Bluetech Award

2nd Bluetech Technology Manual

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Beijing · The Presidential Beijing

Host

CAAC
中国清洁空气联盟
Clean Air Alliance of China

Organizer

ICCS
清洁空气创新中心
Innovation Center for Clean-air Solutions

Partners

Energy Foundation

Energy and Environment Branch of Chinese Society For Environmental Sciences

Chinese Society of Environmental Sciences – Professional Committee for Pollution Prevention and Control of Volatile Organic Compounds

UK Trade & Investment

Xiamen Environment Protection Vehicle Emission Control Technology Center

Foreign Economic Cooperation Office, Environmental Convention Implementation Technical Center, MEP (FECO)

Clean Air Alliance UK

School of Environment, Tsinghua University

The Chemical Industry and Engineering Society of China-Water Borne Coatings Committee

Ecotech China

Beijing Global Village Environmental Education Center

Beijing Energy Network

European Union Chamber of Commerce in China

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China-Italy Chamber of Commerce

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Air and Waste Management Association (USA)

China-Texas Innovative Platform of Entrepreneurs

U.S.-China Cleantech Center (USA)

Swiss clean technology association

VERT Association (Swiss)

Swiss Chinese Chambers of Commerce

State of Green (Denmark)

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Bluetech Award Introduction

The Bluetech Award is launched by the Clean Air Alliance of China to seek and promote high-quality international clean air technologies. Technologies that apply will undergo a standardized evaluation process that verifies real-life results, where the selection committee will examine environmental benefits, technical performances and financial models to find their disruption potential.The winners will receive ample support from the CAAC and its partners to expand their ability to create a blue sky for everyone.

Bluetech Award

- ◎ International: We seek technologies from leading countries around the world, work with international experts in our selection process, and leverage international media coverage.
- ◎ Objective and Scientific Process: We use a uniform, systematic assessment methodology to examine all technologies for practical, real-life results. Our methodology includes document review, expert analysis, on-site examinations and lab tests.
- ◎ Result-oriented: Our procedure focuses on real-world results.
- ◎ Systematic Dissemination: Participants get featured dissemination at the Bluetech Forum, and through our official website, custom local matchmaking sessions, video releases, WeChat platforms, and media partners.

Process

April	April - August	August - November	December
Launch	**Application**	**Assessment**	**Ceremony**

Approach

Gathering clean air technologies from China and overseas, the Bluetech Award provides a platform for technologies to validate and demonstrate core competencies. The Award uses the Clean Air Technology Assessment Methodology to examine real-world results, analyzing environmental benefits, technological performances and financial viabilities to find breakthrough potentials.

Assessment

1. **Form Bluetech Assessment Expert Panel**
   Includes international clean air technology experts, industrial experts and testing experts.
2. **Preliminary Assessment Plan**
   Design preliminary assessment plan for each category to carry out essential technology screening for advanced assessment.
3. **Preliminary Assessment**
   Using preliminary assessment plan to conduct quick evaluation based on technology or product performance data as provided by the applicant.
4. **Advanced Assessment Plan**
   Design specific assessment plan for every technology to assess its breakthrough potential in environmental, technical, and financial fields.
5. **Advanced Assessment**
   Using advanced assessment plan to assess technology which includes document review, on-site investigation and laboratory testing.
6. **Assessment Conclusion and Reports**
   A full assessment report and simplified assessment report are issued for each assessed technology.
7. **Publicize Assessment Result**
   The assessed technology will be recorded into the Clean Air Technology Database and Bluetech winners will be listed into the Bluetech Catelogue.

2nd Bluetech Award Categories

Category 1: Diesel engine emission reduction technologies & clean energy substitutes

Over the past few years, China is driving at an increasingly faster pace: in fact, the country is ranked first globally in terms of vehicle speed increase rate over the past five years. China is also driving longer distance: the average mileage of passenger vehicles in Beijing today is approximately 44 km per day, twice as much as that in the EU. Additionally, most cars are driven in developed urban areas, which subsequently concentrate air pollution in urban regions. In China's megacities like Beijing, Shanghai and Shenzhen, vehicle emissions have become the top local polluter of $PM_{2.5,}$ contributing to nearly 30% of all local $PM_{2.5}$ emissions.

Diesel vehicles are believed as the most significant problem, as they are responsible for up to 70% of all vehicle NOx emissions, and up to 90% of all vehicle particulate matter emissions. Furthermore, diesel powered non-road vehicles, such as ships, port machinery, agricultural machinery and general engineering machinery and so on, their emissions are also believed as significant problems due to lack of control. Some advanced cities like Shanghai and Shenzhen have already begun to employ new energy (e.g. LNG) and emission control retrofit (e.g. DPF) technologies in their policy making to control non-road vehicle emissions.

We are looking for the following types of diesel engine emission control technologies:

- ◎ Fuel treatment technologies, such as diesel fuel treatment, clean energy (e.g. LNG) etc.
- ◎ Engine combustion optimization technologies, such as Exhaust Gas Recirculation, fuel injection optimization techniques, etc.
- ◎ Engine emission control technology, such as Diesel Oxidant Catalyst, Particulate Oxidation, Catalyst, Selective Catalytic Reaction, Diesel Particulate Filter, etc.

Category 2: Coal combustion emission control & clean energy substitutes (non-power sector)

Coal is the major energy source in China. It contributes approx. 60% of the primary energy and has become one of the main pollution sources. Thanks for governmental policy support, emission control for coal fired power plants have been conducted in many places. However, emissions from non-electrical coal combustion should not be underestimated. The $PM_{2.5}$ source apportionment analysis for Jing-Jin-Ji region shows that coal-fire emission has contributed about 25% of local $PM_{2.5}$ emissions. In order to meet the national goal for airpollution improvement, the Municipal Research Institute of Environmental Protection along with Innovation Center for Clean-air Solutions have conducted a project to collect emission control technology for non-electrical coal combustion and list the advanced technologies into ‘Clean Coal Combustion Technical Guidebook’.

