Blue Energy Coin

Whitepaper

Heat engines have been the pillars of modern civilization of humankinds. They will power our future to the eternity. Blue Energy Australia (NSW) has a goal to make them better and efficient. We are achieving such a goal.

Human beings are on the door way of another exciting world. We are ready to witness waves of disruptive technologies and business in energy. Many people will benefit from it.

If you are the stake holders of business in the energy sector, don't be the one receiving disruption. It is time to act. It is time to embrace opportunities.

If you are the believers of sustainability and doing no harm to our environment, you need to be part of solutions to make them change. YOU, the people, have the power to invest in what you believe.

From the inception of steam engine, energy efficiency is the key to make energy business success. Failed to be efficient will fail the business. As investors, when you invest in energy business, you must look for efficiency. Blue Energy is not just about engine, it is about efficiency.

Blue Energy Australia NSW ICO statement

Human civilization is our ability to develop an orderly social structure within the natural environment. It is characterized by urban and rural development. It is supported by business of many kinds. We need agricultural and industrial production to satisfy many levels of demand. Interactions within human society both physically and virtually rely on infrastructures of wired and wireless, road, rail, tunnels, bridges, waterways and air. We establish services for each citizen's wellbeing and quality of living. All these are governed by the laws of sovereign states. Such capacity is beyond any other living specie's capacity. To do so, we use energy to overcome our inherently disadvantages over other species.

Everything within human society, consumption of energy obeys the laws of thermodynamics. We use energy to power cars that travel faster than a cheetah. We can fly higher more than a griffon vulture can. We can communicate with Voyager 1 at 140 AU distance while writing this Whitepaper. Nowadays, a young kid has a smart phone much powerful than the Apollo 11 Lunar landing project combined. To lower indoor temperature by air conditioners for the hot summer, and to use electricity heating in cold winter are norm for most working families. We need more energy. Energy comes from the business that depends on grids to delivery. We will pay for what we use. Highly likely we are told to pay more.

Unless people don't mind to pay more, consumers now have to find what alternative options are available to them to save money.

A solution to help energy users to save money will build a good business case. Our world has global economy of US$6 trillion in 2010. About 20% account for was infrastructure and energy expense. Without any doubt, heat engines play important role in the energy consumption.

Blue Energy Australia NSW (BEAN) believes it has the best engine invention for almost everything relating to heat energy. This is a perfect engine to drive future cars more efficient than Tesla electric cars. Future cars can use their engines to supply electricity to the car owners. Neighbours can link to each other to form a local grid so the electricity supply is safe and stable. When that happens, the power grid will become the last option, which is standby electricity supply.

This engine can store solar or wind energy without battery. When there is not enough solar power due to bad weather, people can collect dry mass fuel from the forest or buy from fuel suppliers. Fuel is for the time when wind stops, and/or the Sun is covered by cloud.

Global initiative to reduce carbon emission and environmental pollution are heading towards so called low carbon economy future. **THIS IS A TERRIBLE MISTAKE.** Carbon is the critical element in energy storage. Combine hydrogen and carbon into fuel, or hydrocarbon, heat energy is stored within the hydrogen-carbon chain. It is nature's way of energy storage at high density, which is reasonably stable. When energy is required, we use combustion to release heat. Engine is the mechanical device to convert chemical energy through gas expansion at the high pressure. Gas expansion into secondary form of energy, such as kinetic energy, or electrical energy is the basic way to transfer heat energy.

Battery was invented by Alexssandro Volta in 1799. This is not the only way to supply electricity. In 1821, Michael Faraday started his research and experiment on electromagnetism phenomenon, which later on in 1831 he developed the Faraday disc, the first generator in history. Electricity generator and heat engine has been supplying most electricity worldwide since then. Why is it so? It is because of energy storage by fuel, and high energy density in fuel. Engine is fast and responsive to loading as long as there is energy to sustain the high pressure gas expansion. People calling for low carbon economy should have done the research first.

This innovative engine can use coal. But it will store the CO2 locally instead of emit to the atmosphere to cause more damage. Wind farms or solar farms will use CO2 to store energy. Quite likely, the companies running wind and solar farms will use our engine. It is also possible to scale down CO2 storage to household level, instead of release CO2 into the atmosphere. Storing energy can also be achieved by water electrolysis to make hydrogen. H2 and CO2 can further store energy with methane production. Methane is the fuel for your cooking, or release heat through combustion to run engines. If these chemical reactions are done efficiently, energy business will change.

What we call this invention? It is called **Blue Energy Thermal Engine. (BETE)**

BEAN is now issuing crypto currency to fund its business venture. Investing in these coins will give investor the potential benefit of global success. This white paper presents facts to our potential investors. Disruption in energy business can be done, and it must be done. BEAN wants to try the new way of crowd funding. ICO is a disruption to the investment world. Our white paper is for you, the people, who have the power to invest in what you believe. You don't have to be the super rich to invest in BEAN.

This whitepaper explains of how the token will work. This token is backed by fuel, just like OPEC economy is backed by crude oil. BEAN will use BETE to create liquid market of fuel harvesting, industrial production according to standard and quality, worldwide fuel delivery, and transparent fuel trading for energy users. Through decentralized trading system, the winner will be the energy users. This token is the Blockchain that transits the hydrocarbon energy chain from fossil energy to renewable energy. It will create opportunities for people who believe sustainability. It is a lever for people to achieve that goal. BEAN's vision will not compromise the quality of living. This Blockchain token will empower people of any skill, or residence to harvest energy through fuel collection and trading. Many people can enjoy low cost and clean energy.

To prepare such future business, we will design smart phone game to simulate the future world powered by this engine innovation. Investors can help us to understand human power in that world by playing this game. Game players can gain experiment how the future fuel is harvested and traded. You will see how your current energy consumption being improved. For the detail of mobile game, please read the content in this whitepaper.

Once BETE is in mass production stage, the game tokens will be converted into REAL token. When investors play the game, they can collect more tokens, if they are good trader, or actively harvesting renewable fuel, or to invest wisely into infrastructure. Your tokens investment will be protected if you lose tokens while playing the game. If you are good

game players and make more token, you will keep the winning. Our game is to study and prepare for the real game.

Disclaimer

Blue Energy Australia heat engine solution

1. The pain of energy

1.1 Electricity

Electricity business is a value added service. When a lump of coal becomes electricity and consumed, the price mark up depends on fuel price, generator efficiency, whole sale price, grid transmission charges and retail price. Based on electricity price and fuel price, after conversion of energy balance, electricity customers in retail sector in Early 2016 paid a price mark up for 1045% in Australia. With recent coal price increasing, electricity network has to increase price to make up the lost.

