

**Announcement of the list of award-winning works in "CCB Cup" the  
16th National University Student Social Practice and Science Contest  
on Energy Saving and Emission Reduction (Hong Kong, Macao,  
Taiwan and International Group)**

Adopted by the evaluation and vote of the committee of the National University Student Social Practice and Science Contest on Energy Saving and Emission Reduction on August 2, 2023, a total of 2 works were awarded Gold Awards, 14 works were awarded Silver Awards, 24 works were awarded Copper Awards, and 40 works were awarded Excellence Awards in "CCB Cup" the 16th National University Student Social Practice and Science Contest on Energy Saving and Emission Reduction (Hong Kong, Macao, Taiwan and International Group).

The specific list is as follows (regardless of order):

<b>Awards</b>	<b>Title of the work</b>	<b>University</b>	<b>Member name</b>
Gold Award	Carbon Teller: A Data-driven Digital System for Carbon Emission Monitoring from Coal-fired Power Plant	Monash University	Jiang Yushuang, Lu Jiahui, Li Tong, Guo Xinyi, Wan Yi, Sun Haixin, Fan Shengwei
Gold Award	A healthy and energy-saving green nano air purifier	University of Illinois Urbana-Champaign	Si Chen, Ma Xin, Zhao Ning, Su Zixiang, Wang Qianrong, Zhong Hong, Su Guifu
Silver Award	A new building envelope system based on synergistic solar and phase change materials for temperature regulation	HONG KONG BAPTIST UNIVERSITY	Lam Tsz Mei, Tang Guoqiang, Liu Minghao, Wang Zheng, Qiao Wenyuan
Silver Award	“A trickle of residual heat that converges into a source”——Removable phase change heat storage system based on waste heat recovery from multiple heat sources	Monash University	Xin Ruixiong, Liu Jiahang, Zhang Kun
Silver Award	A Carbon Dioxide (CO <sub>2</sub> ) cycle energy storage system based on High-pressure Heat transfer tank with Ejector and Jet devices	Monash University	Ye Hengbing, Yang Wenlong, Dong Gege, Chen Cheng

Silver Award	Carbon-Negative Hydrogen Production from Biomass Combined with Wind Energy	Monash University	Xu Yue, Wang Song, Li Xinglong, Wang Tong, Liu Ruian, Wu Qingwen
Silver Award	Green Sound: A Solar-Driven Thermoacoustic Power Generator	The University of Auckland	Sun Wenpeng, Jian Yupei, Liu Jiawei, Wang Zhenhua, Wang Mingrui, Tao Shancheng, Liang Ruiqi
Silver Award	Fully passive zero-carbon rural single-family housing system	University of Minnesota	Gao Yiheng, Qi Siming, Wang Wenjun, Wang Yuxiang, Wang Yichen
Silver Award	Design Specification for a Boiler Dry Slag Quantity Detection Device Based on Binocular Stereoscopic Vision	Monash University	Li Shiqiang, Chen Taian, Chen Yufan, Chai Yuyang
Silver Award	Wanderer knows no boundaries	University of Manitoba	Wang Xin, Li Shuang, Zhou Rongyao, Guo Jinchao, Meng Ruiting, Sun Ruifeng, Chen Xi
Silver Award	Guardian of Green Harbor——AC-DC integrated intelligent shore power pile	The University of Manchester	Wang Ruiran, Yu Mengqin, Miao Bingyan, Lai Xiansheng, Zhang Xue, Han Xiaoyan, Tang Jialin
Silver Award	Soaring High with Hydrogen — Hydrogen Fuel Cell System Based on Coupled Photothermal Power	Moscow Aviation Institute	Wen Jin, Wang Dapeng, Xu Zheng, Jia Yinuo, Liu Xinyue, Wan Yuxuan, Liu Zhongchi
Silver Award	Design Specification for the Preparation of New Adsorption Materials Using Abandoned Pine Cones	University of Macau	Tong Timothy, Pan Guangze, Sun Nan, Zhao Xiaolong
Silver Award	A high mixing degree - low energy consumption anaerobic corn stalk fermentation mixing scheme design	City University of Hong Kong	Sun Jiazheng, Liu Yuyingnan, Wang Xuguang, Qu Youpei, Liu Tianqi, Lv Xiaoyi, Zhang Kejia
Silver Award	Carbon Reduction Future, Green New Life——Efficient combustion of low concentration gas and carbon de-alkalization of high alkali coal	Peter the Great St.Petersburg Polytechnic University	Zhang Kaiyue, Zhang Yaqi, Tang Kunxi, Yan Yaguang, An Bo
Silver Award	Thermoelectric Power Generation - Design Specification of Waste Heat Recovery and Energy Storage Device for Gas Cooker Based on Temperature Difference Generating Power	Macao Institution for tourism studies	Li Yuhao, He Xiaoling, Cheng Shuqing, Peng Xiao, Li Yuting, Zeng Kun, Zheng Xiaoyan
Copper Award	Methanol fuel mixture injection - AI high-precision injection control system that provides clean and energy-saving power for commercial vehicles	Cranfield University	Wang Peining, Song Yang, Zhu Jialong, Zhang Liang, Hu Quan, Liu Feifan, Yang Dahai