We are looking for the following type of Emission Control Technology for Non-electrical Coal Combustion.

◎ Alternative clean energy & renewable energy technologies;

◎ Advanced heating technology, such as waste heat recovery technology, etc.;

◎ Other related technology.

Category 3: VOCs substitution, monitoring and pollution prevention

VOCs is one of the main primary pollutants in various regions throughout China and is one of the major precursors for secondary $PM_{2.5}$ and ozone. VOCs and its secondary products are toxic and cancerous, harming public health. As the China launches the official “war on pollution,” the 13th Five Year Plan listed VOCs as an important contaminant, pushing some major cities and provinces to create their own VOCs control targets

We are looking for the following type of Emission Control Technology for VOCs monitoring and control technologies:

◎ VOCs monitoring technologies, such as online monitoring devices, portable devices, etc.

◎ Leak Detection and Repair (LDAR) related technologies, such as leak detection technology, leak repair technology, etc.

◎ VOCs end of pipe control technologies, such as VOCs recycling technology, VOCs destruct system, etc.

◎ Low VOCs substitutes, such as low VOCs paint, low VOCs solvents, etc.

◎ Other technologies that address VOCs pollution.

Category 4: Indoor air quality monitoring and air purification

People spend, on average, 70% of their time in indoor environment and therefore are potentially more exposed to indoor air pollutants. In addition to outdoor pollution infiltration, there are also many pollution sources in indoor environments, which causes high indoor air pollution that are often more severe than the outdoor air. As people are becoming more aware of air quality and health, concerns on the indoor air quality have also been raised.

We are looking for the following types of indoor air purification technologies:

◎ Indoor air quality monitoring and control technologies;

◎ Central HVAC system purification technologies.

◎ Decentralized purification technologies, such as indoor air purifiers, vehicle air purifiers, etc.

Category 5: Ultra-low emission control for coal-fired power plants

The Work of the Government Report (2015) has raised the request for 'promotion of ultra-low emission control for coal fired power' and planned to achieve the ultra-low emission for all coal fired power plant by 2020. The ultra-low emission technology is looking at a more than 40 billion growth by then. The Bluetech Award is looking for advance and cost-effective ultra-low emission control technology to meet the coal fired power plants' needs. We are looking for the following type of ultra-low emission technology for coal fired power plant.

◎ Advanced technologies for dust-removal, desulfurization and denitrification, etc

◎ Emission control process optimization technology

Highlights of 2nd Bluetech Award

Award Categories Match the Need to Support Local Implementation

The Bluetech Award aims to promote best available clean air technologies to help tackle China's air pollution problems. Air pollution is a very complex issue. Different cities are faced with very different sources of pollution due to varied economic development levels, energy structures, and urban modes. How to help cities to develop their own clean air action plans with reference of the most advanced technology is a key to accelerate the pace of restoring blue skies. CAAC launched 10 local clean air pilots since 2014. This year's bluetech categories are closely linked to the technology needs from these pilots.

Shenzhen: Shenzhen is China' s leader in clean air efforts, who has already achieved the national PM2.5 standards and committed to achieve EU level $PM_{2.5}$ standard by 2020. As the 3rd largest container terminal in the world, one of the biggest challenges for Shenzhen is the emission control for port, which contributes to 13% of Shenzhen's total $PM_{2.5}$ emission. 2016 Bluetech Award Campaign has selected diesel engine emission reduction & clean energy substitutes to call for advanced technology in the related field to help China tackle this problem.

Beijing-Tianjin-Hebei: Air pollution in Beijing, Tianjin and Hebei (Jing-Jin-Ji) Region and its surrounding areas attracted significant attentions from all over the world. It is estimated that if the coal burning pollution in rural areas during winter can be eliminated, the $PM_{2.5}$ concentration can be improved by 20% in Jing-Jin-Ji, and 40% for Beijing alone, which is more than transportation sector and power plants combined. Hence, the coal pollution prevention and control for non-power sector is also selected as a technology category for 2016 Bluetech. Winners in this category will have opportunities to support the development of the Technological Guidance of Jing-Jin-Ji Household Coal Pollution Control, and participate the local technology demonstration projects.

Changzhou: VOCs and its secondary products are toxic and cancerous, harming public health. The 13th Five Year Plan listed VOCs as an important contaminant, pushing some major cities and provinces to create their own VOCs control targets. For Changzhou, one of China's important chemical manufacturing bases, VOC is one of its major contaminants. The emission amount of VOCs in Changzhou is about 51,540 ton per year. Bluetech Award Committee selected VOCs substation, monitoring and pollution prevention as one of the technology categories in Bluetech Award this year to control VOCs emission and ultimately protect public health.

Shanxi: Pollutions emitted from the coal-fired power generations are still playing very significant roles in provinces such as Shanxi, Shaanxi and Inner Mongolia. In the end of 2015, China State Council announced to promote the ultra-low emission control for both new and existing power plants national wide, which triggered the booming up of a huge market in recent years. It is estimated that the total market potential is over 40 billion RMB by 2020. To support the enforcement of this policy, innovative ultra-low emission control technology was selected as the 2016 Bluetech Award Category.

More Innovative Applications from More Countries

In 2015, the applications were coming from eight countries, including China, US, France, Germany, Italy, UK, Australia, and Malaysia. In 2016, eight more countries also joined in the Bluetech applications: Switzerland, Denmark, Netherlands, Sweden, Israel, Norway, Canada, and Korea.

Besides, there are more break-through innovative 'black' technologies in this year's competition, such as reusable HEPA filter, unmanned aerial vehicle monitoring ship emission, quantitative infrared ray monitoring for VOCs, and etc. Through systematic assessment, the strengths and key specifications of these technologies are identified and demonstrated through the bluetech assessment, and all the assessment results will be disseminated to hundreds of representatives from local EPBs, investors, and other industrial partners.

