



PUREAir Coin: The end of air pollution

Pure Air Industries

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Abstract

Today the biggest environmental threat to human life is air pollution. 7 million people die worldwide^[1] up to 2 years earlier every single year because of it, and the cost to the world is \$ 5 Trillion a year. This is something that has been going on for the last decade but hasn't received enough publicity in western societies to be considered a real problem. Lots of effort has been poured into the cleaning up ecosystem, by moving from oil and gas into electric, by cleaning up wastes and create recycling companies of all shapes. Today is the day we start moving towards a fully consistent solution to not just manage air pollution but to completely find ways to eliminate it, as we outline below.

We have created two mechanical units to clean open air from pollution in cities. Now we're creating the Air Bastion, a decentralized platform and PURE as its currency. The platform runs on a blockchain with a token (named "PUREAir Coin") which miners earn by physically verifying the data we create and the working order of the machinery. Clients spend PURE coins when they want to access and retrieve the data. Being a token holder gives you access to the WiFi network these machines will create.

Note: Pure Air is a work in progress, both the physical machines and data gathering systems and the DAPP itself are being developed. They will be tested continuously and new research is going to be conducted. New versions of this paper would be available in the near future. Any comments and suggestions would be welcome at: contact@pureairindustries.com

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1. Introduction

We propose the PUREAir coins and the Air bastion as the platform to handle all the transactions. We provide:

- 1) Clean air for cities.
- 2) Free WiFi for token holders when they are close to our machines.
- 3) Ability to provide sponsorships and help spread the health effects in the community. At the same time, brand exposure and social impact. And some liquidity every month.
- 4) Rich hyper local data set - to be bought by anyone who wants to further investigate the air condition and other data we gather. Or to further investigate how to create products based on this data.

2. State Change

The purpose of *Pure Air Industries* (providing the Hardware) and the *AIR Bastion* platform (providing the Software) is to solve the global problem of air pollution. *PUREAir Coin* (from now on referred as *PURE*) is the vehicle to be used to fuel this change. *PURE coins* are going to be used in the ecosystem to transact, provide access and status to its members.

2.1. Starting State

As per today, 92% of world's cities are under unsafe levels of air pollution. And the breakdown is as follows:

50% of world's cities are under toxic levels of air pollution.

42% of world's cities have unsafe levels of air pollution.

The remaining 8% of them have somehow "safe" levels of air pollution. Although any levels air pollution can be really safe.

2.2. Goal State

The goal state we want to achieve is an overall diminish on air pollution in cities - especially in secondary streets, alleys, and any other type of road.

For big sources of pollution (like principal and high streets, main roads and any other type) we want to achieve a status quo of balance. Meaning after an initial cleaning of air, subsequent pollution should be absorbed and cleaned as it's produced. Without affecting the health of anyone in that area.

When talking about an initial cleaning of the air we are looking at 2-4 days of the machinery working at full capacity and without the main sources (named cars) running.

This means, we all can continue driving our regular cars for now, and there would not be a pressing need of forbidding diesel and petrol vehicles from cities. Even though it makes sense on the long term. In the same fashion, congestion charges or anything similar would become unnecessary. Although it can be a vehicle for governments to sponsor a massive deployment of machinery in streets.

2.3. Path

The clear path to go from starting state to goal state is to use the machines to effectively and actively clean the air from pollution. Actively is a keyword here. They have to be located in a place where passively can clean up the most while cleaning the air actively to get results fast. In that way, an initial cleaning could be undertaken (especially in the city centres) while on a bank Holiday or any other day festivity - when the gross of the population of the city don't have to go to work. Therefore preventing a few people to take their cars for some days would be doable.

2.3.1. Components

There are two main components to the path between the Starting State and the Goal State:

1. *AIR Bastion* - the platform is key to deliver the solution and to get to our desired end state. Specifically, we need the sponsorship contracts running on the platform (and executed on the Ethereum blockchain) to encourage companies to sponsor - knowing how the funds are going to be spent and that our policy is very transparent - the maximum number of machines.

2. Pure Air Units - this technology solves the problem of air pollution, generates and gathers data (stores this data on a public ledger) and provides WiFi access points.

