GE	Wilmington, North Carolina	United States	870	287	Thermal	UO_2 pellets
Hermes	Kairos Power	Alameda, California	United States	35	585	Thermal	TRISO pebble
SEALER-55	Leadcold Reactors	Stockholm	Sweden	140	432	Fast	Uranium nitride
Stable Salt Reactor - Wasteburner	Moltex Energy	Saint John, New Brunswick	Canada	750	590	Fast	Molten salt fuel
VOYGR	NuScale Power	Portland, Oregon	United States	250	321	Thermal	UO_2 pellets
Aurora	OKLO	Sunnyvale, California	United States	4	500	Fast	Metallic U-Zr alloy
Rolls-Royce SMR	Rolls-Royce SMR Ltd	Manchester	United Kingdom	1 358	325	Thermal	UO_2 pellets
KLT-40S	Rosatom	Moscow	Russia	150	316	Thermal	UO_2 pellets
RITM-200N	Rosatom	Moscow	Russia	190	321	Thermal	UO_2 pellets
RITM-200S	Rosatom	Moscow	Russia	198	318	Thermal	UO_2 pellets
Natrium	TerraPower	Bellevue, Washington	United States	840	500	Fast	Metallic U-Zr alloy
HTR-PM	INET[6]	Beijing	China	500	750	Thermal	TRISO pebble
MMR	Ultra Safe Nuclear	Seattle, Washington	United States	15	630	Thermal	TRISO prismatic
U-Battery	Urenco	Stoke Poges	United Kingdom	10	710	Thermal	TRISO prismatic
eVinci	Westinghouse Electric Company	Cranberry Township, Pennsylvania	United States	13	750	Thermal	TRISO
XE-100	X-energy	Rockville, Maryland	United States	200	750	Thermal	TRISO-X pebble

Source: NEA Small Modular Reactor Dashboard, 2023)

THE BUSINESS MODEL (EAAS)

Contracting: energy as a service

- Emerald Horizon AG has successfully implemented a photovoltaic contracting model
- ADES will be helped to an immediate and rapid market penetration by means of contracting / EaaS because of the following features:
    - Emerald Horizon AG will always retain ownership of the ADES modules
    - The customer will only pay for the energy output of the ADES modules on a per kWh basis
    - The energy costs will be well below usual market prices
    - The customer has no acquisition costs
    - The customer has no due diligence risks – if ADES underperforms, the customer simply gets less energy out of it but still pays on a per kWh basis
    - Attractive price target between 9 cents and 17 cents per kWh

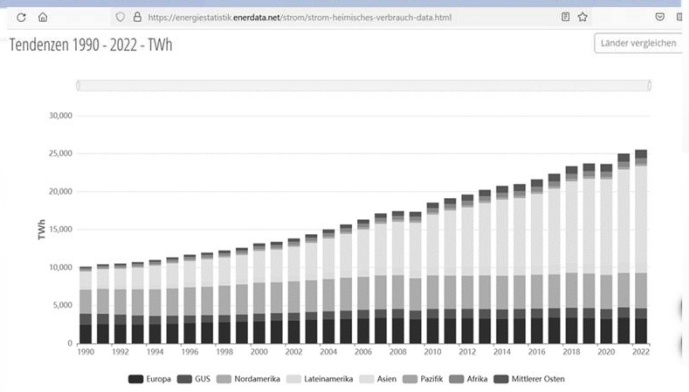
Green Bond – to extend contracting

- Diversified income from all different contracting clients leads to stable income with a high level of creditworthiness. This is ideal to create a bond structure. Together with our licensed partner Qbasis Invest GmbH we are going to set up a Green Bond. Due to the high level of income we intend to pay interest up to 12% p.a.
- Huge demand for investment opportunities in the green space allows us a nearly unlimited expansion of the business model. Additionally, one of the existing shareholders of Emerald runs a brokerage pool with more than USD 1B trading volume per week. This channel is available for us for distributing the Green Bond

