WhitePaper

PIEZO CHAIN

2018. 7. 20 Enactment

PIEZOCHAIN

Index

1. Summary

Today, due to the development of advanced technology, human life has been enriched, but the energy consumption to sustain it has been continuously increasing. Especially, the increase of electricity consumption around the world is a threat to environmental pollution and human survival. In order to overcome these limitations, we have made various efforts, and the world is now paying attention to 'electric energy'. In the case of electric energy (hydropower, thermal power, nuclear power and solar heat) currently being utilized, it is a fact that there is a limit to be a practical alternative means due to problems of resource depletion, risk, environmental change and low power generation efficiency. On the other hand, nature's most powerful renewable energy is lightning. Lightning does not have a production cost, and production is enormous, and mankind has made various efforts to convert lightning into electricity that can be used in everyday life. However, commercializing technologies that can control strong voltages and store them for use at desired times I had to feel the limit. But is not there a way?

Now, after many researches and challenges, we are introducing Shock Wave Power device technology which is in the commercialization stage as an alternative. Pajeon element technology has already been recognized in the US and the global patent registration is now completed. Our Piezochain team will produce and sell SWP (Shock Wave Power) device, We want to promote business that supplies to school. To this end, we will develop SWP generators and apply them to various fields by applying ESS technology. In particular, the development of SWP generators that can overcome the burden of electric energy consumption due to virtual money mining is a top priority, and it will reduce the risk of resource depletion and environmental pollution by producing environmentally friendly electric energy, To build a power trading platform and decentralize electrical energy through the block chain.

The first is to develop an electric energy generator using Shock Wave Power technology. As mentioned above, 'Shock Wave Power Technology' has already been awarded the global patent in recognition of its technology, and a project for the production of small scale generator is already underway.
The primary goal of the project is to produce generators for cryptography mining. Although there is a growing worldwide interest in cryptography, there is an enormous amount of electricity needed for mining, and miners are paying expensive electricity bills for cryptography. However, in most regulatory countries, it is estimated that they have a negative impact on the industry as a whole. Therefore, it would be meaningful to produce small generator for mining and test it and extend it to the whole industry.

Second, we will build and operate a blockchain exchange platform for products with patented 'Shock Wave Power Technology'. The Shock Wave Power device technology is a technology that can not be implemented. As a global patent is already registered, individuals or companies wishing to purchase a patent product for future commercialization are restricted to purchasing through 'Piezochain' based on blockchain. This is to protect investors who have invested in the 'Piezo chain' for technological development and to meet the global demand by keeping the Token price stable by listing on the cryptocurrency exchange through ICO in the future.
To this end, 50,000,000,000 Piezo Chain Tokens based on Etherium ERC20 will be issued, of which 40,000,000 will be distributed through ICO (10 billion sold), private sale, pre-sale and airdrop (30 billion) is. The distribution of the Piezo Chain and ICO are led by the Piezo Chain Foundation, and holders of Piezo Chain Tokens will receive an airdrop according to the Foundation's policy in proportion to their token holdings.

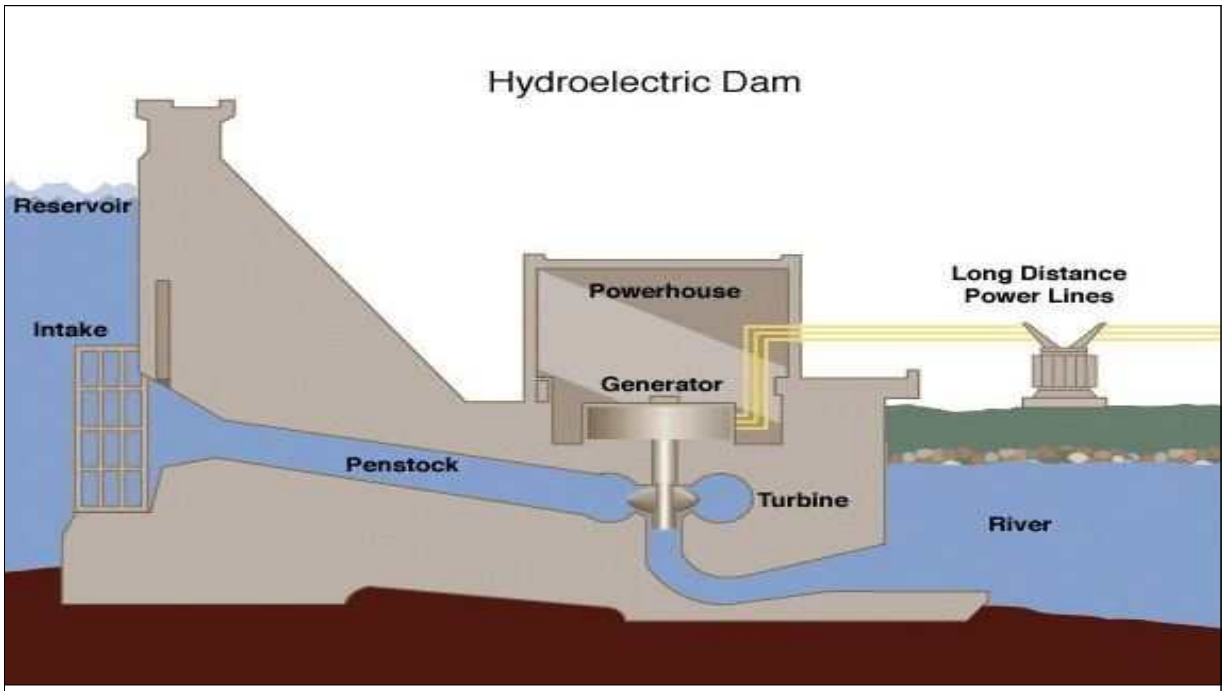
Third, we will develop and operate an electric energy exchange platform. We will integrate information communication and IoT technology with electric energy generators and implement them through applications (apps) so that we can check generator status and electric production in real time. Based on this, we will build a platform by using blockchain technology so that the consumer who needs the producer and electric in the P2P way can exchange the production electric in real time. In addition, I would like to promote the Convention. It will be challenging enough to meet the increasing electric demand worldwide and contribute to the disparity of electric energy supply.

In order to realize what we have already mentioned, we have teamed up and collaborated with experts with outstanding experience and knowledge in technology / product development, patent registration, business strategy / planning, administrative legal work, blockchain algorithm and software development. We will continue to inform you about the activities of our Piezo chain Foundation through SNS and homepage. Piezo chain Foundation will work hard for the day to achieve the goal of decentralization of electric energy by constructing power exchange platform through blockchain technology.

2. Problems of existing electricity production methods

Today, the development of advanced technology has brought the life of mankind to abundance, but the energy consumption to sustain it is steadily increasing. In particular, electric energy is classified as an essential element in the life of modern people. However, due to differences in economic scale and technological power between countries, the inequality of power generation and supply is increasing worldwide. Let's take a look at the types and problems of conventional electric production methods that are the most used in the world all over the world.

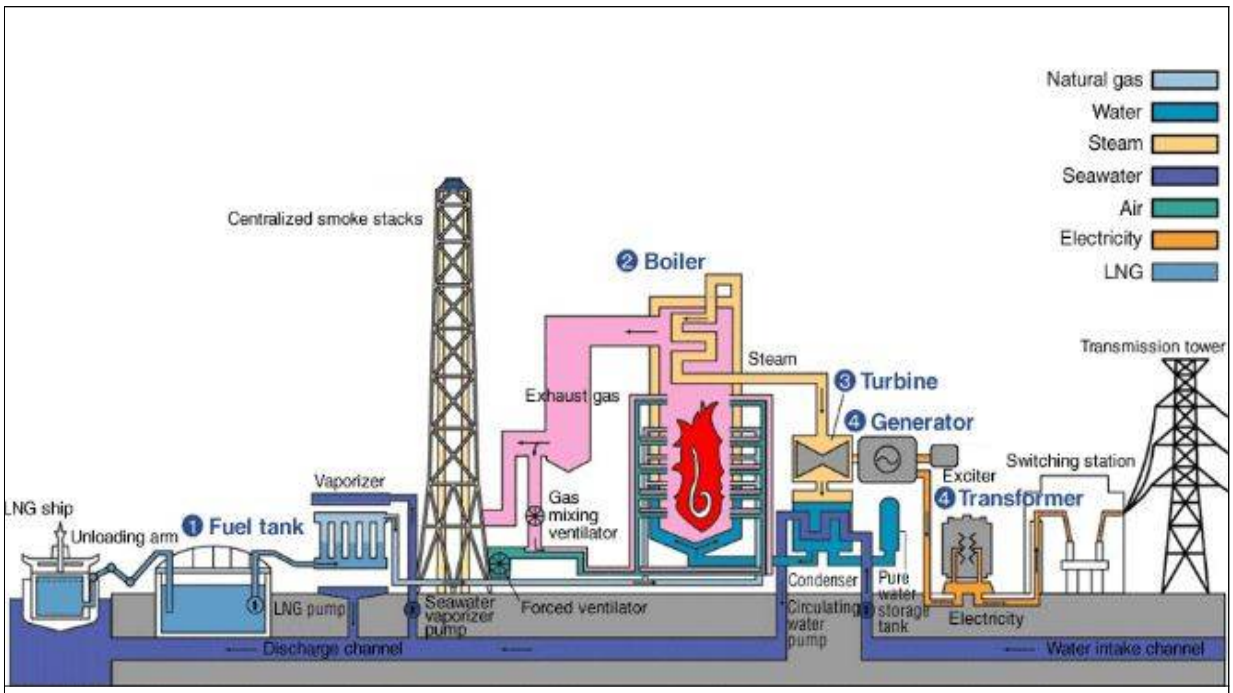
2.1 hydroelectric power generation



explanation of hydroelectric power generation

It is a method to convert electric potential energy of water located at a high place into kinetic energy of a generator turbine and to produce electric using electromagnetic induction phenomenon inside the generator. It is the most widely used power generation method in most countries because it can prevent natural disasters such as flood in construction and can produce stable electric. However, in order to construct a power plant, it is necessary to input enormous amount of financial input, to take risks of environmental damage due to natural damage and construction, and to limit the power generation in areas with low precipitation.