Copper Award	To reduce carbon with carbon, light and heat responsibility— A design specification for a multi-purpose constant temperature phase change carbon-based coating based on photothermal conversion	Ibn Tofail university	Abdellah Assili, Fu Tianhui, Xue Jingxuan, Shi Cheng, Yang Fan
Copper Award	"Smart Sunshine" A full-spectrum dynamic adjustable roof solar energy comprehensive energy supply device	Arizona State University	Peng Zixuan, Jin Gaohe, Zhang Hongxia, Chen Haofei, Xiao liang, Wu Zonghan
Copper Award	Active-passive integrated zero-energy air conditioning system based on photovoltaic - thermoelectric - radiative cooling	The University of Hong Kong	Deng Yirong, Zhang Zexu, Duan Zhiyu, Tian Junwei, Yang Yuchen, Wang Tingting, Yang Siwen
Copper Award	Pollutant capturer --- Desktop Pollutant High-Efficiency Capture and Purification System Specification	Monash University	Jin Ziyu, Zhou Xinda, Zhu Yuhan
Copper Award	High flow zero carbon fuel injection device based on high energy ignition	University of southampton	Feng Zhiqian, Zou Xinsong, Mai Yuanqi, Jin Qiuyu, Sun Yucheng, Wang Anlin
Copper Award	Solar Interfacial Evaporation for Seawater Desalination and High Efficiency Water Harvesting System	University of Twente	Zhao Yiran, Wu Dongxu, Cheng Minghao
Copper Award	iSTEM Compact Box for waste heat recovery using supercritical carbon dioxide	Monash University	Chen Yifan, Chen Ranjing, Li Bo, Jia Boqing, Fan Yongkang, Chai Xuguang
Copper Award	Tracing the source, Travel the future — Xi'an river beach research and the "three horizontal and one vertical" governance model	University of South Australia	Ma Junchi, Xiao Yuang, Li Jiahao, Zhao Fulin, Wang Yuqing, Jing Xin, He Jiawen
Copper Award	Chlorine Inhibitor-Synergistic emission reduction of multiple organic pollutants in flue gas desulfurization process	Auckland University of Technology	Hou Zhengyi, Kang Yi, Liu Shuyi, Shi Boxuan, Mo Fan, Tian Tongmu, Yin Pengming
Copper Award	A new type of water-saving toilet suitable for rural areas	Technological University Dublin	Wang Jiayi, Chenhao, Guan Yujie, Liuzheng, Wu Zonghan, Yan Yujie
Copper Award	Design manual for a vacuum cryogenic drying system based on solar frequency separation type combined electric heating technology	California State University	Lu Hongfei, Wu Liuming, Xu Xubin, Wang Longhai, He Yuzhen, Chen Rongjue, Yang Yiming
Copper Award	High-performance zero-carbon thermal switch	University of California, Berkeley (UCB)	Tang Lei, Zhuo Meng, Shen Xiaohan, Gao Qing, Zhang Jingxia, Fei Jiali

