ASP Isotopes Inc. Announces Agreement Relating to Potential Acquisition of Renergen Limited

Goal to Create a Global Critical Materials Business with $300 Million in EBITDA by 2030

Forward Looking Statements

This presentation contains “forward-looking statements” within the meaning of the safe harbor provisions of the U.S. Private Securities Litigation Reform Act of 1995, including statements with respect to the financial condition, results of operations and businesses of ASP Isotopes Inc. (“ASPI”), Renergen Limited (“Renergen”) and their respective groups, and certain plans and objectives of ASPI with respect to the combined business. The actual results of ASPI, Renergen and the combined business’s actual results may differ materially from our expectations, estimates and projections and consequently, you should not rely on these forward-looking statements as predictions of future events. Forward-looking statements are neither historical facts nor assurances of future performance. Instead, they are based only on our current beliefs, expectations and assumptions regarding the future of our business, future plans and strategies, projections, anticipated events and trends, the economy and other future conditions. Forward-looking statements can be identified by words such as “believes,” “anticipates,” “expects,” “estimates,” “projects,” “will,” “may,” “might” and words of a similar nature. Examples of forward-looking statements include, among others but are not limited to, the parties’ expectations with respect to their beliefs, plans, goals, objectives, expectations, anticipations, assumptions, estimates, intentions and future performance, as well as anticipated financial impacts of the proposed transaction, the satisfaction of the closing conditions to the proposed transaction and the timing of the completion of the proposed transaction. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict, many of which are outside our control. The actual results, financial condition and events related to ASPI, REN and the combined business may differ materially from those indicated in the forward-looking statements based upon a number of factors. Forward-looking statements are not a guarantee of future performance or developments. You are strongly cautioned that reliance on any forward-looking statements involves known and unknown risks and uncertainties. Therefore, you should not rely on any of these forward-looking statements. There are many important factors that could cause our actual results and financial condition to differ materially from those indicated in the forward-looking statements, including: (i) the completion of the proposed transaction in the anticipated timeframe or at all; (ii) the satisfaction of the closing conditions to the proposed transaction including, but not limited to the ability to obtain approval of the shareholders of Renergen; (iii) the failure to obtain necessary regulatory approvals; (iv) the ability to realize the anticipated benefits of the proposed transaction; (v) the ability to successfully integrate the businesses; (vi) disruption from the proposed transaction making it more difficult to maintain business and operational relationships; (vii) the negative effects of the announcement of the proposed transaction or the consummation of the proposed transaction on the market price of ASPI’s or Renergen’s securities; (viii) significant transaction costs and unknown liabilities; (ix) litigation or regulatory actions related to the proposed transaction; and (x) such other factors as are set forth in the periodic reports filed by ASPI with the U.S. Securities and Exchange Commission("SEC"), including but not limited to the factors disclosed in Part I, Item 1A. “Risk Factors” of ASPI’s Annual Report on Form 10-K for the fiscal year ended December 31, 2024 and any amendments thereto and in ASPI’s subsequent reports and filings with the SEC. Any forward-looking statement made by us in this presentation is based only on information currently available to us and speaks only as of the date on which it is made. We undertake no obligation to publicly update any forward-looking statement, whether as a result of new information, future developments or otherwise.

Forward Looking Statements

Use of Projections

The financial outlook and projections, estimates and targets in this press release are forward-looking statements that are based on assumptions that are inherently subject to significant uncertainty and contingencies, many of which are beyond ASP Isotopes's or Renergen's control. Such calculation cannot be predicted with reasonable certainty and without unreasonable effort because of the timing, magnitude and variables associated with the completion of the proposed transaction with Renergen. Additionally, any such calculation, at this time, would imply a degree of precision that could be confusing or misleading to investors. Neither ASP Isotopes nor Renergen's independent auditors have audited, reviewed, compiled or performed any procedures with respect to the financial projections for purposes of inclusion in this press release, and, accordingly, they did not express an opinion or provide any other form of assurance with respect thereto for the purposes of this press release. While all financial projections, estimates and targets are necessarily speculative, ASP Isotopes believes that the preparation of prospective financial information involves increasingly higher levels of uncertainty the further out the projection, estimate or target extends from the date of preparation. The assumptions and estimates underlying the projected, expected or target results for ASP Isotopes, Renergen and the combined company are inherently uncertain and are subject to a wide variety of significant business, economic and competitive risks and uncertainties that could cause actual results to differ materially from those contained in the financial projections, estimates and targets. The inclusion of financial projections, estimates and targets in this press release should not be regarded as an indication that ASP Isotopes, or its representatives, considered or consider the financial projections, estimates or targets to be a reliable prediction of future events. Further, inclusion of the prospective financial information in this press release should not be regarded as a representation by any person that the results contained in the prospective financial information will be achieved.

Market and Industry Data

This presentation includes market and industry data and forecasts that we obtained from internal research, publicly available information and industry publications and surveys. Industry publications and surveys generally state that the information contained therein has been obtained from sources believed to be reliable. Unless otherwise noted, statements as to our potential market position relative to other companies are approximated and based on third-party data and internal analysis and estimates as of the date of this overview. Although we believe the industry and market data and statements as to potential market position to be reliable as of the date of this presentation, we have not independently verified this information, and it could prove inaccurate. Industry and market data could be wrong because of the method by which sources obtained their data and because information cannot always be verified with certainty due to the limits on the availability and reliability of raw data, the voluntary nature of the data-gathering process and other limitations and uncertainties. In addition, we do not know all of the assumptions regarding general economic conditions or growth that were used in preparing the information and forecasts from sources cited herein. All forward-looking statements herein are qualified by reference to the cautionary statements set forth herein and should not be relied upon.

The Energy Act of 2020 defines a "***critical material***" as:

*Any non-fuel mineral, element, substance or material that the Secretary of Energy determines: (i) has a **high risk of supply chain disruption**; and (ii) serves an **essential function** in one or more **energy technologies**, including technologies that produce, transmit, store, and conserve energy.*[(1)]

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ASPI + Renergen = Operational Synergies and Customer Overlap

ASP isotopes + RENERGEN

Proven track record of acquiring distressed assets and creating substantial shareholder value.

Proven track record of exceptional project management and leadership: Construction of three enrichment facilities in three years. In house fabrication workshop and engineering team allows acceleration of project construction milestones.

Deep understanding of global supply chains: Our global footprint allows us to accelerate procurement timelines and hit construction milestones.

On the ground in South Africa: The CEO and COO spend the majority of their time in South Africa focused on project execution.

Exceptional relationship with South African Government and regulators: Signed Term Sheet and MOU with TerraPower and Necsa for nuclear fuel production in South Africa required many conversations with government ministers and regulators.

Strong Balance Sheet: $60 million in cash on balance sheet at Dec 31, 2024[(2)]. Expects to secure $30 million in debt funding during 3Q 2025.

Unique Asset: Helium is considered a critical material by multiple governments, and supply side has regularly been challenged – Renergen's helium asset has ~10x the global average concentration

Strong relationship with US Government: Obtained large quantities of US government funding ($530 million committed and/or drawn) from US government.

Strong relations with semiconductor industry: Office in Austin, Texas is geographically aligned with customers.

Access to low-cost energy: Natural gas produced in Welkom has a wellhead cost of $0.35 per mcf**.** This represents one of the lowest levelized costs of energy globally

Strategic Location: Shipping helium from South Africa: highly efficient and ideally located between the East/West.

Macro tailwinds: First LNG producer in South Africa, which is currently facing a significant energy crisis.

Key Highlights

Shared focus on critical and strategically important materials - **Renergen will be a global leader in liquid helium production**, one of the most sought-after critical minerals globally

US Government has been the principal lender to the business for Phase 1 and has committed to a $500m debt investment for Phase 2

End-market synergies - **liquid helium is an "irreplaceable" mineral in the medical, semiconductor, energy and space exploration industries which are ASP Isotopes' three target markets**

Shared customer base - Renergen's customer network in industrial **gases significantly increases sales targets for ASP Isotopes**

Creates vertical and horizontal supply chain – ASPI's large-scale plants use significant energy, with costs potentially being reduced by up to 94% by leveraging power from Renergen's LNG asset.

The **Renergen Gas Project** has an independent Sproule NPV Valuation of $1.7bn[(3)].

Significant revenue opportunity - goal of combined group is to generate over **$300 million in annual EBITDA by 2030 (post the QLE spin off) and EPS accretive from 2026, reflecting the strength of the combined business.**

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ASP Isotopes at a Glance – Operating in Three Verticals

ASP isotopes

Enrichment of stable (non-radioactive) isotopes for use in the medical and semiconductor industries.

ASP Isotopes Inc.
Delaware, US
NASDAQ (ASPI)

QLE – Planned spin out expected in 2H 2025

PET Labs Pharmaceuticals

Leader in the provision of nuclear medicine services in South Africa and sub-Saharan Africa; ASPI purchased 51% majority stake in PET Labs in November 2023.

PET Labs (Pty) Ltd
South Africa
51% Majority Stake

QUANTUM LEAP ENERGY

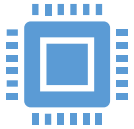
Development and production of the nuclear fuels of the future (HALEU, Lithium 6 and 7, Chlorine 37).

Quantum Leap Energy LLC
Delaware, US

Quantum Leap Energy (UK) Ltd
United Kingdom

ASP Isotopes – Three Multi-Billion Dollar End Markets

ASPI has constructed three operational nuclear enrichment facilities in South Africa that will provide critical materials to fuel global megatrends in three multi-billion-dollar end markets and expects to ship first commercial products during 2Q 2025.



Semiconductors: Next generation semiconductors that enable quantum computing and artificial intelligence will likely require isotopically pure materials. ASPI has contracted with a US semiconductor company and a global industrial gas company to supply large quantities of Silicon-28. ASPI is likely the only company globally capable of producing these products.

Medical: An increasing number of radioisotopes are being used to treat diseases such as cancer. Novartis' Pluvicto is forecast to become a c.$4bn product by 2028[4]. ASP Isotopes has constructed a Ytterbium 176 enrichment facility in South Africa which will be used to produce the active ingredient (Lu-177). During 2026 construction on additional medical isotope facilities will commence.

Nuclear Energy: ASPI's subsidiary, Quantum Leap Energy ("QLE"), has signed a term sheet with TerraPower, Bill Gates' SMR nuclear reactor company. QLE has signed an MOU with Necsa to construct a next-generation nuclear fuel production plant in South Africa that will produce the essential fuels for next-generation nuclear power plants.

Isotopes have one of the most severely compromised supply chains of any material in the world. The US Department of Energy and the majority of Western governments identifies isotopes as critical materials.

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ASP Isotopes – Operations Update

- During the last three years, ASPI has constructed three operational nuclear enrichment facilities in South Africa. All three successfully commenced commercial production during 1H 2025.

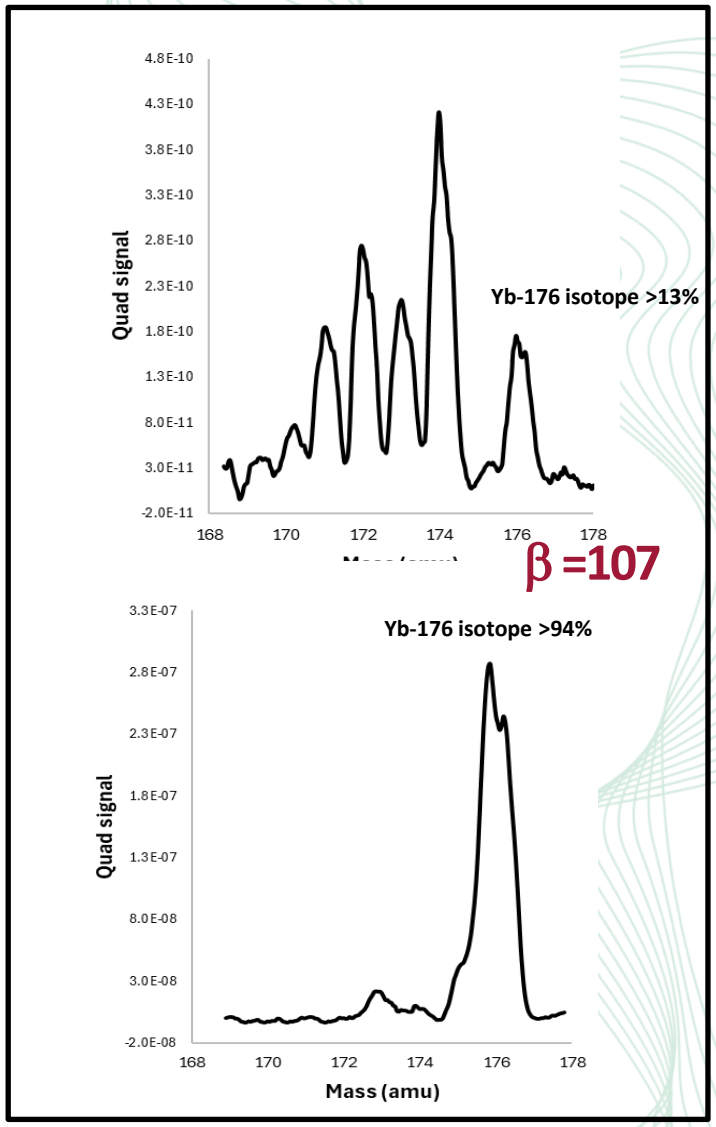
- **Ytterbium-176:**
  - Currently operating at an annualized rate of 300 grams per year in batch mode with each production run lasting several hours.
  - Expect to move to continuous processing during July which should increase capacity to > 1kg/year
  - Commercial samples expected to be shipped during June or July.