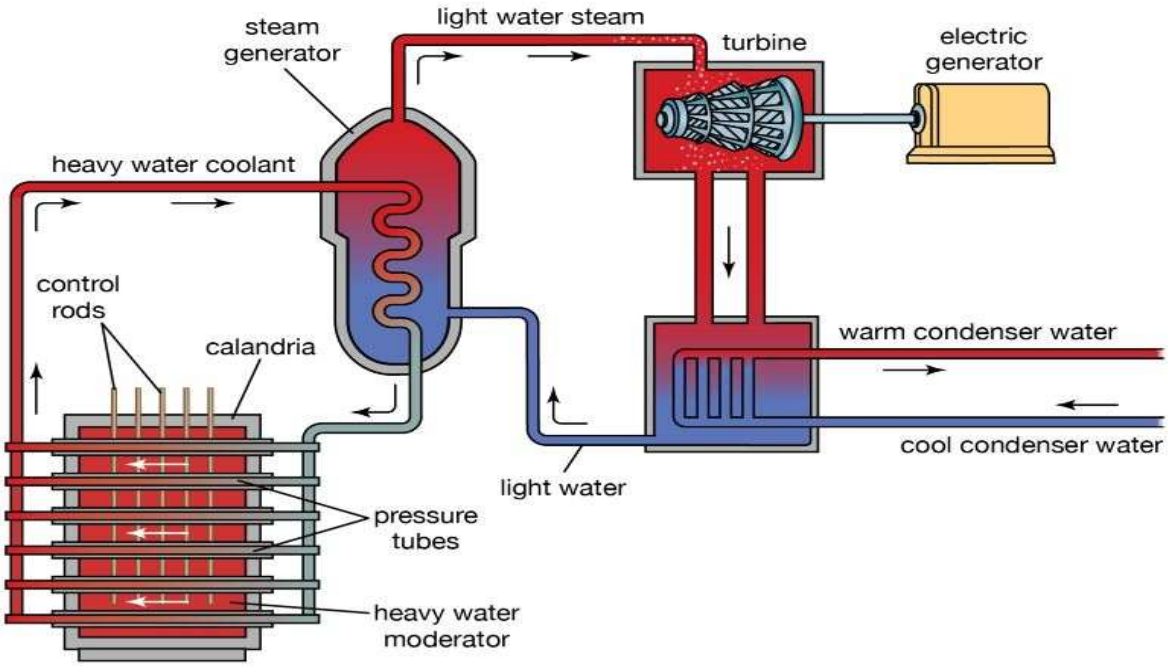
2.2 thermal power plant



explanation of thermal power plant

It is a power generation system that obtains electric energy by rotating a rotor with mechanical energy obtained by burning fuel energy. Compared to hydroelectric power generation, it is the cheapest construction cost, and it is the most widely used next to hydroelectric power generation because it is not affected by climate or environment. However, most of the fuel energy is fossil fuels such as coal and oil, and it is pointed out as a main cause of resource consumption and environmental pollution.

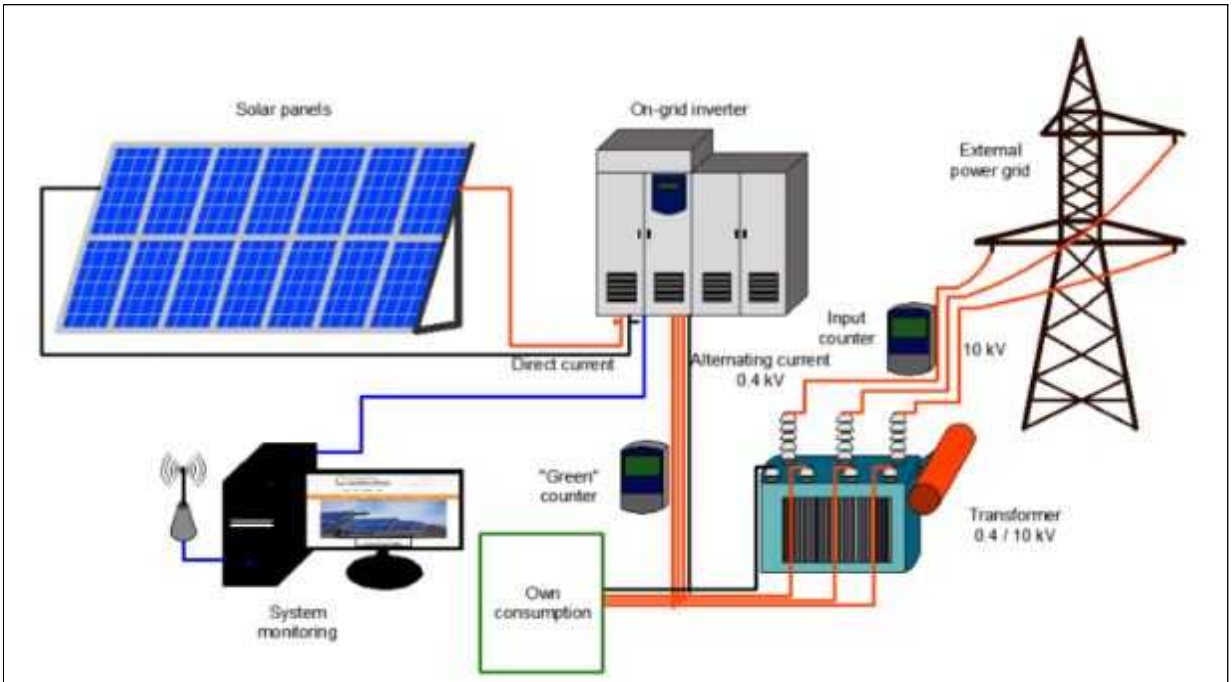
2.3 nuclear power generation



explanation of nuclear power generation

It generates huge heat by using fission and drives the turbine by using that heat. It is also a way to adopt it for stable electric production especially in countries where hydroelectric power generation is limited. However, the construction of the power plant and the stable management of the technology are required and the maintenance cost is required, and most of all, there is a risk factor that can cause fatal damage that threatens the survival of mankind in case of an accident. In addition, it is a development method that has the disadvantage of having to pay huge cost and risk for the safe disposal of nuclear waste after power generation.

2.4 solar power generation



explanation of solar power generation

It absorbs the heat energy that the sun copies and drives the heat engine and generator to produce electric. Compared to conventional thermal power plant and nuclear power generation methods, the risk of resource consumption and environmental pollution is small, but it is sensitive to the factors of climate change such as the sun, It is also a way of having.

3. Solution

Most of the existing electric production methods proposed so far have problems such as resource consumption, environmental pollution, stability and power generation efficiency. So, our Piezochain team think Shock Wave Power device technology can be an alternative. The Shock Wave Power device technology has been registered with the US as a global patent in recognition of its technology and is preparing to commercialize the production of the generator using patent. This will overcome the problems of existing electric production methods and will reduce the risk of resource depletion and environmental pollution by producing environmentally friendly electric energy. In addition, we intend to decentralize electric energy by building a power exchange platform by combining blockchain technology.

3.1 Shock Wave Power Device technology

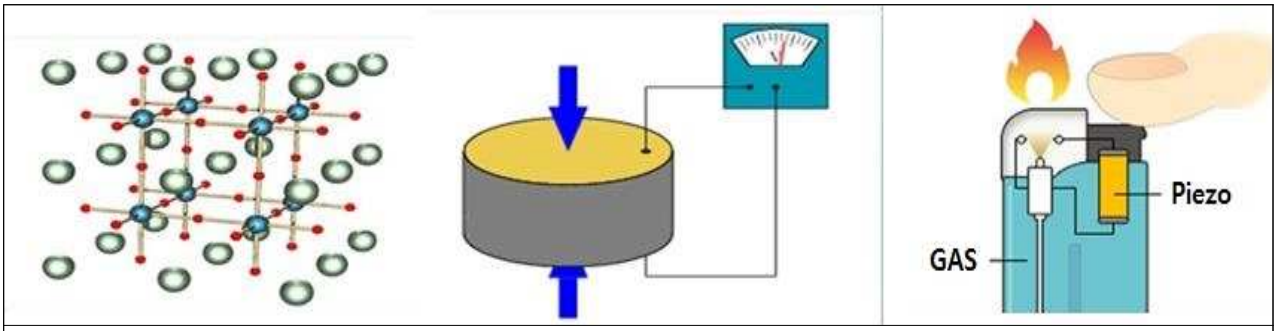
Einstein is recognized as a representative scientist of mankind.
"The future humanity will face the exhaustion of resources and the environmental pollution crisis. It will be necessary to develop electric energy. We must catch lightning discharges. "
As a contemporary scientist with Einstein, the french physicist Curie finds the piezoelectric effect.

■ Piezoelectric effect

- A piezoelectric effect is a phenomenon in which a charge is generated when a force is applied. It is a compound word of 'electricity' which means 'piezo' and electric. That is, by using the pressing force electric.
  This piezoelectric effect was discovered by Pierre Curie and Jacques Curie in 1880
  This is a phenomenon in which a difference in voltage occurs due to pressure, and electricity is generated thereby.