2.3.2. Justification

There is a reason to use blockchain and to create a cryptographic token. It serves 3 main purposes:

- 1) It raises awareness of the Air Pollution and the problems we have moving us to a system of transparency
- 2) The blockchain allows everyone to track the blocks and verify the data has not been manipulated in order to meet certain levels. Also, there are countries like China which don't trust third party data because it can't be traced back. Now we can trace it back and show proof.
- 3) The creation of the verification market. People will be able to earn *PURE coins* to do certain tasks to improve data accuracy.

Also, since the conversion from fiat currency to cryptocurrency must be done anyway for the sponsor to pay the contract (in ethers), he might well do the conversion to *PURE*, as it further promotes the ecosystem.

3. Proof-of-usability

Given that the *PURE* coins are implemented on the Ethereum Blockchain, a consensus algorithm is not needed. However, consensus algorithms usually server a secondary purpose as a reward function. To that extend we are trying to find a close enough way to provide these incentives in a meaningful and timely manner.

4. The markets

At the moment of the creation of this platform, we will be creating three different markets with different functions and different communities inside each of them. They are listed below:

4.1. The Data Market

Anyone with PURE coins can purchase our data. This data might prove very valuable to governments as they are already collecting lots of data but with bulky and very expensive containers that collect the data of a very small area and then is “manipulated” and extrapolated to have the whole picture. So they are paying a lot and guessing almost as much.

It might prove very valuable as well for anyone conducting investigations at a local scale. We can even find the incidence of diseases in an area by medical records - with our data we can compare how much contribution air pollution is

We will be able to know which vehicles, which hours, which days, which specific meteorological conditions at a hyper local level are the ones causing the more pollution and other problems. Especially as the dataset grows.

4.2. The Sponsorship Market

The sponsorship market is part of our fast deployment strategy. By leveraging other people’s or other companies’ money we will be able to emplace more machines faster than if we were to pay ourselves for each of them.

But this market is also valuable for sponsors as we are planning to attract them by giving very good rewards. Every time a brand or person buys a machine it gets:

Social recognition in society. By letting people know you’re sponsoring that machine your brand or person gets linked to the aim of cleaning the air and providing health to the community. Also, you raise in status among your fellow men.

In-DAPP recognition. By paying for the machine you’re helping to clean the air but at the same time to analyse the air composition and to gather hyper local data such as: weather, air composition, air pollution (before-and-after), occupancy,

Badges. Following with in-DAPP recognition, these users will have badges inside the DAPP that will showcase their contribution to the platform. Also, big power sponsors will receive press and mentions in press from the company.

Cash (optional). This also comes with some liquidity. The given liquidity comes from advertising revenue we will be getting from the WiFi advertising.

4.3. The open WiFi market

Token holders will be able to automatically get into these networks by installing an app that checks they indeed are holding PURE coins - either is a phone, tablet, computer, or whatever device they have with WiFi capabilities and publicly listable marketplace.

We are going to run advertising on these networks not specifically when you connect but as you are ready to leave, or in other points in time which are not intrusive but attention can be conducted to the advertising. We are going to run and attract targeted and highly relevant advertising with the requirement of having a better deal for our token holders.

This last piece can work in two ways, by providing great and highly relevant deals, token holders will be eager to get them and watch out for relevant advertising.

Part of the advertising revenue goes to pay the machine contracts and to give sponsors some liquidity on top. The other part will give some liquidity to the company.

5. The Roles

There are three different roles in the AIR Bastion ecosystem. Each of them have different functions and behaviours. Also, there might be a 4th role for people wanting to earn money by doing some of the tasks we don't need specialised technical people to do.

5.1. Token holders

Token Holders will be able to use the token as a system to connect with the WiFi network our machines are going to have included. Membership is really important as every member is supporting in a way or another the mission of the company - to save lives by cleaning the air from pollution.

5.2. The sponsors

Sponsors can be either wealthy people who by their actions want to impact society in a positive way and don't look for a 3x - 100x their investment. Or companies looking to improve their image in society and link other values to their brand. Also, companies wanting to get more public exposure or even some PR in the press.