2nd Bluetech Winner & Award Finalists Introduction

The Second Bluetech Award officially began in April 2016, and gathered 60 technologies in August and September that come from China, the United States, France, Germany, Italy, the United Kingdom, Australia and Malaysia. The Bluetech Award looks for real-life breakthrough potential from these technologies in terms of environmental impact, technical performance and economic feasibility. This year, we are excited to announce 23 Bluetech Award finalists and Six Winners that take the lead in developing high-quality, innovative technologies to tackle China's air pollution!

Declaimer

Innovation Center for Clean-air Solutions (ICCS) undertook the mandate to organize the "Bluetech Award" Clean Air Technology Schemes. ICCS organizes this event in accordance with relevant laws and regulations and also based on the principles of objectivity, fairness, and justice. In order to ensure the seriousness and scientificity of the award, we have clearly required all participating entities that:

1. The intellectual property of the technologies that participate in the event of "Bluetech Award" ("Participating Technology") shall belong to the participating entity, or the participating entity shall be legally granted a license to use the Participating Technology and shall have the right to submit the Participating Technology to the event of "Bluetech Award.

2. The participating entities shall truly disclose the information related to the Particiapting Technologies, include but not limited to inventors, applicant, technical parameters, legal status, etc.

ICCS hereby acknowledges that the award of "Bluetech Award" shall be based on the information, data and documents provided by the participating entities and we have only conducted onsite verification for a few technologies which had applied for the technology assessment. Hence, we are not able to guarantee the authenticity and accuracy of all information, data and documents. ICCS does not take responsibilities for any un-authorized use of relevant technology information in any form of distribution in the internet. ICCS reserves the right of final interpretation to the above statement.

Bluetech Winners

Air Powered Start-up System

Category:

Diesel engine emission reduction technologies & clean energy substitutes

Applicant:

Shanghai ShenZhou Vehicle Energy Saving & Environmental Protection Co., Ltd.

Country:

China

Technology Overview:

◎ The Air Powered Start-up System employ hydraulic drive mechanism to recover kinetic energy at deceleration and while idle. The energy is stored as compressed nitrogen in the energy accumulator at maximum pressure of 28MPa. The hydraulic motor then utilize the energy stored in the accumulator to drive the vehicle.

◎ Key components of the Air Powered Start-up System are a specially designed gearbox, hydraulic pump, energy accumulator, hydraulic controller and electronic control unit (ECU). The unique gearbox is capable to output power in hydraulic mode, engine mode and hybrid mode. The gearbox has an auto hold function and is able to provide driving force from the hydraulic system in neutral gear. After the air powered staring, driver can directly shift to higher gear from neutral gear which will reduce their labor intensity.

◎ As an independent system, the Air Powered Start-up System can be installed without changing vehicle's original structure. It is suitable for both retrofitting and new vehicle production. The system is compatible for diesel engines, gasoline engines, natural gas engines and even electric motors.

Environmental Features:

◎ Fuel saving: 20% (urban bus traffic)

◎ Reduce the PM, CO, HC and CO_2 emissions by reducing inefficient engine combustion and improving fuel economy.

Financial Features:

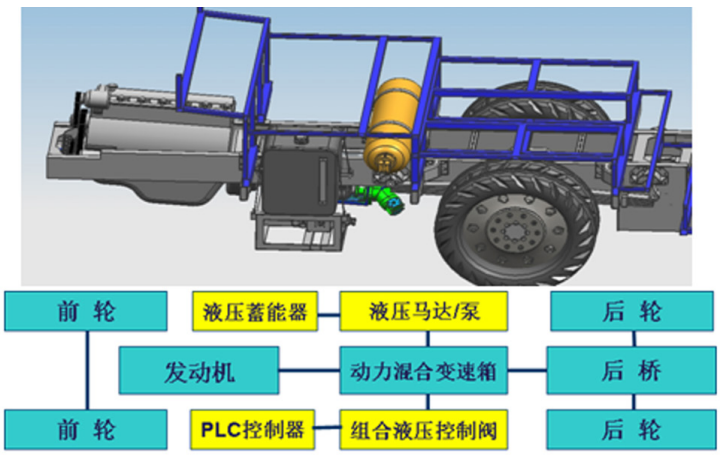
◎ System cost: 120,000 RMB. Return of investment: About 2 years

◎ The system can reduce wear and tear on clutch and brake and thus extend the maintenance interval.

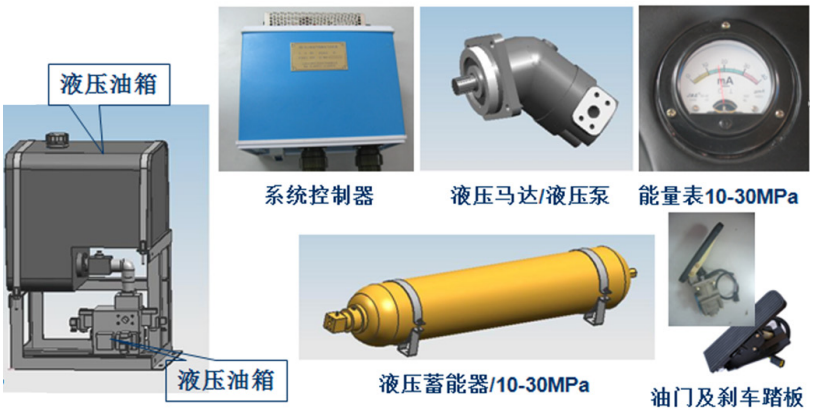
Implementation Status:

Trial operations were performed in Shenyang and Foshan in 2008.

10 modified buses with Air Powered Start-up System have been in operation in Shanghai(Chuanjiang line 1) since 2013.