■ Principle of Piezoelectricity

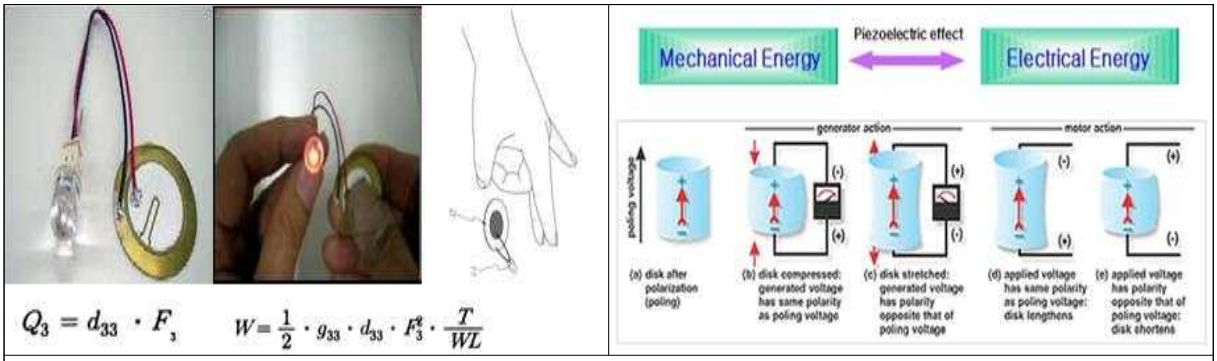
Most materials on Earth are electrically neutral because they have the same amount of positive charge and negative charge. However, when the positive charge and negative charge are shifted from each other, an electric field is formed around the positive charge and the negative charge. This is called an electric dipole. If an external pressure is applied to a substance having such an electric dipole, the state of the molecule or ion changes, and the crystal structure is distorted, causing the electric dipole size to change, thereby changing the electric field around the piezoelectric element. Electricity is connected to the connected electric circuit.



principle of Piezoelectric Effect(압전효과의 원리)

■ Advantages of piezoelectric elements

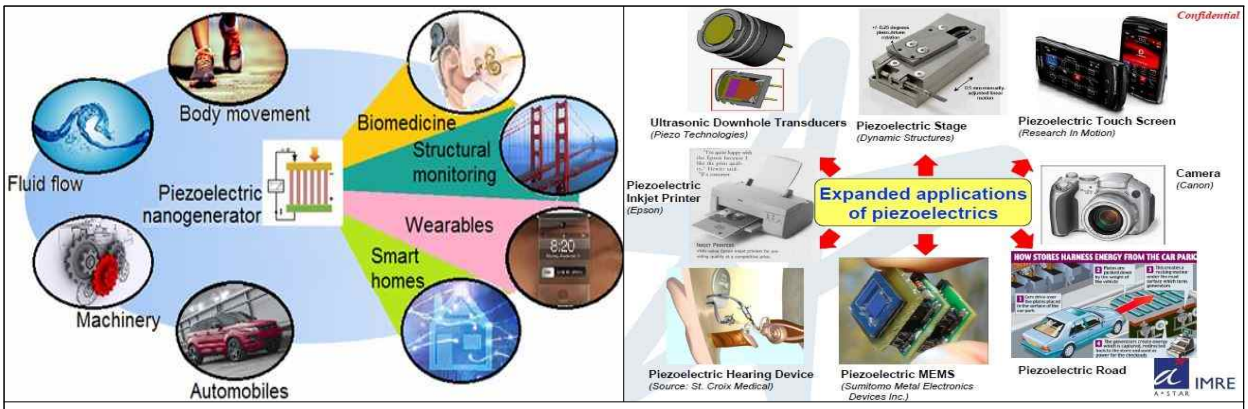
- Small device size
- High production efficiency
- Environmentally friendly
- semi-permanent
- Wide range of applications and applications



merit of Piezoelectric Element(압전소자의 장점)

■ Application field

- Microphones, speakers, ultrasonic detectors / oscillators, crystal oscillators, etc.
- Micro balance, accelerometer, stress meter, igniter, ultrasonic motor, etc.
- Lens drive for zoom / auto focus function of mobile phone camera module
- humidifier, microwave, igniter, TV, computer / smartphone sensor, etc.



Piezoelectric Element Applications

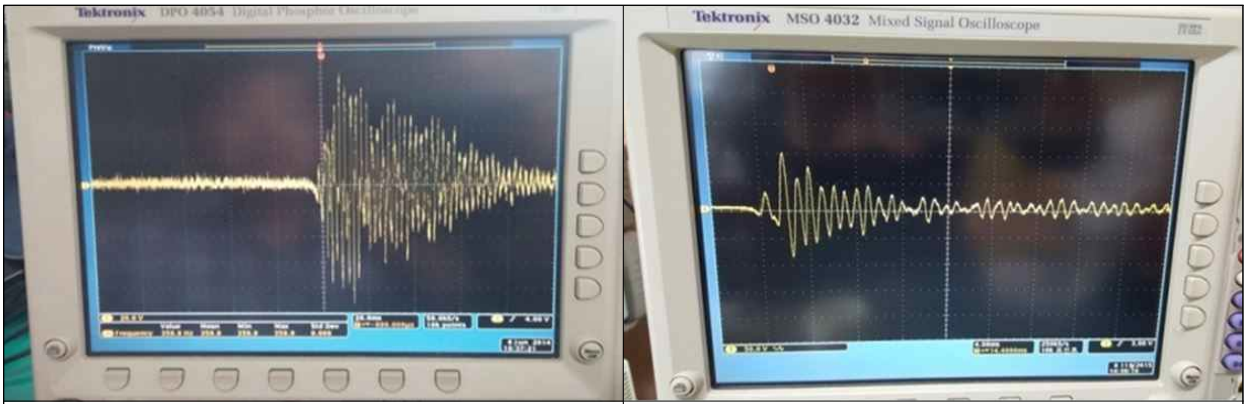
■ **Limitations of conventional piezoelectric devices**

- Limited electromotive force to commercialization
- Piezoelectric element damage when increasing electromotive force
- Limitation of size and durability of piezoelectric elements

3.2 Technical test results & Global patent

The Piezochain team developed the Shock Wave Power technology that overcame the problems of the existing Piezoelectric Element and registered a global patent. We are already developing to commercialize an electric energy generator using patent technology.

※ New development Piezoelectric device measurement result(Oscilloscope measurement)



Conventional piezoelectric elements (No useful electromotive force)	New development piezoelectric element (Generating useful electromotive force)

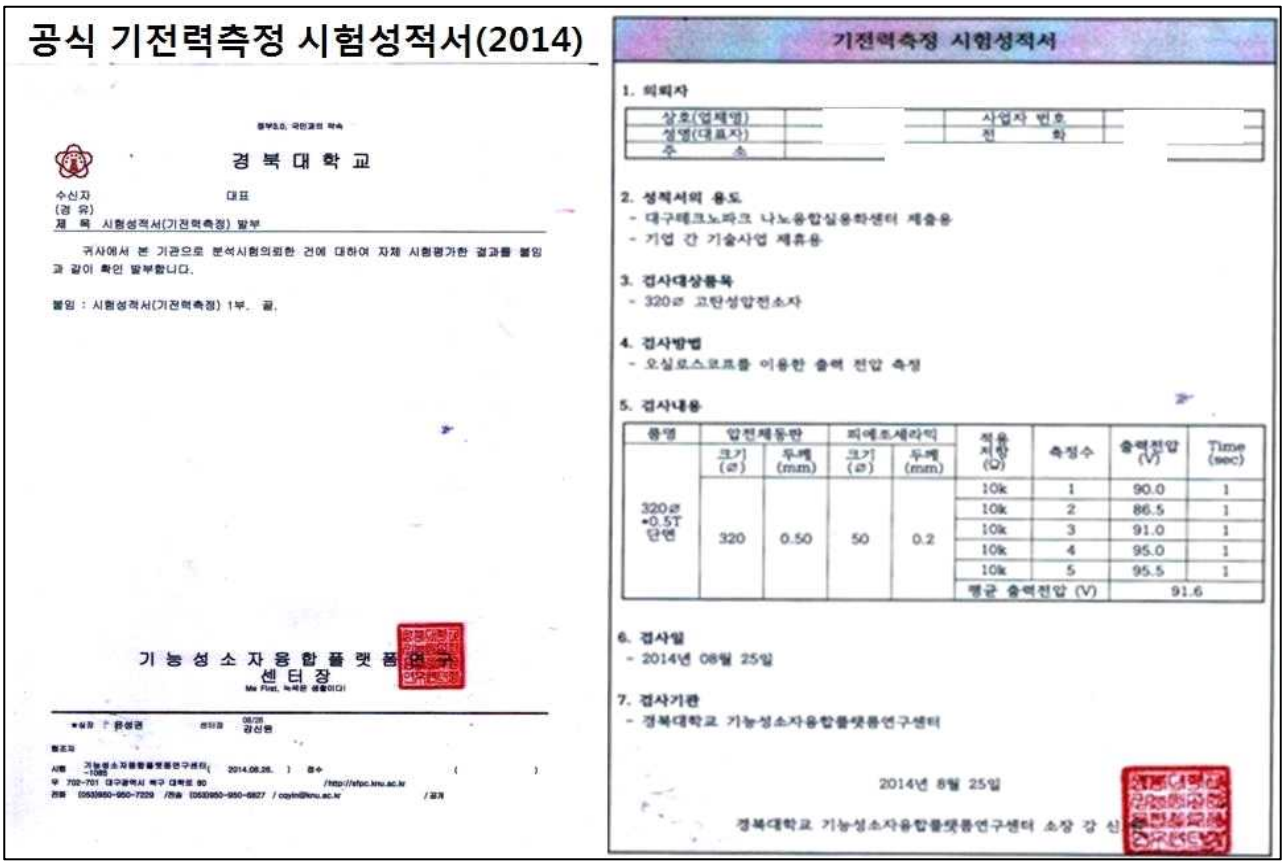
■ Result of conventional piezoelectric device measurement
(Gumi Electronics Information Technology Institute)

Product	Piezoelectric copper plate		PZT		Number of measurements	Voltage (V)	electric current (mA)		time (us)	frequency (MF)	Suitable invitation resistance (Ω)
	size (ϕ)	thickness (㎜)	size (ϕ)	thickness (㎜)			10kΩ	Resistance not applicable			
	50	0.2	24	0.2	1	0.8	-	0.6	240	10	-
					2	1.0	-	0.8	255		
					3	1.1	-	0.9	270		

■ New development piezoelectric device measurement result
(Gumi Electronics Information Technology Institute)

Product	Piezoelectric copper plate		PZT		Number of measurements	Resistance 10kΩ Applied measurement(V)	time (us)	frequency (MF)	Suitable invitation resistance (Ω)
	size (ϕ)	thickness (㎜)	size (ϕ)	thickness (㎜)					
	30	0.1	10	0.1	1	37.0	370	83	10k
					2	35.0	340	76	10k
					3	36.0	358	78	10k
	60	0.15	20	0.1	1	80.0	770	190	10k
					2	85.0	860	225	10k
					3	83.0	810	215	10k
	130	0.25	50	0.2	1	158.0	1800	374	10k
					2	149.0	1760	360	10k
					3	163.0	1995	386	10k
	250	0.40	60	0.22	1	950.0	3500	720	12k
					2	1080.0	4080	800	12k
					3	1050.0	3865	760	12k

■ EMF measurement test report(Kyungpook National University)



공식 기전력측정 시험성적서(2014)

경 북 대 학 교

수신자 대표
(경 유)
제 목 시험성적서(기전력측정) 발부

귀사에서 본 기관으로 분석시험의뢰한 건에 대하여 자체 시험평가한 결과를 붙임과 같이 확인 발부합니다.