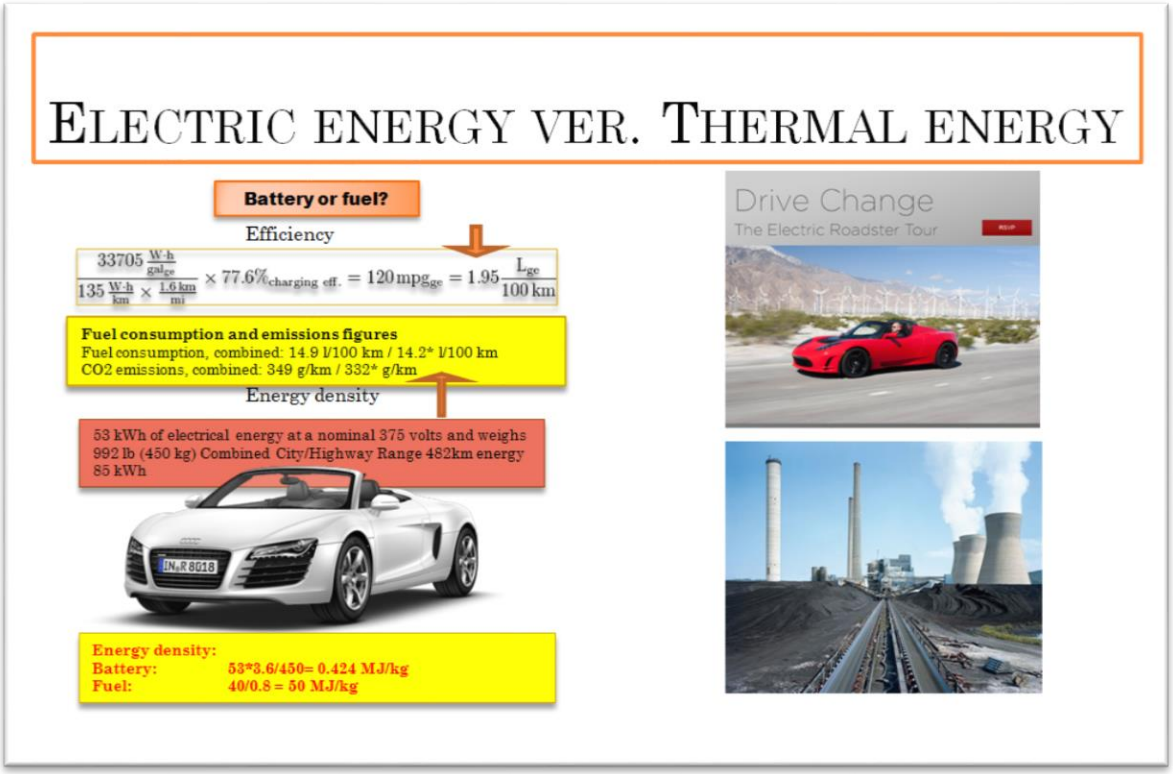
	A	B	C	D
1	Items	Coal price	Electricity price	Coal energy density
2	Unit	AU$/Ton	AU$/KWh	MJ/Ton
3	Data	55	0.3	28,000
4	engine efficiency	Transmission efficiency	Sale of electricity	Profit markup
5	10%	90%	210	281.82%
6	20%	90%	420	663.64%
7	30%	90%	630	1045.45%
8	40%	90%	840	1427.27%
9	50%	90%	1050	1809.09%
10	60%	90%	1260	2190.91%
11	70%	90%	1470	2572.73%
12	80%	90%	1680	2954.55%
13	90%	90%	1890	3336.36%
14	100%	90%	2100	3718.18%

As general rule of thumb, when coal price rises, the profit margin for the energy business will be eroded. But the mark up can be maintained or increased in many ways. For example, energy companies can increase both electricity unit price and daily access fee, or to increase engine energy efficiency. Energy efficiency from the engines plays much higher impact according to the study. Obviously, energy companies would make more money if they use energy sources to generate electricity that cost NOTHING.

1.2 Transport

In transport, a typical internal combustion engine (ICE) powered car runs at least 80% less fuel efficient than an Electric Vehicle. There is call for engine based cars being replaced by electric based cars in the future.

Some countries have put time table for the transition. The logical thinking is that EV can store energy by its battery, which helps to smooth the peak and valley demand on the grid. But when you take into account the fact that most electricity grid energy sources are from fuel, either coal or nuclear, the picture of energy efficiency will cancel the benefit. Charging battery will not be 100% efficient, nowhere near it.



As you can see in this graphic, which was composed in 2011, Tesla Roaster uses battery that is merely 0.848% of petrol in energy density. But the equivalent fuel economy is 51.28 Km/L versus 6.71 Km/L for an Audi sport vehicle, which represented a fuel economy comparison ratio of **7.642:1**. Does it mean EV is better than engine driven cars? According to recent research, Tesla Model 3 fuel economy is around 126 MPG while Audi TT is 34 MPG, which narrow the ratio to **3.706:1**. How can we further narrow this gap?

In automobile history, external combustion engine (EXE), mainly steam engine, was around 17th to 18th century until Siegfried Marcus built the first gasoline powered engine car. Since then, internal combustion engine (ICE) becomes the dominant engine for transport. ICE is not just for cars. It is also used in shipping. Aircraft engines are also consider as ICE. Without going to the technical detail, BEAN considers the EXE has great potential. **It opens the option for car owners to find FREE fuel in the environment.** Obviously liquid fuel has none in the natural landscape. Solid fuel though exists and is reproduced everywhere on Earth. BETE is an very energy efficient EXE. As a result, when BEAN commercializing BETE for the car industry, it will achieve the goal of emission, pollution reduction, and much lower fuel cost. BEAN thinks Neutral Emission (NE) outcome is a better way to replay ZERO Emission (ZE).

When we try to value the energy source for a transport solution, we must consider another important fact, which is Energy Density (ED). Current renaissance of Electric Vehicles (EV) is a mirage, which is a harsh word to describe this new trend of high expectation. In 1828, Anyos Jedik from Hungary invented first EV. EV has never surpassed engine powered transport in any form. One of the reasons is energy density. At the present, the most energy dense battery is around 1 MJ/Kg while the typical petroleum liquid fuel density is 50 MJ/Kg. The cost to set up global charging stations is unrealistically expensive. It is a double-investment, if you consider current petrol stations around the world is first line of existing energy

supplier. The problem of charging battery for EV can only get worse as EV numbers going up. A compromised hybrid solution is to use engine, such as BETE in an EV as onboard charging component. This will reduce battery quantity, which has been implemented by GM EV1 hybrid series, BMW i3 with range extender option (Rex), and the Nissan e-Power technology. If an engine-generator solution provides enough electrical power to an EV electric motor efficiently, the logic to store energy in battery is obviously clumsy and unnecessary. That also makes the case to question why you need power grid to supply your electricity at all. Any car engine has maximum output far beyond the peak demand of its owner's electricity loading. Some family might have more than one car. The pain every car owner hates might be the cure for two pains. You can avoid paying liquid fuel, and not to pay electricity at home.

1.3 Emission and pollutions

CO2 emission due to fossil energy consumption has long term effect on climate. The smog around the world, especially in South East Asian region has become a public health problem. PM2.5 level in some nations stays high due to fuel burning, partially caused by increasing private ownership of motor vehicles. In third world countries, burning cooking fuel due to lack of electricity supply is also creating air quality issue in the community. We need to find solutions to burn fuel without any emission of gaseous by-products and PM2.5.

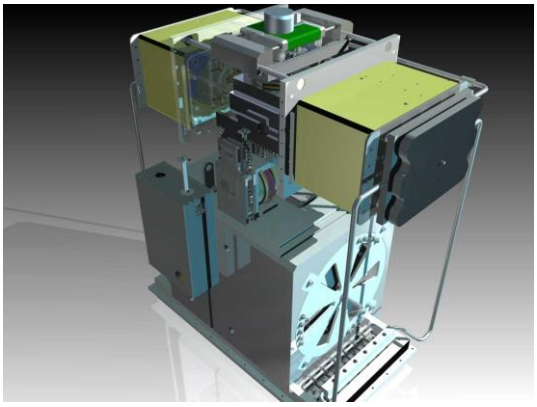
1.4 Energy security for the longevity

We will run out of fossil fuel, it is not if but when. No matter which side of legion people choose in the climate change debate, it is a consensus view from both sides. People who disagree with climate change theories are not necessary the people who don't care about the environment. Their major concern is the cost relating to CO2 reduction solutions. If we find a way to reduce emission, pollution and energy cost, there is no reason to debate any more. The only losers are the energy companies. You know why!

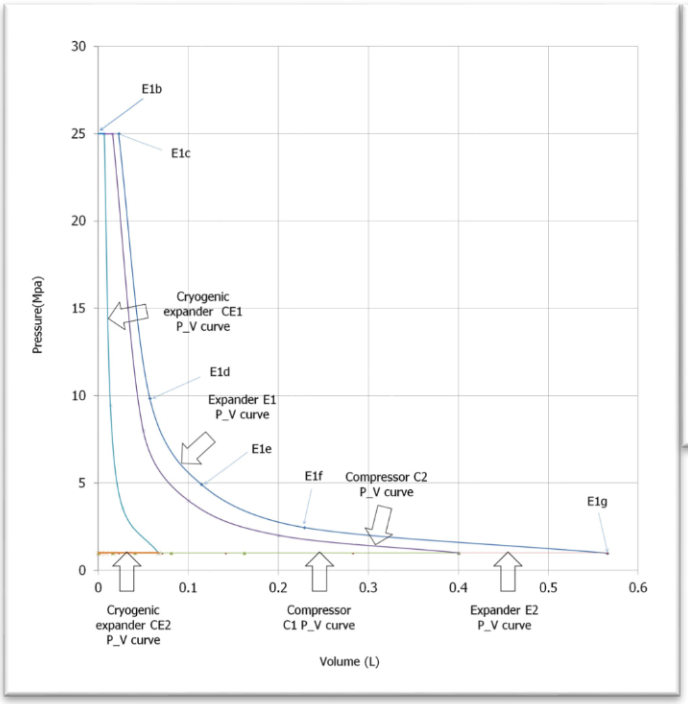
Fossil energy price action is closely related to supply and demand fundamental and geopolitical influence. When 2008 GFC occurs, global commodity prices collapsed. From 2014, the battle between OPEC and emerging fossil energy business created glut of excessive supply lead by Saudi, which resulted in price slump. While many people cheer such competition, the saving actually hasn't fully gone into the petrol pump every time you fill up your cars. If you come back to this world in 200 years, would you expect cheaper oil? Should you drive a magic vehicle that doesn't need you to pay for expensive fuel?