THE BUSINESS MODEL (EAAS)- INCOME 1.ELECTRICITY | 2.SHIPS |3.HYDROGEN| 4.HEAT

EXAMPLE (electricity only):

P/L plan calculation for ADES electricity application								
Number of ADES modules		35	70	140	280	560	1120	2240
gWh p.a.		4151	8301	16602	33205	66410	132819	265638
Worldwide market share (electricity only)		0,02%	0,03%	0,07%	0,13%	0,26%	0,53%	1,05%
Selling price per kWh (energy as a service)								
0,06	P/L	-€ 17 114 150	-€ 9 228 300	€ 6 543 400	€ 38 086 800	€ 101 173 600	€ 227 347 200	€ 479 694 400
	return on equity	*-2,3%*	*-1,2%*	*0,9%*	*5,1%*	*13,5%*	*30,3%*	*64,0%*
0,09	P/L	€ 107 403 775	€ 239 807 550	€ 504 615 100	€ 1 034 230 200	€ 2 093 460 400	€ 4 211 920 800	€ 8 448 841 600
	return on equity	*14,3%*	*32,0%*	*67,3%*	*137,9%*	*279,1%*	*561,6%*	*1126,5%*
0,12	P/L	€ 231 921 700	€ 488 843 400	€ 1 002 686 800	€ 2 030 373 600	€ 4 085 747 200	€ 8 196 494 400	€ 16 417 988 800
	return on equity	*30,9%*	*65,2%*	*133,7%*	*270,7%*	*544,8%*	*1092,9%*	*2189,1%*
0,15	P/L	€ 356 439 625	€ 737 879 250	€ 1 500 758 500	€ 3 026 517 000	€ 6 078 034 000	€ 12 181 068 000	€ 24 387 136 000
	return on equity	*47,5%*	*98,4%*	*200,1%*	*403,5%*			



Financials

- Return on equity: assumption 750 million valuation (post 250 million of financing round 2)
- Planned fixed costs per module in small serial production of EUR 25 million + ongoing costs
- Planned electricity output per module per year: 25MW(th)> ~118 GWh
- Planned green-bond of 12% p.a. to finance leverage for contracting (EAAS)
- Not included: + decreasing internal costs due to large serial production | – tax impacts

FUNDRAISING PLAN

2019 – Foundation of Emerald Horizon

2021 – Financing round 1A (prototype NES & contracting)

Purpose:
- Enlarge R&D team
- Build up external partnerships
- Rent building with office space, laboratories and workshop
- Finishing laboratory set-up

2022 – Financing round 1B (prototype ADES)

2023 – Financing round 2A (expected inflow EUR 25M)

Purpose:
- Acceleration of prototype construction ADES
- Company building: Necessary adaptations at the rented location or purchase/construction of an own building
- Acquisition of company stakes in R&D to secure key competencies & technologies and thorium
- Purchase of various machines to reduce dependence on external companies (e.g. 3D printer | multi-neutron source etc.)
- Budget increase for partner companies
- Additional internal redundancy personnel

2024 – Financing round 2B (expected inflow 9* EUR 25M)

Purpose:
- Completion of the prototype ADES
- Construction of the demonstrator ADES
- Transfer to series production
- Rapid market entry through contracting
- Shareholders receive priority supply contracts
- Patents ADES | CALStore | NES
- Prototype and series production CALStore
- Prototype and series production NES
- Contracting in MW (e.g. PV)