붙임 : 시험성적서(기전력측정) 1부. 끝.

기능성소자융합플랫폼연구센터장

기전력측정 시험성적서

1. 의뢰자

상호(업체명)		사업자 번호	
성명(대표자)		전 화	
주 소			

2. 성적서의 용도
- 대구테크노파크 나노융합실용화센터 제출용
- 기업 간 기술사업 제휴용

3. 검사대상품목
- 320㎠ 고탄성압전소자

4. 검사방법
- 오실로스코프를 이용한 출력 전압 측정

5. 검사내용

품명	압전세동판		피에조세라믹		적용저항(Ω)	측정수	출력전압(V)	Time(sec)
	크기(㎠)	두께(mm)	크기(㎠)	두께(mm)				
320㎠ •0.5T 단면	320	0.50	50	0.2	10k	1	90.0	1
					10k	2	86.5	1
					10k	3	91.0	1
					10k	4	95.0	1
					10k	5	95.5	1
					평균 출력전압 (V)		91.6	

6. 검사일
- 2014년 08월 25일

7. 검사기관
- 경북대학교 기능성소자융합플랫폼연구센터

2014년 8월 25일

경북대학교 기능성소자융합플랫폼연구센터 소장 강 신

■ Intellectual Property Rights

No.	구 분	내 용 및 명 칭	일 자	등 록 번 호	비고
1	미국특허등록	PIEZOELECTRIC ELEMENT FOR POWER GENERATION AND POWER GENERATION DEVICE USING SAME	2018년 1월 30일	US 9,882,512 B2	등록
2	중국특허출원	PIEZOELECTRIC ELEMENT FOR POWER GENERATION AND POWER GENERATION DEVICE USING SAME [发电用压电器件及基于该压电器件工作的发电装置]	2015년 3월 25일	PCT/ KR 2013/008502	출원
3	국제특허PCT	발전용 압전소자 및 이를 이용한 발전장치	2013년 9월 24일	PCT/KR2013/008502	출원
4	특 허	발전용 압전소자 및 이를 이용한 발전장치	2014년 7월 28일	특허 제 10-1426145호	등록
5	특 허	압전효과를 이용한 발전장치	2012년 9월 25일	10-2012-0106247	출원
6	특 허	보석류를 식입한 발광장신구	2012년 4월 13일	특허 제 10-1138439호	등록
7	인 증	벤처기업인증	2012년 2월 1일	제 20120100516호	등록
8	특 허	소 전력 발전용 발전 압전소자	2012년 3월 27일	특허 제 10-1132934호	등록

■ US Patents

The United States of America

The Director of the United States Patent and Trademark Office

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

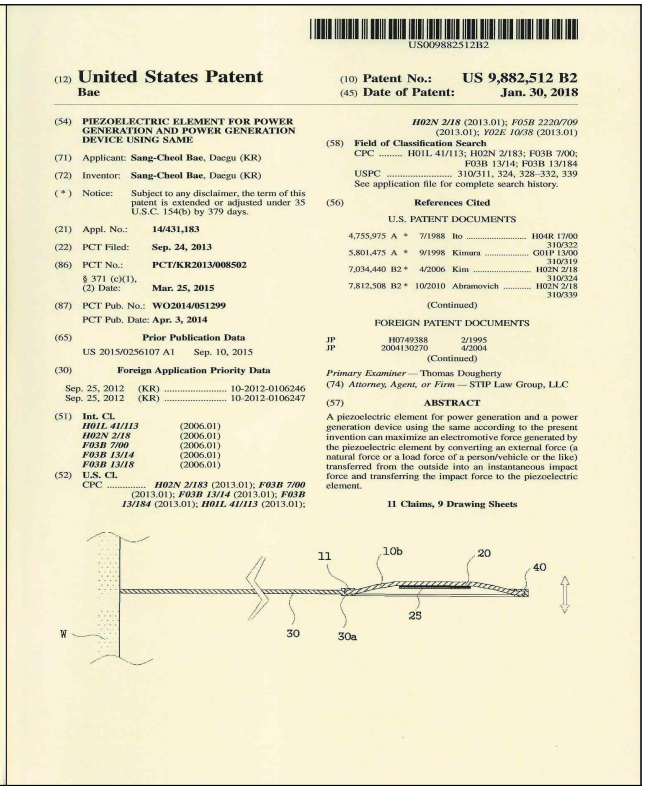
Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, or importing into the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(2) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

Joseph Matal

Performing the Functions and Duties of the Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office



US009882512B2

(12) **United States Patent**
Bae

(10) **Patent No.: US 9,882,512 B2**
(45) **Date of Patent: Jan. 30, 2018**

(54) **PIEZOELECTRIC ELEMENT FOR POWER GENERATION AND POWER GENERATION DEVICE USING SAME**

(71) Applicant: **Sang-Cheol Bae**, Daegu (KR)

(72) Inventor: **Sang-Cheol Bae**, Daegu (KR)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 379 days.

(21) Appl. No.: **14/431,183**

(22) PCT Filed: **Sep. 24, 2013**

(86) PCT No.: **PCT/KR2013/008502**
§ 371 (c)(1),
(2) Date: **Mar. 25, 2015**

(87) PCT Pub. No.: **WO2014/051299**
PCT Pub. Date: **Apr. 3, 2014**

(65) **Prior Publication Data**
US 2015/0256107 A1 Sep. 10, 2015

(30) **Foreign Application Priority Data**
Sep. 25, 2012 (KR) 10-2012-0106246
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(51) **Int. Cl.**
H01L 41/113 (2006.01)
H02N 2/18 (2006.01)
F03B 7/00 (2006.01)
F03B 13/14 (2006.01)
F03B 13/18 (2006.01)

(52) **U.S. Cl.**
CPC ***H02N 2/183*** (2013.01); ***F03B 7/00*** (2013.01); ***F03B 13/14*** (2013.01); ***F03B 13/184*** (2013.01); ***H01L 41/113*** (2013.01); ***H02N 2/18*** (2013.01); *F05B 2220/709* (2013.01); *Y02E 10/38* (2013.01)

(58) **Field of Classification Search**
CPC H01L 41/113; H02N 2/183; F03B 7/00; F03B 13/14; F03B 13/184
USPC 310/311, 324, 328–332, 339
See application file for complete search history.

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(Continued)

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(Continued)

Primary Examiner — Thomas Dougherty
(74) *Attorney, Agent, or Firm* — STIP Law Group, LLC

(57) **ABSTRACT**

A piezoelectric element for power generation and a power generation device using the same according to the present invention can maximize an electromotive force generated by the piezoelectric element by converting an external force (a natural force or a load force of a person/vehicle or the like) transferred from the outside into an instantaneous impact force and transferring the impact force to the piezoelectric element.

11 Claims, 9 Drawing Sheets

■ Chian Patent (Proceeding)

国际申请进入中国国家阶段声明（发明）

国际申请进入中国国家阶段声明（发明）

■ Korean Patent

특 허 증
CERTIFICATE OF PATENT

특 허 제 10-1426145 호 (PATENT NUMBER)
출원번호 (APPLICATION NUMBER) 제 2012-0106246 호
출 원 일 (FILING DATE:YY/MM/DD) 2012년 09월 25일
등 록 일 (REGISTRATION DATE:YY/MM/DD) 2014년 07월 28일

발명의명칭 (TITLE OF THE INVENTION)
발전용 압전소자 및 이를 이용한 발전장치

특허권자 (PATENTEE)

발명자 (INVENTOR)

위의 발명은 「특허법」에 따라 특허등록원부에 등록되었음을 증명합니다.
(THIS IS TO CERTIFY THAT THE PATENT IS REGISTERED ON THE REGISTER OF THE KOREAN INTELLECTUAL PROPERTY OFFICE.)

2014년 07월 28일

특허청장 김 영 [illegible]
COMMISSIONER, THE KOREAN INTELLECTUAL PROPERTY OFFICE

연차등록료는 2017년부터 매년 07월 28일까지 납부하여야 하며, 등록원부로 권리관계를 확인바랍니다.

특 허 증
CERTIFICATE OF PATENT

특 허 제 10-1132934 호 (PATENT NUMBER)
출원번호 (APPLICATION NUMBER) 제 2011-0013388 호
출 원 일 (FILING DATE:YY/MM/DD) 2011년 02월 15일
등 록 일 (REGISTRATION DATE:YY/MM/DD) 2012년 03월 27일

발명의명칭 (TITLE OF THE INVENTION)
소전력발전용 발전압전소자

특허권자 (PATENTEE)

발명자 (INVENTOR)

위의 발명은 「특허법」에 의하여 특허등록원부에 등록되었음을 증명합니다.
(THIS IS TO CERTIFY THAT THE PATENT IS REGISTERED ON THE REGISTER OF THE KOREAN INTELLECTUAL PROPERTY OFFICE.)