- **Silicon-28:**
  - Plant successfully entered full reflux during March 2025.
  - Currently enriching silane with chemical purity at 99.9999% being maintained through the process.
  - Expect first commercial product shipment enriched to 99.995% isotopic purity during June or July.

- **Carbon-14:**
  - Received first two shipments of feedstock. Awaiting third shipment.
  - Successful operations 24/7. Expect to ship first product during July subject to timely receipt of final feedstock.

- **Other:**
  - Started the procurement and construction on a large laser facility in South Africa to produce commercial quantities of nickle-64, gadolinium-160, zinc-68, lithium-6/7.

Successful Ytterbium Enrichment via QE



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Renergen at a Glance

World-class helium reserves with exceptionally high helium concentrations and low extraction costs. Most governments classify Helium as a Critical Material

Focused on **accelerating the adoption of LNG as a cleaner energy source** in an energy starved country

LNG and liquid helium producer from its flagship **Virginia Gas Project - Phase I**

Principal lender is the **US government**, through the **Development Finance Corporation (DFC)**

Only onshore petroleum production right holder in South Africa. This provides Renergen with a significant first-mover advantage

Declared a **Strategic Integrated Project** by the South African Government, whilst helium considered critical mineral in the US

Positioning South Africa as a **net exporter of helium,** one of eight nations supplying this critical element into a growing helium market

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Helium Market Overview

The global market for helium, including both liquid and gaseous forms, is **estimated to be around $7.5 billion by 2029**[5]

This market is projected to grow significantly, with **CAGR estimates of up to 8.3% expected between 2025 and 2032**[5]

Global supply is fragile and concentrated. Over 80% of world's helium comes from three countries - US (46%), Qatar (38%), and Algeria (5%)[6]—with fewer than 15 companies globally involved in large-scale production[7]

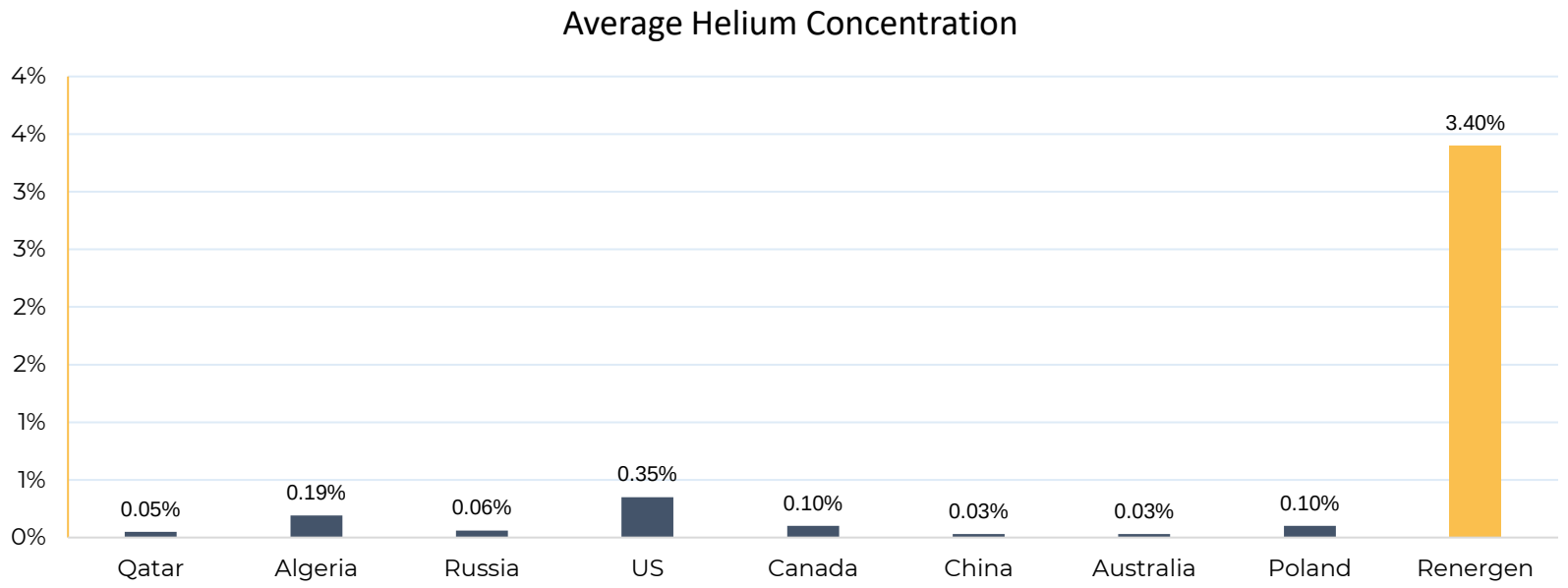
There have been four global helium shortages since 2006. Price volatility is a persistent issue: between 2020 and 2023, helium prices nearly doubled—from $7.57 to $14 per cubic meter[8]

Helium prices have risen sharply over the past decade, with a CAGR of around 20%, driven by tightening supply and rising demand from high-tech sectors

A Unique Geological Formation: How did the gas get there?

Renergen's production right is on the rim of the Vredefort Crater, formed by an asteroid strike approximately 2 billion years ago, where natural helium is produced as a result of natural decay of ultra-high uranium and thorium deposits

- Timing of the asteroid impact and conditions after impact resulted in bacteria adapting to the specific surroundings.
- Bacteria evolved to use the energy from the radioactivity underground to metabolise carbon into natural gas, similar to chlorophyl using sunlight to metabolize CO2 into sugar and oxygen.
- Helium gas is produced as a by-product of radioactive decay so that the natural gas and helium are found together in this deposit.



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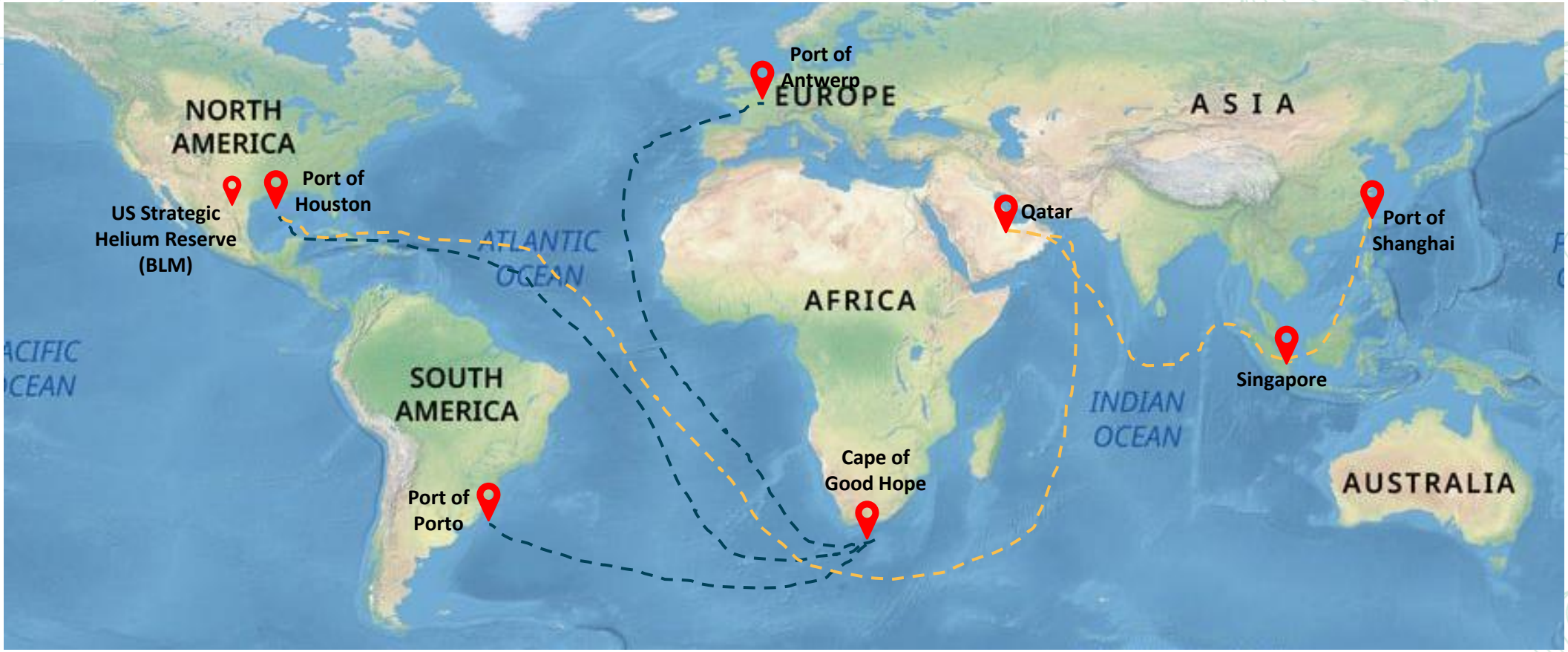
The World's Only Global Helium Supplier

Every day of travel, 1% of your liquid helium turns into a gas **– Cape of Good Hope's location is one of the most accessible globally**



Cape of Good Hope > Houston = ~20 days (80% liquid / 20% gas)
Cape of Good Hope > Antwerp = ~16 days (80% liquid / 20% gas)
Cape of Good Hope > Porto (Brazil) = ~16 days (90% liquid / 10% gas)
Qatar > Shanghai (via Singapore) = ~44 days (55% liquid / 45% gas)
Qatar > Port of Houston = ~40 days (60% liquid / 40% gas)

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Combined Business Snapshot - Production & Distribution of Critical Minerals

Semiconductors

ASPI & Renergen

Silicon-28
Helium-4
Germanium-70
Ytterbium-171
Barium-137
Silver-107
Copper-65

Medical

PET, ASPI & Renergen

Helium-4
Carbon-14
Ytterbium-176
Molybdenum-98&100
Zinc-68
Nickel-64

Energy

QLE & Renergen

HALEU (Nuclear)
Helium-3 (Fusion)
Helium-4 (Nuclear, Wind & Solar)
Silicon-28 (Solar)
Lithium-6&7
LNG

Space

ASPI, QLE & Renergen

Helium-4
LNG
HALEU
Germanium-70
Silcon-28 (Solar)

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Merger Rationale

Critical Materials Powerhouse	Goal of combined group is to generate >$300m EBITDA in 2030
Critical Minerals and Gases	Both companies focus on critical and strategically important minerals and gases
Integrated Supply Chain	Creates a vertically and horizontally integrated supply chain
Complimentary Customer Base	Both companies produce for medical, semiconductor and energy applications
Geographical Diversification	USA, South Africa, UK, Europe and Middle East

Reduce Lead Times	ASP's Advanced workshop and fabrication facility can reduce lead times on critical imported spares
Shared Knowledge	Shared Scientific knowledge in specialized gas processing and separation technologies
Combined R&D	Combining R&D capabilities for next-generation separation methods
Power	ASPI can leverage Renergen's low-cost, constant power supplies
Shared Infrastructure	Shared infrastructure and operational costs – in both South Africa and USA
Reduces Geopolitical Risk	Geographical Diversification leading to reduced geopolitical risk
Accounting – US GAAP	SA finance function can be consolidated. Reporting under US GAAP.

