Bluetech Award

1st Bluetech Technology Manual

2015/12/12

Renaissance beijing Capital Hotel

Organizers

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

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

Strategic Partners

Energy Foundation China

Partner Organizations

Energy and Environment Branch of Chinese Society for Environmental Science (CSES)

Ministry of Environmental Protection – Vehicle Emissions Control Center (VECC)

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

China Association of Environmental Protection Industry (CAEPI), Committee of Vehicle Emission Control (CVEC)

China Council for Industrial Environmental Protection (CIEP)

Green Finance Committee of China Society for Finance and Banking

Center for Environmental Education and Communications of Ministry of Environmental Protection (CEEC)

Supporting Organizations

Xiamen Environment Protection Vehicle Emission Control Technology Center

China Bioenergy Network

Ecotech China

China Association of Private Equity

Ecotech China

Beijing Global Village Environmental Education Center

Canada China Chamber of Commerce

European Union Chamber of Commerce in China

China-Italy Chamber of Commerce

UK Trade & Investment

Clean Air Alliance UK

Beijing Energy Network

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.

◎ International: We gather technologies globally, including those from countries that lead the clean air technology industry. Experts and media players from around the world participate in the judging and reporting processes.

◎ Objective: We use a standardized, transparent technology assessment methodology ensure objectivity in our judging process. We look for real-life performance results through expert visits, on-site investigations, data analysis and other multidisciplinary approaches.

◎ Impactful: On-line and off-line activities will be conducted and publicized, including Forum presentations, website coverage, regional matchmaking tours, video, WeChat and trade media coverage.

1st Bluetech Winner & Award Finalists Introduction

The first Bluetech Award officially began in July 2015, 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 26 Bluetech Award finalists and five 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

Diesel Particulate Filter System

Category: Diesel Engine Pollution Control Technology

Applicant: Wuxi Weifu Lida Catalytic Converter Co., Ltd.

Description:

◎ Noble metal catalyst coating in DOC triggers oxidation reactions to oxidize HC, CO and a portion of particulate matters. The CDPF captures PM, where the PM is then burned by 1.) passive regeneration with the noble metal catalyst to help reduce temperature to 400℃ , and 2.) active regeneration with diesel fuel injection to help reach higher temperature. The treated exhaust can satisfy the CN 5 emission standards.

◎ Installing the DPF fuel injection device will cause minimal changes to the engine, and the system can operate independently. Comprehensive and standardized calibration systems ensure DPF regeneration is quick, accurate, effective, and controlled so that the system can be re-used.

◎ The structure of the system is engineered so that the fogging coefficient UI≥0.95, raising the utilization rate of the catalyst and improving the system's ability to manage heat efficiency and reliability.

Environmental Effect:

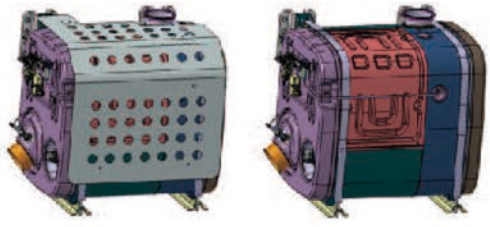
Pollutant removal efficiency: CO>80%，PM>90%，PN>90%，HC>80%，NOx>90%.

Financial Impact:

System costs are varied and are based on different exhaust treatment requirements.

Application status:

This technology is in prototype stages, and the DPF system has not been commercialized yet.



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Bench test

Multi Functional Diesel Performance Additive

Category: Diesel Engine Pollution Control Technology

Applicant: Total Petroleum (Shanghai) Co., Ltd.

Description:

◎ Multi-functional diesel performance additive (AC700) is composed with an environmentally friendly, ash-free, phosphate-free and halogen free formula. The additive uses polyisobutylene succinimide as an oil-soluble surfactant.

◎ By clearing the carbon residue in the inner-engine to optimize combustion, the additive reduces the fuel consumption.

◎ Reduces CO, PM, HC and NOx emission that are caused by incomplete combustion.

◎ The product is low-cost and fast-acting, thus produces visible results.

◎ The diesel fuel is required to meet Chinese 4/5 diesel fuel standard.

◎ AC700 is compatible with many materials used for combustion systems. It is compatible with stainless steel, aluminum, Teflon PFTE packaging coating, and any other materials that are compatible with C9/C10 aromatic solvents.

◎ The product is able to be operated and stored for more than 12 months, under temperatures that are above -10℃ .

Environmental Effects:

◎ If added at high doses, AC700 could have significant effects on diesel fuel efficiency. Total has conducted chassis-dyno tests in Indian ICAT laboratory using typical Asian diesel fuel. Results revealed that AC700 improves cost efficiency by an average of 3.24%.

◎ Testing results revealed that the product can reduce emissions by up to1.8% for CO, 6.45% for HC, 5.56% for NOx , 1.93% for CO_2 and 4.86% for PM.