Copper Award	Rational design of alloy-based nanoarray for high-performance sodium-ion batteries	National University of Singapore	Wang Junhui, Li Xinyan, Zhu Ying, Wang Yamei, Wang Xingyang
Copper Award	The "Green" Voyage - UVMS System for Ship Attachment Cleaning	Australian National University /ShanDong University (weihai)	Cao Rui, Chen Tong, Fan Lingxuan, Ji Pengyuan, Xu Yifan, Mu Wenxin, Wang Junhua
Copper Award	Elastic ecosystem - sea, land, air smart association on floating island purification	University of Sydney	Zhuo Yuxi, Liu Xinyue, Lan Binshen, Wang Ning, Liu Ziyu
Copper Award	Smell Sight—Air Quality Detection System	Palacky University in Olomouc	Li Xinlu, Sun Xingdong, Wang Xiancheng, Du Haocheng, Gao Zhanming
Copper Award	Smart solar moisture collection and power generation device for intelligent flower maintenance	University of Macau	Feng Jinxian, Zhao Rong, Wang Xueke, Wu Qiang, Luo Yaohong, Zhao Jiawang, Chen Yi
Copper Award	Energy-saving and environmentally friendly intelligent sorting garbage bins	North South University	Xu yanyan, Wu Tao, Guo Yuxuan, Chen Xingyue, Yao Suyang, Ding Weijie, Alfi Shariar
Copper Award	energy recovery device for automobile speed bump	University of Detroit Mercy	Xu yanyan, Wang Siqi, Li Meizi, Wang Peiyao, Li Zida, Li Yunuo
Copper Award	Pioneer of snail control 2.0--Eco-friendly intelligent snail control device	Soongsil University	Gong Suyang, Ma Hongdong, Shen Xiaoyi, Cao Kehan, Li Xingchi
Copper Award	Hydrogen is loaded into the array—A mobile power supply equipment integrated with a lithium borohydride-based hydrogen source system and fuel cell	Brandeis University	Zhang Junqi, Zeng Kun, Zheng Xiaoyan, Mao Xiuliang, Xu Daoming, He Xiaoling, Chen Shuqin
Copper Award	A Sustainable Self-charging Environmental Protection Mask System	University of Macau	Li Jiacheng, Li Beiqiu, An Dan, Xiang Zhimin, Wang Xiaoping, Dai Hangrui
Copper Award	HydroShield — A Low-Temperature Plasma Discharge-Based Hydrophobic Modification Device	University of Cincinnati	Zheng Boyu, Hou Zhiwen, Pei Haoran, Wang Xiao, Liao Ling, Wen Xiaoyu, Qi Danlin
Excellence Award	Mobile power router electric vehicle charging station	University of Wisconsin - Madison	Zhang Jiaqi, Xiao Xiang, Yang Wentao, Zhao Ziyi, Zhang Haoran, Chen Yuan, Chen Junwei
Excellence Award	Dynamic Energy Efficiency Optimization of Photovoltaic/Thermal Integrated Heat Pump Systems	Monash University	Yu Qian Yue, Zhai Deman, Wu Mengdan, Gao Peibo, Han Jiahua