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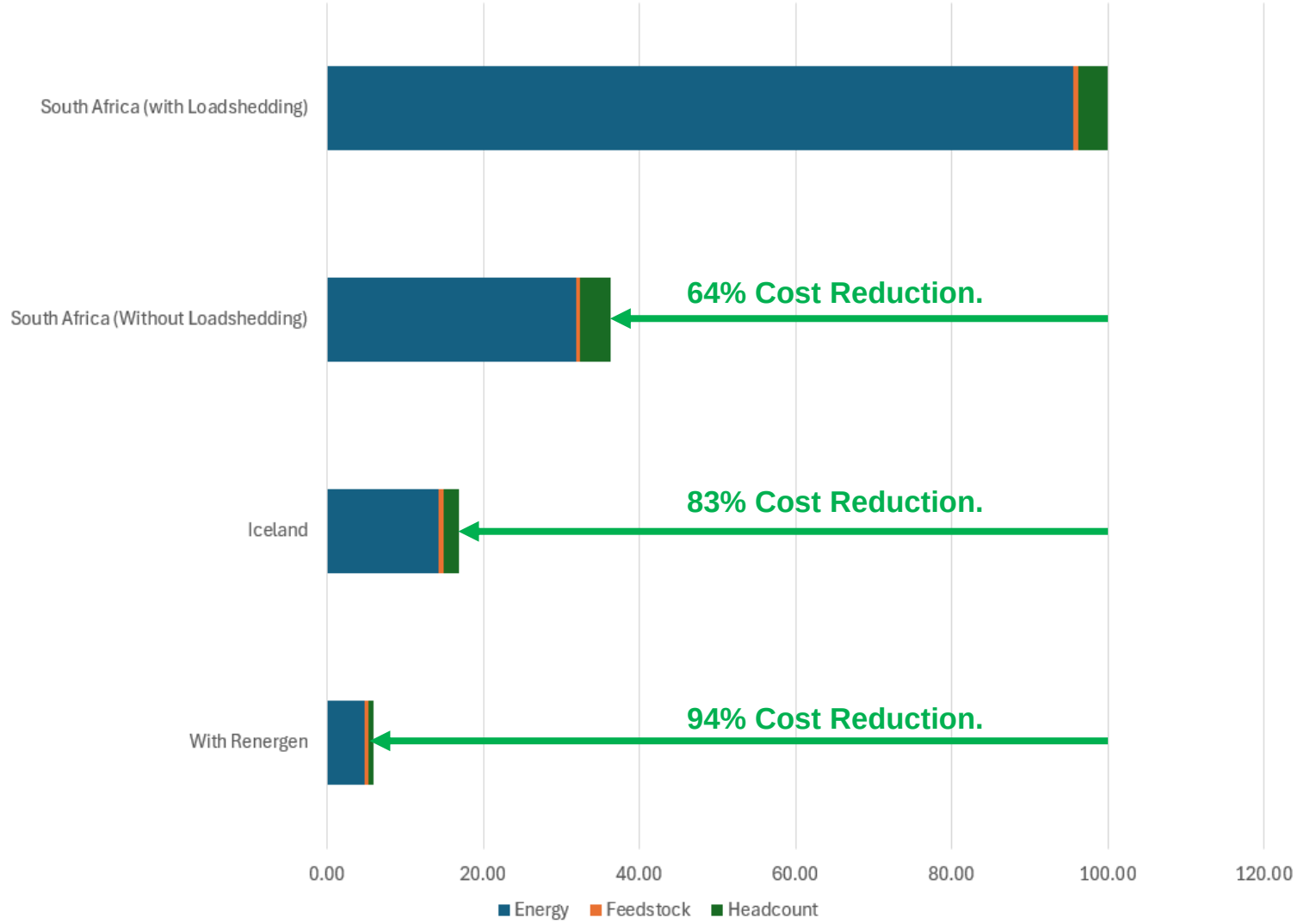
Vertical Integration will Significantly Reduce Isotope Production Costs

ASP Isotopes' goal is to be the lowest cost and most reliable supplier of isotopes globally.

For many isotopes, the largest cost driver is **energy, which at our current facilities accounts for over 90% of cost of goods.**

A large-scale plant constructed at Welkom **would result in both reliable and cheaper energy – a reduction in cash costs of 94% compared to our current facilities** (with 6 hours of load shedding per day) and 82% compared to our current facilities with no loadshedding.

Many of our plants use helium as a carrier gas. Vertical integration into Renergen's helium production will also result in a lowering of cash costs.



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ASP & Renergen: Leadership Team

PAUL MANN
Exec Chairman & CEO

- Co-Founder, ASP Isotopes
- 20+ years of experience on Wall Street investing in healthcare and chemicals companies at Soros Fund Management, Highbridge Capital and Morgan Stanley.
- MA and MEng (Chemical Engineering) from Cambridge University, Research Scientist at Procter and Gamble. CFA charter holder.

Based: South Africa, UK and USA

STEFANO MARANI
CEO Electronics & Space

- Co-founded Tetra4 and Renergen.
- 15+ years' experience in structured finance for institutions including Deutsche Bank and Morgan Stanley.
- BSc Actuarial Hons from WITS University.

Based: USA

ROBERT AINSCOW
Co-COO

- Co-Founder, ASP Isotopes.
- 20+ years experience on Wall Street in Capital Markets, Asset-Backed Finance, and Control at Investec Bank, Bear Sterns, and Morgan Stanley.
- B.A. (Joint Hons) in Law and Modern Languages from Bristol University.

Based: South Africa and UK

NICK MITCHELL
Co-COO

- Co-founded Tetra4 and Renergen.
- Experienced Network Engineer with experience in developing infrastructure projects in Africa.
- Current Chairman of the Onshore Petroleum Association of South Africa.

Based: South Africa

HEATHER KIESSLING
Chief Financial Officer

- 30+ years experience with life science and high-tech companies.
- Managing Director at Danforth Advisors LLC, a life science consulting firm. Held finance leadership roles at Cytonome/ST, LLC and AutoImmune Inc.
- CPA and holds a BA from University of California, San Diego, and an MBA from University of Michigan Graduate School of Business.

Based: USA

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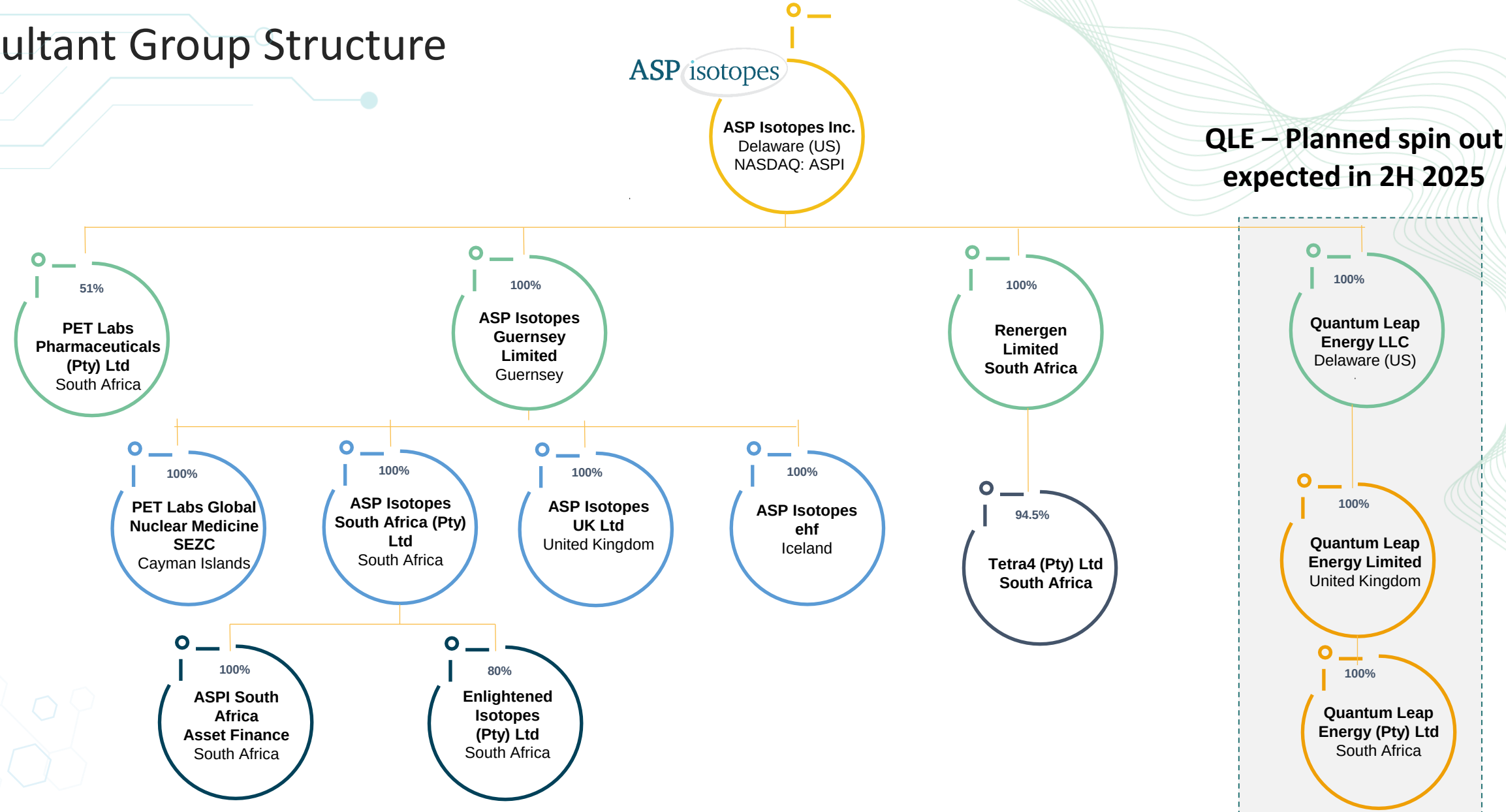
Resultant Group Structure



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Appendix

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Creating a Global Powerhouse in Critical Materials for the Electronics Industry

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New Areas of Development: Expanding ASPI's Footprint in Electronic gases

Enriched Isotopes

Next generation semiconductors will require isotopically enriched materials: There is considerable interest from quantum computing companies and manufacturers of semiconductors for artificial intelligence for materials that enable higher processing speeds.

There are few (if any) suppliers of isotopically enriched materials of the enrichment and purity required by the semiconductor industry.

Isotope	Application	Anticipated Market Entry
Silicon-28	Semiconductors	1H 2025
Germanium-70/72	Semiconducotrs	2025
Ytterbium-171	Quantum Computing	2026
Barium-137	Quantum Computing	2026
Silver -160	Semiconductors	2027
Copper - XX	Semiconductors	2027

Fluorinated Gases

Considerable supply side challenges in specialist electronic gasses: There are few producers of specialist fluorinated gases. Limited domestic US production and challenging shipping.

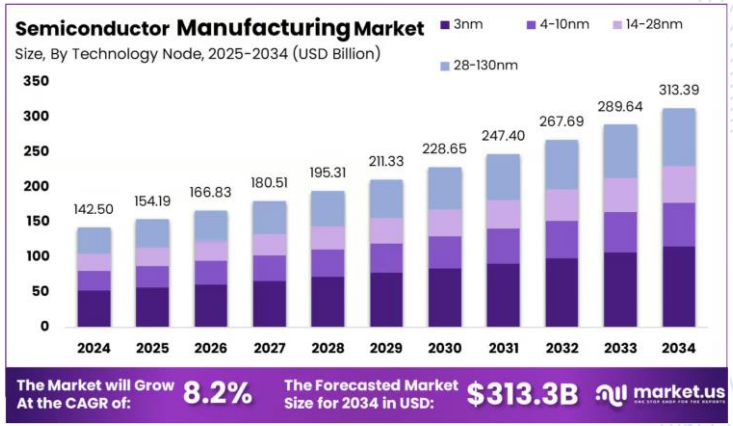
ASP Isotopes' engineers have considerable expertise in construction of fluorinated chemical plants.

Gas	Application	Anticipated Market Entry
Germane	Doping	2027
Methyl Fluoride	Etching	2027
Difluoromethane	Etching	2028
Tetrafluoromethane	Etching	2028
Xenon difluoride	Etching	2028
Tungsten hexafluoride	Deposition	2027

Helium

Limited substitution capability in the semiconductor manufacturing process: Helium is used in the backside wafer cooling and as a carrier gas. No other gas has the same physical properties as helium, making it critical in the process.

Renergen's ability to easily ship helium East or West allows us to pivot customer base and maximize revenue potential from the fast-growing semiconductor market[9].



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Fluorinated Gases in the Electronics Industry

Fluorinated gases play several important roles in semiconductor manufacturing.