Financial Impact:

RMB 40,000 / metric ton.

Application Status:

The product has approx. 10 major clients in the Yellow River Delta and Yangtze River Delta regions. The majority of the clients are within the petrochemical industry. Annual domestic sales have reached RMB 8M in worth.

Before & After

Low Emission Control Technology for Valves

Category: VOCs Pollution Control Technology

Applicant: Garlock Sealing Technologies (Shanghai) Co.,Ltd.

Description:

◎ Low fugitive dust valves are formed with high-purity graphite fibers coated with INCONEL-special alloy string for extra strength.

◎ Maximum continuous working pressure: 10,000 psig (EVSP), Maximum continuous working temperature range: -200°C to 455°C.

◎ Packing material that is under pressure can experience shape deformation, which helps seal leaking areas on the valve stem. The seal has low resistance.

◎ After being tested under the U. S. API 622-Type Testing of Process Valve Packing for Fugitive Emissions, the product averaged a leaking capacity of< 100ppmv.

◎ Low density graphite can address the leaking problem from stems that have been stressed repeatedly. The product can be adjusted multiple times and can extend the valve's lifespan, EVSP can maintain minimal leaking capacity for long service life.

Environmental Effect:

Reduces VOC emissions and material costs that are caused by leaking.

Financial Impact:

Not provided.

Application Status:

The product is used in the United States, Canada and China. The company has approx. 50 clients in China, who are mostly in the chemicals, petroleum and nuclear power industries. The products made about RMB 8M in sales in China annually.

MayAir "Electric-Pocket" Technology

Category: Indoor Air Purification Technology

Applicant: MayAir Technology (China) Co., Ltd

Description:

◎ Can be used with any VRV or VRF air conditioning systems.

◎ Able to capture less than 0.01 microns of fine particles, and can be designed uniquely according to each client's processes and needs.

◎ Electric-Pocket Technology can reach high PM filtering efficiency; it can also prevent fugitive dust even after shutting down the electric filter, or under strong wind conditions.

◎ The static electricity generator is built with pure metals, ensuring durability and up to 20 years of performance. The system can also be fully recycled.

◎ Can reduce the replacement frequency of the internal pocket filter, thus lowering the operation cost for the company.

◎ Compare to other medium filters, this filter creates relatively less resistance, and does not affect airflow and performance of the air conditioning system.

◎ Compare to other air conditioning systems with similar efficiencies, this system has relatively less energy demands and ozone emissions.

Environmental Effects:

◎ Lab testing results: $PM_{2.5}$ reduction efficiency: 96%-98%, bacterial removal efficiency: >89%.

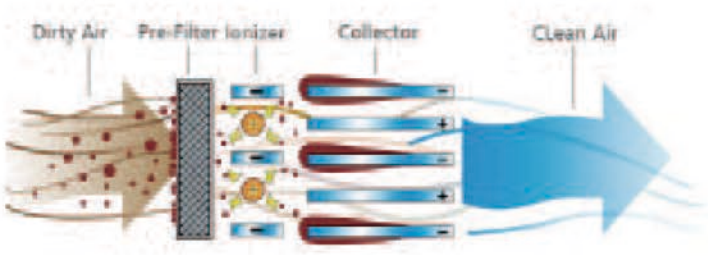
◎ On-site testing results (3 months after last maintenance): $PM_{2.5}$ Removal efficiency: 96%.

Financial Impact:

Approx. RMB 3,000/per system (may be subject to change)

Application Status:

The product is currently deployed in the northern and eastern regions of China, mostly in high-end commercial buildings.



EKEAIRTM MKJ-4000 Air Purification Disinfector

Category: Indoor Air Purification Technology

Applicant: Jiaxing Sanyin Environmental Purification Technology Co., Ltd.

Description:

◎ High efficiency filter + high power UV sanitation module.

◎ Can be used in ICU, IV rooms, outpatient service rooms, precision equipment rooms and central control rooms.

◎ The system has high air outflow rate up to 4,000 m^3/hr.

◎ HEPA H12 low-resistance, high-efficiency filter to remove PM and UV light to kill bacteria.

◎ Dynamic, continuous air filtration can help ensure facilities meet medical standards and public health standards.

Environmental Effects:

◎ The system was tested in a 30m^3 environmental chamber, which successfully reduced white staphylococcus bacteria by 100% in one hour. Under the same amount of time, Aspergillus count was reduced by 100% as well and natural bacteria was reduced by 98.53%.

◎ CADR for $PM_{2.5}$: 2755.4m^3/h, PM10: 2561.8m^3/h, PM>0.3: 4159.3m^3/h and purification efficiency of 8m^3/hW accordingly;

◎ Noise level: <60dB.

Financial Impact:

The system costs RMB 390,000.

Application Status:

The system recently went to market

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

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

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, technology enterprises and investment institutions. 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

Tsinghua 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

The Energy Foundation

More information, please contact: **www.cleanairchina.org**

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