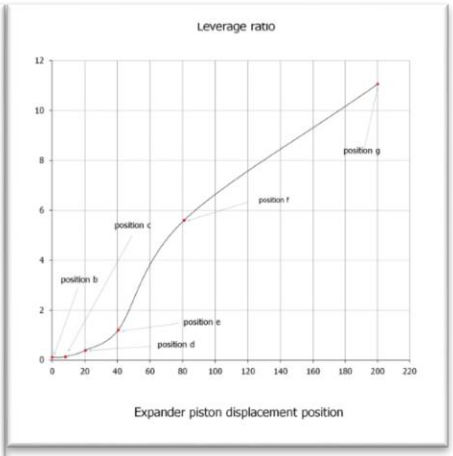
2. BEAN's solution

2.1 The engines



The real causes of all these problems are due to engine efficiency. Increasing engine efficiency in power stations, in cars will significantly reduce energy consumption. There are many solutions we can find to solve these problems. For example, BEAN believes future direction is to make cross domain integration, such as to incorporate car engines into electricity grid, which helps to lower energy cost in electricity. Car engines as decentralized electricity generators will eliminate transmission line upgrade when future demand increased. When car engines achieve or surpass engine efficiency used by power stations in the electricity grid, we need to adopt such strategy. Our innovation started in 2009. With the help of energy balance, we identify that heat engines we use for cars, in coal fire and nuclear power stations don't efficiently handle energy distribution when gas is expanding and compressed. In this invention, a novel leveraged force modulation mechanism is introduced in our engine design. We have patent pending on this invention in most advanced nations.





2.2 Decentralization

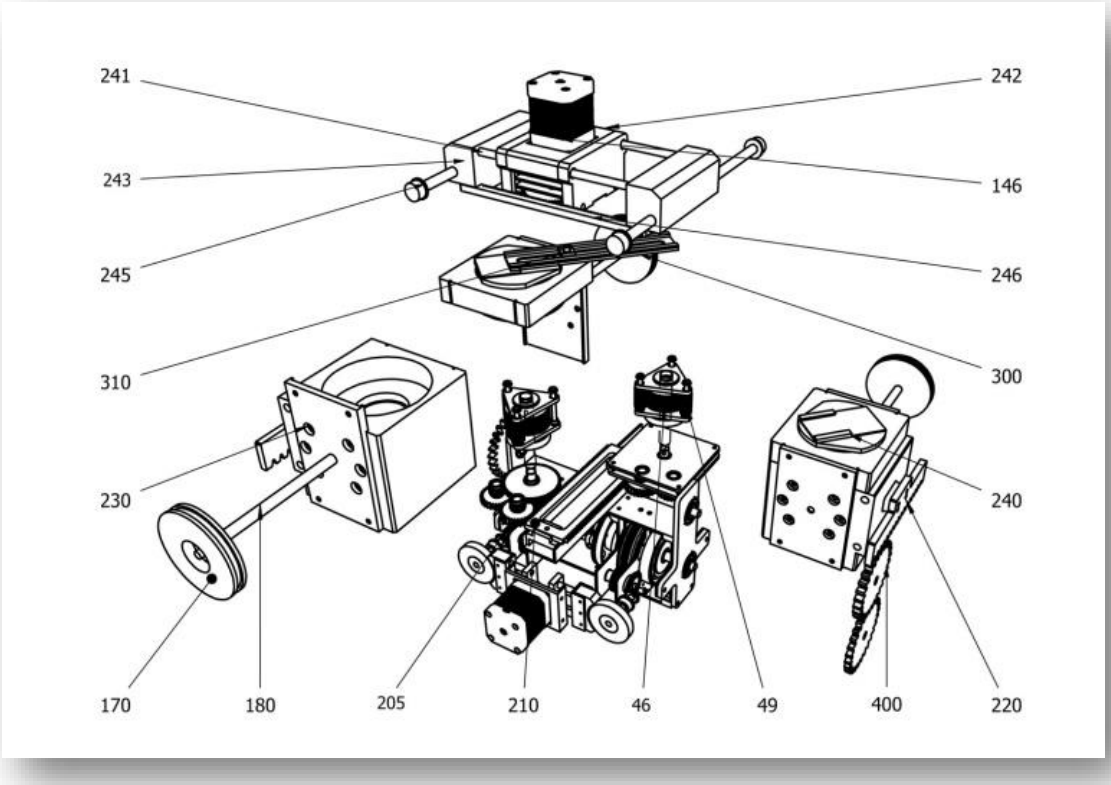
Energy companies can also consider decentralization of power supply if they know the enemies could be the “friends” they believe they have. Instead of waiting car manufacturers declaring war, they must act NOW! Electricity companies can install more generators in the community. Due to air quality control, the fuel must be from clean source. Decentralized power supply can use energy from PV units, which supplies solar energy during sunny weather. Solar energy can be stored as heat in water. Fuel burning is the second option to supply energy. BETE is a fast responsive heat engine. It can mimic user’s demand in seconds. The range of output is from a few watts to tens of thousands watts by controlling expansion and compression pressures. The engine can store fume locally without emitting to the atmosphere. Future cars with BETE will not have muffler. Something we will explain in later chapter.

2.3 AC or DC

Due historic reason, AC power supply has been dominating centralized electricity grid. ACDC war between Thomas Edison and Nikola Tesla at the infancy of electricity power supply was well documented. BEAN believes when electricity grid is decentralized, DC power source is better than AC because DC electricity doesn’t need synchronized utility frequencies. When most household electrical appliances are running, AC source in fact has to be rectified into DC. Most electrical cooking devices work well regardless AC or DC, unless things like inducted cooking is used. Another technical issue relates to single phase and three phases AC, the later format is much more efficient to work with BETE. But the entire private, and many business, are connected to single phase power lines. To rectify three phases AC into DC source, the efficiency outcome is significant.

2.4 Air conditioning

BETE can also work as an air conditioning unit. It is integral to the power generation function. With BETE, air conditioning in summer will use far less electricity due to the fact that BETE has a novel leveraged compression technology built in. This leveraged compression solution requires only a few hundred watts instead of a few KW to supply cool air. Investors shall look more into our documentation of the mechanical solution, which is important in problem solving. BEAN first product will be a small engine-generator for electricity users. It is also an air conditioner too. A lot of electricity premium is due to “gold plating” accusation. But for the grid operators, they are required to do so due to the legal commitment to guarantee supply. To make air conditioners efficient, such rare peak demand is avoided.