- Fluorine (F2) and Fluorine mixtures (F2/N2), Phosphorus trifluoride (PF3), Iodine pentafluoride (IF5), and Selenium tetrafluoride (SeF4) are used in plasma etching processes to selectively remove material and create precise patterns on semiconductor wafers.
- Dopants such as Germanium tetrafluoride (GeF4) and Antimony pentafluoride (SbF5) are introduced to modify electrical properties.
- Germanium tetrafluoride (GeF4), Molybdenum hexafluoride (MoF6), Niobium pentafluoride (NbF5), and Selenium tetrafluoride (SeF4) are used in chemical vapor deposition processes to deposit thin films of materials like silicon dioxide.
- **Scientists at ASP Isotopes have developed novel methods to manufacture fluorinated compounds and have constructed a pilot plant in Pretoria.**

Pilot plant capable of producing 220 tons per annum of fluorinated rare earth metals.

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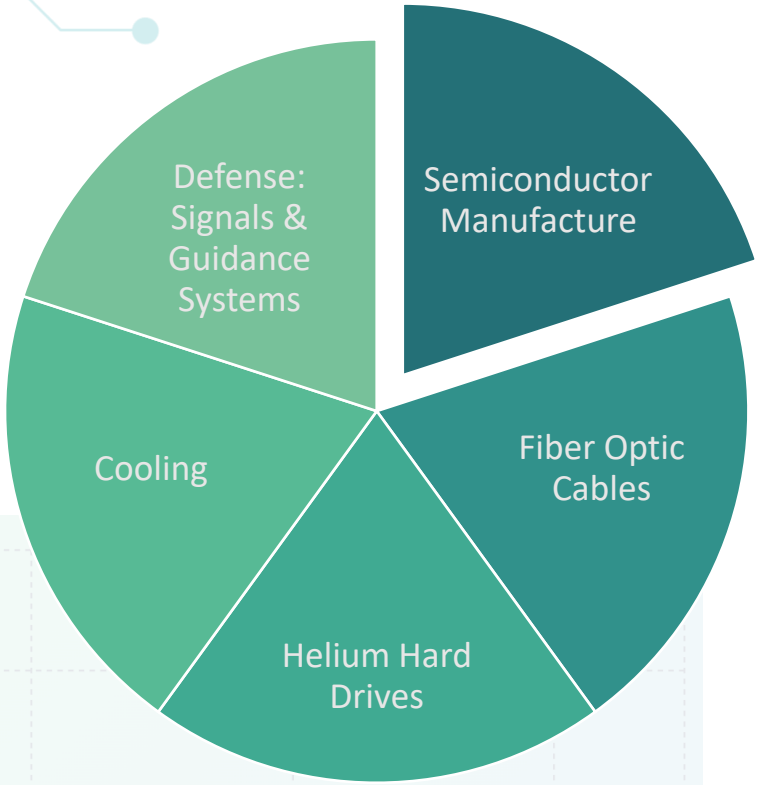
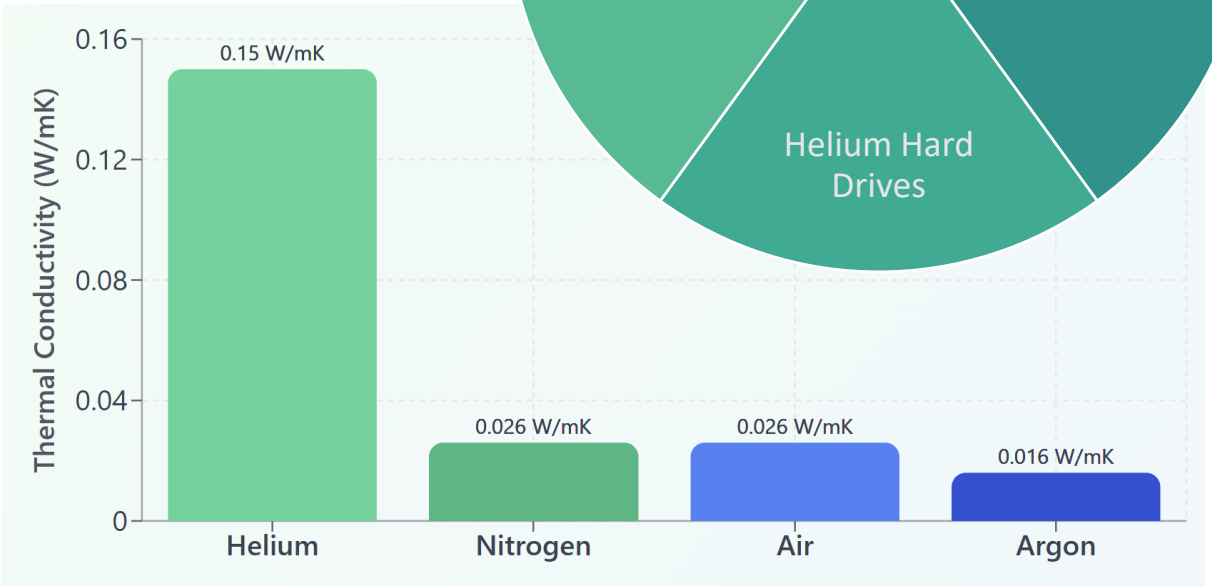
Helium in Electronics markets



Thermal Conductivity[10]



Helium: Gas like no other.

- Semiconductor manufacture requires the gas for effective heat dissipation and inert atmospheres.
- Heated silica is cooled using helium to produce consistent, high purity strands of cable.
- Specialised helium hard drives dissipate heat and reduce friction, making them more efficient.
- Helium is used in applications to cool equipment due to its high thermal conductivity.
- Defense requires liquid helium in certain signal processing to reduce interference, and in heat-guided systems.

- **Renergen's Phase 2 helium capacity, estimated to be around 7% of global supply, and strategically located headquarters in Austin, Texas, give the company first hand access to the electronics industry in the US, with a direct wellhead to customer approach as opposed to customers having to source via intermediaries.**

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The Opportunity for Isotopes in Semiconductors

ASPI aims to establish itself as an indispensable part of the semiconductor supply chain.

- Using ASPI's proprietary technology and increasing capacity our goal is to become the world's leading supplier of enriched Silicon-28. Commercial production started during 1Q 2025.
- ASPI aims to enrich Silicon-28 content from 92.2% to the required >99.995% purity product, removing Silicon-29 and 30 isotopes.
- Preliminary research suggests that enriched Silicon-28 can deliver superior conductivity and transformational performance - unlocking greater computing potential.

Demand for semiconductors and their materials is growing, with the market on track to surpass US$1tn by 2030. [11]

- Data Centres
- AI
- Consumer Electronics
- EVs
- Quantum Computing

ASP Isotopes' Silicon-28 enrichment plant in South Africa

ASPI is the world's only commercial supplier of Silicon-28 in the form of silane and is partnering with the global semiconductor industry to supply large quantities of Silicon-28 through 2030 and beyond to allow the industry to unlock the significant performance gains that arise from switching to Silicon-28 Nanowires.

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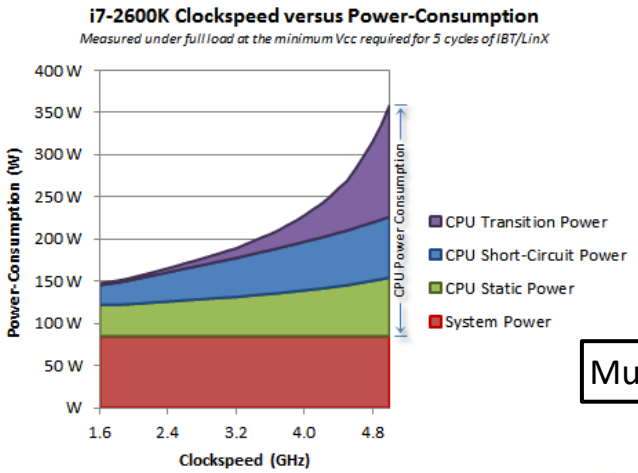
How Scientists believe ^{28}Si improves CPU speeds



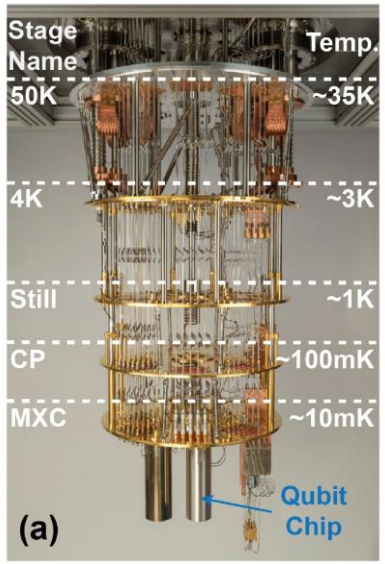
CPU Power Consumption Causes:

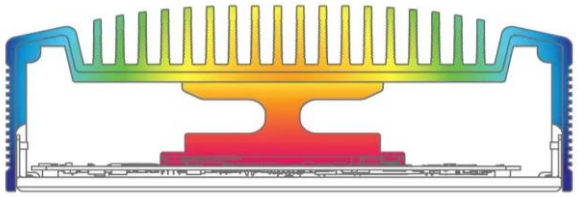
$P_{CPU} = P_{dyn} + P_{sc} + P_{sp}$

$P_{dyn} = CV^2f$ ⟸ f is Processor Clock Speed

$P_{cooling} \approx P_{CPU}$

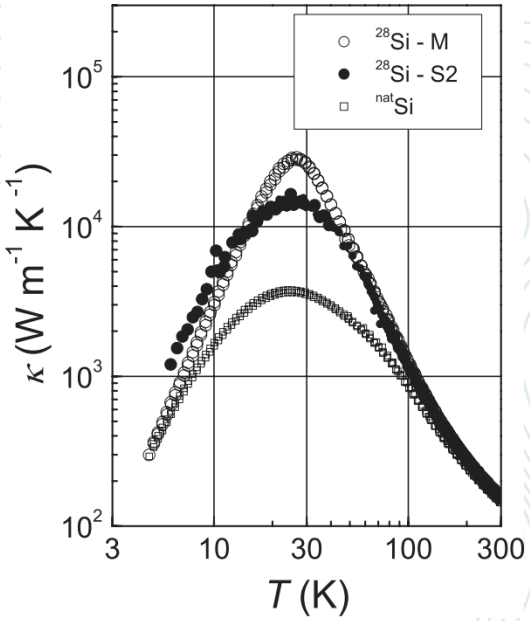
Much Heat Generation + Poor Heat Conduction = Processor Meltdown





SOLUTION: ⟹

IMPROVE ON-CHIP THERMAL CONDUCTIVITY



$$m \cdot C_p \cdot \frac{dT_{Chip}}{dt} = P_{CPU} - k \cdot A_{Chip} \cdot \frac{T_{chip} - T_{cooling}}{L_{chip}}$$

- High-purity ^{28}Si improves thermal conductivity by ca. 10% at 25 °C = Faster CPUs or Less Cooling Cost[12]
- High-purity ^{28}Si has order of magnitude thermal conductivity at Quantum Processing temperatures[13]
- High-purity ^{28}Si allows lower maximum operating temperatures for Qubit Processors = Better Qubits

⟸ Maximum Heat Dissipation Required For Quantum Computing

ASP isotopes

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Silicon-28: Technological Breakthrough

- Electronics are relatively affordable because Silicon is cheap and abundant. But, although naturally occurring Silicon is a good conductor of electricity, it is not a good conductor of heat when it is reduced to very small sizes – and when it comes to fast computing, that presents a big problem.
- Silicon-28, an isotopically pure form of silicon, presents a solution. Its thermal conductivity is about 60% higher.
- ASPI's technology has demonstrated the potential to produce enriched Silicon-28 at a commercial scale. ASPI expects to supply semiconductor companies with highly enriched Silicon-28 from 2024.

For many decades, researchers theorized that chips made of pure Silicon-28 would overcome Silicon's thermal conductivity limit, and therefore improve the processing speeds of smaller, denser microelectronics. But purifying silicon down to a single isotope requires intense levels of energy which few facilities can supply – and even fewer specialize in manufacturing market-ready isotopes.

