



ArgHe

Tokenized Helium

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ABSTRACT

The following report delineates the background, purpose, functional mechanisms and utility of Argonon’s Helium Token (ArgHe). The overarching premise of the ArgHe token is to offer democratized access to helium through blockchain-enabled technology. The ArgHe token is built on the BEP20 standard of the Binance Smart Chain (BSC).

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Introduction to ArgHe

At its core, the [ArgHe token](#) represents a right to redeem an underlying quantity of helium, a rare natural gas listed on the United States critical minerals list and currently in short supply, mined by Reenergy¹ from their Virginia Gas Project located in the Free State in South Africa. The token is built on the Binance Smart Chain² (BSC) using the BEP20 standard³. It provides a decentralized mechanism for trade and ownership of helium. The purpose of the ArgHe token is to harness contemporary blockchain technology which offers superior digital security and a wider range of capabilities compared to traditional derivative instruments. The ArgHe helium redemption facility is accessible through the Argonon⁴ online platform.

Background

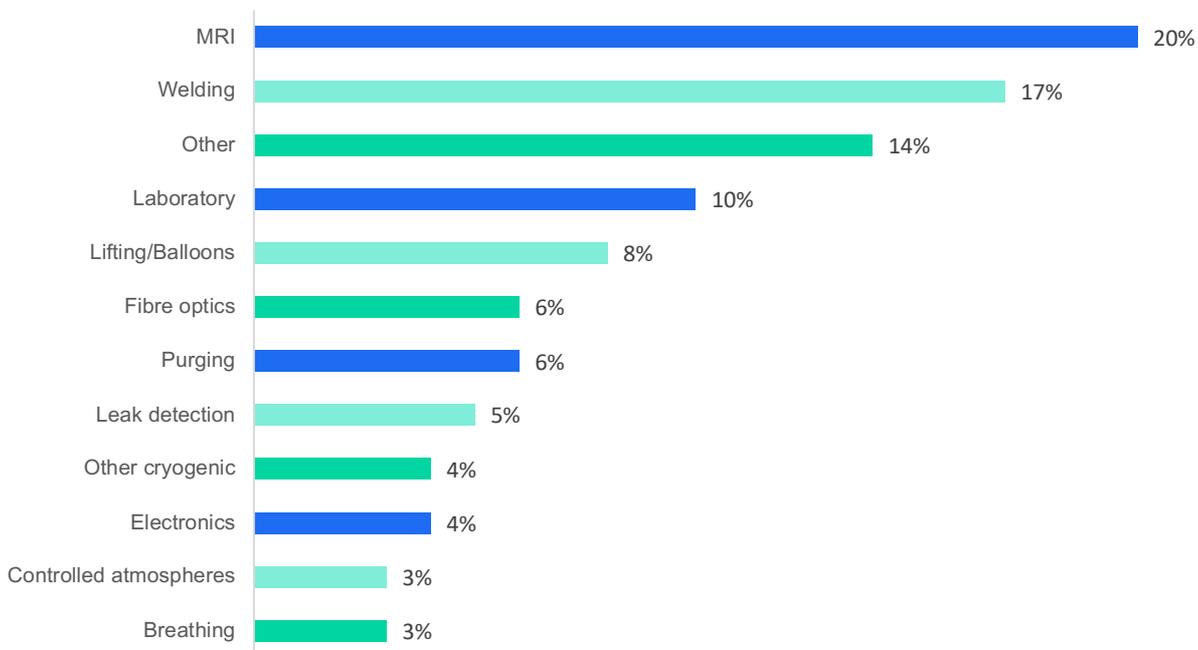
Helium is a non-renewable commodity. It is a noble gas made very slowly through the radioactive decay of heavy metals underground such as Uranium and Thorium. The helium gets trapped in pockets of natural gas, where it can be extracted. Once helium reaches Earth's surface, it can easily escape its gravitational pull and enter the vacuum of space. Hence, helium is a rare Earth element with a limited supply, and a diminishing commodity which cannot be recycled if purged.