2012년 03월 27일

특 허 청 장
COMMISSIONER, THE KOREAN INTELLECTUAL PROPERTY OFFICE

연차등록료 납부일은 설정등록일 이후 4년차부터 매년 03월 27일까지이며 등록원부로 권리관계를 확인바랍니다.

■ Korean Patent

특 허 증
CERTIFICATE OF PATENT

특 허 제 10-1138439 호 (PATENT NUMBER)
출원번호 (APPLICATION NUMBER) 제 2010-0086666 호
출 원 일 (FILING DATE:YY/MM/DD) 2010년 09월 03일
등 록 일 (REGISTRATION DATE:YY/MM/DD) 2012년 04월 13일

발명의명칭 (TITLE OF THE INVENTION)
보석류를 식입한 발광장신구

특허권자 (PATENTEE)

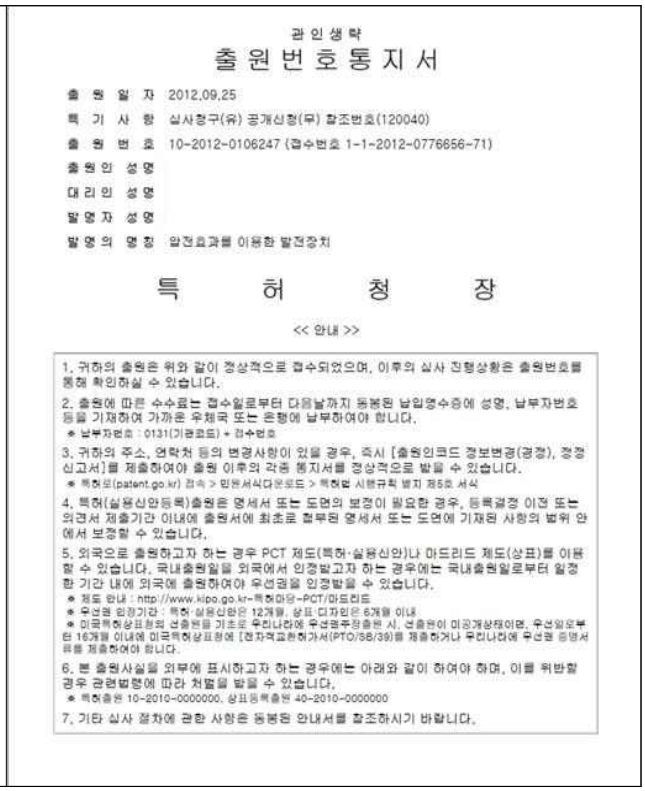
발명자 (INVENTOR)

위의 발명은 「특허법」에 의하여 특허등록원부에 등록되었음을 증명합니다.
(THIS IS TO CERTIFY THAT THE PATENT IS REGISTERED ON THE REGISTER OF THE KOREAN INTELLECTUAL PROPERTY OFFICE.)

2012년 04월 13일

특 허 청 장
COMMISSIONER, THE KOREAN INTELLECTUAL PROPERTY OFFICE

연차등록료 납부일은 설정등록일 이후 4년차부터 매년 04월 13일까지이며 등록원부로 권리관계를 확인바랍니다.



관인생략

출원번호통지서

출 원 일 자 2012.09.25
특 기 사 항 심사청구(유) 공개신청(무) 참조번호(120040)
출 원 번 호 10-2012-0106247 (접수번호 1-1-2012-0776656-71)
출원인 성명
대리인 성명
발명자 성명
발명의 명칭 압전효과를 이용한 발전장치

특 허 청 장

<< 안내 >>

1. 귀하의 출원은 위와 같이 정상적으로 접수되었으며, 이후의 심사 진행상황은 출원번호를 통해 확인하실 수 있습니다.
2. 출원에 따른 수수료는 접수일로부터 다음날까지 동봉된 납입영수증에 성명, 납부자번호 등을 기재하여 가까운 우체국 또는 은행에 납부하여야 합니다.
* 납부자번호 : 0131(기관코드) + 접수번호
3. 귀하의 주소, 연락처 등의 변경사항이 있을 경우, 즉시 [출원인코드 정보변경(경정), 정정신고서]를 제출하여야 출원 이후의 각종 통지서를 정상적으로 받을 수 있습니다.
* 특허로(patent.go.kr) 접속 > 민원서식다운로드 > 특허법 시행규칙 별지 제5호 서식
4. 특허(실용신안등록)출원은 명세서 또는 도면의 보정이 필요한 경우, 등록결정 이전 또는 의견서 제출기간 이내에 출원서에 최초로 첨부된 명세서 또는 도면에 기재된 사항의 범위 안에서 보정할 수 있습니다.
5. 외국으로 출원하고자 하는 경우 PCT 제도(특허·실용신안)나 마드리드 제도(상표)를 이용할 수 있습니다. 국내출원일을 외국에서 인정받고자 하는 경우에는 국내출원일로부터 일정한 기간 내에 외국에 출원하여야 우선권을 인정받을 수 있습니다.
* 제도 안내 : http://www.kipo.go.kr~특허마당~PCT/마드리드
* 우선권 인정기간 : 특허 실용신안은 12개월, 상표 디자인은 6개월 이내
* 이국특허상표청의 선출원을 기초로 우리나라에 우선권주장출원 시, 선출원이 미공개상태이면, 우선일로부터 16개월 이내에 이국특허상표청에 [전자적교환허가서(PTO/SB/39)]를 제출하거나 우리나라에 우선권 증명서류를 제출하여야 합니다.
6. 본 출원사실을 외부에 표시하고자 하는 경우에는 아래와 같이 하여야 하며, 이를 위반할 경우 관련법령에 따라 처벌을 받을 수 있습니다.
* 특허출원 10-2010-0000000, 상표등록출원 40-2010-0000000
7. 기타 심사 절차에 관한 사항은 동봉된 안내서를 참조하시기 바랍니다.

■ Korean Patent(PCT)

PO13-0001

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PCT 출원서

출력(전자적 형태가 원본)

0	수리관청 전용	
0-1	국제출원번호	
0-2	국제출원일자	
0-3	수리관청 명칭 및 "PCT 국제출원"	

0-4	서식 **PCT/RO/101 - PCT 출원서**	
0-4-1	우측에 기재된 바와 같이 작성되었다.	**PCT-SAFE** **버전 3.51.059.235 MT/FOP 20130701/0.20.5.21**
0-5	**신청** 아래 서명인은 본 국제출원서가 특허협력조약에 의해 처리될 것을 청구합니다.	
0-6	**출원인이 지정한 수리관청**	**대한민국 특허청 (RO/KR)**
0-7	**출원인 또는 대리인의 서류참조기호**	**PO13-0001**
I	**발명의 명칭**	**발전용 압전소자 및 이를 이용한 발전장치**
II	**출원인**	
II-1	이 사람은	**출원인 겸 발명자 (applicant and inventor)**
II-2	우측 지정국에 관한 출원인	**모든 지정국 (all designated States)**
II-4ko	성명	
II-4en	Name (LAST, First):	
II-5ko	주소	
II-5en	Address:	**Republic of Korea**
II-6	국적	**대한민국 KR**
II-7	거주국	**대한민국 KR**
II-8	전화번호	**82**
II-9	팩스번호	**82**
II-10	이메일 주소	
II-10(a)	이메일 사용동의 수리관청, 국제조사기관, 국제사무국, 국제예비심사기관이 필요 시 이 이메일 주소를 사용하여 이 국제출원과 관련하여 발행된 통지서를 송부할 것에 동의한다.	**서면 통지서에 앞서 선람용 사본 송부**
II-11	출원인 코드	**4-2003-006428-1**

PO13-0001

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PCT 출원서

출력(전자적 형태가 원본)

IV-1	**대리인 또는 대표자** 이곳에 기재된 자는 관할 국제기관에 대하여 우측에 표시된 특정으로 출원인을 대리하는 것으로 선임되었다.	**대리인**
IV-1-1ko	성명	
IV-1-1en	Name (LAST, First):	
IV-1-2ko	주소	**대한민국**
IV-1-2en	Address:	**Republic of Korea**
IV-1-3	전화번호	**82-**
IV-1-4	팩스번호	**82-**
IV-1-5	이메일 주소	
IV-1-5(a)	이메일 사용동의 수리관청, 국제조사기관, 국제사무국, 국제예비심사기관이 필요 시 이 이메일 주소를 사용하여 이 국제출원과 관련하여 발행된 통지서를 송부할 것에 동의한다.	**서면 통지서에 앞서 선람용 사본 송부**
IV-1-6	대리인 코드	**9-2007-001004-8**
V	**지정국**	
V-1	**본 출원서의 제출로, 규칙 4.9(a)에 따라 부여될 수 있는 모든 종류의 권리 보호를 위하여, 그리고 해당하는 경우 지역특허 및 국내특허 모두를 위하여 상세 국제출원당에 PCT에 기속되는 모든 체약국이 지정된다.**	
V-2	**V-2항은 출원시 제출시 또는 규칙 26의2.1에 의해 그 이후 출원서 제6기재란에 위 특정 하의 체약국의 국내 선출원에 대한 우선권주장이 포함되어 있을 경우 당해 체약국의 국내법에 의해 해당 국내 선출원의 효력이 상실되는 것을 방지하기 위한 목적으로 당해 체약국의 지정을 제외하는 제외란 사용될 수 있다 (지정 제외서 이외 취소 불가능).**	**KR**
VI-1	**선국내출원에 대한 우선권 주장**	
VI-1-1	출원일	**2012년 09월 25일 (25.09.2012)**
VI-1-2	출원번호	**10-2012-0106246**
VI-1-3	국가	**KR**
VI-2	**선국내출원에 대한 우선권 주장**	
VI-2-1	출원일	**2012년 09월 25일 (25.09.2012)**
VI-2-2	출원번호	**10-2012-0106247**
VI-2-3	국가	**KR**
VI-3	**우선권서류 신청**	
	우선권주장에 대하여 위에 명시된 선출원의 인증등본을 준비하여 국제사무국에 송부하여줄 것을 신청한다.	**VI-1** **VI-2**