- Lawrence Berkeley National Laboratory [14]

Isotopes	End-Market	R&D Stage	R&D Evaluation	Under Construction	Anticipated Market Entry	Technology
Silicon-28	Semiconductors	✓	✓	✓	2025	ASP
Germanium-70/72		✓	✓	✓	2025	ASP
Ytterbium-171	Quantum Computing	✓	✓	✓	2026	QE
Barium-137		✓	--	--	2026	QE
Helium-3	Semiconductors & Defense	✓	--	--	2026/27	Undisclosed

ASP Isotopes – Engineering Expertise can Overcome Procurement Challenges

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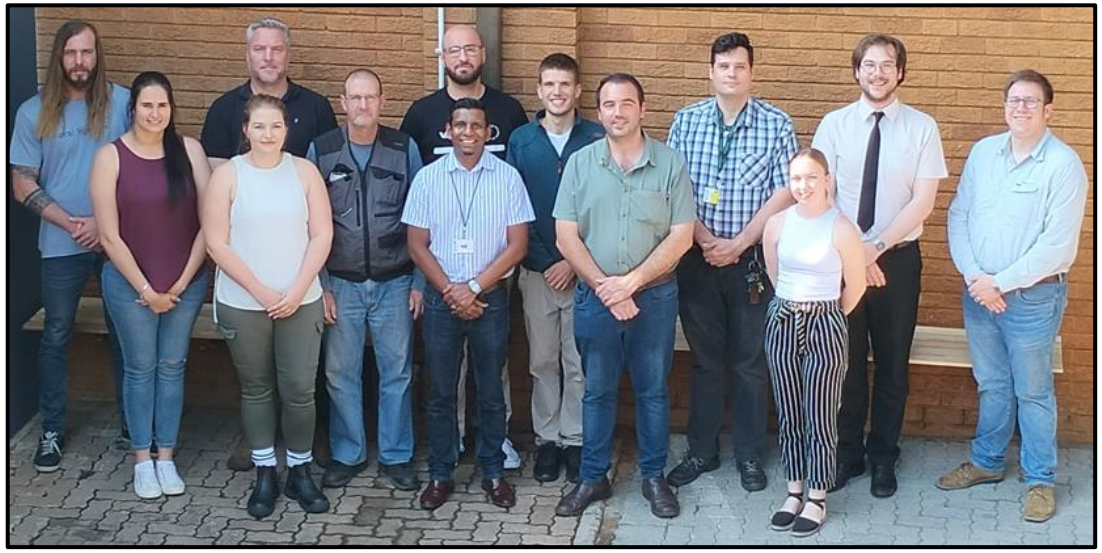
Overview – EPCM capabilities

Next generation semiconductors will require isotopically enriched materials: There is considerable interest from quantum computing companies and manufacturers of semiconductors for artificial intelligence for materials that enable higher processing speeds.

There are few (if any) suppliers of isotopically enriched materials of the enrichment and purity required by the semiconductor industry.

Extensive Engineering team with deep experience

- **12** Process Engineers ~108 years of combined experience
- **9** Mechanical Engineers ~118 years of combined experience
- **5** EC&I Engineers ~72 years of combined experience



ASPI Engineering Team

Engineering Design Capability

- All process engineering is done in-house
- All mechanical engineering is done in-house
- EC&I engineering partially done in-house
- Civil engineering is done externally

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Process Engineering Team

Heino van Wyk
Head of Engineering

- Mr. van Wyk is tasked is the Head of Engineering, leading a team of engineers to design, construct, and commission the next generation of isotope separation plants in record times.
- Chemical Process Engineer with 13 years of experience in the EPCM for petrochemical, chemical, and isotope industries. Proficient in simulations, process design, simulations, and commissioning.
- B.Eng (Chemical), University of Pretoria PgDIP Nuclear Engineering

Japie Grant
Principle Process Engineer

- An expert in process simulation and plant Design, Mr. Grant is currently working on feasibility assessments and basic engineering projects.
- Chemical Process Engineer with +40 years of experience in engineering design, plant commissioning, operations, management, cascade optimization, and lecturing.
- M.Eng. (*Mechanical*) & B.Eng. (*Chemical*), University of Pretoria

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Process Engineering Team

Inbanathan Govender, PhD
Senior Chemical Process Engineer

- Dr. Govender is currently tasked to lead the 28Si enrichment plant project.
- Chemical Process Engineer with 10 years of experience in engineering design of fluoro-chemical and chloro-chemical plants as well as metal refining plants such as Ni, Cu, Co and rare earth metals.
- PhD in Fluorochemical Engineering, MSc in Absorption as a Separation method

Gerard Puts, PhD
Senior Chemical Process Engineer

- Dr. Puts is currently working on the company's anticipated site expansion projects in Iceland and Solar Hydrogen-Uranium-Florine (SHUF) projects.
- Chemical Process Engineer with 11 years of experience in Pharmaceuticals, fluorochemical plant engineering, and plasma systems.
- Ph.D. in Chemical Engineering with a research focus on the design and synthesis of fluorinated polymers

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Engineering Capabilities

Process Engineering

- MEB, P&IDs, Equipment Design, Datasheets
- Hazop studies
- Extremely proficient in equipment design of:
  - Cryogenic Desublimers
  - Cryogenic Partial Condensers
  - PSA Columns
  - Absorbers & Scrubbers
- Process Simulations
- Control system design
- Cascade Calculations
- Commissioning
- Optimization

Mechanical Engineering

- Proficient in SolidWorks CAD
- 3D Modelling
- 2D Manufacturing drawings
- Bill of Materials generation
- Pressure Vessel Design
- Piping Systems Design
- Proficient in material selection to:
  - Comply with process requirements
  - Optimize costs
  - Ease manufacturing and construction
  - Comply with mechanical requirements

ECI Engineering

- Designing Electrical and low voltage distribution networks
- Designing of communication networks
- Designing and set-up control systems
- HMI/SCADA design and set-up
- PLC programming
- Low voltage and communication set-up
- CoC on low voltage and communication networks

*All HV electrical is done by third party engineering contractors and independent CoC's issued.

In House Fabrication Facility Minimizes Procurement Delays

Location: Koedoespoort, Pretoria, South Africa

Size & Team: 250m^2 & 7 Personnel

Facility Breakdown

- Design & Programming
- CNC machines
- Laser cutting
- Material Store
- Inspection Area
- Manual Workstations
- 3D Printing

ASPI Manufacturing Facility

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Product Design Lifecycle

Fabrication

- Design
- Manufacturing
- Assembly
- Testing

Integration

- Assembly
- Safety
- Quality
- Testing

QA Control

- Operational Stability
- Control Performance

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Innovation

Innovation Capabilities & Examples

Some vendor equipment pose:

- Long Lead times for specialty products
- Material incompatibility
- Issues with reliability and robustness

Innovative ASPI solutions to:

- Gas Composition Measurements
- Control valves
- Flow Measurements

Pneumatic Actuating Regulating Valve

Molar Mass Meters

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ASP Isotopes Overview for Renergen Investors

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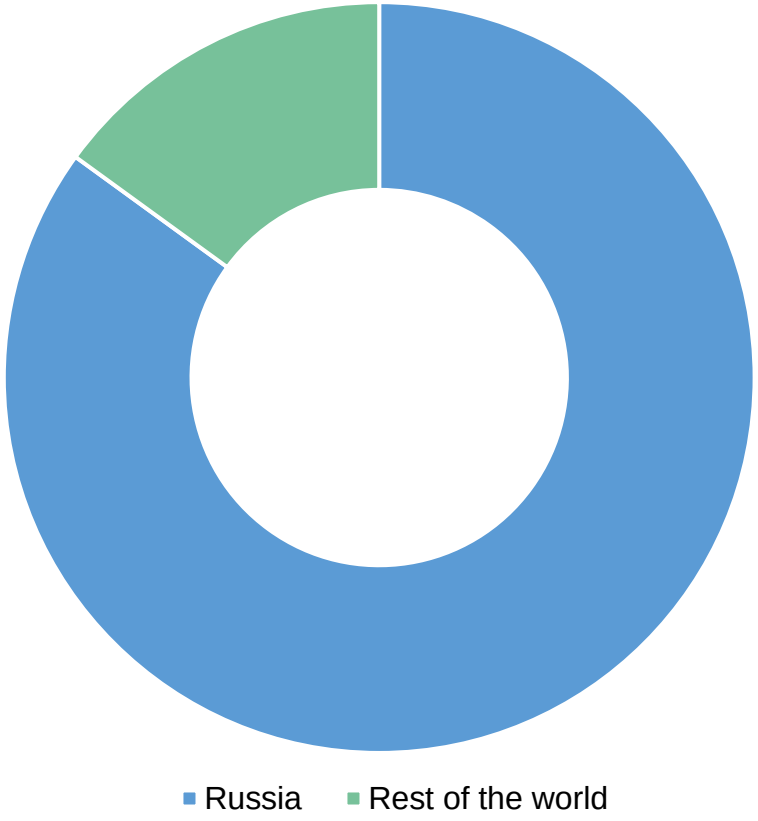
Isotope supply chain



Isotope Market Producers

- Isotopes have one of the most **severely compromised supply chains of any material in the world** and are critical to many end markets including nuclear medicine, energy, food and water.
- Global isotope production is **dominated by Russia (85%) by Rosatom** with the remainder produced in the Netherlands (15%) by URENCO[15].
- The world remains susceptible to global disruption of industrial production, electricity generation, national defense, and the entire economy at large. The existence of many industries and defense capabilities faces existential risk without a secure isotope supply.

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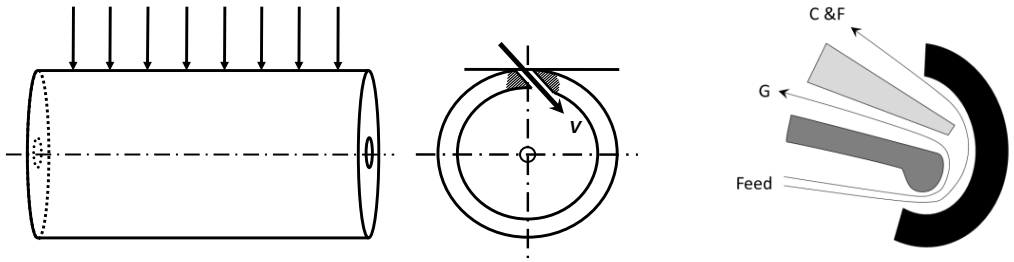
Our Technologies

1

Aerodynamic Separation Process (ASP)

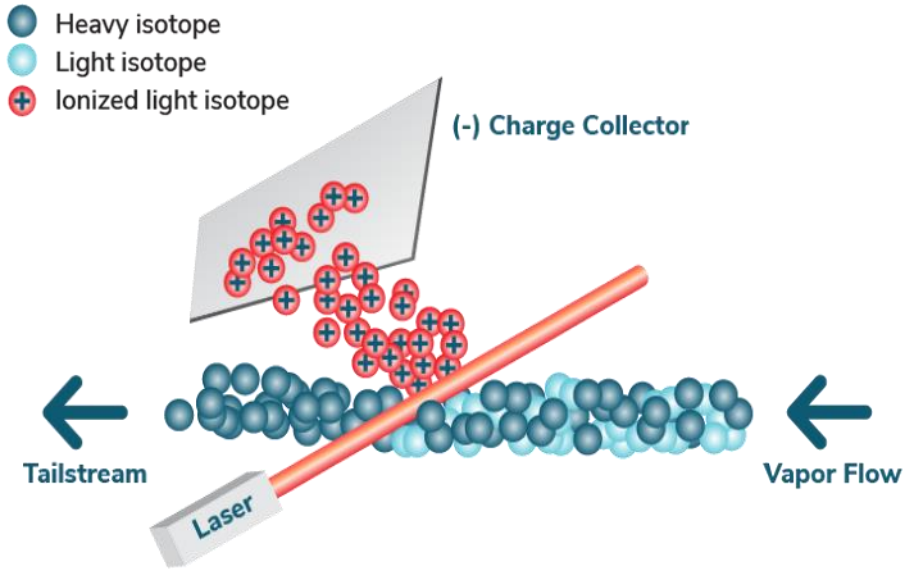
The Aerodynamic Separation Process utilizes gaseous diffusion via a stationary wall centrifuge paired with proprietary flow directors to separate isotopes of varying levels of atomic mass.



2

Quantum Enrichment (QE)

Quantum Enrichment technology employs precisely tuned lasers and quantum mechanical principles to efficiently separate isotopes based on their unique transition energies, achieving high selectivity for most elements.