Air Powered Start-up System



Key components of Air Powered Start-up System

Ammonia (Solid State) Storage and Delivery System (ASDS)

Category:

Diesel engine emission reduction technologies & clean energy substitutes

Applicant:

Faurecia China.

Country:

France

Technology Overview:

◎ Solid state ammonia (NH_3) storage system (ASDS) is ammonia generation system for on bo ard selective catalytic reduction (SCR). This technology utilizes solid strontium chloride ($SrCl_2$) to adsorb ammonia. The adsorbed ammonia is stored as solid state clathrate $Sr(NH_3)_8Cl_2$. The adsorbed ammonia is released under certain conditions to convert NO_X in the diesel exhaust to Nitrogen (N_2) and water (H_2O).

◎ The ASDS uses strontium chloride ($SrCl_2$) stored in sealed cartridges. Reverse reaction temperature of solid state clathrate ($Sr(NH_3)_8Cl_2$) is 55~80 ℃ and ammonia will be released when the cartridge is heated.

◎ Main components of ASDS include main cartridges, dosing control unit, control unit and sensors.

Environmental Features:

◎ The ASDS has outstanding ammonia generation performance and de-NO_x performance especially in low temperature condition. This the next generation de-NO_x technology is capable to meet strict emission regulation.

◎ Gaseous ammonia mix better with exhaust gas and require less arrangement for exhaust pipeline.

◎ It's capable to generate ammonia and control NO_X at cold start and low speed conditions.

◎ There is no urea crystallization issue for the the ASDS system which improves de-NO_X performance.

Financial Features:

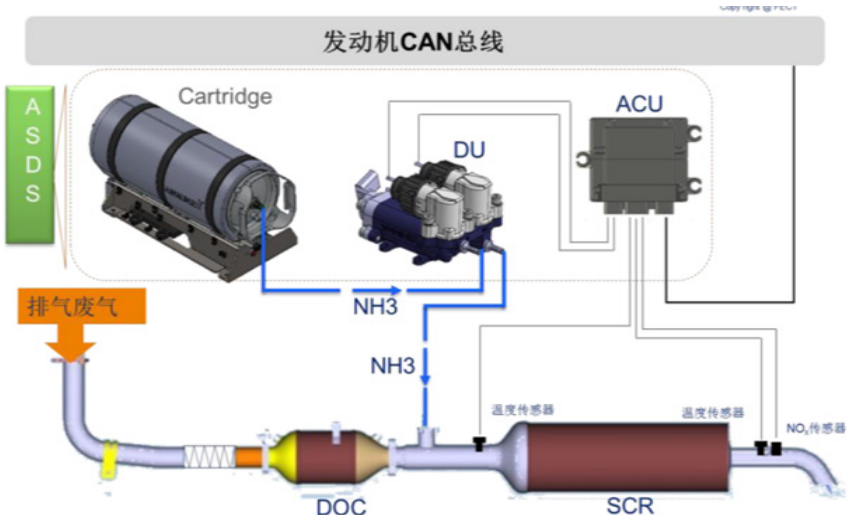
◎ Less engine temperature control requirements than urea system, better fuel economy

◎ Avoid urea crystallization issue, less maintenance cost.

Implementation Status:

Two buses with ASDS systems have run over 50,000km in Anting, Shanghai (Anting Line 2).

ASDS has been applied in public transport system in Suwon South Korea, London UK and Copenhagen Denmark. Over 300 city buses in Copenhagen are benefiting from ASDS system.



Ammonia Storage and Delivery System (ASDS)

Strontium chloride (SrCl2)

Slurry Atomization and Vortex Flow Field Technology for the Intensive Desulphurization of Flue Gas

Category :

Ultra-low emission* control for coal-fired power plants

Applicant :

Beijing Chutian Ruiping Environmental Technology Co. Ltd

South China University of Technology

Country:

China

Technology Overview:

◎ Patented technology of slurry atomization, vortex flow field and multiple conic section arrangements that creates an atomized vortex field within the desulfurization tower. This system not only solve the problem of absorbent heterogeneity in the traditional absorption tower, but also induces complete mixing of the flue gas with the desulfurizing agent, thus accomplishing intensive desulfurization.

◎ The application of this technology decreases the fluid/gas ratio and desulfurizer reaction cycle multiplier, and therefore decreases energy consumption of the system, specifically the electricity consumption of the desulfurizer pump and ventilator.

◎ Slurry atomization and vortex flow decreases desulfurizer particle size from the traditional 1500-3000 μm down to 80-150 μm, leading to a 400X increase in reaction surface area between flue gas and desulfurizer particles.

◎ A coagulation process induces the combination of flue gas particles and desulfurizer particles, and through the application of heat exchange tube bundles to cause condensation, high efficiency particulate removal is achieved.

◎ On-line maintenance technology allows repair and replacement of core atomizer components while the desulfurization tower is in operation.

◎ Uses proprietary abrasion and clogging resistant technology to ensure long-term, stable and efficient operation of the desulfurization tower.

◎ Easy implementation allows a short construction period of about 20 days.

Environmental Features:

◎ Improve flue gas SO_2 removal rate. Tail gas SO_2 concentration will be less than 30 mg/m^3 after the process.

◎ Keep environmental potential for the power plant those burning high sulfur coal.

Financial Features:

◎ Construction investment varies depending on existing conditions, compared to traditional spray desulfurization methods, energy costs are reduced by 20% and construction costs are vastly lower.