<-> – Green Bond

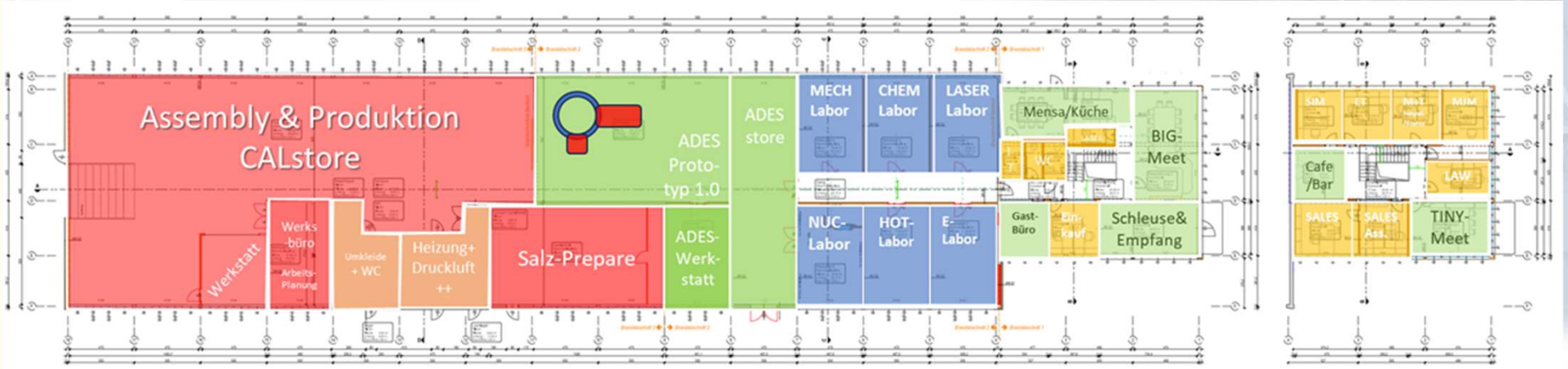
2029 – Expected IPO

TEAM – office tower + R&D headquarter

Team – now **37** - later **100**
Expert-fields are: electrical-, mechanical- & chemical engineering, nuclear physics, LASER & plasma-physics thermodynamics, monte-carlo & multi-physics simulations

Office: Science Tower- the main existing green technologies built together in a new composition! Technical development by our head of R&D - Dr. Mario Müller.

R&D headquarter: **4500m2**



MANAGEMENT TEAM

FOUNDER

Florian Wagner

Philipp Pölzl

Finding ways out of crises is the passion of the Salzburg (Florian Wagner) & Styrian (Philipp Pölzl) native. In 2019, Florian Wagner & Philipp Pölzl founded Emerald Horizon AG with the aim of creating a timely and secure solution to the climate crisis. After developing algorithms and fully automated response-models for capital hedging in financial crises in the early 2000s, the founding of Emerald Horizon AG now aims to make solutions for the next global threat, the acute climate and energy crisis, mass-produced and marketable. Wagner and Pölzl combine management and financial market skills.

- 2005-today: Development, expansion and management of an investment firm with a large license from the financial market authority Austria and EU passport
- 2009-today: Co-development of a trading pool (total trading volume of around USD 1 billion/week and development of 8,000 clients)
- Brokerage/development of complex white label products/mandates for Deutsche Bank for many years

Florian Wagner
- Medical studies at Karl-Franzens-University (relevant field: radiology)
- Focus on telecommunications technology as part of officer training at Austrian Armed Forces - technical understanding
- Personal involvement in the protection of the environment and biodiversity
- Intensive involvement with development studies and breeding optimisation to solve the extinction of special animal species
- Knowledge of the natural sciences expanded through the basics of medical studies
- International speaker

Philipp Pölzl
- Degrees in finance and law
- University lecturer
- Sports enthusiast & flag football world champion

MANAGEMENT TEAM

HEAD OF R&D

Dr. Mario J. Müller

"Knowing all the technical risks, I am against classic nuclear power plants – on the foundation of my PhD in nuclear physics I came up with the solution of using a new kind of particle accelerator to control nuclear reaction in order to release nuclear energy with the smallest amounts of risk!"

Together with national and international experts from science and industry, Dr. Müller, who was born in Graz, coordinates the research and development of energy generation from Thorium with the help of modern particle accelerators and high-temperature processes. Dr. Müller is well established in the domestic research scene. After several years at the Technical Universities in Graz and Vienna, he spent three years at CERN nuclear research centre in Geneva.