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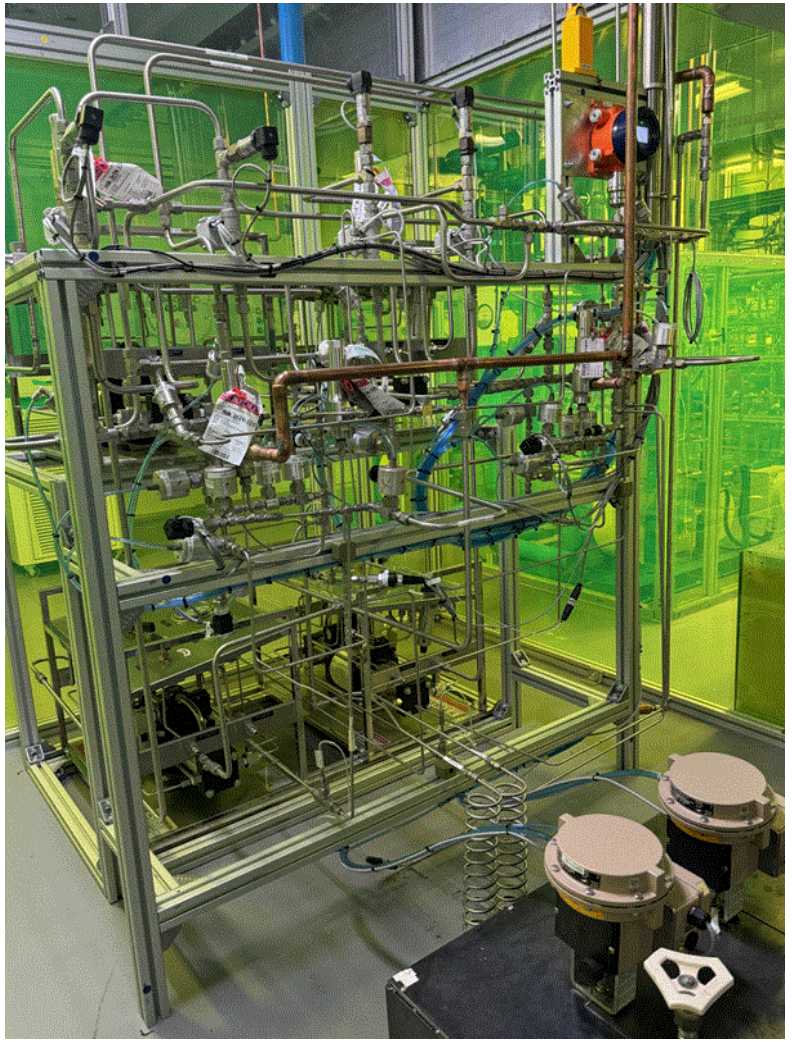
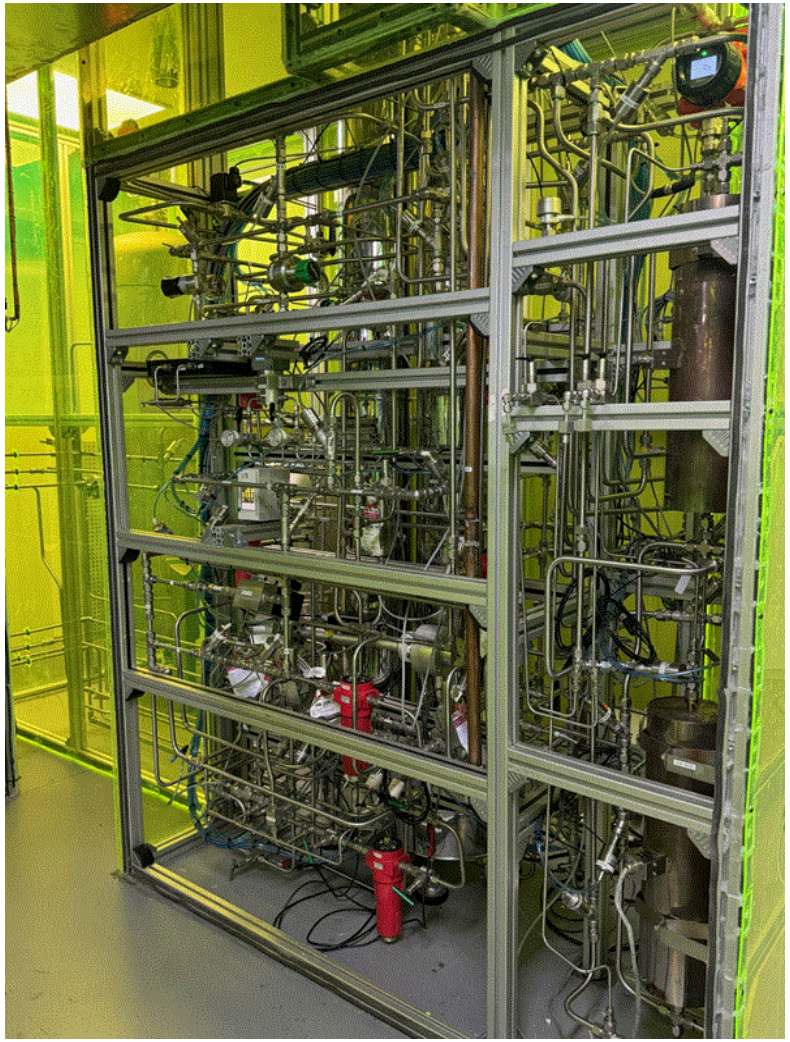
ASPI Technology: Illustrative Separation Segment and Element Recovery





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Quantum Enrichment: Real World Experience

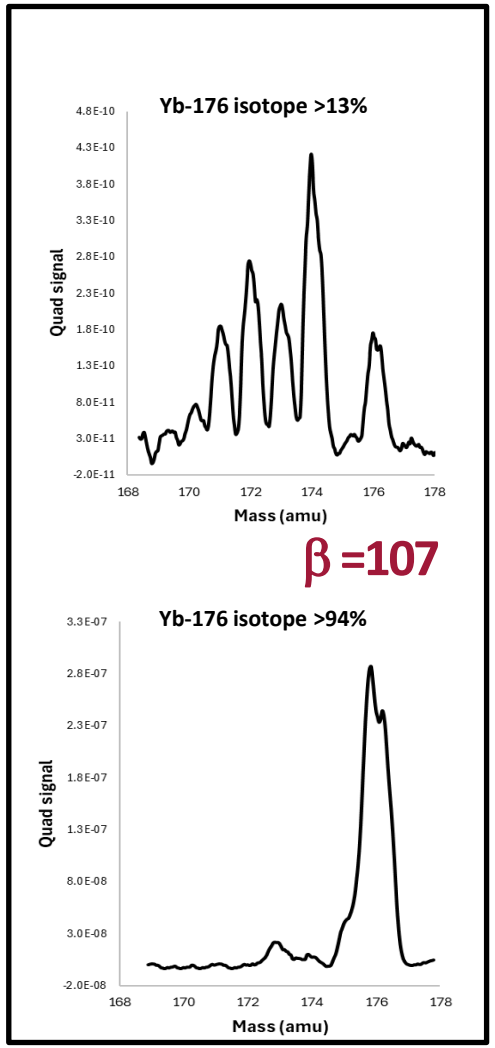
ASPI's team have used lasers to enrich many different metals

- Uranium
- Lithium (the only isotopes where results have been published)
- Ytterbium
- Zirconium
- Zinc

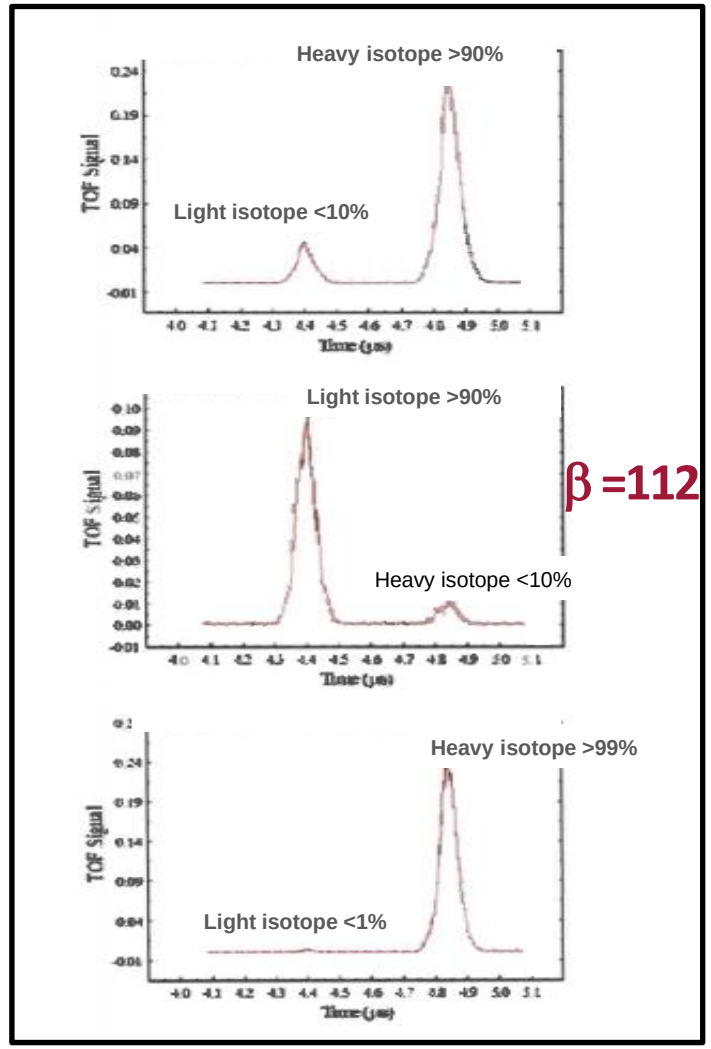
The separation process shown on the right is for Lithium 6 and 7

- A metal with an atomic mass <100
- Mix of isotopes: ~5% is the light isotope (Lithium 6) and ~95% is the heavy isotope (Lithium 7)
- After a single enrichment stage –
  - In the product stream the light isotope (Lithium 6) is >90% and the heavy isotope (Lithium 7) is <10%
  - **Light side enrichment factor (b) of 112**

Ytterbium (Atomic mass 176)



Lithium (Atomic mass 6)



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Nuclear Medicine: Isotopes of Interest

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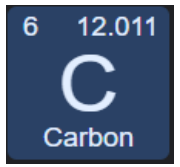

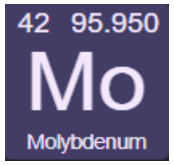

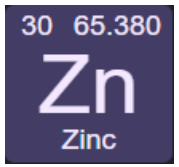

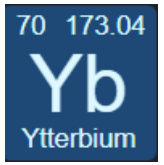

Stable Isotopes

PET Labs Pharmaceuticals

^{14}C

^{99}Tc

^{68}Ga

^{67}Cu

^{64}Cu

^{177}Lu

Short half-life Radioisotopes

End Market

Carbon-Dating & Pharmacokinetic Tracing

SPECT Scan Imaging

PET Scan Imaging

Oncology Treatment

Non-Hodgkin lymphoma, Prostate Cancer, NETs

Neuroendocrine Tumors NETs

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Medical Isotopes – Timelines

Isotopes	End-Market	R&D Stage	R&D Evaluation	Under Construction	Anticipated Market Entry	Technology
Carbon-14	Pharma & Agrochem	✓	✓	✓	1H 2025	ASP
Ytterbium-176	Nuclear Medicine	✓	✓	✓	2026	QE
Molybdenum-98		✓	✓	✓	2025	ASP
Molybdenum-100		✓	✓	✓	2026	ASP
Zinc-67/68		✓	✓	--	2026	ASP
Nickel-64		✓	✓	--	2026	QE
Xenon-129		✓	✓	--	2026	ASP
Gadolinium-160		✓	--	--	2026	QE

SMR (Small Modular Reactors): Next wave in nuclear energy

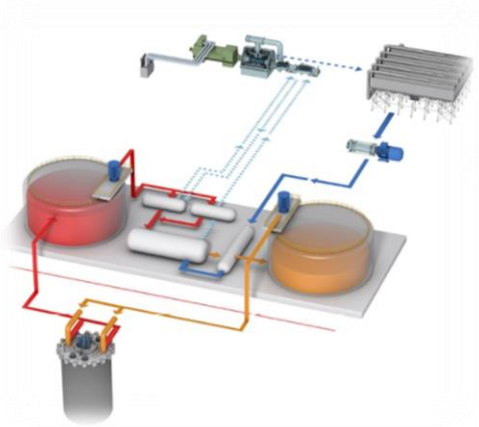
The world is moving to a new type of nuclear reactor: SMR

The US DOE has already committed billions of dollars to Advanced Reactor Design Program (ARDP) to facilitate and accelerate development of advanced reactors.