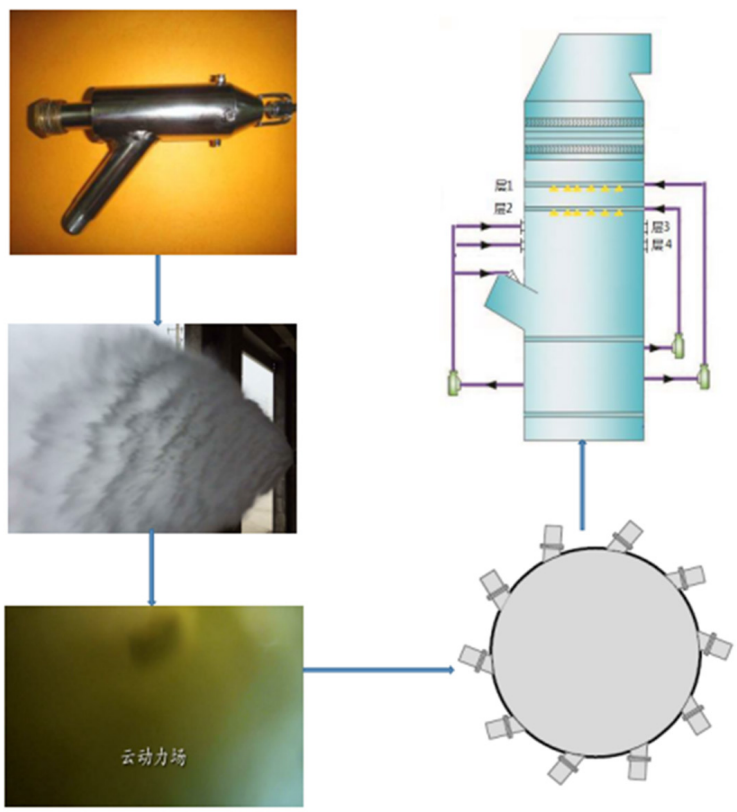
Implementation status:

Part of project caseses:

Huaneng Baotou No. 1 Thermal Power Plant 300MW

Henan Yuneng Tongli Power Plant Generator 1 and 2 300MW

Jiangsu Jiangyin Ligang Generator 5 660MW



Slurry Atomization and Vortex Flow Field

Zeta Electrode Boiler

Category:

Coal combustion emission control & clean energy substitutes (non-power sector)

Applicant:

Beijing Zeta Energy Technology Corp.

Country:

China

Technology Overview:

◎ Electrode boiler is an electric boiler product using electrode heating method. Electrode heating applies voltage to the electrolyte solution between the electrodes. Ions move in the electric field and generates heat. Zeta Electrode Boiler utilize the electrode heating method, use water as heating element to produce hot water.

◎ 6-20kV three-phase high-voltage can be directly applied to the electrode hot water boiler, eliminating the need of low-voltage power distribution equipment and reduces power distribution losses.

◎ Zeta Electrode Boiler has high power and high efficiency for single unit. The boiler is able to start and stop at any time. Continuous output power control is achieved by regulating the emerging surface area of the electrode. Secondary pollution is low because of the electrolyte used is common chemicals and the closed loop design of the boiler.

◎ Zeta Electrode Boiler combined with thermal storage system is an effective method of peak load shifting and off-peak wind power utilization for grid. There are no emissions when the boiler is in operation. It is alternative heating solution in strict air pollutants control area.

Environmental Features:

◎ No emission when the boiler is in operation.

◎ Thermal efficiency of electrode boiler is over 99%.

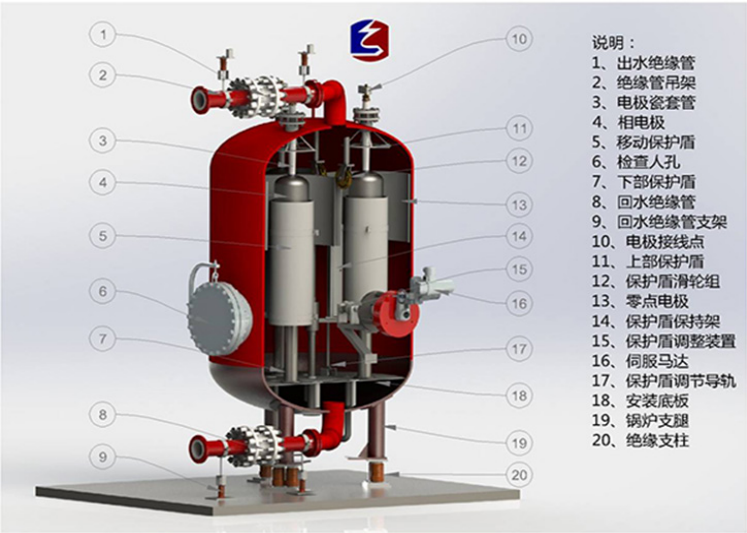
Financial Features:

◎ The investment of high-voltage electrode boiler with thermal storage is 700-1000 RMB/ kW.

◎ There will be commercial value for the electrode boiler when electricity price is 0.15-0.3 RMB/ kW・h.

Implementation Status:

There are implementations in city of Rizhao, Xinjiang, Daban City, Baotou, Da'an City, Dalian and etc since 2011 in China.



Electrode Hot Water Boiler

ZVPI-1806 Electrode Water Boiler

Intermetallic Compound Paper Membrane Air Purification

Category:

Indoor air quality monitoring and air purification

Applicant:

Intermet Technology Chengdu Co., Ltd.

Country:

China

Technology Overview:

◎ Intermetallic compound paper membrane is an advanced porous material, in which the chemical bonds between the atoms of intermetallic compound consist of both covalent and metallic bonds. The porous paper membrane has a large number of fine pores with a characteristic of even distribution. Furthermore, the new product has specific functions, such as filtering, inhibiting germs and catalyzing characteristic.

◎ The folding angle (R ⩾ 3mm) and pitch (⩾ 5mm) of the intermetallic compound paper membrane can be adjusted, which can be used to produce a new air purifying filter. The $PM_{2.5}$ in the air can be intercepted by an efficient physical purification way. The purification efficiency can be achieved at level H13.

◎ The membrane can be washed and reused and is also recycalble.