Science Tower- Green Tec. Synergy

- Conception and initiation of the Science Tower (Graz) as the lighthouse project of the Smart City Graz in cooperation with architect Markus Pernthaler.
- Member of the scientific advisory board of Joanneum Research; curator for LIFE (Institute for Climate, Energy and Society) – since 2018
- Member of the Styrian research council - advising the Styrian provincial government on research, innovation and technology for the future (2012 - 2017)
- Board member of the Styrian Green Tech Cluster - establishment/naming Green Tech Valley (2010 - 2018)
- Director of FIBAG (2006-2015) - private, non-university research institution for future-oriented energy facades & smart building technologies
- PhD in nuclear physics with Summa cum laude

MOST IMPORTANT PEOPLE FOR ADES – 37 internal and external team

Dr. Marc Prokop
Supervisory board, coordination of scientific studies

University Professor for economics

Dr. Christian Tuscher
Supervisory board, coordination of patents with SONN & partner

Lawyer

Werner H. Bittner
Head of supervisory board

Mechanical Engineer | Industry expert |Former CEO of a tech company

Erwin Krause
Business Development, strategic advisor

Economics, real estate
@ BZK

Gerhard Greiner
Technical advisor

Informatics, IT

@ AL

Franz Fuchs
Head of PV-contracting

Ex-CEO of a sales company

@EH

Dr. Stefan Schwarz
Plasma physics

Physics | Cambridge

@ BG

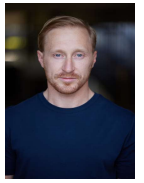
Helmut Friedrich
Head of brokerage

Global brokerage - € 1B trading volume per week

@SYS

Eva-Katharina Novak
Operational risk management

Legal
@EH



Clemens Brugner
Simulations

Finance & programming

@EH

Christoph Neuwirth
Mechanical constructions

Mechanical engineer

@EH

Jul Fössinger
Thermomechanical constructions

Mechanical engineer
@EH

Dr. Christof Weber
FEM/CFD models

Physics

@ EH

Stephen Perry
FEM/CFD models

Mechanical engineer
University of Liverpool

@EH

Alexander Todt
Simulations

Finance & energy trading

@EH

Dr. Maria Bernard -Schwarz
Technical development

Nuclear physics | CERN

@ BG

Robert Köppl
Head of IT

IT

@EH

Nikolai Vorobev
Technical equipment

Process engineer

@ BG

Dr. Martin Meraner
Plasma physics

Physics | Cambridge

@ BG

David Emanuel Haller-Muser
Process engineering

Mechanical engíneer
@ BG

Dr. Christoph Hochenauer
Thermal engineering

Mechanical engineering

@ TUG

Georg Scheiring
Mechanical constructions

Mechanical engineer
@ BG

Dr. Andreas Tockner
Mechanical development

Mechanical engineer

@ EH

Martin Tomaselli
Process engineering

Mechanical engineer

@ BG

Radiation physics @ TUG:

Dr. Waldemar Ninaus
Dr. Bernd Oberdorfer
DDDr. Elke Pichl

Nuclear physics @ JSI:

Dr. Leon Cizelj
Dr. Luka Snoj

Picture | Name | Responsibility | Educational background | Company or Institution (Emerald Horizon @ EH, Bernard Group @ BG, Technical University Graz @ TUG, Systrade AG @ SYS, Betha Zwerenz & Krause @ BZK, Alps Lab @ AL, Jozef Stefan Institute @ JSI)

MOST IMPORTANT PARTNERS OF EMERALD HORIZON

BERNARD GRUPPE

- Headquarters in Austria
- Engineering office for structural overall planning
- Planner for safety engineering, automation engineering and power engineering, measurement engineering,
- Hydrogen production
- Advantages: Experience in the industry and a large team

GREEN TECH CLUSTER

- Partners in Austria and worldwide
- Access to more than 200 green tech companies
- Advantage: Basic know-how