- Modular, smaller size (50 MWe to 300 MWe) reactors allowing greater flexibility in deployment.
- Designed for production-line manufacturing rather than conventional custom-built capital projects.
- Limited on-site preparation to substantially reduce lengthy construction times.
- Simplicity of design, enhanced safety features, economics and quality afforded by factory production, and more flexibility (financing, siting, sizing, and end-use applications).
- Can provide power for applications where large plants are not needed or sites lack infrastructure to support a large unit (e.g. smaller electrical markets, isolated areas, smaller grids, sites with limited water and acreage, or unique industrial applications).

ASPI has entered into a term sheet with TerraPower and Necsa to construct a HALEU facility in South Africa. The term sheet provides that TerraPower will provide funding for the construction of the facility. In addition, the parties anticipate entering into a long-term supply agreement for the HALEU expected to be produced at this facility.

TerraPower's Natrium



X-Energy's Xe-100

Rolls-Royce's SMR

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Market overview

Leverage the following…

Proven Proprietary Technology

- ASPI's advanced technologies leverage 20 years of R&D history to enrich isotopes in varying levels of atomic mass, allowing it to meet the growing demand in the Nuclear Medicine, Semiconductors, and Nuclear Energy industries.

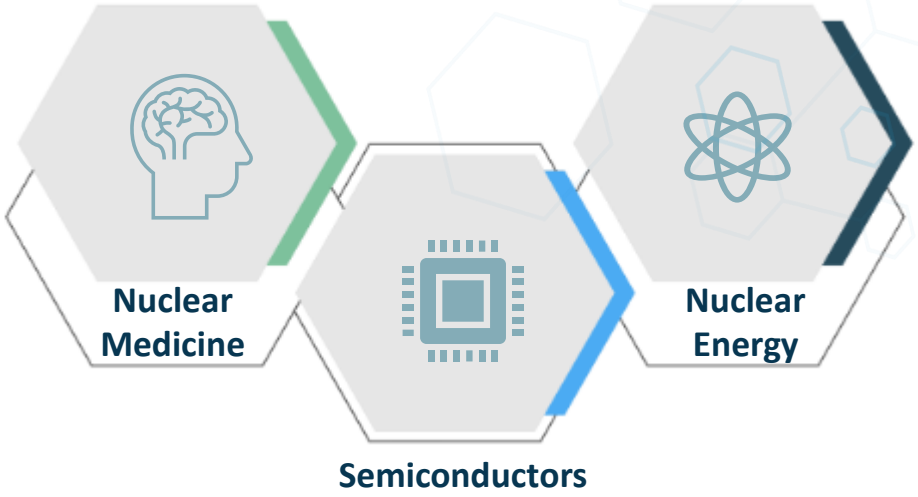
Multiple Secular & Geopolitical Tailwinds

- Favorable long-term market trends are expected to drive long-term secular industry growth. Recent geopolitical events have created high urgency for companies and countries to search for reliable sources of isotopes.

Consistent Operational Performance

- Since incorporation, ASPI has completed the construction of three manufacturing facilities, and we continue to expand our operating footprint in South Africa. Our South African facilities are expected to enter commercial production during 2025 and should drive free cash flow.

To capitalize on <u>three</u> multi-billion-dollar opportunities…



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Renergen Overview for ASP Isotopes' Investors

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Virginia Gas Project

Renergen's Virginia Gas Project in the Free State Province of South Africa

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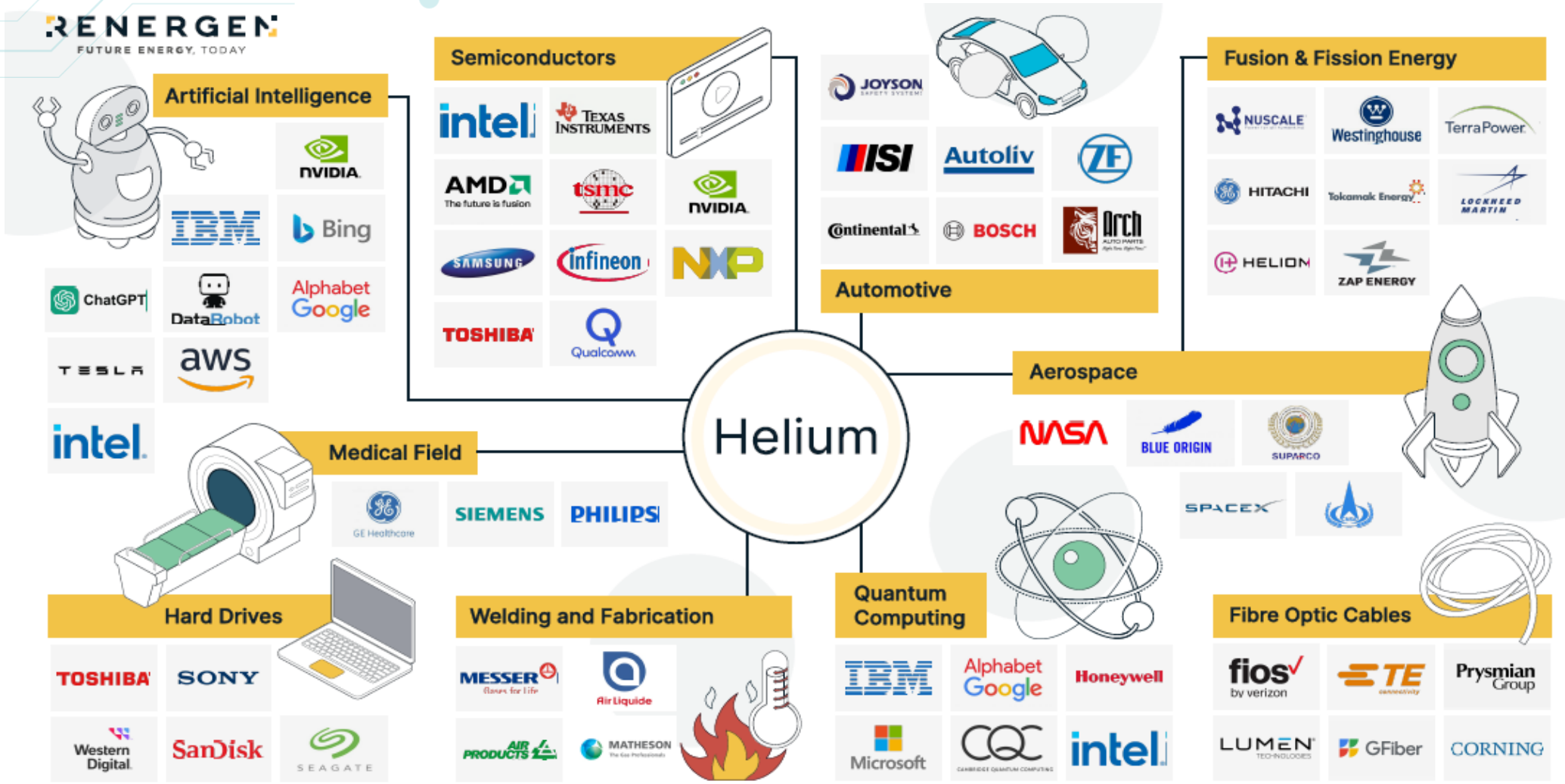
Why is Helium critical?



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Helium is a vital and irreplaceable element in many modern industries

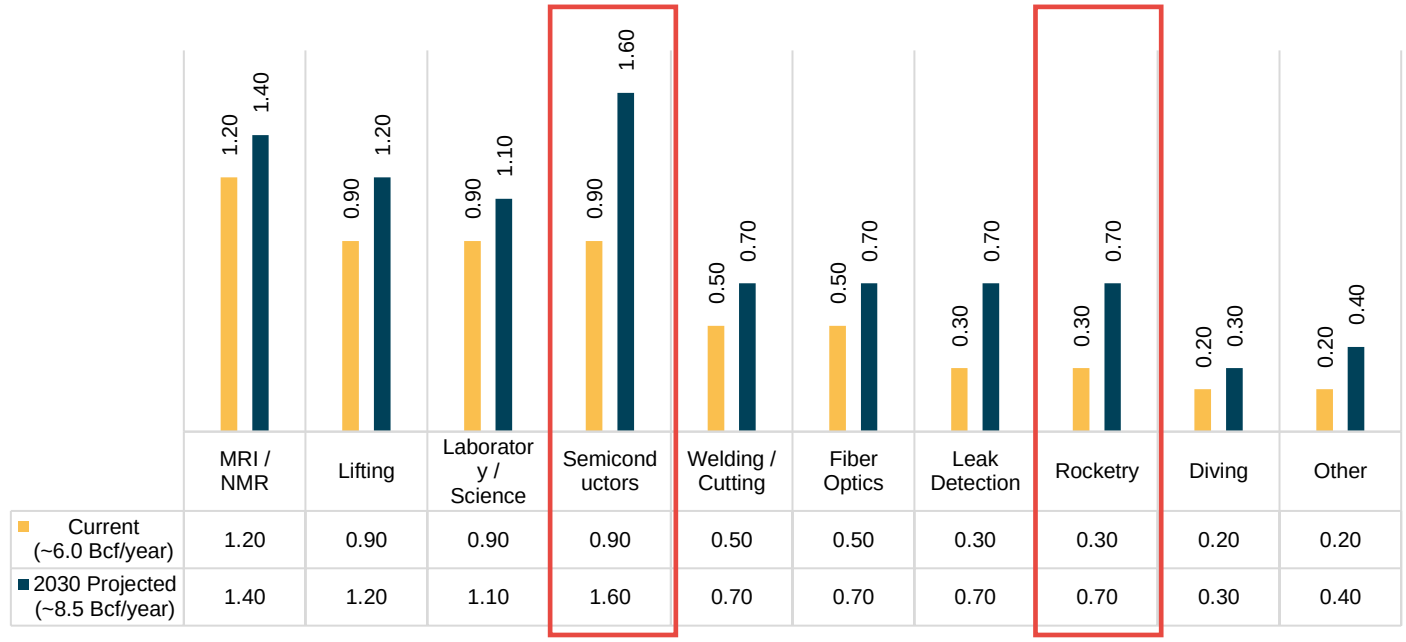
Properties of helium

- **Chemically inert**
  - Helium doesn't readily react with other elements
  - Makes it ideal for applications where chemical reactions could be problematic
- **Non-toxic**
  - Colourless, odourless and tasteless
- **Low density**
  - Helium is the second lightest element in the universe (after hydrogen)
  - Provides buoyancy without the risk of combustion associated with hydrogen
- **Low boiling point**
  - Boiling point of -268.9°C
  - Does not solidify at atmospheric pressure
- **Superfluidity**
  - Helium has zero viscosity in liquid form and can flow without any loss of kinetic energy
  - It is the only substance that carries this property
- **Critical mineral**
  In 2023, the EU listed Helium as a critical raw material. The US Government treats Helium as a priority mineral through large investment in supply chains, including Renergen

The global market is 16 containers per day. Phase 2 will produce ONE container per day!