Technical Features:

◎ The methods to filter out the $PM_{2.5}$ using intermetallic compound paper membrane can be direct interception, bridging interception, inertia collision interception and such kind of classical physical process interception.

◎ Compared with traditional air filter, the efficiency of wind flux and wind drag of the new material filter can remain the same level, on the basis of several test results.

Purifying efficiency of particulate matter (one-off): 99.71%
Degerming efficiency of Staphylococcus albus: 99%
Degerming efficiency of Escherichia Coli: 99%
Antibacterial ratio of Staphylococcus aureus: 99%
Antibacterial ratio of Escherichia Coli: 99%

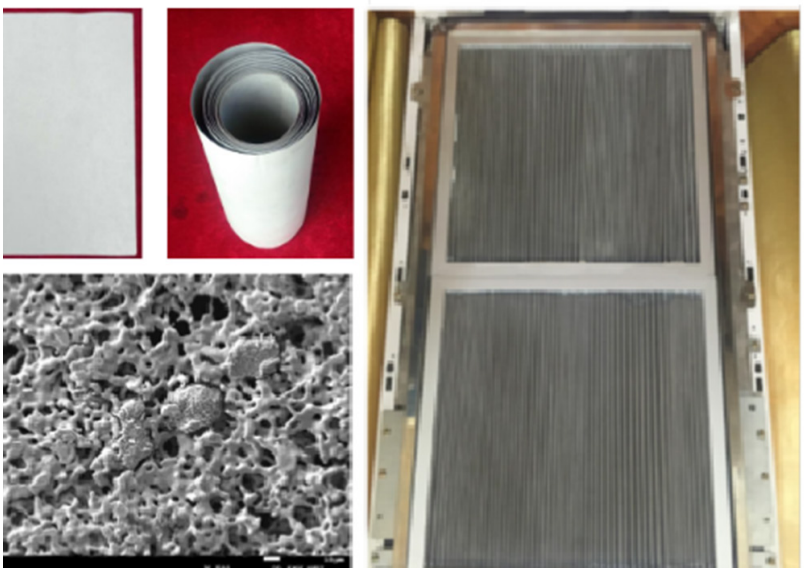
Financial Features:

◎ According to recycle function of production and environment element of life cycle, also considering the economic benefits, it can be concluded that the intermetallic compound paper membrane air purification technology has an advantage in market compared with the traditional air purifying filter.

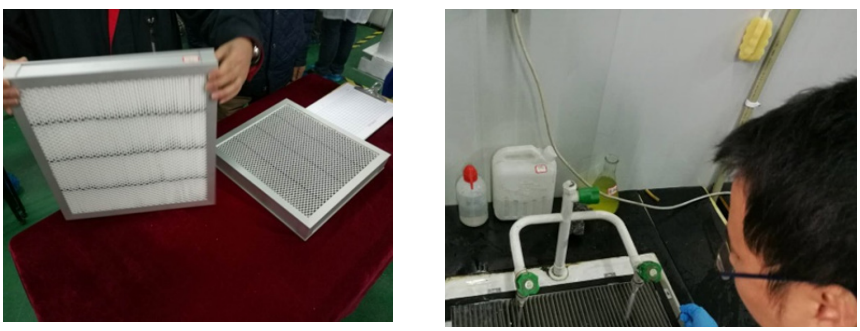
Implementation Status:

◎ The technology can be used in both industrial de-dusting and home air purifying.

◎ The new material filter has already been utilized for air cleaner, central ventilation system, automotive air purification and domestic robot system.



Filter Using Intermetallic Compound Paper Membrane



Application of Intermetallic Compound Paper Membrane on Air Purifying Machine

Escaping Current ParticleMeasurementTechnology

Category:

Indoor air quality monitoring and air purification

Applicant:

Pegasor

Country:

Finland

Technology Overview:

◎ The Pegasor sensor technology is based on measuring of electrical charge carried by particles. The electrical current escaping from the sensor with the charged particles can be measured and this gives a direct, fast, real-time measurement of the particle concentration.

◎ Sensitive to particle size 10nm-2.5 μm particle, high concentration range without dilution.

◎ Dynamic trap function, self-calibration, No drifting during service period.

◎ Proven Pegasor technology and experience can be applied for indoor, outdoor, stack and engine emission particle monitoring.

Technical Features:

◎ Capable of monitoring particle surface area, and the result can be expressed in real-time either or both as mass concentration or as number concentration.

◎ Test reports and publications are consistent with international and national standard equipment's and monitor equipment's in the market.

Financial Features:

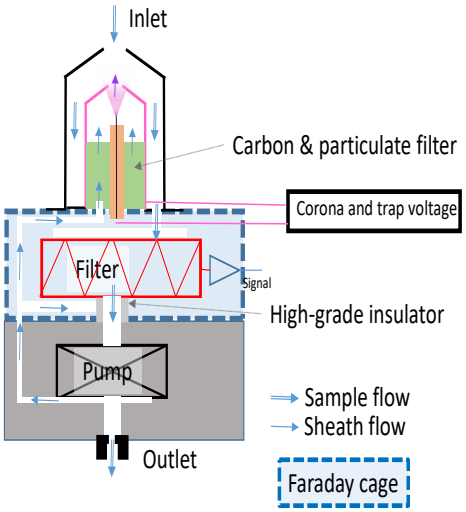
◎ Price: 9000-50 000 Euros (depending on different products and configurations)

◎ Less Maintenance: Filter replacement interval is 12 months, Cost 500 EUR.

◎ Designed lifetime: 10 years

Implementation Status:

The Pegasor sensor technology has been implemented in public buildings (office building, school, airport, hospital, etc.) as well as test lab, monitor station and engine emission monitor station.