Jožef Stefan Institute

- Headquarters in Ljubljana, Slovenia
- A leading center for nuclear technology
- Owns its own research reactor
- Has access to a large number of nuclear research results
- Advantage: Ability to collaborate on simulations, research and technical validation

TU Graz

- Located in Graz, Austria
- Best technical university in Austria
- Access to all scientific disciplines
- Advantage: Potential for the development and establishment of of new disciplines

QBASIS INVEST

- Licensed investment firm
- Internationally active
- Established in 2005
- Trading volume of more than EUR 1B per week in the trading pool

- **Advantage:** Product-level capital support

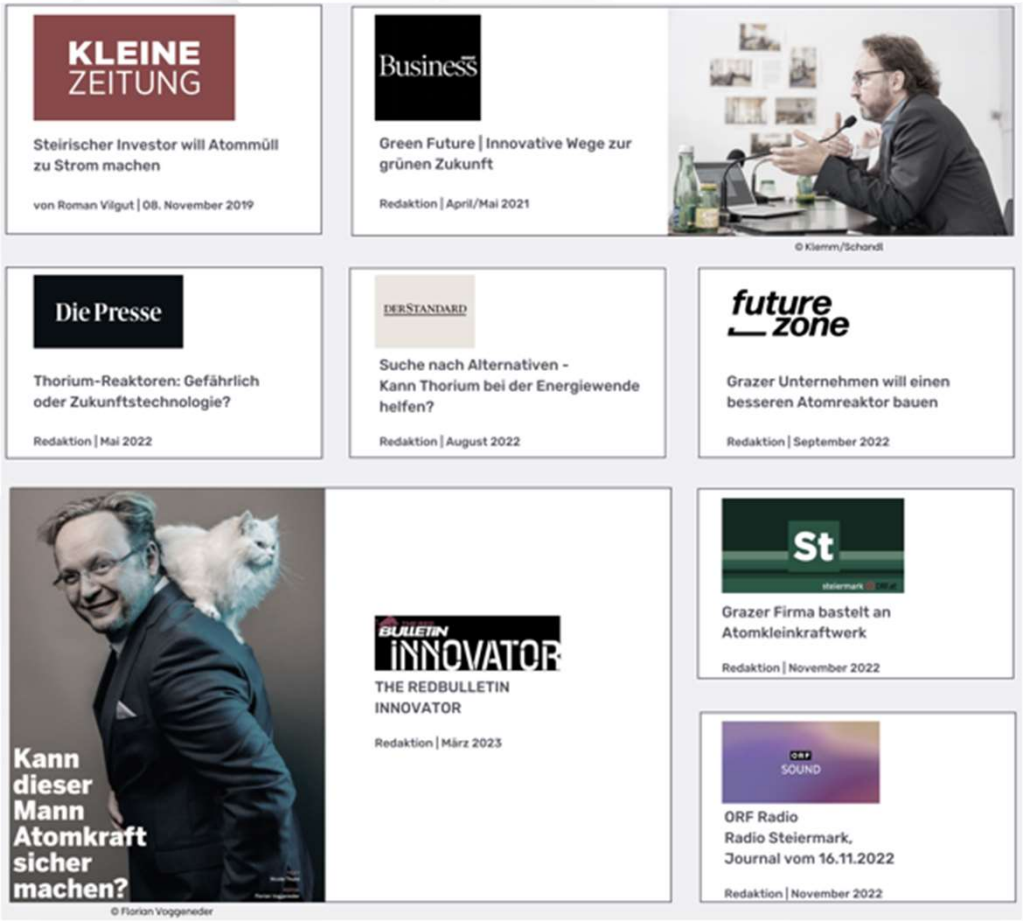
SMG Strahlenmesstechnik Graz

+4 further companies

- Production
- Contract conclusion
- Research
- Components

TEAM

NEWSPAPERS | TV | RADIO | CONGRESS | ADRESS



UNDRR

UN Office for Disaster Risk Reduction

UN Climate Initiatives Insights

IMPRINT
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E-Mail: office@emerald-horizon.com
Company register number: FN517877i
Commercial Register Court: Landesgericht für ZRS Graz