The Helium Market

Helium is the second-most common element in the universe, but it's comparatively rare on Earth. It also fulfills a surprising role in everything from space exploration to quantum computing. Helium is a significantly unreactive element. Therefore, it is used to provide an inert protective atmosphere for making fibre optics and semiconductors, and for arc welding. Helium is also used to detect leaks, such as in car air-conditioning systems, and because it diffuses quickly it can be used to inflate car airbags after impact. Other use cases of helium include MRI implementations, telecommunications, electronics, superconductivity, welding, nuclear power station support, and of course, lifting balloons. Helium is essential to a preponderance of markets across the globe. The vast majority of helium supplied in the past was from a strategic reserve in Amarillo, Texas, managed by the Bureau of Land Management (BLM). In 2018 the BLM declared reserves had been depleted through the annual auctions, which supplied as much as 50% of the world's consumption, and that one final auction was to be held in August that year. The auction saw prices reach all-time highs, and since then the helium market has been in tight supply, with a very large margin between refinery gate prices and those paid by the end-user. More recently technical failures at the new Amur plant in Russia and Qatar's delayed commencement of the next helium train have pushed the helium market into a position of short supply which is likely to persist for several years. The purpose of the ArgHe token is to provide democratized access to accessible redemption rights, and thus accessible ownership, of helium through blockchain technology. The vision of the project accommodates a new era of technological capabilities offered by the BEP20 standard. The growing use cases of irreplaceably dependent on helium are depicted in the following diagram:

Helium Market Utility



Blockchain Technology



The blockchain, which is a distributed ledger system, consists of a series of digital blocks. These blocks contain verified transactions. The blockchain was designed to be not only decentralised, but also immutable, meaning that entries could not be erased once placed on this distributed ledger. The idea of the blockchain was first introduced by the pseudonymous author, Satoshi Nakamoto, in a scientific article titled “Bitcoin: A peer-to-peer electronic cash system”. The blockchain offers a digital form of decentralized record keeping. Newer renditions of blockchain technology have since emerged from Proof-of-work (PoW) protocols to Proof-of-stake (PoS) protocols which accommodate smart contract capabilities. *For more information on PoW and PoS protocols see the Definitions section at the end of this report.* Blockchain networks are decentralized, meaning they do not require an intermediary, or middleman, to facilitate and validate transactions. Instead participants contribute in the transaction validation process. Participants are directly connected via nodes.

Traditional networks, on the other hand, require an intermediary, or middleman, to facilitate transactions, such as a bank providing a central server for transactions. Traditional networks place all functional responsibility on a single node. Should the central node of a traditional network fail then the entire network is compromised. Blockchain networks continue to function regardless of whether individual nodes are compromised. The ArgHe token utilizes contemporary blockchain technology as a substitute to traditional derivative contracts which grant holders a right to the underlying. Essentially, the ArgHe protocol is a modern rendition of a commodity-based derivative with the benefits of enhanced digital security on the blockchain.

Tokenization

Tokenization is the process of transforming ownership rights of an asset into a digital token on the blockchain. Once an asset has been tokenized they are able to enter the digital world. They become able to be stored and traded, fractionally or completely, as well as transferred to other owners. As tokens run on the blockchain, it allows you to unlock blockchain’s wide range of benefits. The benefits of Tokenized Helium include:

- **Liquidity:** Increased liquidity to asset owners generated through a parallel economy of helium on the blockchain.
- **24/7 markets:** The blockchain is a global technology which does not require trading hours to functionally operate. ArgHe ownership can be transferred on the blockchain on demand at any time without the need of an intermediary.
- **Transaction costs:** Transaction costs on the Binance Smart Chain are gradually decreasing as the scaling capabilities in BSC are rapidly improving. Moreover, by holding the ArgHe token, clients are not subjected to the underlying storage costs of helium.
- **Fractional ownership:** Instead of only being able to own a specific minimum quantity, or none, blockchain technology allows for fractional ownership making ownership of helium more affordable and accessible.

- **Transparency:** The public ledger system on the blockchain creates a public record confirming the existence of a transaction. Traditional derivative instruments do not possess this level of transparency and are often precluded by organizational red tape. It must be noted that the anonymity of participants on the blockchain's public ledger is maintained.
- **Fast settlement:** Transactions between traditional banking institutions and derivative settlement houses may take days or hours to settle. International payments can take even longer with traditional fiat mechanisms underpinning transactions. Blockchain transactions are globally near instantaneous.
- **Redeemable:** ArgHe is redeemable. Using Argonon's platform, token holders can redeem a specified amount of helium for delivery from Renergen.
- **Programmable:** Due to the digital and programmable nature of the smart contract, ArgHe is easy to convert, trade or use in many other ways. Programmable helium creates significant new functionality in the trading world.