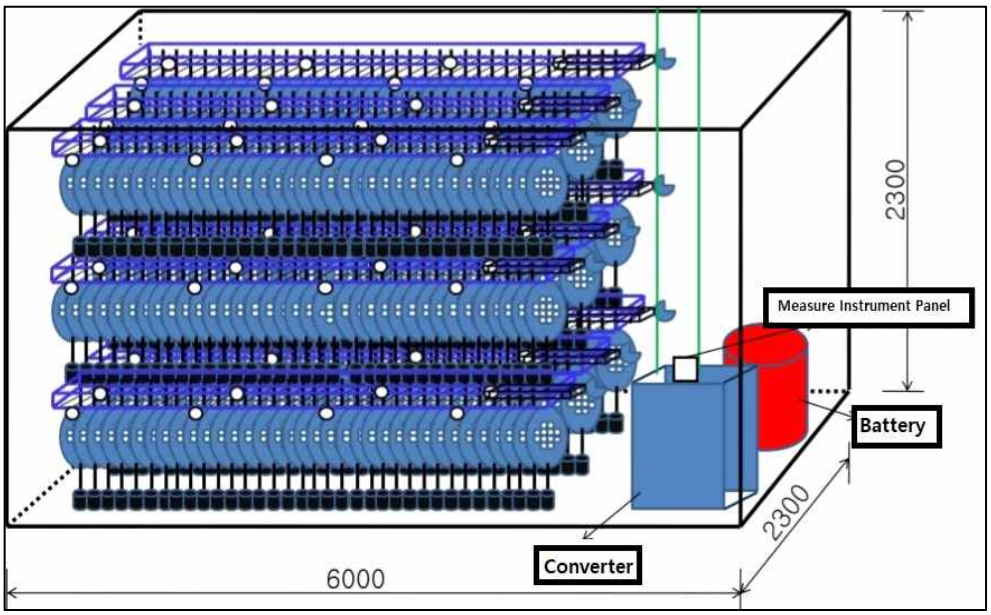
3.3 Electric Energy Generator Development

Our Piezochain team has already started development to commercialize 3.1 and 3.2 technologies and global patents as generators, and the schedule and plans will be going along with the roadmap.

■ **Mining Electric Energy Generator**

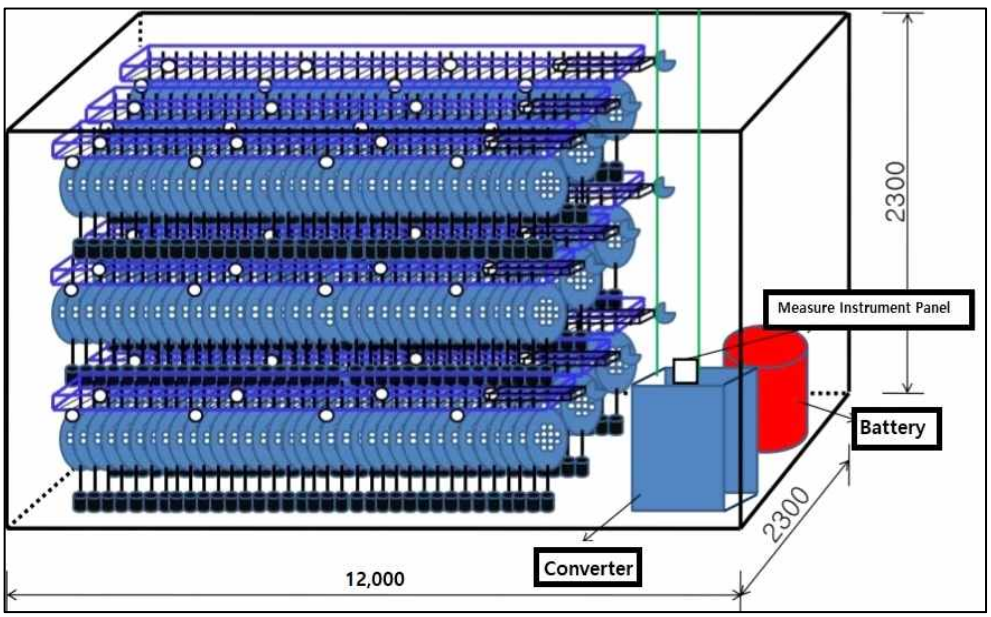
The primary goal of the project is to produce a generator for cryptocurrency mining. The global interest in cryptocurrency mining is on the rise, but mining requires an enormous amount of electric power, and miners are paying for expensive electric charges for cryptocurrency mining. In addition, in most regulatory countries, it is regulated because it is estimated that the waste of electricity is having a negative effect on the industry as a whole. With this in mind, our Piezochain team will develop and test miniature generators for mining with top priority, and if we analyze and improve the problems and replace the power consumption for mining, it will be a meaningful approach. is. It is also our primary goal to commercialize it as a generator for small power supplies after testing.

■ **Middle Electric Energy Generator**



mining electric The second goal is to produce electric generators that can replace the electric power supply of small enterprises or factories by increasing electric production and stability based on energy generators. I will do.

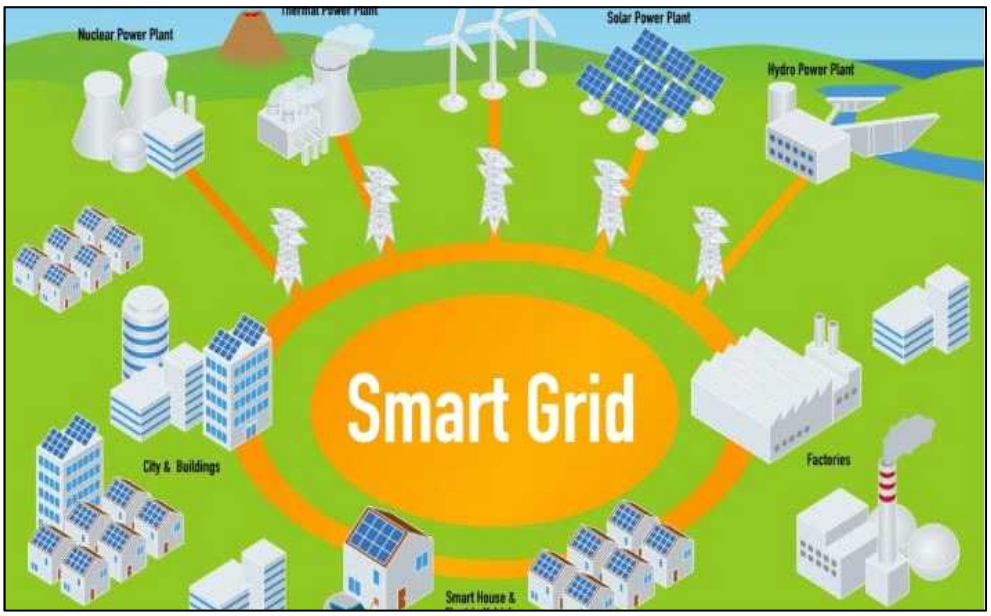
■ **Large Electric Energy Generator**



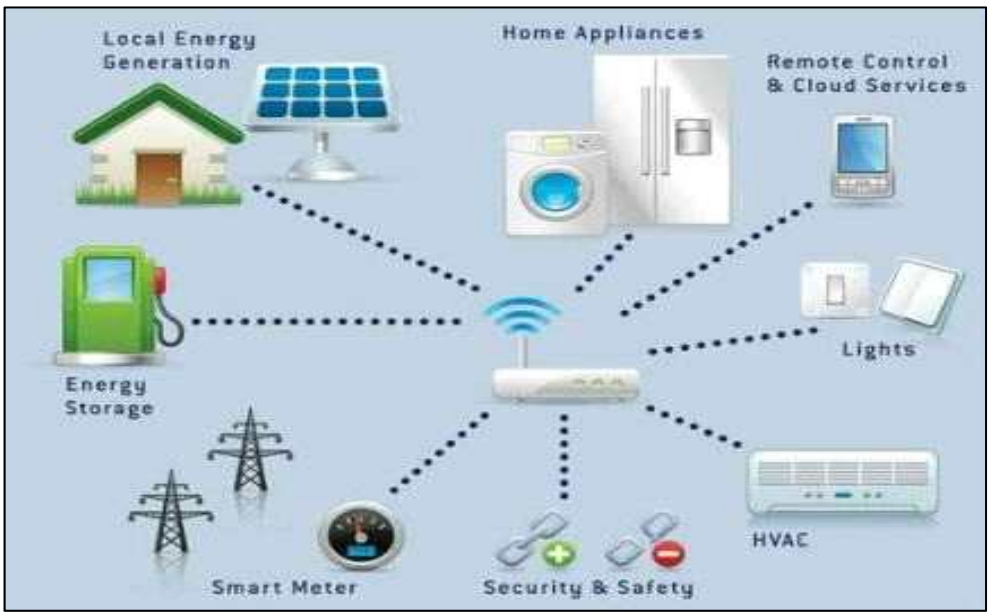
As a final goal of the Piezochain team's generator development, the development of large-scale electric energy generators has replaced existing electric energy production such

as hydropower, thermal power and nuclear power generation to eliminate the anxiety factors that threaten human survival such as resource depletion and environmental pollution. I believe that it is our mission to achieve lasting prosperity of the people.