7 USPs – Summary

TEAM

1. **The idea** – the concept - one universal energy module for several use cases with clear benefits compared to competitors

2. **The brains** - 37 experts - soon more than 100 with over 1000 years of total experience & partner network

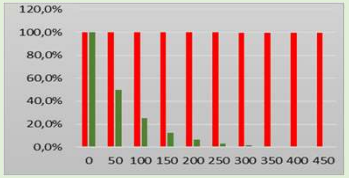
THE SOLUTION

FAST MARKET ENTRY

HIGH SAFETY

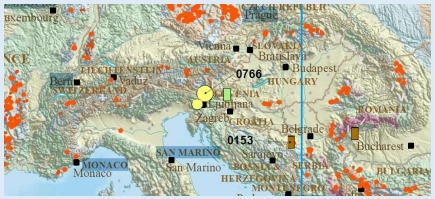
3. **High availability** in the near future - modular design prepared for serial production - less than 10 kg of Thorium meets the annual energy demand for 10,000 households.

4. **High safety** – no plutonium, no risk of explosion, no risk of meltdown, significant reduction of isotopic half-life



MARKET POTENTIAL

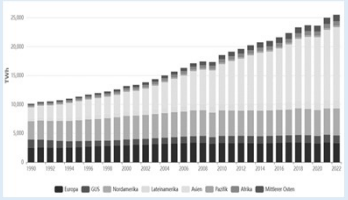
LOW COSTS & HIGH INCOME



5. **High Income** & cost efficiency – high energy density, highly available, constant energy production, fast market entry through contracting model, low ongoing costs (Thorium is inexpensive, no staff on-site necessary, no CO2 emission costs,…), low construction costs through serial production- prepared for increasing demand

6. **Low investor risk** because of solid basic research- (based on 2 nobel price laureates and a national laboratory)+ „**it´s just one container @ risk**“

7. **Low raw material risk** –Emerald Thorium reserve + significant Thorium deposit in Austria



APPENDIX

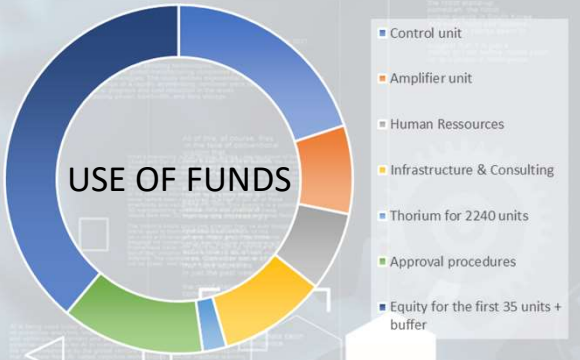
OFFER FOR INVESTORS
Investor round 2

SHARES OF EMERALD HORIZON AG

ADES included
CAL STORE included
NES included
Contracting included
ALL patent rights and incomes included

2A Now untill mid-Dec
EUR 25M without conditions

2B 2024-Q2
9* EUR 25M predominantly out of the following industrial segments to get an immediate market entry once the ADES modules are ready for delivery:

