

NANOBEST JAPAN Co.,Ltd.

**Environmental
Purification**

Air purification

Water purification

Fuel purification

環境浄化の光触媒
NANOBEST[®]
可視光応答型アパタイト被覆二酸化チタン



Photocatalyst Application Development of Applied Products

General Agents in Each Country

【USA】

TOSMO ADVANCED PRODUCTS LLC

【China】

Shanghai NingLi Industrial Co., Ltd

【HONG KONG】

i-Natural Healthcare Products Limited

【Taiwan】

Qiao Hao Yun Enterprise Co.Ltd.

【Thailand】

SIAM MATERIAL & BUSSINESS CO.,LTD

【South Korea】

【Indonesia】

Development Partnership



RMUTT Thailand

www.rmUTT.ac.th ราชภัฏเทคโนโลยี

Rajamangala University of Technology Thanyaburi

Regular Member



光触媒工業会

Photocatalysis Industry Association of Japan

環境浄化の光触媒

NANOBEST®

可視光応答型アパタイト被覆二酸化チタン

Photocatalyst
Antibacterial and
Deodorizing Treatment

It can also decompose viruses.

Air Purification



Interior Coating
Application Method



Vehicle (Automobile) Interior Coating Application Method



【JAPAN】

Photocatalyst Antibacterial and Deodorizing Treatment

Airport

Chubu Centrair International Airport



Hotel

Hotel Yamachi



Hospital

Plastic Surgery



南郷中央整形外科

Animal Hospital



もぐもぐ動物病院

Nursing Facility



秀欧会 蜜柑

University



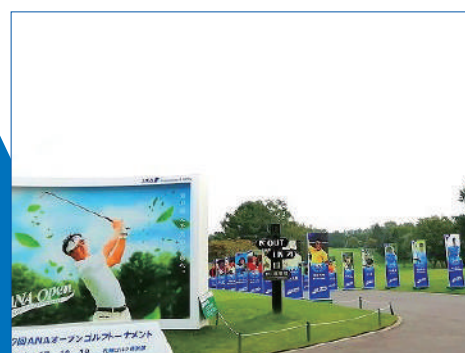
Takushoku University Hokkaido Junior College