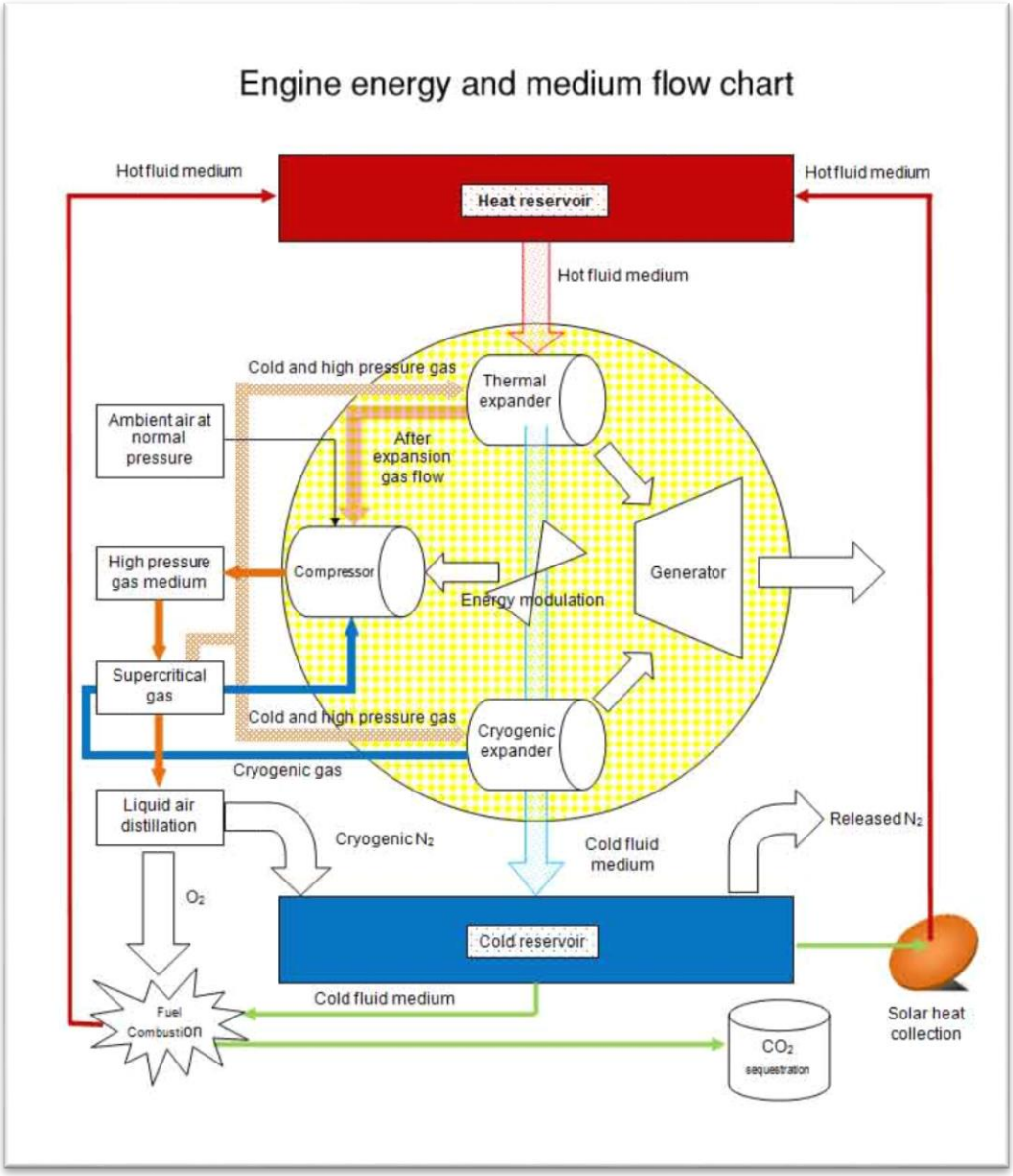
2.5 Energy storage

Energy storage is an important and weakest link in our civilization currently. The most popular solution is the pumped hydro energy storage. Thermal heat and battery are also used by some business and private. The most forgotten one is the fuel around the area we live and the household waste we throw out daily. Anything has hydrocarbon in it is potential fuel. The fire storm that is going across California has been a disaster by nature. According to the news, power lines might be the culprit that ignited the fire. Communities taking the fuel out of the forest and land for their own energy consumption will mitigate the intensity of wild fire. It is in fact the cheapest way to reduce your energy cost. There are many other energy storage technologies such as compressed air energy storage. To judge an energy storage business, the bottom line is efficiency. It is not just how much energy being stored from original energy sources, but also the cost, scalability, energy density, and duration of energy can last when stored by a medium.

2.6 Pure Oxygen combustion

Fuel combustion is the process that heat energy is released when an oxidant, mainly oxygen, reacts with fuel in a self-sustained exothermic chemical reaction. Conventional fossil fuel combustion by engine produces mixture of carbon dioxide, sulphur dioxide, carbon monoxide, nitrogen oxides etc., due to nitrogen in atmosphere and sulphur in fuel. Burning fuel without nitrogen will reduce pollution. To separate oxygen from the air needs cryogenic temperature and high pressure. BETE's leveraged compression and expansion design can achieve both compression and expansion efficiently. Without nitrogen during fuel combustion, CO_2 is the main product after fuel is consumed. BETE can use small amount of energy from fuel to sequestrate CO_2 into dry ice, which will be used for energy storage by

renewable energy business. Even if fossil fuel has to be used to run BETE, this solution will reduce emission and pollution. Pure oxygen burning by cars and power stations will be a quick fix in early BETE commercialization. In the long run, use clean fuel, and fuel production by CO2 create neutral emission energy cycle.



3. The market

3.1 With global annual new cars production at 80 million, a US$100 loyalty fee per engine will bring in potential US$8billion income per year. Car manufacturing business is slow to adopt new technology, especially engines. Our best opportunity is to convince electric car makers such as BYD in China, Tesla motor in the US to adopt onboard charging hybrid, instead of stationary charging and pure battery EV product. This can be done rather easy because BETE is very compact and high power to weight ratio. Retrofit BETE for second hand cars might be possible. But the cost might not offer incentive unless certain cars can replace ICE with

electric motor. Car industry has been self innovating at slow pace. Competition is the main drive.

3.2 Air conditioning and power generation by private, big and small business are now very popular. Refrigeration also needs compression. BEAN can work with electrical appliances manufacturers to mass produce engine-generator-AC (EEAC) products, which replace air conditioners that are currently sold as standalone electrical appliance. The potential quantities for small BETE in EEAC are in hundreds of million units each year. If BETE loyalty fee is at US$10 per unit, the income will be a few billion each year.

3.3 Shipping industry is another big market for BETE. BETE disruption on waterway transport could be easier than land transport. An existing boat, either civilian or military, can install a few large, or a few dozen smaller BETE powered generators to supply electricity to a large electric motor. This motor can couple torque into the shaft of propeller that is driven by the main engine. New ships can use BETE directly to drive propeller. BETE can scale up to satisfy very large ships too. Either for civilian or military, BETE is a great engine to replace ICE.

3.4 Aviation and space travel need completely new approach. In 2010, BEAN started investigation on BETE potential for aviation and space travel. To make heavier than air machines to fly, propulsion, which comes from heat engines, creates highly compressed air flow so the aircraft can gain anti gravity momentum. Similarly, rocket engine needs high pressure to be lifted with payload. Somehow, BEAN discovered that MASS EFFICIENCY is the key to built future airborne and space travel machines. We have developed another heat engine called Blue Energy Buoyancy Engine (BEBE), which requires BETE to supply compressed air and electricity. People understand that buoyancy is the reason why Helium balloons can float in the air without the jet flow to create anti gravity effect. BEBE can achieve much greater buoyancy effect by using energy and high pressure air efficiently. In this ICO, this whitepaper will not discuss more detail on BEBE. **Token investors shall not consider investment in this ICO has any relation and benefit associate with BEBE development and commercialization.** BEBE and BETE help BEAN to build future Vertical-Take-Off-Landing (VTOL) technology. Such potential VTOL will trigger another battle in manufacturing. It will be a war between car manufacturers and aircraft manufactures. This ICO will help BEAN to build a working prototype to prove BEBE concept.

3.5 Steel and aluminium industry can increase the profit with BETE innovation. The main reason is heat energy recycle. Industrial scale power supply within the business venue has multiple benefits for the business operators and environment. When business ceases operation, the power supply can be dispatched to the grid.

3.6 Commercial customers, especially those having high electricity consumption in cooling, can adopt BETE to reduce cost significantly.

3.7 Renewable energy projects, such as wind and solar, can consider energy storage solutions mentioned earlier. Certain formats of energy storage might be short term. Long term solution will be fuel production to make hydrocarbon.

3.8 Energy trading based on fuel cultivation and decentralized fuel selling/buying can avoid middle men. To further lower the cost, delivery fuel needs vehicles using BETE instead of ICE. VTOL equipped with BETE and BEBE will be another disruptive transport solution to change aviation and space travel. With this VTOL, passengers travel, goods and service delivery around the world will enter new chapters. Cultivation of fuel from dense forest, from large farm fields, will be easier and low cost if VTOL replaces land transport for fuel.