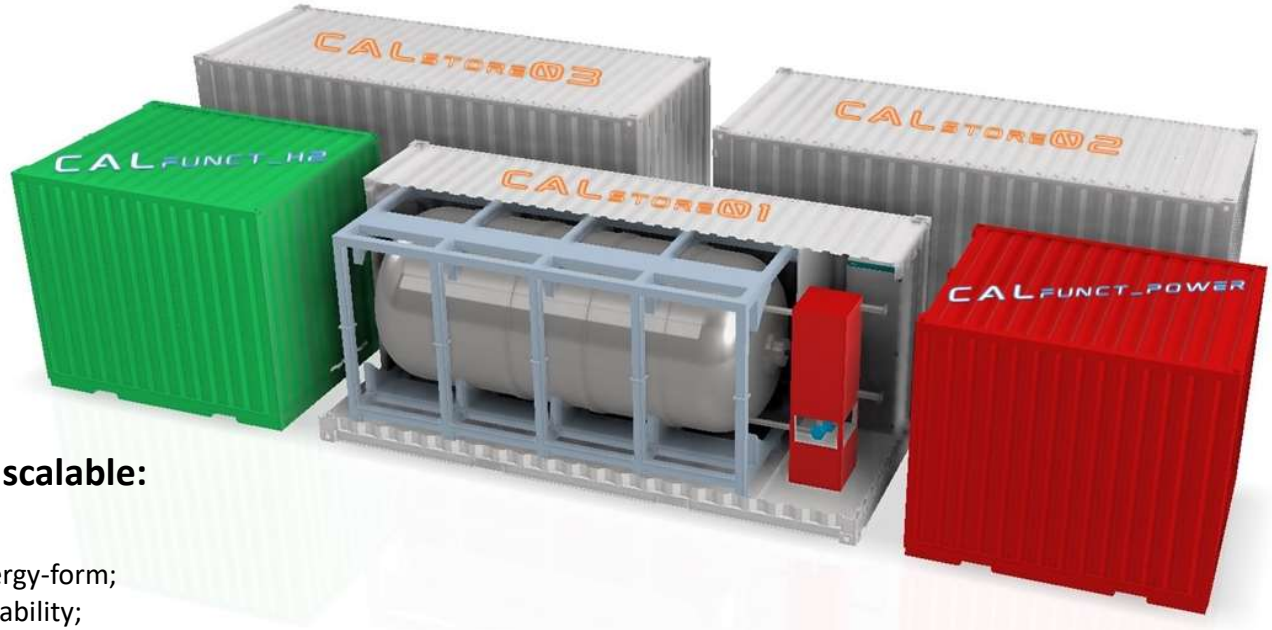


CALstore: 20-feet concept design

in cooperation with Bernard Group and Technical University of Graz
IDEA: high-capacity energy storage for ADES or as stand-alone system for volatile energy sources like wind or PV-power

CALstore basic specifications:

- 20-feet container – fixed, stationary;
- salt volume in storage-cylinder volume: 8-15m³;
- PCM operation – using the full range: ambient temp up to T_max;
- energy capacity: > 5[MWh]
- national funded project: 4 Mio. (2023-2026)



CALsys = CALstore + CALfunct – modular + scalable:

- if more energy-storage-amount is needed;
- if stored heat is going to be reconverted into other energy-form;
- CALstore form-factor: 20-feet container + interconnectability;
- CALfunct form-factor: 10-feet-container;

APPENDIX

Emerald Horizon
DIE ZUKUNFT DER CO_2-FREIEN ENERGIEVERSORGUNG

ECKDATEN CALstore Projekt	
Projektleitung:	Emerald Horizon AG, Graz Admin: MMag. Philipp PÖLZL, CFO Technik: DI Dr. Mario J. MÜLLER, Head R&D
FFG-Projekt-Nr.:	903946
Projekt-Kurzname	CALstore
Projekt-Titel:	Modularer Hochtemperatur-Flüssigsalz-Speicher
Projektvolumen:	EUR 4,066 Mio.
FFG-Förderung:	EUR 2,676 Mio.
Projektlaufzeit:	1. April 2023 - 31.3.2026
Wissenschaftlicher Partner:	TU Graz, Institut für Wärmetechnik, Univ.-Prof. Dr. Hochenauer

CALSTORE
high temperature liquid-salt energy storage system

FFG
Austrian
Research Promotion Agency

Die Entwicklung des Prototypen:

Modularer Hochtemperatur-Flüssigsalz Energiespeicher

wird gefördert von FFG im Basisprogramm!
2023-2026 FFG-Projektnummer: 903946