- Helium is a rare commodity
- Helium becomes economically viable to extract from natural gas at concentrations as low as 0.1%
- The Virginia Gas Project's average concentration of helium is over 3% and has been as high as 12%

HELIUM USAGE BY VOLUME[1]



	MRI / NMR	Lifting	Laboratory / Science	Semiconductors	Welding / Cutting	Fiber Optics	Leak Detection	Rocketry	Diving	Other
Current (~6.0 Bcf/year)	1.20	0.90	0.90	0.90	0.50	0.50	0.30	0.30	0.20	0.20
2030 Projected (~8.5 Bcf/year)	1.40	1.20	1.10	1.60	0.70	0.70	0.70	0.70	0.30	0.40

1. Global helium demand is expected to grow at a rate of approximately 4% per annum, driven by significant expansion in semiconductor and rocketry end markets[16]

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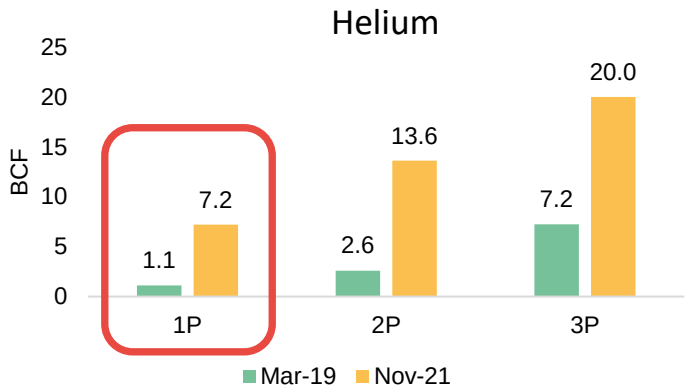
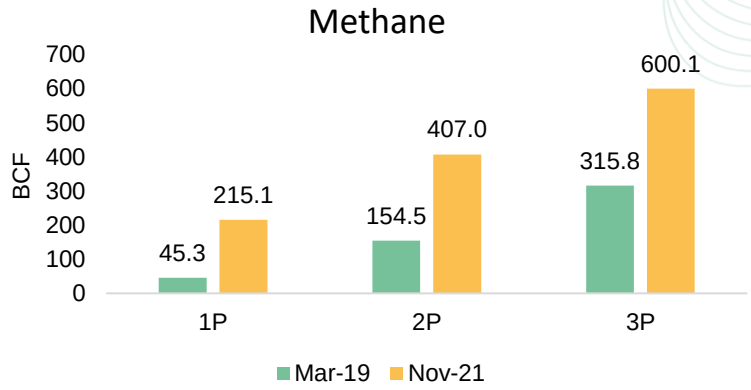
Summary of the Virginia Project's Methane & Helium Net Gas Reserves

Approximately the size of US Federal Helium system





MHA/Sproule Findings – November 2021	Helium (Bcf)			Methane (Bcf)		
Net Reserves	**1P**	**2P**	**3P**	**1P**	**2P**	**3P**
November 2021 MHA/Sproule Update	7.2	13.6	20.0	215.1	407.0	600.1
Contingent Resources	**C1**	**C2**	**C3**	**C1**	**C2**	**C3**
November 2021 MHA/Sproule Update	4.3	8.0	12.3	127.6	241.0	368.6
Prospective Resources[1]	**1U**	**2U**	**3U**	**1U**	**2U**	**3U**
November 2021 MHA/Sproule Update	5.7	10.7	16.4	170	321	491

1 – Calculated at 3%

- At the request of Renergen Limited, Sproule, an independent sub-surface consultancy based in Calgary, Canada has conducted an independent update to its April 2019 assessment of the unconventional methane and helium reserves and resources in the Tetra4 Virginia Gas Field. This evaluation includes estimates of recoverable methane and helium volumes from Proved Developed Producing wells, Proved Developed Non-Producing wells (PDNP's), Proved Undeveloped locations (PUDs), total Proved, Probable, and Possible reserves
- Sproule has also estimated the volumes of Contingent Resources, those volumes of gases that are discovered but are not yet considered commercially viable for extraction due to one or more contingencies. It has also estimated the volumes of Prospective Resources, those volumes of gases that are undiscovered, but the likelihood of their existence can be estimated

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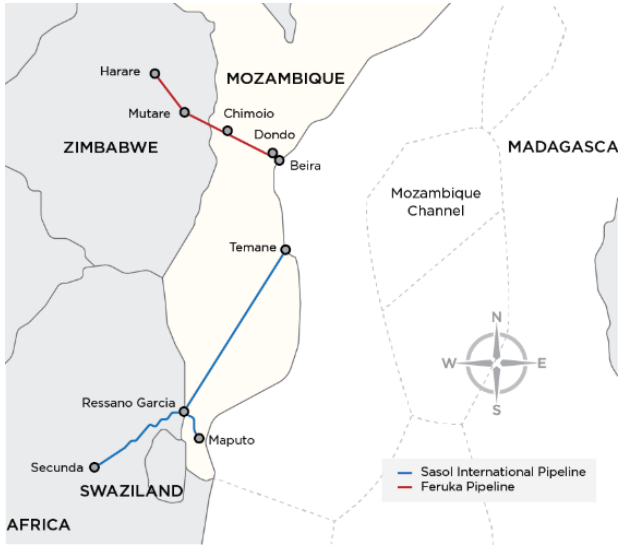
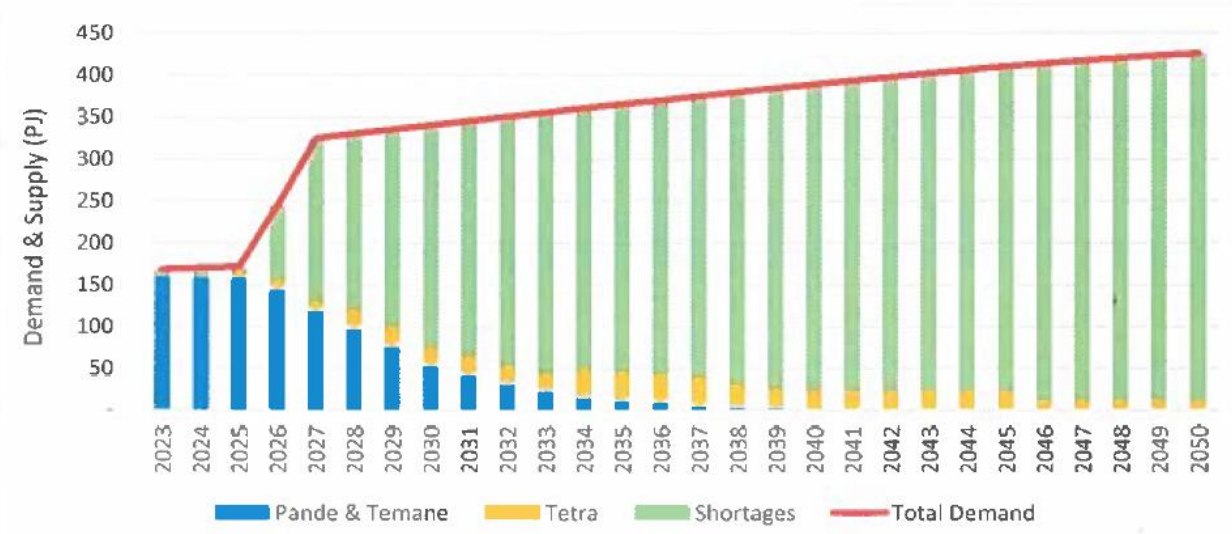
LNG - The South African Industrial Gas Market

Renergen's supply by 2026 time is estimated at 36, 000 GJ/day



Natural gas is currently imported via pipeline from Mozambique by Sasol

- Pipeline runs to Johannesburg - reticulated to customers via low-pressure pipeline.
- Majority of **imported gas** is used by Sasol for its petrochemicals business.
  - Estimated shortfall of gas in Johannesburg of up to **220,000 GJ/day**[17]**.**
  - In August 2023, Sasol stated they will **curtail natural gas to customers by June 2026.**
- For many businesses in SA, there is no alternative and imported LNG can only be moved by pipeline, which only services Johannesburg.
- No plans are formalized to develop other pipelines in the country.
- Correspondingly, LNG prices in South Africa are priced against import parity or competitive fuels such as LPG or diesel, with pricing between US$ 16 - 20/GJ in certain applications.
- By 2030 inland natural gas shortages could be as high as 250 PJ per annum, according to the draft Gas Master Plan of 2024 published by the Department of Mineral Resources and Energy.



Source: Draft Gas Master Plan of 2024

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Combined Management Teams

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ASP & Renergen: Leadership Team

PAUL MANN
Exec Chairman & CEO

- Co-Founder, ASP Isotopes
- 20+ years of experience on Wall Street investing in healthcare and chemicals companies at Soros Fund Management, Highbridge Capital and Morgan Stanley.
- MA and MEng (Chemical Engineering) from Cambridge University, Research Scientist at Procter and Gamble. CFA charter holder.

Based: South Africa, UK and USA

STEFANO MARANI
CEO Electronics & Space

- Co-founded Tetra4 and Renergen.
- 15+ years' experience in structured finance for institutions including Deutsche Bank and Morgan Stanley.
- BSc Actuarial Hons from WITS University.

Based: USA

ROBERT AINSCOW
Co-COO

- Co-Founder, ASP Isotopes.
- 20+ years experience on Wall Street in Capital Markets, Asset-Backed Finance, and Control at Investec Bank, Bear Sterns, and Morgan Stanley.
- B.A. (Joint Hons) in Law and Modern Languages from Bristol University.

Based: South Africa and UK

NICK MITCHELL
Co-COO

- Co-founded Tetra4 and Renergen.
- Experienced Network Engineer with experience in developing infrastructure projects in Africa.
- Current Chairman of the Onshore Petroleum Association of South Africa.

Based: South Africa

HEATHER KIESSLING
Chief Financial Officer

- 30+ years experience with life science and high-tech companies.
- Managing Director at Danforth Advisors LLC, a life science consulting firm. Held finance leadership roles at Cytonome/ST, LLC and AutoImmune Inc.
- CPA and holds a BA from University of California, San Diego, and an MBA from University of Michigan Graduate School of Business.

Based: USA

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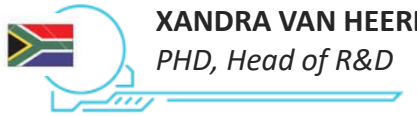
ASP & Renergen: Senior Management Team

HENDRIK STRYDOM, PhD
CTO

- Co-developer of "Aerodynamic Separation Process" (ASP) and CEO of Klydon, the predecessor company since 1993.
- Extensive research on the laser separation of heavy isotopes (AVLIS, MLIS, SILEX).
- Dr. Strydom has PhD (Physics) (2000) from the University of Natal (Durban).



XANDRA VAN HEERDEN
PHD, Head of R&D

- Head of Research & Development at ASP. Previously R&D Manager at a large biomedical engineering company.
- Senior lecturer at the University of Pretoria for five years, with a focus on chemical mass transfer processes and separation technologies (Distillation).
- PhD (Chemical Engineering) from the University of Pretoria.

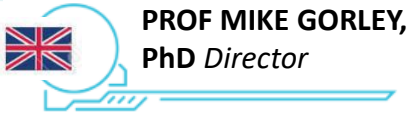
HEINO VAN WYK
Head of Engineering

- Process engineer with design experience in Petrochemical, Chemical, Water and Isotope Separation Plants.
- Process Engineer and Engineering Manager at Klydon. Headed up design process on a MoF6 & Carbon-14 enrichment plant.
- BEng (Chemical Engineering) from the University of Pretoria.

DR GERDUS KEMP, PhD
Medical Director, CEO PET Labs

- CEO Pet-Labs, a South African radiopharmaceutical operations company dedicated to nuclear medicine and the science of radiopharmaceutical production.
- Medical Director Klydon, Medical Director Molybdos.
- Ph.D. (Inorganic Chemistry) from the University of Johannesburg. Current Lecturer in Radiography, University of Pretoria.

ASP & Renergen: Independent Directors



PROF MIKE GORLEY, PhD *Director*

- Director of Fusion Technology at the U.K. Atomic Energy Authority. and a visiting Professor at the University of Bristol, U.K. Mike is a well-known expert in fusion technology and fusion materials.
- Previously served as a Chief Technologist and Strategic leader and program area manager for fusion technology at the UK Atomic Energy Authority.
- Ph.D. (DPhil) in Materials Science from Oxford University, U.K.

TODD WIDER, MD *Director*

- Executive Chairman and Chief Medical Officer, Emendo Biotherapeutics.
- Active Staff (~20 Years) in reconstructive surgery at Mount Sinai Hospital in New York.
- MD Columbia College, Residency in General Surgery and Plastic and Recon at Columbia Presbyterian, Postdoctoral fellowships at Memorial Sloan Kettering as Chief Microsurgery Fellow.

DUNCAN MOORE, PhD *Director*

- Partner at East West Capital Partners, specializing in investment opportunities within the Healthcare Industry across the APAC region.
- Global Head of Healthcare Equity Research at Morgan Stanley from 1991 to 2008.
- M.Phil & PhD in Biochemistry from Cambridge University.

ROB RYAN *Director*

- 30+ years private investor with experience in investment banking, private equity and international financial law.
- Was a partner and MD of Balbec Capital LP.
- Worked at international investment banks after starting his career as a solicitor at a leading U.K. multinational law firm.
- LL.B. degree from the University of Leicester.

SIPHO MASEKO *Director*

- Previously served as Chief Executive Officer of Telkom SA SOC Ltd, Managing Director of Vodacom SA and Group Chief Operating Officer of Vodacom after serving almost 14 years at BP Africa Limited where he held a number of senior positions, including Chief Executive Officer and Chief Operating Officer for BP Downstream activities
- Non-executive director of KAP Limited, Shoprite Holdings Ltd, Africa's largest retail group
- Bachelor's degree from the University of the Witwatersrand and a law degree (LLB) from the University of KwaZuluNatal.

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Sources

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