5.3. Data buyers

Data buyers, as the name indicates, are people from any organisation (Governments, Public institutions, Research Groups, Product development groups, etc.) or individuals who want to prove, investigate, research and do something meaningful with it.

5.4. The possible 4th role

These machines have tasks that need to be performed on a regular basis (maintenance) to keep them working and to improve the accuracy of the data. And someone needs to do so.

Every machine has two sensors one in the intake and one in the exhaust (connected by wire) to measure the difference we make. To assess we are really doing a great job. As an engineering principle, all systems in a complex machine should be duplicated to avoid single point failures and to keep the machine operating as normal no matter what.

The duplication of sensors requires a 10-day cycle of recalibration in the laboratory of one of the sensors on the top and one of the sensors on the bottom. As it needs to be performed on each machine, we have found a way around this waste of resources which is to create gathering containers to grab a small quantity of air, with a timestamp and meteorological data. After that, these containers are brought back to the lab and we analyze the composition with a higher accuracy - knowing if the sensors are working in good working order or needs recalibration.

These tasks may be performed by the 4th role - and they will earn money out of doing that.

6. Token Dynamics & Launch

6.1 Blockchain Implementation

PURE is implemented as an Ethereum-based token [2] on the Ethereum blockchain. *PURE* complies with the ERC20 token standard [3].

The *AIR Bastion* team will closely monitor developments in public blockchains. There is a possibility that if development of Ethereum stagnates or the Ethereum blockchain becomes a less hospitable environment and other alternative blockchains such as Tezos become more robust, we may choose to migrate *PURE* to another blockchain; in such a case, all ownership positions would be preserved 1-to-1. If all public blockchains become infertile grounds for *PURE* we will develop/fork and operate our own blockchain.

6.2 Total Supply

The total supply of *PURE* is going to be determined during the *PURE* pre-sale. This will be held starting the 24th of November 2017 and lasting until the 6th of December 2017. 15% of the available coins for sale to the public will be accessible at a discounted price for the first 4 days. And the breakdown of bonuses is as follows:

First day: 10% bonus.

Second day: 7% bonus.

Third day: 5% bonus.

Fourth day: 3% bonus.

Fifth day onwards: no bonus.

PURE account totals are stored on the blockchain to 8 decimal places, so the smallest unit of account for *PURE* is 0.00000001 *PURE*.

6.3 Non-inflation

There will be no inflation in *PURE coins*. The *PURE* smart contract does not permit any new tokens to be created.

6.4 Division of Tokens

The total supply for *PURE* tokens will be divided into four portions. These portions are as follows:

Allocation: 50% of the supply will be sold to the public. **Justification:** this allocation is needed in order to generate funds necessary for further development and business development of *Pure Air Industries* and the *AIR Bastion*. The allocation size gives token purchasers a meaningful ownership stake in the token, and ensures a more decentralized distribution of *PURE coins*. The remaining supply will be available during the main public ICO.

Allocation: 20% reserved for a user growth pool. **Justification:** this allocation is needed to perform the Proof of Usage distribution of *PURE COINS* and bootstrap the *AIR Bastion* platform.

Allocation: 20% reserved for general company expenses. **Justification:** this allocation is needed to cover expenses that the company may incur beyond what can be covered with the token sale proceeds. For instance, salaries for engineers brought onto the team could be paid for in *Pure Air Industries* or with fiat purchased with *PURE COINS* from this allocation.

Allocation: 20% allocated to team members/shareholders in *AIR Bastion's* parent company. **Justification:** this allocation is needed to a) reward team members and shareholders for their significant contributions made to the development of *PURE COINS* and the *AIR Bastion*, and b) to keep team member's personal incentives aligned with the success of *PURE COINS* and the *AIR Bastion*, which is important since the continued contributions of key persons on the team will remain necessary for the foreseeable future.

6.5 Pricing

The price of *PURE coins* at the token sale will be set based on valuing 50% of the supply of the tokens at \$70 million US dollars. Following the token sale, the market will set the price based on the price traded on cryptocurrency exchanges.

6.6 Team

Isaac Ramonet is the founder and CEO of *Pure Air Industries*. He has a degree in Behavior Science and has been involved in technology since an early age building web and mobile apps. He leads all software engineering for *Pure Air Industries*.