Why Blockchain

1. Technology of Blockchain

   Blockchain is a *"is a continuously growing list of records, called blocks, which are linked and secured using cryptography. Each block typically contains a hash pointer as a link to a previous block, a timestamp and transaction data. By design, Blockchain are inherently resistant to modification of the data. A Blockchain can serve as an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way".* (Wikipedia) BEAN's tokens have smart contract to allow verified fuel to be sold in a trading platform from fuel miners to energy users without too many middle men during the fuel production to distribution and consumption.

2. Energy in the Blockchain of hydrocarbon

   According to Wikipedia, hydrocarbon "is an organic compound consisting entirely of hydrogen and carbon". Hydrocarbon is the main energy source for our civilization. To access energy in hydrocarbon, combustion is the easiest way to release energy locked by hydrogen and carbon bonds.

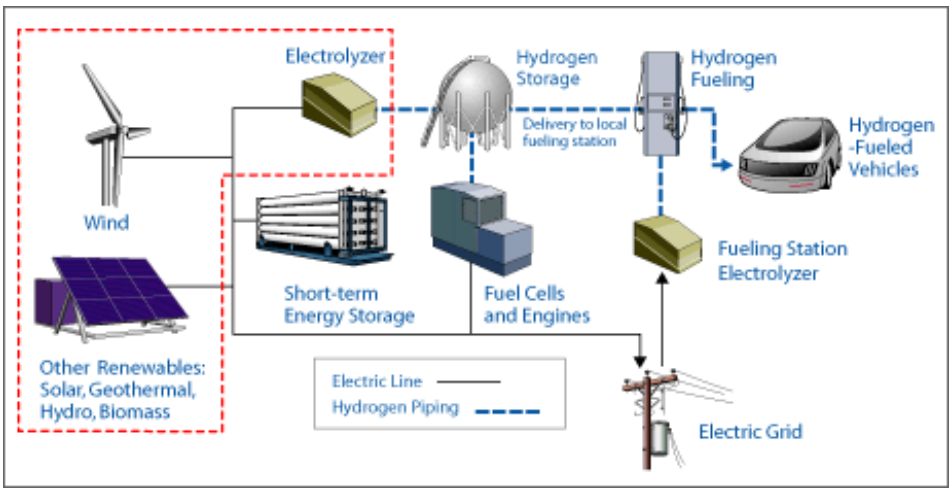
3. Trading of fuel through BEAN's token

   Due to the way Blockchain technology works, BEAN's tokens carry the information for global and decentralized energy trading platform through smart contracts. Collecting fuel, mainly the solid clean fuel from the environment, requires mass participation. Harvesting fuel shall not damage the environment, i.e., we want to encourage fuel collection on deposit that is not considered as active and live carbon sink, for example, to deliberately cut down tree and use it for fuel. Many people can collect fuel for themselves. Some people might be able to make a living out of fuel harvesting, if they live close to vast fuel deposit. Fuel must be verified by a credited business, and to be made into standard blocks that contain precise energy. By issuing tokens to people who harvest fuel, they can exchange fuel credit with anyone around the world who wants to buy such fuel. Energy business can settle the trade with fuel delivery. That is very much how fossil fuel business works. Such trading market can be continuously from small trading lots to very large quantity. This energy market is alternative to fossil energy market. With more people to join in, it will become big and highly liquid in both supply and demand.

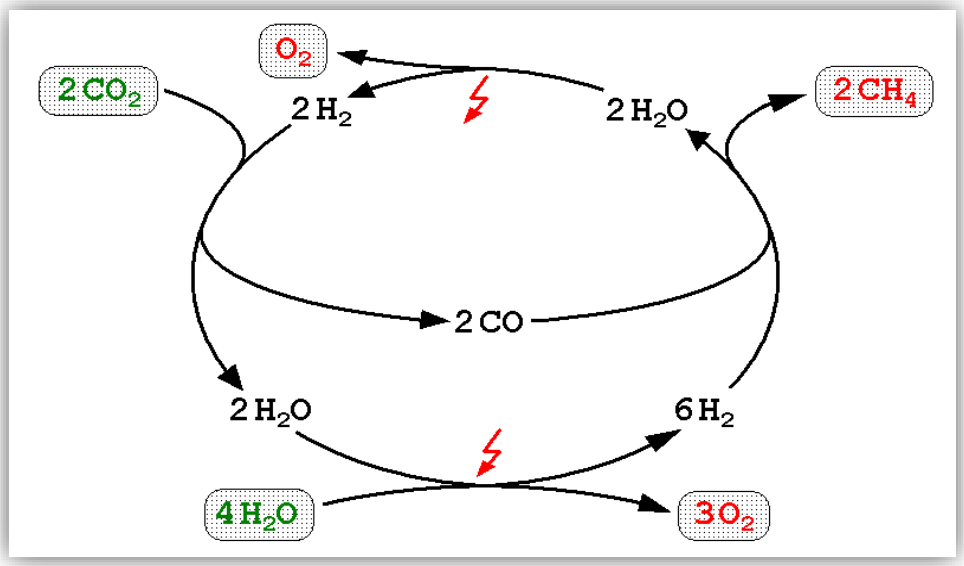
4. The future of energy storage

   Renewable energy business, such as solar and wind, needs better energy storage solutions to overcome its intermittent problem. Storing heat directly is not a permanent method. Battery is the not a good idea to store large scale renewable energy. Renewable energy business needs to consider hydrocarbon production in order to be competitive and real disruption. Water electrolysis to create hydrogen is not efficient. A research done by Keveh Mazllomi, Nasrib b. Sulaiman and Hossein Moayedi titled "Electrical Efficiency of Electrolytic Hydrogen Production", published by International Journal of Electrochemical science in 2012,

has done great research into the efficiency study. As far as BEAN can foresee, most of factors that contribute to the drawback, such as heat lost, compression energy lost etc., can be minimized when BETE is introduced in the process. Hydrogen is not ideal end-of-product due to the light weight molar mass. To use hydrogen and CO2, through Sabatier reaction to produce methane is a better product. Optimal temperature for such reaction is 300 to 400 degrees Celsius. With BETE, heat will be recycled while methane can be compressed or liquefied. If such initiative adopted by renewable companies, CO2 demand is high. CO2 will be a commodity that is very important in energy business. Blockchain information in token can be the information for CO2 trading.



(Image credit: US DOE)



(Image credit: Wikipedia.org)

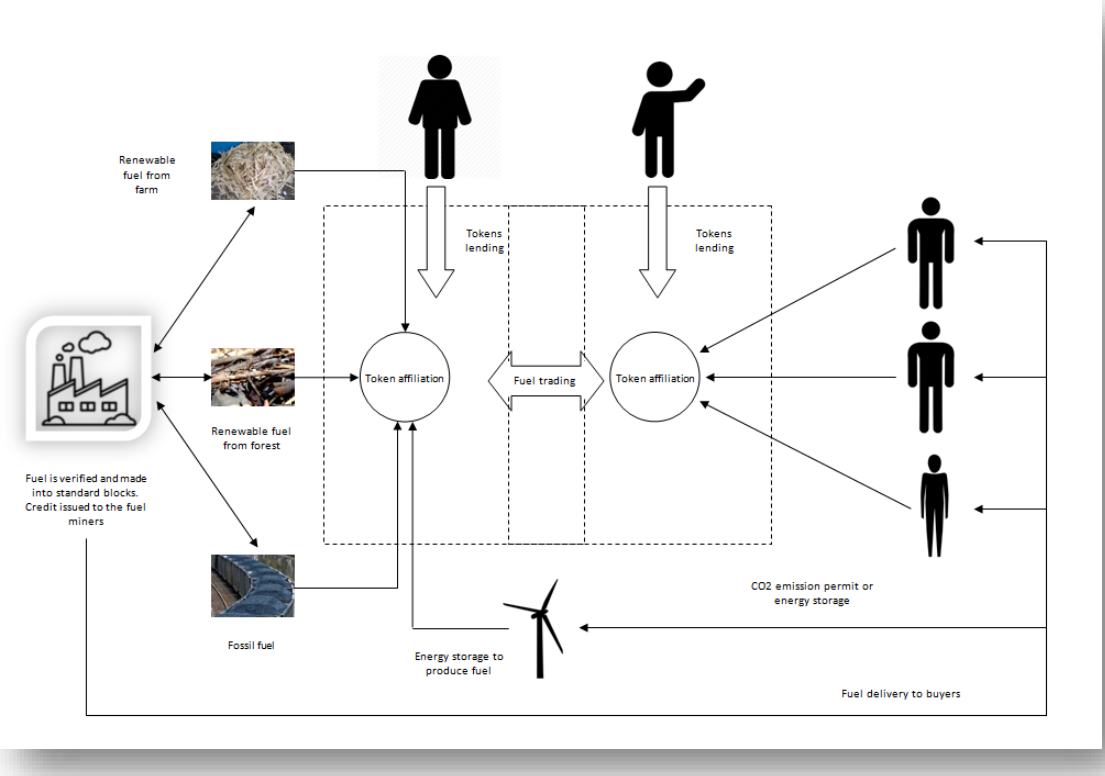
5. Blockchain value in energy flow

Conventional fossil energy business requires intensive capital investment. The investment includes mining deposit exploration, infrastructure for the mining site, transport solutions

for the asset being delivered and labour cost. Government or land owners will charge a fee for the exploration. At the end of mining, operators will normally rehabilitate the site.