3.4 IoT Interlocking Technology Development

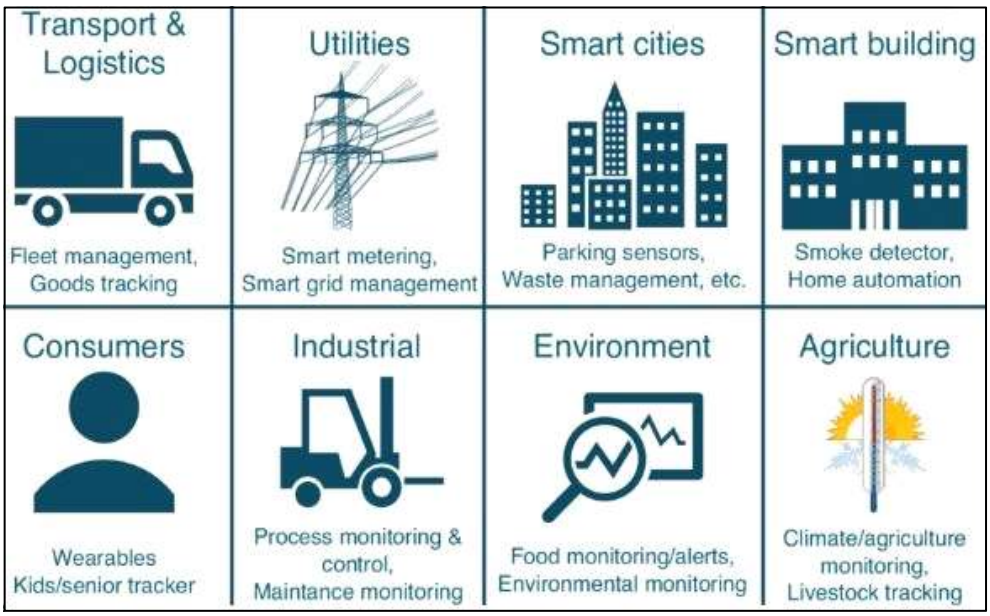


The construction of a smart grid (smart grid) for efficient electric energy production and utilization is already a global trend, and various research and efforts are required to build it. Our team of Piezochain not only develops the generator but also works with IoT technology applied to the developed generator so that it can utilize the electric energy that is produced environmentally friendly.



If you apply IoT technology to the generator, you can check the generator's status and electric production in real time and it will be the basis for exchanging the electricity produced through the electric energy exchange platform in the future. I think it is important.

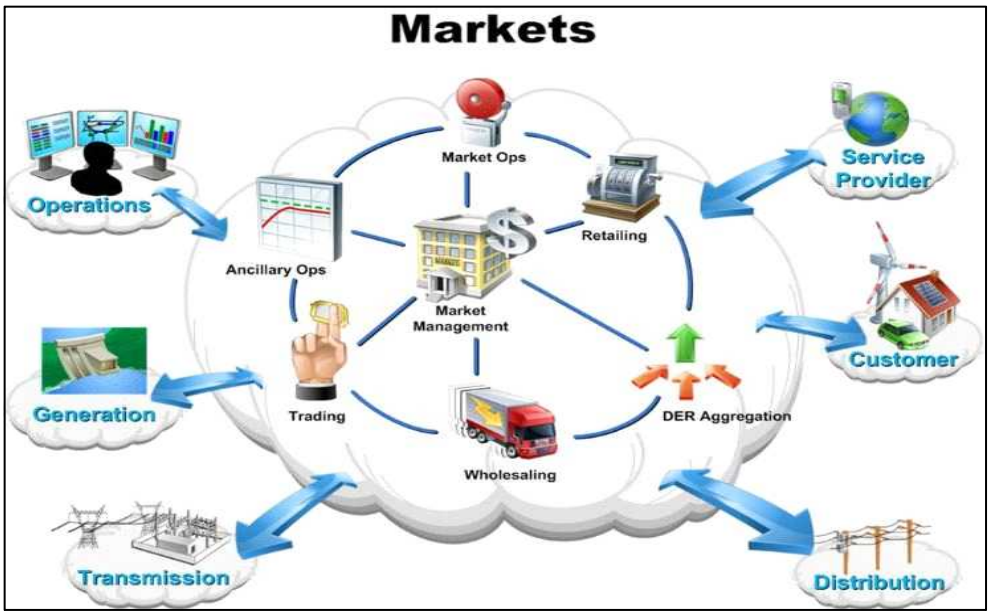
In addition, we will implement Graphic User Interface that enables us to check the electric energy production and equipment abnormality in real time through PC or smartphone application (APP).



If IOT is to be extended to all industries in the future, it is expected that a truly smart grid that is beneficial to human beings can be implemented. To this end, our Piezochain team will continue to spur development and will use a significant portion of their investment in R&D.

3.5 Electric Energy exchange platform development & Build

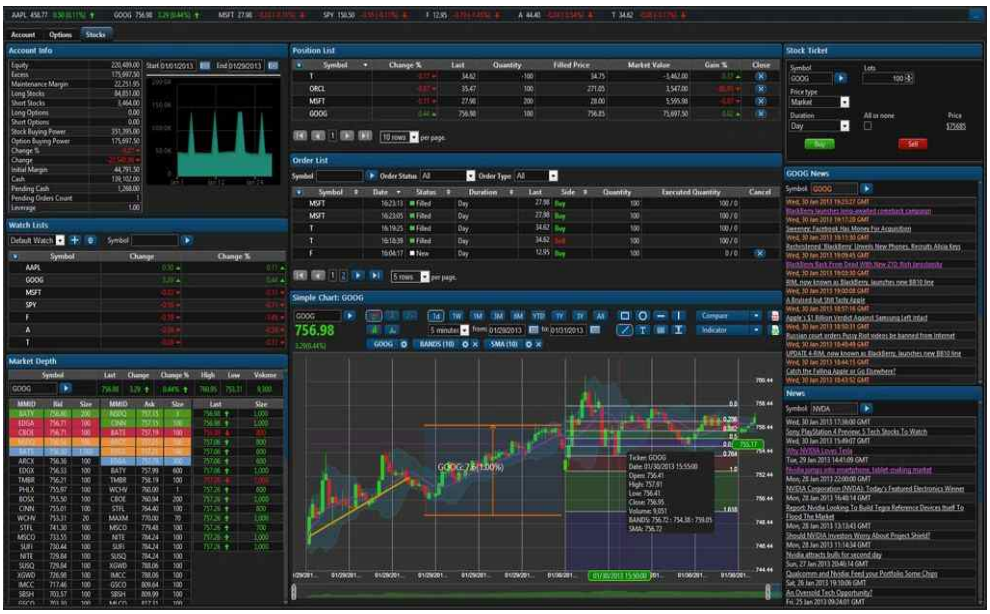
The ultimate goal of the Piezochain team is to develop and build an electric energy exchange platform. We believe that the mission of the Piezochain team is to eliminate the anxiety that threatens the survival of mankind through resource depletion, environmental pollution, and elimination of dangerous factors through platform construction and achieve lasting prosperity of mankind.



The power exchange is responsible for the operation of the electric power market, power system operation, real-time dispatch operation, and overall government support for electric power supply and demand. In the case of electric energy produced through conventional methods, most of the energy is exchanged through power exchange. However, in order to meet stable electric supply and demand, large-scale power plants need to be built and maintained. This causes users to pay a high price for electric use.

Our Piezochain team wants to build a platform that enables users to exchange electricity at the desired price in real time by P2P method through the construction of exchange platform by electric energy produced by generator. The exchange platform with blockchain technology prevents the government or the group from monopolizing the electric power that has become a necessity of modern people, and if a reliable electric energy exchange

is made, the production and supply of the region or country where electric production is restricted We hope to resolve the imbalance and promote common prosperity of mankind.



In order to implement P2P power exchange, our Piezochain team will build an electric energy exchange platform with blockchain technology like the schedule of the roadmap.

In addition, we will implement Graphic User Interface that enables users to exchange power in real time through PC or smartphone application (APP).

3.6 Vision of Piezochain

Although the development of science and technology and electric energy have brought the abundance of life to mankind, energy consumption and environmental destruction to sustain it have been increasing day by day. However, the existing electric production method has already reached its limit, and it is true that it has difficulties in development of revolutionary technology to replace it. Now, mankind wants to produce environmentally friendly and powerful new renewable energy that can replace the existing way. We have focused on these areas and have created a business strategy and vision that can overcome the limitations of today while taking advantage of our good intentions.