ArgHe Design

The [ArgHe token](#) enables a parallel economy of the helium market. The token is built on the BEP20³ standard of the Binance Smart Chain² blockchain. Renergen¹ is an upstream helium producer that supplies helium to Argonon. Argonon issues tokens using blockchain which are tradeable at the Renergen reserve. The Argonon online platform⁴ allows users the ability to send and receive ArgHe tokens with the additional capability of exchanging ArgHe tokens for helium through the platform's redemption facility. Moreover, since the ArgHe tokens are built on the BEP20 standard, they are tradeable through qualified crypto asset exchanges. The qualified crypto asset exchanges offering the ArgHe token provide an additional layer of liquidity for the ArgHe tokens.

The ArgHe tokens are capped at a supply of 1 billion tokens. The minting procedures are enabled through the discretion of Renergen and the corresponding supply of helium at Renergen's reserve. Minting is concurred with Renergen through a governance approval procedure. ArgHe minting is consented in batches of 100 000 000 units should the availability of supply for redemption necessitate additional minting. The redemption facility is bound by the terms and conditions set out in the helium supply agreement between Argonon Helium Limited., Tetra4 Proprietary Limited and Renergen Limited. Moreover, the corresponding redemption value per unit of helium gas is further subject to the helium supply agreement between the aforementioned parties. A Collateral Assignment of the Helium Supply Agreement has been entered into between Argonon Helium Limited, Tetra4 Proprietary Limited and Renergen Limited.

Regulation

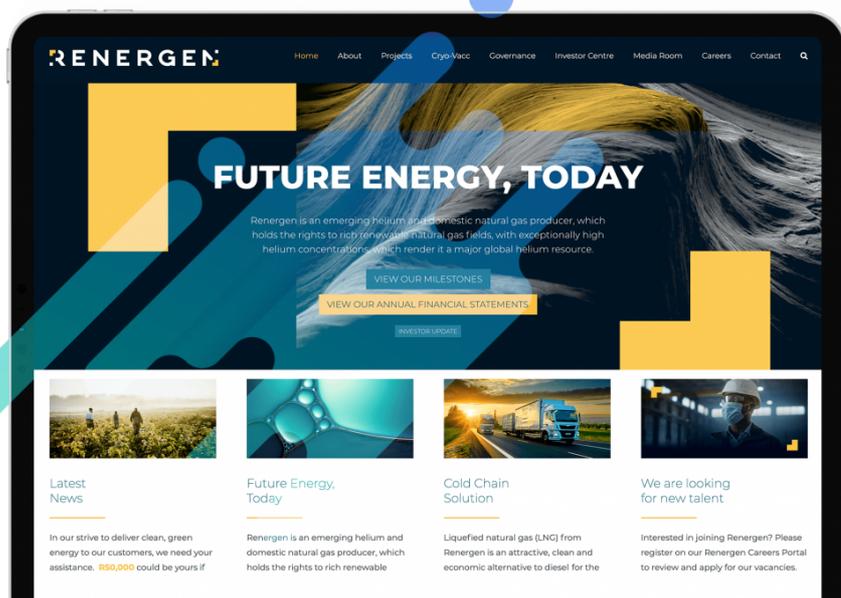
The participation in the ArgHe tokens offered hereby have not been registered under the Securities Act of 1933, as amended (the "Securities Act"), or the securities laws of any state or other jurisdiction, and are being offered and sold in reliance on exemptions from the registration requirements of the Securities Act, Regulation D (Rule 506(c)) and Regulation S, and other applicable laws. The tokens are subject to restrictions on transferability and resale and may not be transferred or resold except as permitted under the Securities Act and applicable laws. The tokens have not been approved or disapproved by the Securities and Exchange Commission, any state securities commission or other regulatory authority, nor have any of the foregoing authorities passed upon or endorsed the merits of this offering. Any representation to the contrary is unlawful.