Schematic Diagrame of Escaping Current Particle Measurement

Ambient Particulate Monitor and Vehicle Exhaust Particulate Monitor

2nd Bluetech Award Finalists

Category: Diesel engine emission reduction technologies & clean energy substitutes

Technology	Applicant
◎ Silicon Carbide Diesel Particulate Filters (Re-SiC-DPF)	◎ LiqTech International A/S
◎ ART Diesel Vehicle Exhaust Treatment System	◎ Guizhou Huangdi Diesel Engine Cleaner Co., LTD.
◎ BlueMAX NOVA 300e	◎ Nett Technologies Inc.
◎ EGS BOOST	◎ Eco Global Solutions,Inc.
◎ XeroPoint Hybrid Propulsion System	◎ Aspin Kemp & Associates Inc.
◎ Air Powered Start-up System	◎ Shanghai ShenZhou Vehicle Energy Saving & Environmental Protection Co., Ltd.
◎ Ammonia Storage and Delivery System (ASDS)	◎ Faurecia China

Category: Coal combustion emission control & clean energy substitutes (non-power sector)

Technology	Applicant
◎ Low Temperature Flue Gas Simultaneous Desulfurization Denitrification and Dust Removal Technology	◎ Central Research Institute of Building and Construction Co.,Ltd.
◎ Zeta Electrode Boiler	◎ Beijing Zeta Energy Technology Corp.

Category: VOCs substitution, monitoring and pollution prevention

Technology	Applicant
◎ Regenerative Thermal Oxidizer(RTO)	◎ Anguil Environmental Asia(Shanghai) Ltd.
◎ Gas Filter Correlation Radiometry (GFCR)	◎ Gas Plume Imaging (GPI) Canada Inc.

◎ Packaged Technology of VOCs Treatment and Recycling Based on the Adsorption and Recycling Technology of Activated Carbon	◎ Bay Environmental Technology(Beijing) Corp.
◎ Smart detection technology for industrial VOCs leakage & fugitive emissions	◎ EnsMax LLC
◎ Diffusive VOC Sampler	◎ IVL Swedish Environmental Research Institute Ltd.

Category:Indoor air quality monitoring and air purification

Technology	Applicant
◎ CLIMATIC (Indoor Air)	◎ INFUSER Denmark
◎ Smart Fresh Air Purification System	◎ Jiangsu CASRS Pollution Control Engineering Co.,Ltd.
◎ MayAir Germicidal Air Purifier D-Breath 5	◎ MayAir Technology (China) Co., Ltd
◎ Indoor Air Quality Online Sensing and Monitoring System	◎ Shanghai Digital Sensing Technology
◎ Intermetallic compound Parer-like membrane air purification technology	◎ Intermet Techonology Chengdu Co., LTD.
◎ Escaping current particle measurement	◎ Pegasor Oy

Category:Ultra-low emission control for coal-fired power plants

Technology	Applicant
◎ Powdered Activated Carbon FastPAC Premium	◎ ADA Carbon Solutions, LLC
◎ A Low Concentration Stack Dust Sampling Probe with Heating System	◎ Qingdao Haina Electrooptical Environmental Protection Co.,Ltd.
◎ The deep desulphurization technology of flue gas by slurry atomization and swirl flow field	◎ Beijing Chutian ruiping Environmental Technology Co.,Ltd South China University of Technology"

Previous Winner & Award Finalists

1st Bluetech Award

The First Bluetech Award officially began in April 2015 and gathered 60 technologies from 8 countries. After the assessment and evaluation. 21 technoliges became the finalists and 5 of them were the award winner.

1st Bluetech Award Winners

Category: Diesel Engine Pollution Control Technology

- ◎ Technology： Multi Functional Diesel Performance Additive
- ◎ Applicant: Total Petroleum (Shanghai) Co., Ltd.
- ◎ Technology： Diesel Particulate Filter System
- ◎ Applicant: Wuxi Weifu Lida Catalytic Converter Co., Ltd.

Category: VOCs Pollution Control Technology

- ◎ Technology： Low Emission Control Technology for Valves
- ◎ Applicant: Garlock Sealing Technologies (Shanghai) Co., Ltd

Category: Indoor Air Purfication Technology

- ◎ Technology: Mayair Electric-Pocket Technology
- ◎ Applicant: Mayair Technology (China) Co., Ltd
- ◎ Technology: EKEAIRTM MKJ-4000 Air Purfication Disinfector
- ◎ Applicant: Jiaxing Sanyin Environmental Purfication Technology Co., Ltd

1st Bluetech Award Finalists

Technology	Applicant
◎ Laser Egg Smart Air Quality Monitor	◎ Origins Technology
◎ HVAC Runoff-style ESP Air Purifier	◎ Beijing Huanengda Power Technology Company
◎ Bi-Polar Ionization(BPI)	◎ AtmosAir Asia
◎ PHI Technology in Interior Smart Air Purification System	◎ Shanghai Eayco E@P Technology Co., Ltd
◎ RESET Certified: material database, health impact calculators and real-time monitoring	◎ GIGABASE ENVIRONMENTAL CONSULTING (SHANGHAI) CO., LTD
◎ High precision air quality monitors powered by big data and artificial intelligence	◎ Air Visual
◎ Diesel-CNG Dual Fuel Supply System	◎ Beijing Landi Renzo Autogas Systems Co., Ltd.,
◎ EGS Boost	◎ Eco Global Solutions, Inc.
◎ FBC Diesel Particulate Filter System	◎ Beijing Runwoda Auto Technology Co., Ltd.
◎ Low Temperature Plasma VOC Treatment Technology	◎ Tsinghua University b
◎ Aquaguard Waterborne Coating	◎ Valspar (Shanghai) Management Co.,Ltd.
◎ VOCs Fugitive Emission Detection and Management	◎ Beijing TopOasis Environmental Technology Co., Ltd.
◎ Low temperature plasma & RCO technology for VOCs	◎ Jiangsu CASRS Pollution Control Engineering Co.,Ltd.
◎ Low temperature catalytic oxidation technology of volatile organic com-pounds(VOCs)	◎ Guangdong Live Fresh Inc.
◎ Evap Trap ORVR Technology	◎ BASF Catalysts (Shanghai) Co,.Ltd
◎ UV-Biofiltration joint technique for VOC and odor gas treatment	◎ Tsinghua Redbud Huizhi Technology Ltd.
◎ ECB Enhanced SQU VOC Treatment Technology	◎ BEIJING DAHUAMINGKE E&F CO, LTD
◎ Uviblox air treatment systems	◎ IBL Umwelt and Biotechnik GmbH
◎ Low Cost Air Quality Monitoring System Powered by Big Data and Internet Tech-nology	◎ Jining Zhongke YunTian Environmental Protection Technology Co. ,Ltd