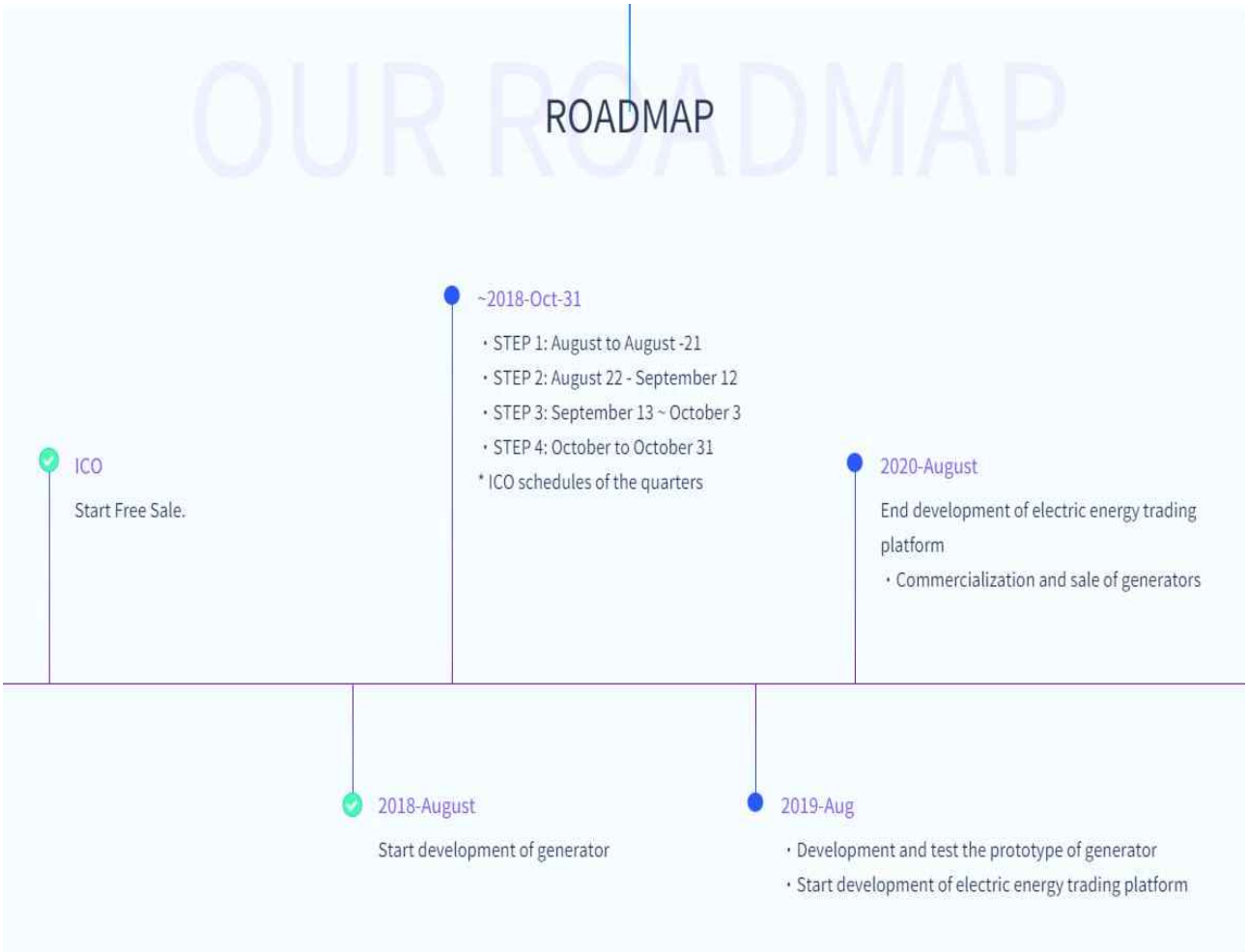
First, to commercialize a generator that can generate electric,

First, development of an electric energy generator using Shock Wave Power device technology.
As mentioned above, 'Shock Wave Power Device Technology' has already completed its global patent in recognition of its technological capability and has already started a project to produce a small-sized generator. Purchasing of Piezochain Token and ICO It will be an important Seed Money that will make you become.

Second, we will restrict the purchase of 'Shock Wave Power Technology' patented electric energy generators through the blockchain platform. This will protect investors who invested funds through 'Piezochain' for stable investment attraction and technology development, In the future, when listing the cryptocurrency exchange through ICO, it is necessary to establish a basis to meet global demand by maintaining stable token prices.

Finally, the electric energy exchange platform must be developed and operated.
It is necessary to integrate information communication and IoT technology with an electric energy generator and implement it through an application (app) so that electric production can be confirmed in real time. Through this, we will build a platform by using blockchain technology to enable producers and electric users in need of P2P to exchange production electric in real time. Through this, we will meet the increasing electric demand in the world and provide electric If you can contribute to resolving the imbalance in energy supply, it will be challenging enough, so you need a lot of support and support.

4. Roadmap


OUR ROADMAP
ROADMAP
~2018-Oct-31
・STEP 1: August to August -21
・STEP 2: August 22 - September 12
・STEP 3: September 13 ~ October 3
・STEP 4: October to October 31
* ICO schedules of the quarters
ICO
Start Free Sale.
2020-August
End development of electric energy trading platform
・Commercialization and sale of generators
2018-August
Start development of generator
2019-Aug
・Development and test the prototype of generator
・Start development of electric energy trading platform

5. ICO : Piezochain Token

The Piezochain Token is an Etherium Token based on the ERC-20 standard. The policy is announced as follows,

Token Holders are granted the following rights:

① Used as an official payment instrument after commercialization of electric energy generator by mining company

- The primary objective of the piezo chain is to commercialize a proprietary electric energy generator, We will use Piezochain Token as a payment method only when purchasing generator.
- The second goal of the piezo chain is to improve the performance of electric energy generators

  It will be commercialized and will be used as a payment instrument only with the Piezochain Token when purchasing the generator.

② Token issuance and policy

- Total issue volume: 50 billion (50,000,000,000)
- Flow rate: 10 billion (10,000,000,000)
- Air drop: 30 billion (30,000,000,000)
- Company ownership: 10 billion (10,000,000,000)

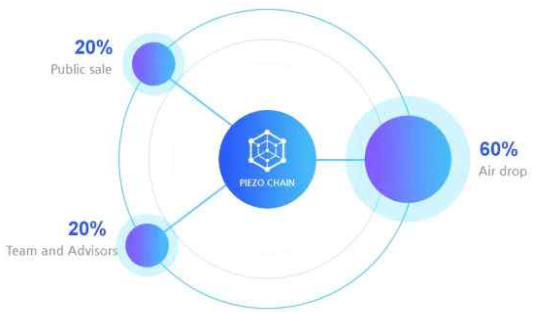
  ※ Lock action for 12 months

The total Token issue is 50,000,000,000 piezochain, based on Soft Cap 3,000,000,000 piezochain, and Hard Cap 10,000,000,000 piezochain.

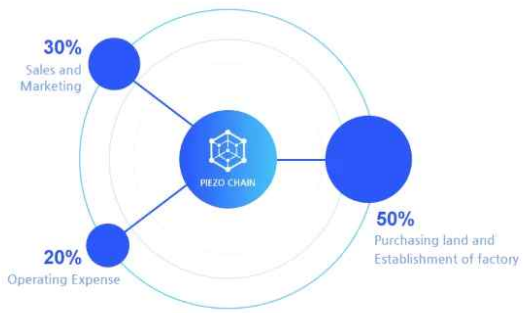
Token circulation rate is 20% for ICO, 20% for Piezochain team (12 months Lock)

And the remaining 60% will be paid by Airdrop to Token buyers.

Token distribution



Fund allocation



- Within the pre-purchase period : 75,000 to 70,000 (per ETH)
- After pre-purchase ~ ICO : 65,000 ~ 50,000 (per ETH)

Additional information about the technology and development of PiezoChain and channels for communicating with us can be found on the SNS and Homepage.

③ If you have a Piezochain Token, you will receive an airdrop for 3 years after ICO
※ Please refer to homepage for payment standard

6. Use of recruitment funds

50% of the money raised for ICO will be used for technical development such as commercialization of electric energy generators, and the remaining 50% will be used for company operations, ICO and global public relations activities.

All of these processes are conducted through the establishment of an official corporation and external audits, and are subject to the legitimate process of the ICO listed country.

If the SoftCap of the target amount can not be reached by the ICO period, the Piezochain Token team will cancel the planned plan and return the raised cryptocurrency to the participants.
However, we will deduct the expenses related to transmission and ICO proceedings.

7. Large Participant Benefits

Large-scale participants on the network will be provided additional tokens in proportion to the purchase of Piezochain Token, invite meet-up events, provide up-to-date development information, and give preferential benefits to commercialization of electric energy generators in the future.

8. Prediction ROI

For ROI, development of original technology and registration of patent are important, but we have already secured competitiveness, and commercialization of original technology is the most important part. In order to do this, we will do our best to put the money for recruitment into the market as soon as possible. The progress can be confirmed through SNS and homepage.

9. KYC(KN0W YOUR CUSTOMER) & Security

In order to comply with worldwide anti-money laundering (anti-money laundering) regulations, we need to know who has funded the Piezochain team.
Therefore, the KYC procedure is performed before the Piezochain Token is issued.
All of this is done under the supervision of the ICO listed country and will go through the legitimate process of the country concerned.
The main purpose of registering for token sales is mandatory customer identification in order to prevent identity theft, terror financing, money laundering and financial fraud.
In addition, it not only allows our team to better understand token holders, but also allows us to manage risks carefully.
We take social responsibility very seriously and I think it is very important to play a role in coping with money laundering and terrorist financing.
That's why we benchmarked the same KYC standards that are universally adopted by banks and financial institutions around the world.
The due diligence process includes reviews of international sanctions / terrorist lists and people with bad reputations. Risk assessment and onboarding results are performed and determined by dedicated software.

The KYC process consists of two parts in the following order :

Autometic
The details provided are verified against the disclosure and alert list.
This step is performed by a third party.

Manual
If the automated step is successful, the Piezochain team will manually check whether the information provided matches the photo of the identity certificate that you submitted.

10. Operator

Jinseob Kim

CEO & Piezochain Cofounder

Jung Hwan Lee

CEO & Piezochain Cofounder

Inheum Jo

BlockChain Cooperative President

Heesuk Lee

Online Marketing

Sang-Woo Lee

Global Marketing Manager

Anderson Alexandria

Global Marketing Advisor

Bibiana Silva de Abreu

Advisor in UK

11. Development Team

Sang-Cheol Bae

ShockWave Engineer & Patent Holder

Tae-Wook Roh

ShockWave Engineer

Dongsoo Lee

Blockchain Developer

Ka-Ram Bae

S.W.P(shock wave power)Technical Researcher

12. Advisor

Sung-Man Won

Cheif of Global ICT Administration Law Office & Director of Blockchain Cooperative in Korea

Jae-Eun Choi

Advisor

Sungjin Gil

Global Renewable Energy Consultant

13. Legal Liability

The Piezochain team (including the Foundation and our company, shareholders, employees, and affiliates) has written this white paper for reference purposes only to provide future plans and specific information to those who have a lot of interest and affection in our projects. This white paper is provided as of the time of writing and does not guarantee that any information contained in the white paper, including conclusions, is accurate to the future.

Our team makes no representations or warranties of any kind with respect to this white paper, and assumes no legal responsibility for it. For example,

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(2) Whether the white paper is commercially valuable or useful

(3) Whether the white paper is appropriate for your particular purpose

(4) There is no guarantee that the contents of the white paper are error free. The range of liability exemptions is not limited to the above examples.

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