Energy is a commodity that subject to price fluctuation. Price can be hedged by energy companies, professional trading institutions and private speculators. This token will try to provide energy trading market, with the tokens as information courier to match deal, from small to big. Unlike conventional energy market, this Blockchain energy market only has sellers who have energy credit that is verified. It forbids speculative selling. It will not consider fossil energy in this trading platform, unless fossil energy provides carbon dioxide to facilitate energy storage. It is possible that CO2 demand from renewable energy business might not fully adequate from renewable fuel consumption. In this energy trading environment, CO2 is regarded as commodity, instead of pollutant.

This trading platform needs fuel sellers and buyers to use BEAN's tokens. When a seller or a buyers has own token, the trade is free. When they have no token, they will have to "borrow" tokens. When token is leased, traders, either fuel sellers or buyers, will pay commission to the token owners.



How much a token can generate commission to its owner is hard to predict at this stage. It all comes down to BETE commercialization success, and how much trading volume flows to BEAN's platform. If you invest in ICO, the price for each token is priced at US$0.01 per piece. Token owners can also use secondary crypto trading to sell their tokens. Tokens can also be exchanged pier to pier. For tokens carry extra fiat density, pier to pier token exchange is recommended. For fiat density, please read this whitepaper in later chapter.

6. Share the wealth of resource

   BEAN encourages people's power to cultivate fuel from the environment. Unlike fossil energy, renewable fuel doesn't have rich deposit for automation and machinery to mine. We need real miners who work for themselves and enrich fuel into a piled collection for transport. We have a potential VTOL technology to transport fuel from area such as dense forest, or farmland. This VTOL technology will not have limitation of lifting capacity. VTOL will play very important role to deliver fuel to anywhere in the world at very low cost. Future investment includes setting up fuel blocks manufacturing facilities around the world. Fuel will be dehydrated, compressed into standard blocks. Fuel blocks are subject to random quality examination by laboratory. Miners will receive part of fuel credit to sell in our trading platform. BEAN will keep part of fuel for own trading, settlement and delivery. Blockchain will make such fuel trading, money transfer low cost, secure and simple.

7. Your coins are the proof of investment in BEAN.

   BEAN shall receive loyalty payment during BETE commercialization in the jurisdiction of patent protection. As incentive of being BEAN's token investors in ICO, 20% of loyalty collected by BEAN will be allocated to token owners. ICO investors WHO KEEP THE TOKEN SINCE ICO will receive payment at higher rate than tokens bought after ICO. In both categories, token owners' identity must be verified in order to receive loyalty fee sharing. To receive the payment, tokens must be monthly transferred to BEAN's official wallet. Token quantities must be integer number, i.e., to be equal or larger than ONE. The monthly payment will be capped at US$0.25 per coin. Tokens bought from listed market will receive monthly payment capped at US$0.05 per token. Payment can be fiat currency or crypto currency. BEAN's payment to tokens will only last until patent right expired. If there is balance remaining in the account for the collected loyalty when the last nation patent protection expires, 50% of the balance will be distributed to ICO investors who are holding their original tokens. 25% of the balance will be distributed to token owners who buy their tokens from listed market. The remaining balance will be donated to charities who work for energy and sustainability causes.

8. Plan the disruption with the game you play.

   Part of the fund raised in this ICO will allow BEAN to hire mobile game design talent to build iOS and Android game app. This game is a fuel trading game similar to Pokémon Go. This game will help BEAN to understand human participation in the fuel harvesting and trading. The data will simulate the energy consumption before and after BETE commercialization. It will have built in algorithm to collect data of energy consumption, infrastructure cost and benefit. BEAN is working on the concept and solutions. Eventually, this game will help BEAN to build a real trading system, which allows game participants to trade and use clean fuel in the future.

Team Blue Energy Australia

Blue Energy Australia NSW is a startup business registered in NSW. Team members are local and overseas engineers and scientists working together since 2009.

Founder:

Mr. Da Wei (David) Huang

BEAN is the start up company founded by Mr. Huang. During an energy efficiency research project, Mr. Huang discovered global scale energy waste due to poor heat engine designs. The problem can be fixed by integrating all applications into two types of engines, BETE and BEBE. Both heat engines R&D have been the result of Mr. Huang's effort and collaboration from freelancers around the world.

Mr. Huang has a bachelor degree received in his four years education in South China University of Technology in 1989.

Engineer:

Jorge Andrés Cifuentes Gutiérrez

Jorge is from Chile. He is one of many talents Blue Energy Australia has found around the world to design and improve technologies and innovations. Working as mechatronic engineer, Jorge has been working on BETE and BEBE for BEAN since 2016. He is great asset BEAN wants to work with for long term.

Scientist and mathematician:

Pio Arias

Pio has PhD in physics. He is from Maracay, Estoda Aragua, Venezuela. During a research project on space travel, Pio helped Mr. Huang with mass efficiency study through basic energy and mass momentum transfer equations solving.

Pio has been working on pure math for decades with vast publications of research paper.

Patent pending

BETE is patent pending in following countries and regions.

- Australia
- Canada
- China
- EU
- Japan
- South Korea
- USA

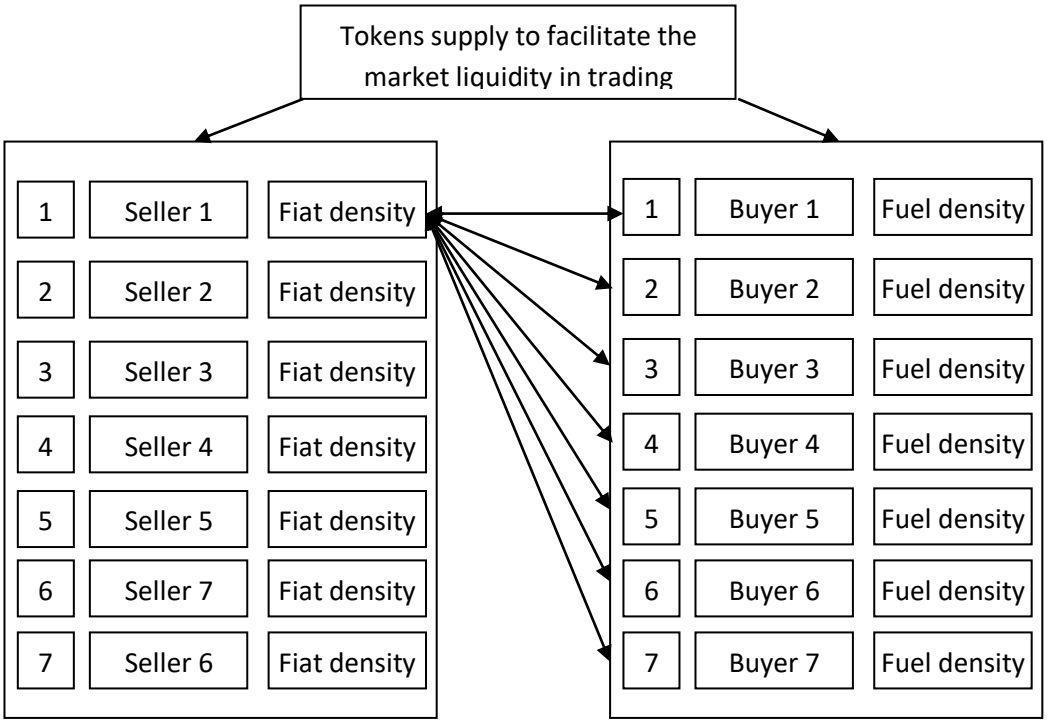
The Blockchain of digital and the Blockchain of hydrocarbon

Quantities of tokens issued

7,000,000,000 tokens will be issued. This number reflects a worldwide population and business as a whole. 10% tokens will be sold in ICO and follow on sales, unless ICO reaches 700,000,000 tokens. The rest will be locked for liquidity of energy trading.