Initial Coin Offering

Argonon's initial coin offering ("ICO") is accessible to clients (and/or investors) through Argonon's online platform. 100 000 000 ArgHe tokens are offered to the general (international) public in the first round of the ICO. The price of the ArgHe token is based on the corresponding amount of redeemable helium from the Renergen reserve. Each ArgHe unit corresponds to a single cf of helium as determined by the redemption value predicated by Renergen. Regulation D (Rule 506(c)) under the Securities Act allows exemption for the registration of offerings that are sold to investors who have been verified as accredited investors. Similarly Reg S exempts offerings that are made to non-US persons. If an ICO only uses Rule 506(c), then it must verify every investor as an accredited investor to US standards, including foreign investors. If an ICO only uses Reg S, then it cannot sell to any US person. It's also important to note that the resale restrictions exist for both Rule 506(c) and Reg S securities, and they differ. This means that purchasers of tokens offered under Rule 506(c) might have different restrictions on how they can exchange those tokens from purchasers of tokens offered under Reg S. Both ICO issuers and purchasers of tokens must comply with the transfer restrictions so that neither allows for an illegal exchange of the tokens.⁹ Accordingly, the domicile of clients (and/or investors) purchasing the ArgHe token is recorded as part of the funding and payment capturing process on the Argonon platform. Argonon and its affiliates closely monitor the state of ICO legislation in the respective jurisdictions in which it operates.

About Renergen

Renergen Limited, a dual-listed South African company, has a world-class helium asset of global significance, possessing the world's richest helium concentration of up to 12% in some wells where the rest of the world is less than 0.5%. Renergen is uniquely positioned to create a dominant market situation as an industry price-setter. Renergen's principal asset is its 100% shareholding in Tetra4, which holds the first and only onshore petroleum production right (issued by The Department of Mineral Resources and Energy (DMRE)) in South Africa, giving it first mover advantage on distribution of domestic natural gas. Their Virginia Gas Project is located in the Free State, approximately 250 km southwest of Johannesburg. The Renergen natural gas reserve contains one of the richest helium concentrations recorded globally. The natural gas is also very pure with an average of over 90% methane, and almost zero higher alkanes, which reduces the complexity of liquefaction. Furthermore, their natural gas offers a less carbon-intensive substitute for South Africa's existing transport fuel, thermal fuel and power.



Roadmap

System conceptualized and approved through SRS documentation

Completed as at 15/10/2021



Argonon platform front-end development

Completed as at 12/11/2021



Database configuration in MySQL

Completed as at 8/11/2021



BEP20 API configuration

Underway



BEP20 API Integration

Underway



ArgHe exchange listings

*Eligible exchanges are being nominated,
and preliminary applications are underway.*



Bitget and Pancake Swap Integration

*The front-end development for the ArgHe sale facility is underway
and the backend blueprint is being deployed.*



Helium plant redemption capabilities

*Plant construction underway. Redemptions will be deliverable
from the Renergen Helium reserve in consonance with plant production capacity.*

Custody Flows and Procedures

Argonon's custody flows and procedures are compiled with the intention of accommodating (1) robust digital security and (2) preserving client funds by mitigating BEP20 gas fees. The following process illustrates the system flows and discretionary potentialities for custody holdings.

1. SMART CONTRACT DEPLOYMENT

The ArgHe tokens are deployed on the BEP20 protocol with a maximum supply of 1 billion tokens. The smart contract deployment allows for the minting of tokens within the specified conditions of the maximum supply.

2. MINTING CONDITIONS AND SIGN-OFF PERMISSIONS

The minting of new tokens are permissible through the simultaneous *pari-passu* authorization between the CEO of Renergen, and the CEO of Argonon. The governance of minting procedures are intended to accommodate the demand for ArgHe tokens and uphold the integrity of the ArgHe market. The cumulative total client purchases are accrued to be minted on a weekly basis.

3. TREASURY

The tokens are minted and initially occupy the balance of Argonon's treasury wallet address. Client balances on the Argonon platform are maintained and monitored on Argonon's encrypted database. Client balances are initially held on behalf of the client by treasury for the sake of mitigating gas fees.

4. CUSTODY

The Argonon platform grants users the ability to "request custody" or to send to a client's personal wallet address (self-custody). By requesting custody, the client's ArgHe tokens are sent from treasury to an independent custody solution provider. The associated custody fees, lockup periods and other conditions are disclosed to the client. Should the client opt for a custody solution, the balance will remain on their Argonon Balance dashboard. However, the client's ability to send and redeem will only become available once the ArgHe tokens are withdrawn from custody. It is also the client's prerogative to take self-custody of the tokens by sending it to their own wallet address. In the self-custody scenario, the ArgHe balance will no longer reflect on the Argonon dashboard facility.

5. SECONDARY MARKETS

Users of the Argonon platform possess the discretion to send and receive ArgHe tokens to and from eligible crypto asset exchanges and external wallet addresses. Transactions must conform to the BEP20 protocol and can only be sent to exchanges that have listed the ArgHe tokens and other BEP20 wallets created in a personal capacity. Users agree to indemnify Argonon of any responsibility over the ArgHe tokens once the tokens are sent to an external wallet address.