Excellence Award	Rechargeable Zinc-ion Battery Based on Water System	City University of Hong Kong	Chen Junhong, Yang Xinyao, Zhao Yingyang, Jiang Zhenyan, Jiang Jiayu, Yao Jiaming, Cai Quansheng
Excellence Award	A dazzling and energy-saving full heat recovery fresh air window	Monash University	Jiang Yiao, Su Guifu, Zhong Hong
Excellence Award	Photosynthetic microbial fuel cell system based on bionic giant clam	The University of New South Wales	He Zixu, Zhao Wenge, Xin Chunxin, Zhang Haoyang, Peng Minxuan, Liu Wanzhen
Excellence Award	Design manual for electronically controlled fuel system for open type diesel engines	University of Southampton UK	Liu Wenzhuo, Nie Xiaojian, Jin Meihui, Su Ruiqing, Zhang Xinyu, Zhao Tianhang, Wang Jin
Excellence Award	FertilizerLEAP – Green Ammonia Production Platform	The University of New South Wales /The University of Sydney	Sun Jing, Gao Yuting, Li Tianyu, Jiang Haoxuan, Song Qiang, Xia Binbin
Excellence Award	Speed bump for green travel-Self-powered carbon cleaning device based on efficient potential energyrecovery	Belarusian State University of Physical Education	Hou Shihao, Zhao Mengyun, Wang Minghan, Wang Mengxiao, Li Yihang, Lu Jiahao, Xie Yuhao
Excellence Award	Research on Green Campus Construction under the "Dual Carbon" Goal: Based on a survey of 7 universities in Chinaand Southeast Asia	Arizona State University	Li Junjie, Zhang Xinran, Pu Jiajun, Li Zixin, Liao Tongyao, Chen Jiaoyu, Kang Rongye
Excellence Award	A trip to explore potential – a survey of carbon reduction potential for students	University of Bologna	Wen Zhixuan, Wang Bo, Chen Xinjie, Chen Yuling, Han Jinzhao, hao Mingkun, Wang Peiqian
Excellence Award	Green Intelligent Manufacturing - Five-axis CNC monitoring and evaluation system based on digital twin	Newcastle University	Feng Longyuan, Chen Senmia, Xiao Xiaolong, Fan Wenhan, Wang Siyuna, Ping Yunhong, Cui Mengyang
Excellence Award	"Three birds with one stone"—a portable battery based on nitrate reduction	The University of Hong Kong	Xia Yue, Xi Guobin, Chen Feng, Lin Zichen, Fan Jialin, Chen Yuhan
Excellence Award	Nanometer magnetron sputtering photocatalytic new car film	Dublin University of Technology	Zhu Zirui, Deng Jingtian, Song Yinqiao, Wang Nianwen, Lin Qingshu, Zhou Yunzhu
Excellence Award	Design of light guide based on GPRS controlsystem toreplace tunnel bulb	University of Calgary	Karleen Gwen, Liu Yunqi, Wang Jingxin, Chen Silin, Dong Xueying, Chen Haoqian, Li Xiang

Excellence Award	"Solar Sandwalker" — Design manual of desertsand control robot based on solar air water intelligent irrigation	The university of Debrecen	Li Lexu, Nan Wenting, Sun Yunhao, Zhu Yifei
Excellence Award	New Energy Smart Street Lamp Design Declaration Based on Internet of Things	Inner Mongolia University of Science and Technology	Gao Di, Gu Jianye, Han Yuze
Excellence Award	Tree based passive multi-coupling condensing water extraction device	Georg-August-University Goettingen	Zeng Zining
Excellence Award	"Tiny current ably concerned" — design specification of self-powered smart insole for health monitoring	University of Macau	Qiao Lulu, Chen Yi, Zhao Rong, Wang Xueke, Li Shasha, Geng Xueming, Hu Yingfei
Excellence Award	Gold Diggers: Microfluidics-Based Microbial Recovery of Precious Metals	University of Macau	Dai Xuanwei, Wang Xueke, Hao Rong, Zhao Jiawang, Geng Xuemin, Chen Yi, Wu Qiang
Excellence Award	A new type of marine garbage recycling and transformation platform	City University of Macau	Chen Zhuoxun, Cao Junhua, Tan Qiujie, Li Qiu, Ge Zengji
Excellence Award	Intelligent Cooling Cushion Based on Semiconductor Refrigeration and Micro-channel Circulation	University of Macau	Lai Yongyi, Zhang Yongqi, Teng Shucheng, Zheng Aodu, An Hui, Huang Runnan, Wu Yingjie
Excellence Award	Red transport without "line" — A new remote wireless charging technology based on infrared ray	University college London	Li Bingzhuo, He Xinge, Wu Junrong, Peng Pengming, Huang Gang, Guo Shiming, Xie Jiawei
Excellence Award	Cyanophyta Bloom to Carbon Material- Instruction Manual for a Ship-integrated Hydrothermal Carbonization System to Simultaneously Produce Carbon Quantum Dots and Carbon Dioxide Adsorbents	Northern Arizona University	Shi Ruihua, Xu Han, Xu Yingdong, Liu Xiao, Shen Jincheng, Wang Longhai, Lu Yixiang
Excellence Award	A scroll hydrogen engine coupled with organic hydrogen storage system using multi-stage waste heat recovery	Northumbria University	Sardellis Apostolos, Qi Shijia, Qiu Wenheng
Excellence Award	Fresh and cold chain first — Intelligent Guardian of Fresh Scattered Delivery	The University of Manchester	Lin Tongjie, Yang Yuhao, Wang Qifang, Wang Jingwei, Zhao Liangliang, Li Xiaohui, Liu Xinting