Trading concept

Information carried by tokens can be vast. Tokens operate as deal maker. Following diagram demonstrates how tokens are in holding by owners to enable fuel trading. Tokens have certain attributes in the smart contract architecture.



How the Blockchain in BEAN's token will carry information

Our goal is to use Blockchain technology to disrupt energy business. Energy users can use BETE without this token. But BEAN has its plan for the energy future. With so many people needs energy, we can't rely on traditional energy business to change. Many people need jobs, better lives and low cost of living. This token, issued by BEAN, is to motivate people's power to push the change. This Blockchain can elevate poor and low skilled labour to stand on the equal playfield to harvest and trade energy. When large number of people harvests fuel, it will drive cost down. There are certain features BEAN would like to write into this cryptocurrency.

The token holders

Investors participating BEAN's ICO, or buying BEAN's tokens from crypto trading platform have rights in multiple income streams when BETE commercialized. Loyalty payment to coin holders is based on verification of coin ownership. Coin owners can unconditionally participate energy trading. Coin holders can lend coins to facilitate energy trading, which generates commission when trades happen. Like all other crypto, coin owners can also sell coins in trading platform BEAN lists its crypto.

Token standard:

Tokens issued by BEAN are ERC20 compliant.

Blockchain attributes in BEAN's tokens

FIAT number:

This token carries information of FIAT. By default, each token carries ONE Nickel Fiat. Fiat in each token gives energy traders the power to swap energy and fiat money. Energy buyer can deposit certain amount of many types of legal currencies in order to buy fuel in this trading platform. For token holders, they have the privilege to decide who will "lease" their tokens for the trading. Token can also be used for fuel selling, or for fuel buying. Tokens with various fiat densities create market depth in energy trading. In our ICO, we offer incentive to investor in ICO with various fiats, which depends on the total quantities they will invest. Please refer to the table for more information.

Token	Nickel	Bronze	Silver	GOLD	Uranium	Dark Matter
1 to 99	Up to 99					
100 to 999	Up to 999	From 1 to 9				
1,000 to 9,999	Up to 9,999	From 10 to 99	From 1 to 9			
10,000 to 99,999	Up to 99,999	From 100 to 999	From 1 to 99	From 1 to 9		
100,000 to 999,999	Up to 999,999	From 1000 to 9,999	From 100 to 999	From 1 to 99	From 1 to 9	
1,000,000 and above	Total investment quantity	T/100 integer	T/1,000 integer	T/10,000 integer	T/100,000 integer	T/1,000,000 integer

Nickel fiat (NF): ONE per coin at ICO. You must purchase token from BEAN

Bronze fiat (BF): ONE per 100 coins at the ICO. One BF = 100 NF

Silver fiat (SF): ONE per 1000 coins at the ICO. One SF = 1,000 NF

Gold fiat (GF): ONE per 10000 coins at the ICO. One GF = 10,000 NF

Uranium fiat (UF): ONE per 100000 coins at the ICO. One UF=100,000 NF

Dark matter fiat (DF): ONE per 1,000,000 coins at the ICO. One DF = 1,000,000 DF

Fiat multiply and fiat density

Fiat can be moved from one token to another in order to increase the density and multiply by the token owners. Fiat multiply is the token quantities, regardless the token being integer or decimal, to divide the fiat numbers. Fiat density is the fiat numbers divided by token numbers. By increasing fiats multiply and fiat density, a token ranking in the energy trading market will be elevated. A ranking in energy trading is based on Fiat multiply first and then density. They are self constrained in the market ranking. Simplest way to explain this is to use ONE token, and allocate the fiat numbers as high as possible. The ranking will be elevated as the fiat numbers increased.

For example below table represents the ranking based on Fiat multiply.

Ranking	Token quantities	Fiat numbers	Fiat density	Fiat multiply
1	1.25	5200	4160	6500
2	0.2	27000	135000	5400
3	4	250	62.5	1000
4	10	100	10	1000

In the table, if trader in ranking 2 wishes to overtake trader 1, he can simply add more token to be elevated. If his token number is 1, trader 1 has no option but to add more fiat numbers.

Being in the top ranking in trading system will give the token holders the early decision to participate a market deal, either fuel selling or fuel buying. Token owners can participate trading directly, or to lease token to third party who doesn't have a token. When deal is done, token owner will reclaim the token back with commission of successful trading. The token is ready for next lease. When token owners list their token for lease, higher fiat density token gets better ranking in the lease. Owner can set the minimum fuel quantities to let the system make the deal automated.

BEAN reserves unsold tokens for trading if private lease unavailable. For example, small buying order or selling order might not be attractive to all the token owners, the reserved tokens will step in for these deals. For example, a young kid from a developing country who has harvested certain fuel wants to sell his fuel a better price for the upcoming school term. BEAN's tokens can help that kid to find a buyer around the world to fulfil the goal. Buyers can selectively buy fuel from particular sellers. For example, a philanthropist can choose the young kid's fuel even if his/her fuel is a little bit expansive than the other. The trading platform can overcome the ranking barrier to make the trade. In a way, this is the power of Blockchain and smart contract in energy trading.

Preset lease rate and commission

This information gives token owners to charge lease fee at yearly, monthly, weekly, daily or to hourly rate to the third parties who wish to rent tokens for trading. The token can be leased by fuel sellers and buyers. Commission is based on fuel trade deal at agreed percentage. Highly likely the bigger fuel trade quantities, the more income will be generated for the token owners. With Blockchain, token owners can access the clients' history in energy trading. Reserved tokens by BEAN provide market liquidity for smaller trades. In theory, the token supply from the reserve is infinite regardless how big the market grows in the future.

Fuel density

In simulation game, each token at the ICO carries ONE Kg of thermal coal regardless how many tokens are attached to that token. Game players can harvest renewable fuel by themselves, or to purchase renewable fuel blocks at the trading market. Different game rules are in drafting concept. The objective is to allow game participants to balance the outcome of using finite fossil energy or to harvest, trade, invest in renewable through various avenues, and collaboration.

In the real world energy trading, token owners can lend tokens to traders for either fuel selling or buying. Fiat density and fiat multiply of each token give traders the ranking in the market. When a sell order has the fuel quantities match token present conditions, the trading system will deposit the fuel credit into the token for market listing. When a fuel seller finds another token that has the right fuel buying order, a deal is done by fuel information swap. As a result, fuel seller received payment while the fuel buyer will receive fuel credit. The fuel sellers can transfer the fund to his own bank after the commission paid to the token owner. Token will be reclaimed by the owner.

Token numbers	Fiat quantities	Fiat multiply	Fiat density	Ranking	Minimum Fuel block	Minimum Fuel density
35	2500	87500	71.42857	1	20000	20000/35
350	250	87500	0.714286	2	25000	20000/350
5	100	500	20	3	2000	2000/5
1	300	300	300	4	5000	5000/1
1	5	5	5	5	200	200/1
1	1	1	1	6	20	20/1
0.5	1	0.5	2	7	5	5/0.5
0.25	0	0	0	8	2	2/0.25

The ranking system creates market depth based on fiat multiply and fiat density. Higher ranking list have priority to accept fuel sellers' information and lease out the tokens. Fuel density represents token owners' expectation for minimum fuel selling from the market. That is a way to give token owners to control what market order can lease their tokens.

Fiat currency balance

Certain ICO projects are working on wallet allowing real currencies and crypto exchange. This token will look into the potential. Energy buyers deposit fiat currencies such as US$, JPY, UKP, Euro etc., into a financial account for energy trading. Token will confirm the fiat currency for energy trading, while energy sellers have the fuel credit carried by different tokens. Money can be hold in a normal banking account, or financial institution account. Since the Blockchain technology inception, solutions to make cryptocurrency alternative payment are getting traction.