Cyber Security Considerations

The price setting facility on the Argonon platform is subject to the price of helium (ArgHe/cf) stipulated by Renergen. The price setting facility requires a two-factor authentication (2FA) procedure to amend the redemption value per ArgHe token on the platform. The minting of ArgHe tokens are authorized through a *pari-passu* multi-signature authentication by the CEO of Renergen and the CEO of Argonon. Payment capturing for clients are subject to a confirmation & password procedure from administrators. Token transfers (send/receive/request custody) are also subject to 2FA. Finally, the Argonon database is encrypted and conforms to robust cyber security conventions.



Definitions

BEP20	BEP-20 is a token standard on Binance Smart Chain that extends ERC-20, the most common Ethereum token standard. You can think of it as a blueprint for tokens that defines how they can be spent, who can spend them, and other rules for their usage. Due to its similarity to Binance Chain's BEP-2 and Ethereum's ERC-20, it's compatible with both.
Binance Smart Chain (BSC)	Binance Smart Chain (BSC) is a blockchain network built for running smart contract-based applications. BSC runs in parallel with Binance's native Binance Chain (BC), which allows users to get the best of both worlds: the high transaction capacity of BC and the smart contract functionality of BSC.
Blockchain	A system in which a record of transactions made using cryptocurrency are maintained across several computers that are linked in a peer-to-peer network.
Cf	The volume of the element helium in the gaseous state contained in one cubic foot of space at a temperature of 70° F and at an absolute pressure of 14.6989 pound-force per square inch psia.
Cryptocurrency, or crypto asset	A digital currency in which transactions are verified and records maintained by a decentralized system using cryptography, rather than by a centralized authority.
Ethereum	Ethereum is a decentralized, open-source blockchain with smart contract functionality. Ether is the native cryptocurrency of the platform. Amongst cryptocurrencies, Ether is second only to Bitcoin in market capitalization. Ethereum was conceived in 2013 by programmer Vitalik Buterin.
Initial Coin Offering (ICO)	The process through which Argonon raises capital by selling the ArgHe cryptocurrency token, which investors may purchase in exchange for the redemption rights of helium. The ICO is expected to trade on secondary exchange markets. The status of eligible exchange listings subsequent to the ICO will be communicated to registered clients.
Proof-of-stake	The Proof-of-Stake (PoS) consensus algorithm is introduced as an alternative to Proof-of-Work (PoW) without the energy-consuming aspect. In the case of PoS the creator of the next block is randomly chosen based on a combined selection of age and wealth, where the wealth is the 'stake' or amount of cryptocurrency that has been put to work. This is done by having it in an unlocked wallet for staking. The digital currencies that use this approach to verification frequently provide all their digital tokens up front, and miners are selected based on how many units they have (their stake). In these cases, users who confirm transactions, sometimes referred to as "forgers," receive transaction fees for their contributions.
Proof-of-work	Proof-of-work (PoW) is a system of proving that a digital currency's transactions have been verified. Many digital currencies, including Bitcoin, use PoW. Under such a system, miners must do "work" that is difficult for them to contribute, but easy for the broader network to verify. Miners are usually rewarded for verifying

	<p>transactions by receiving units of a digital currency. The PoW consensus algorithm successfully came to life with the introduction of Bitcoin in 2009. It is the algorithm that is used to confirm transactions and the creation of new blocks in a blockchain. Specialised devices, computers or graphic cards can be used to do calculations. In PoW a new block is created or found by solving a mathematical puzzle. The process of trying to solve that puzzle is called mining. The miners are working hard and usually consuming a lot of energy to find the solution to the puzzle. This is basically where the definition 'Proof-of- Work' comes from.</p>
Token	<p>A crypto token is a virtual currency token or a denomination of a cryptocurrency. It represents a tradable asset or utility that resides on a specific blockchain.</p>

References

1. <https://www.renergen.co.za/>
2. <https://www.binance.org/en/smartChain>
3. <https://academy.binance.com/en/glossary/bep-20>
4. <https://argonon-he.com/>
5. <http://www.purplegroup.co.za/>
6. <https://www.easycrypto.co.za/>
7. <https://argonon-he.com/wp-content/uploads/2021/09/Hannam-Partners-Helium-research.pdf>
8. <https://lexcuity.com/latest-news/concurrent-reg-d-reg-s-icos/>