Excellence Award	One road generation "electricity" - intelligent lifting speed belt power generation device for deep utilization of road residual energy	University of Illinois Chicago	Wu Xun, Cao Jiahui, Xu Rui, Jiang Chao, Huo Xiao, Guo Hongying, Yu Lina
Excellence Award	Offshore integrated energy generation system	Arts et Métiers ParisTech	Tu Yongqiang, Zhang Tian, Xue Fangkai
Excellence Award	Born towards the sun — a smart street lamp system based on cloud-edge collaboration	The University of Manchester	Sun Yiran, Liu Yanhui, Huang Shiyv, Jin Yiran, Chu Zixin, Liu Jingjie, Jiale Qv
Excellence Award	A new design of blowdown water recycling in circulating cooling water system based on energy saving and emission reduction	Yonsei University	Yan Yan, Liu Jia, Zhang Qixin, Li Wen, Zhang Xinqing, Xu Mengmeng, Yang Yi
Excellence Award	The Instruction Manual for Vehicle-Mounted Methanol Steam Reforming technology for Hydrogen Production Based on Waste Heat Recovery	Bangor University	Yang Xin, Jin Junhao, Wan Shuai, Ma Yingchao, Liu Xunhao, Li Jinhua
Excellence Award	Carbon chain - Blockchain facilitates carbon-neutral solutions	Heriot-Watt University	Zhang Fuyao, Hong Mingfeng, Wei Zixiang, Li Meiyi, Shen Hanbin, Yuan Ruiyi, Yang Zhuo
Excellence Award	Hydrogen New Power - /N, S-rGO Bifunctional Total Water Dissolution Catalyst Development and Promotion Design Manual	University of Birmingham	Zhao Jianya, Bai Kailong, Chai Qichu, Liu Wenlong, Chen Yaru, Luo Qiuyu, Zuo Jinmin
Excellence Award	A Miniature Robot for Pest Detection and Control Utilizing a Gel-based Piezoelectric Luminescent Actuation System	Humboldt University of Berlin	Li Huiyong, Chen Yi, Dan An, Dong Shitao, Zhang Youjie, Li Boqiu Wang Xiaoping
Excellence Award	Pre-treating high-magnesia limestone in electrolytic cells enables carbon emission reduction in cement production and green hydrogen preparation	University of Kentucky	Ohiomoba Emmanuel, Xiao Ao, Qing Qingyun, Liu Shuai, Chen Jinlong, Zhang Zhenzhen, Liu Yang
Excellence Award	“Renewing from Waste” - A Carbon Fiber Composite Waste Reutilization Process Based on Supercritical Fluid Degradation Technology	Minsk State Linguistic University	Aliexandra Kuchuk, Wu Zhiping, Huang Kuan, Li Siwen, Liu Chaoning, Liu Shuyi, Hu Yuanyuan
Excellence Award	EcoGuardian: Your Portable Sterilizer and Freshener with PAW & DBD Technology	University of Liverpool, Xi'an Jiaotong-Liverpool University	Ji Yuxiang, Zhu Feifei, Guan Weizhuo, Chen Haochen, Su Hao, He Siqin, Zhang Jiayi

Excellence Award	Intelligent cruise - solar water environment monitoring clean linkage equipment	University Of Sussex	Lin Chenxi, Qi Ming, Gao Zhixin, XuMinna
Excellence Award	Infinite power team – Thermosensitive starch intelligent window design specification	Technological University Dublin	Wang Linyu, Bai Kailong, Bai Wenbo, Xiong Qianchi, Zhang Yang, Liu Wenlong, Wan Yunru
Excellence Award	The innovator -Novel Green Thermal Insulation Material	Technological University Dublin	Wang Linyu, Liu Wenlong, Bai Kailong, JingXianfeng, Zuo Jinmin, Wang Zhihao, Guo Yichen
Excellence Award	Multiple Batch Metal Ion Enrichment Devices and Their Applications	University of Freiburg	Jing Xu, Yang Minghui, Zhang Tianbao, Liu Chengpeng, He Yanfei, Liu Yanan

Publicity time: August 7th to August 13th (inclusive).

Secretariat of the Committee of the National University Student Social Practice and Science Contest on Energy Saving and Emission Reduction

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August 7, 2023