Jamie Young – Leads the mechanical engineering team at *Pure Air Industries*.

Adel Djebbar - He is a mechanical engineer and manager with great experience coming from General Electric.

Oliver Grange - he is the one in charge of creating and implementing the electrical and data gathering systems inside the machines.

In Pure Air Industries - we have also two other mechanical engineers in probatory period.

6.7 Community

The team will seek to foster a strong community around *PURE COINS*, and attract community members who can give feedback and evangelize usage of the token and product.

A [PURE COINS Facebook Owners group](#) has been set up to foster discussion and keep owners informed of updates. We have also set up a [sub-Reddit for PURE COINS](#). We will not have a Slack group/channel because numerous other token Slack groups have been subject to phishing attacks. However, any chat communication will be held in our [Telegram channel](#), we share articles in [Medium](#) and Steem.it and we [have private group](#) of interested people in the air pollution.

6.8 Compliance

The team behind *Pure Air Industries*, *AIR Bastion* and *PURE*, is working with outside legal counsel to ensure full compliance with Gibraltar law. However, the emerging cryptographic token space is sparsely regulated right now. Our goal is to be as compliant as possible within such a regulatory environment as we possibly can.

6.9 Risks

As with any cryptographic token, significant risks exist. These risks include potential failures in the still new Ethereum platform and with *PURE* and *AIR Bastion* technology. Prospective token purchasers ought to thoroughly assess the involved risks and know that possibilities involving a catastrophic failure in underlying technology that wipe out token value could happen. These risks will be further covered in the terms and conditions for the sale.

We will endeavour to mitigate risks relating to *AIR Bastion* technology through rigorous testing and through using *PURE* bounties for identification of security vulnerabilities. We will mitigate risks relating to the Ethereum platform by monitoring other options for public blockchains (see 4.1). We will mitigate *Pure Air Industries* product risks by developing strong alliances and securing partnerships as well as the favour of governments.

6.10 Smart Contract

The smart contract for *PURE* is available on GitHub^[5]. In order to ensure security, the token is based on the ERC20 standard with minimal deviations coupled with inspiration from other ERC20 tokens such as the Ethereum token and crowdsale tutorial, the Tezos^[7] crowdsale, the EOS crowdsale^[6], Bancor crowdsale^[8], Funfair crowdsale^[10] and code from Open Zeppelin^[9] public repositories.

6.11 Token Pre-Sale

The *PURE* pre-sale will be taking place during the last week of November and first of December, starting the 24th and finishing the 6th. 15% of the 100% we are selling to the public are going to be offered at a discount for four days.

6.12 Token Sale

The *PURE* token sale is taking 50% of the total supply of *PURE coins* will be sold in the token sale. Instructions on how to participate will be released on the [Pure Air Industries website](#), emailed to our subscribers, and broadcast through various media channels.

The *PURE* fundraiser has been postponed and the final date is going to be decided and announced soon. You will be able to get access at <https://crowdfund.pureairindustries.com> a week before the date.

6.13 Use of Proceeds

The token sale proceeds will primarily be used on three areas:

- **Finishing the machine tests** and through product improvements, iterations, better materials, partnerships, and etc. → Basically make it production ready.
- **Improving the sensors and creating the data gathering systems integrated with the *AIR Bastion DAPP*.**
- **Creating the *AIR Bastion DAPP* and defending it against threats** via security enhancements, use of encryption, proactive defense against any advanced persistent threats, protecting our trademarks and the IP of our inventions, etc.

To do all the above, we will need to hire more people and pay salaries, IP and licenses. All this is going to be coordinated by the CEO and the management team he puts in place.

7. The Road ahead

The next milestone for the *AIR Bastion* is to build and create the ecosystem so the token becomes fully functional and usable in a day to day basis. At the same time, we need to deploy a test of the clean air machine and data gathering system while we're finishing the development of the *AIR Bastion*, so when the platform is ready we can ship both as the sponsorship market goes live and money to pay for the machinery starts coming in.

You can follow the development and the progress in our public Trello board.

References

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1. 6. GitHub repository for BAT Smart Contract code. URL:

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