Clean Air Alliance of China

Clean Air Alliance of China (CAAC), initiated by 10 key Chinese academic and technical institutions in clean air field, aims at providing an integrated clean air collaboration platform in China for academic and technical institutions, provinces and cities, non-profit organizations and enterprises. The overarching goal is to improve air quality in China and mitigate the negative impacts on public health due to air pollution. The members of CAAC include academic institutions, provinces & cities, as well as other nonprofit organizations and enterprises that care about clean air.

Founding Members

Tsing University

Appraisal Center for Environment &Engineering of MEP

Chinese Academy for Environmental Planning (CAEP)

Nanjing University

Beijing Normal University

Fudan University

Chinese Research Academy of Environmental Sciences (CRAES)

Peking University

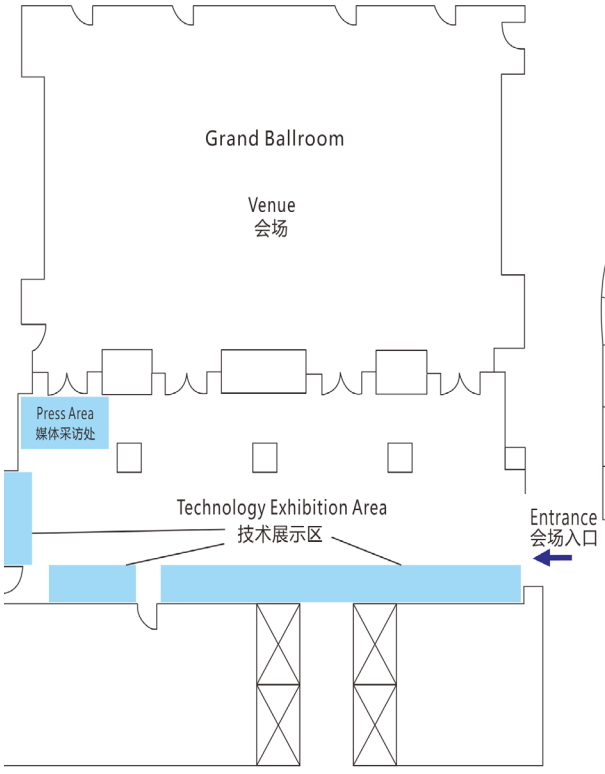
Vehicle Emission Control Center (VECC) of MEP

Renmin University of China

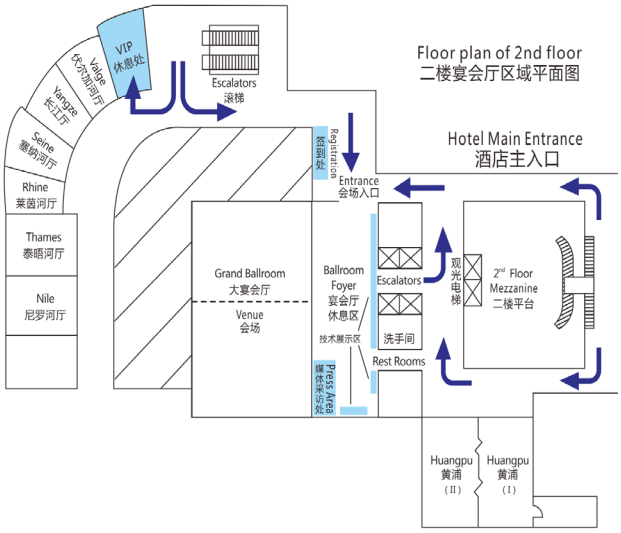
Founding Supporter

Energy Foundation

Participant Guide



Grand Ballroom Plan



Grand Ballroom Plan Of 2nd Floor

CAAC Enterprise Network

As a sustainable collaboration platform, the CAAC Enterprise Network was founded to involve private entities to help improve China's air quality and develop ecological civilization, by identifying and promoting best available clean air technologies across the world.

CAAC Enterprise Network conducts the following activities:

◎ Evaluate and promote clean air technologies on our online database, using CAAC's Clean Air Technology Assessment Methodology

◎ Connect technology providers with relevant upstream and downstream partners, including clients, companies and investors

◎ Transfer and exchange knowledge and best practices through forums, visitations, salons and training sessions

◎ Support research projects around innovative technologies, technology standards and policy development to foster a supportive ecosystem for technology deployment

With support from the CAAC enterprise network, members could stay ahead of industry changes with CAAC's updates and analysis of clean air policies, measures and development plans on both national and local levels. In addition, members can also differentiate their technologies by undergoing 3rd party Clean Air Technology Assessment Methodology to verify their performances. The network offers opportunities for members to participate in trainings, workshops, forums, exhibitions and matchmaking activities, which could contribute to forming clean air policy and standards, as well as implementing local clean air schemes.

◎ Technical focus areas of the Network include but are not limited to:

◎ Emission prevention and treatment

◎ Air quality monitoring and analysis

◎ Green transportation

◎ Clean and renewable energy

◎ Industrial and building energy conservation

◎ Individual protection from air pollution

ICCS
清洁空气创新中心
Innovation Center for Clean-air Solutions

For more information, please contact:

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