Fuel unit price

Fuel buyers and sellers can set a fuel price to exchange fiat currency with fuel credit. Automated deal match is done according to market list ranking in both sellers and buyers. For example, two fuel sellers in the market might ask for same fuel unit price. The one with higher list ranking will have priority to accept matching bid. Similarly, two or more fuel buyers will be in a queue to buy the cheapest asking price fuel according to market ranking. As token owner, if your token carries more fiat attachment, you are more likely to lease tokens out than a token of less fiat density. BEAN will

use this trading system to eliminate the middle men. Such decentralized worldwide fuel trading will be the most transparent and liquid energy network. With Blockchain technology, energy users can collect standard fuel blocks at a service station, or a grocery store. If possible, driverless truck, VTOL drones can deliver fuel as well.

Energy type

The main goal for this ICO is to create worldwide trading of renewable energy. Due to certain energy sources might be long term, or short term in its existence, priority in this business is to establish information verification mechanism when energy source is declared. Liquid fuel, heat sink, electricity, CO2, solid fuel, gaseous fuel and many other energy sources are all consider energy. Energy consumption in this trading platform aims for neutral emission energy cycles. Fossil energy can also traded in this market, as long as emission of CO2 must go through at least ONCE in energy storage. Renewable energy fuel can either emit CO2 back to the atmosphere or sell CO2 as medium to store energy in methane production.

Heat engine capacity

When BETE is commercialized, heat engine ownership, origin of manufacturers, models, year of making etc., can be attached to a token. Why is it necessary? Here is the energy trading scenario BETE might be able to participate. For example, Mr. Smith installs a BETE based product in his home. In a sunny day, his rooftop PV works fine to store the solar energy in a hot water tank. Mr. Smith is on holiday. No one will use the hot water. So the energy trading will kick in when the grid needs electricity because someone needs air-conditioning at night. The trading system will kick in when the electricity price satisfy Mr. Smith's preset sell order. BETE will use the heat energy in the hot water tank to supply electricity. It will make some money for Mr. Smith. This trading can be done peer-to-peer if a community creates its own electricity grid.

Buyer ID

Cryptocurrency can be completely identity concealed. Such ID might be linked to a personal wallet. In each trade, access to real buyer ID can be optional. Buying fuel with borrowed tokens will not qualify the loyalty payment scheme as offered to the token owners.

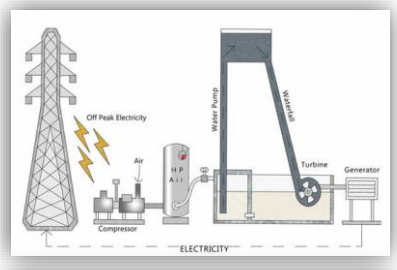
Seller ID

Similar to buyer ID, this attribute can be optional. Selling fuel with borrowed tokens will not qualify the loyalty payment scheme as offered to the token owners.

Trade deal range

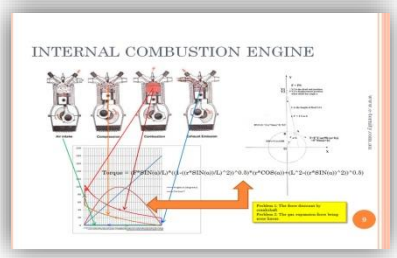
This attribute let the owner to set up a minimum and maximum trade quantity when tokens are in the market for lease. When tokens are in the possession of buyers or sellers, the range tells the system what order will be accepted. For example, if the order is based on fuel blocks of certain standard, the range of 5000 to 100,000 indicates the quantities not smaller 5000, and not bigger than 100,000. With reserved tokens from BEAN, it will provide both fuel buying and selling in both sides to provide liquidity.

Roadmap of BETE innovation



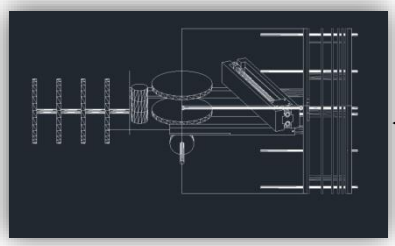
2009: Initial concept of off peak electricity energy storage

Using off peak electricity to run compressor and store energy in the compressed air, which will push water into high altitude and fall back to rotate hydro turbine. The turbine will run a generator to feed electricity back to the grid.
Result: very inefficient and not commercial viable.
Reason: Many discovery of energy related problems.



2010: ICE energy study

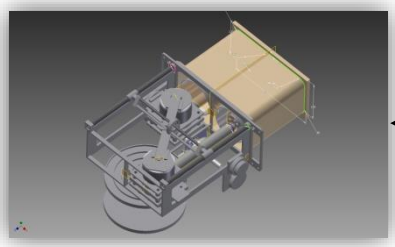
Investigation on heat engine energy efficiency based on gas expansion and compression characteristic in physics, and mechanical energy distribution in a crankshaft
Result: very inefficient and need new solution.
Reason: thermal energy is none constant, crankshaft energy distribution inadequate.



2011: BETE CAD design project

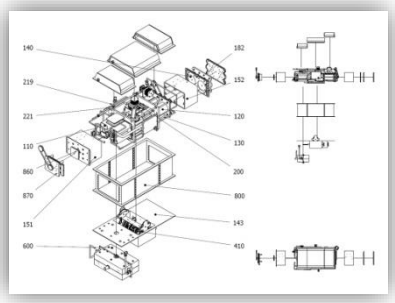
BEAN started the first project to design a reciprocation heat engine with a lever to modulate thermal energy force. There was no crankshaft in this engine.

Result: very primitive in concept and needed fine tune.
Reason: Many discovery of energy related problems.



2014: BETE CAD design project

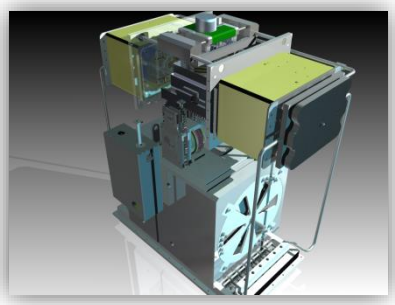
BEAN started the new project to improve BETE. A epicyclic gear solution is added onto the lever to make the force modulation tangent at any position of piston reciprocation.
Result: Better result.
Reason: More discovery of energy related problems.



2015: BETE patent filing

BEAN lodged patent application with more improvement on the design.

Result: integration of compressor and expander with more mechanical solutions to address energy efficiency and emission/pollution reduction.



2016: Product design

BEAN worked on engine-generator-AC project.

Result: A product design aimed to introduce multi functions product for small business and private to reduce electricity cost.

Game of energy future

Concept

Part of ICO funding will help BEAN to develop an energy trading system. This system starts with a game. This game will use smart phone to collect data of game participants. The game will use GPS to decide if the players are in a mode to consume energy or not. Game backend will collect the data to calculate the potential energy consumption. As the game goes, players can lodge finding of fuel deposit, which allows cultivation for own usage or to be sold to other game player. The fuel will be approved by game moderators. Without renewable fuel, game players will have to use finite fossil fuel to sustain the energy use. Backend database will use known energy efficiency to simulate the usage of energy. Along the game progress, the system will provide much efficient solutions to reduce energy consumption and reduce emission and pollution.

It is possible to simulate energy consumption based on smart phone apps.

Why?

How the game and the future energy trading ….. Following rules are:

You can use your finite supply of coal block daily, with penalty rate of FIAT.

Use efficient engine to limit your energy consumption

Going off grid, or investment into a grid to make income stream

You can use smart phone and photos, GPS to claim fuel supply area unless other gamers claims the area already. You need to ship the fuel out of the area with your own transport or collaborate with other gamers.

Your energy consumption is based on home and transport. Game will develop algorithm to test your transport in a private car or public transport. Fuel consumption is deducted from your fuel stock.

Gabage fuel theft to find renewable energy. Only the recycles bins are accepted. Time and GPS will decide who will claim the theft over the other.

You will use energy if your smart phone indicated you are at home. The energy consumption at higher rate.

You can invest in high efficiency engine to reduce your penalty. You can use renewable fuel to reduce your penalty. You can buy infrastructure to charge gamers using your infrastructure. Such as wind farm, living off grid.

We will set up formulat to decise if the gamers is actually live locally or going oversea in ships or aircrafts. Energy consumption will apply. You will use Fiat to pay, or to use your fuel stock to offset.

Each month the score board will show the top player in trading and result. Award of new tokens based on scores.

Following ideas:

You balance of fuel. Ratio of coal verse renewable

Your fiat balance.