Food Factory



Chocolate Factory

Golf Course



Sapporo Golf Club Wattsu Course

Ski Resort



Sapporo Kokusai Ski Resort

Public restroom



Sapporo Odori Park

【Overseas】

Airport

【Thailand】



Suvarnabhumi International Airport



Public facilities

【HONG KONG】



HK Convention & Exhibition Centre



Hong Kong Visual Arts Centre



Hospital

Wu Ki Lim Neighbourhood Elderly Centre



Nursing Facility

Tai Tung Pui Care & Attention Home

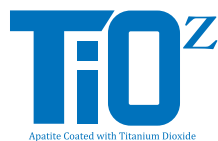


Elementary School

Chiu Yang Por Yen Primary School

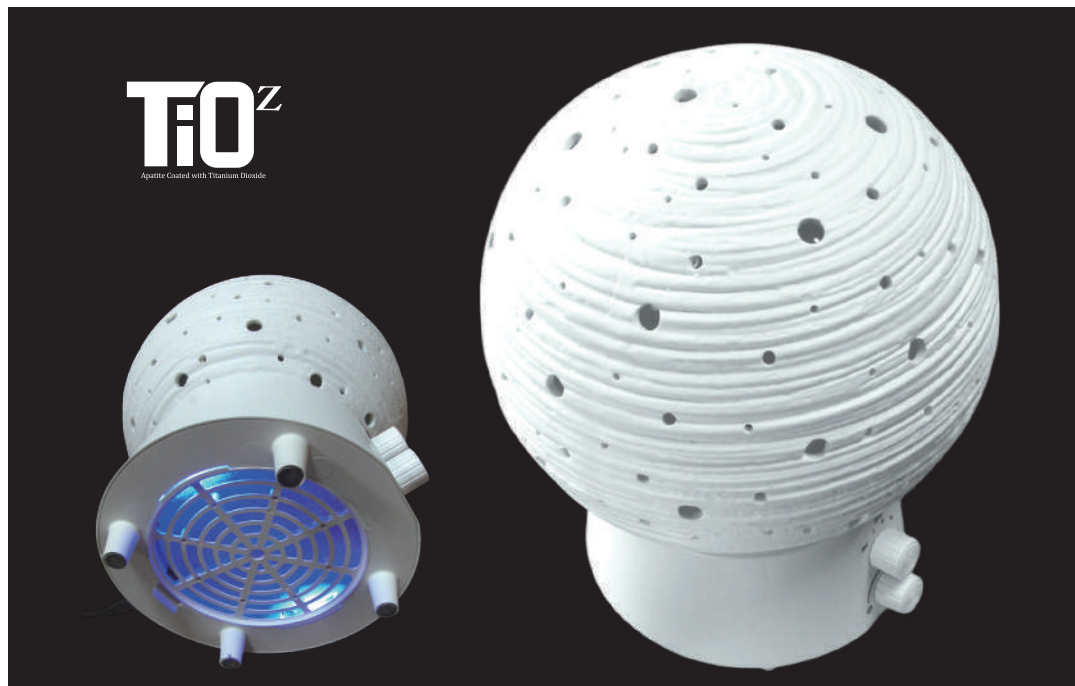


Photocatalyst Development of Air Purifiers



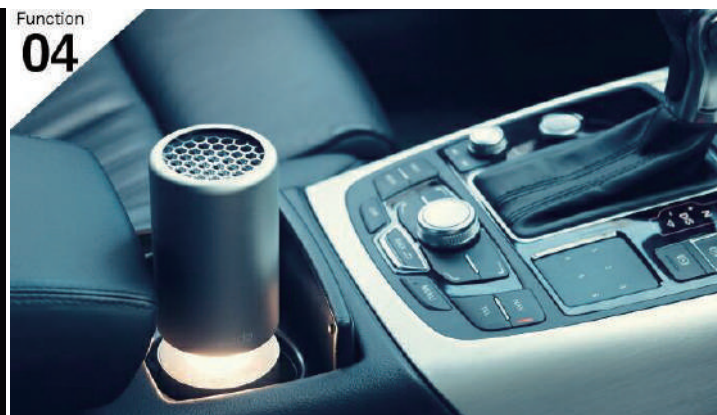
World's First! Fully Photocatalytic Air Purifier

Decomposition and treatment: Odors, influenza viruses, bacteria, mold, formaldehyde.



Technology Provision

cado



環境浄化の光触媒
NANOBEST
可視光応答型アパタイト被覆二酸化チタン

Photocatalyst Development of Antibacterial and Deodorizing Resin

development partnership

Thailand 

Rajamangala University of Technology Thanyaburi



Antibacterial

Freshness Preservation

Deodorize

Photo Resin

Film [HDPE, LDPE]

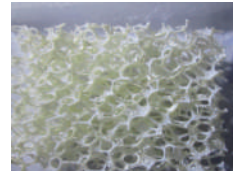


plastic bag



Plastic wrap

Sponge [PU] [PET]



Air purifier, water purification



Freshness Preservation Sheet

Resin [PET] Other



fiber [PP]



BIO+ Photocatalyst

[PLA]

“Environmentally Friendly”

Decompose and degrade, returning to the soil



Planting bag



Bioplastic

LDPE

Apatite-coated titanium dioxide paste

Photocatalytic Freshness Preservation Bag

Edible state



Corruption

3 days later



Standard bag

6 days later



Standard bag

10 days later



Standard bag



There are nine campuses within Thailand, and this Thanyaburi Campus is the main campus.

RMUTT
www.rmUTT.ac.th

Development Partnership

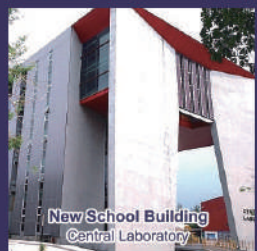
Thailand
Rajamangala University of Technology Thanyaburi

環境浄化の光触媒
NANOBEST
可視光応答型アパタイト被覆二酸化チタン

Photo Resin

PHOTOCATALYST
PLASTIC MASTERBATCH & FIBER

▼ Resin Molding Lab on Campus



Sample prototyping and small-lot production are available.

Antibacterial

Freshness Preservation

Deodorization

Photocatalysts react to light and can decompose various organic chemicals, dilute substances in water, odors, bacteria, mold, and oil stains—substances that are difficult to break down. Moreover, this effect is not a one-time occurrence; it repeats its action.



Kneading in visible-light-responsive photocatalysts

Applied Products

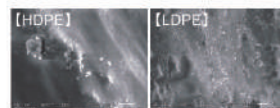
PHOTOCATALYST PLASTIC MASTERBATCH & FIBER

Fiber [NYLON][PET][PP]

TiO₂ 1%/10ppm



Film [HDPE, LDPE]



5% blended

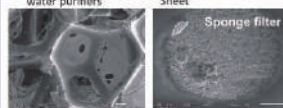
Sponge [PU] [PET]



For air purifiers and water purifiers



Freshness Preservation Sheet



7% blended

Resin [PET etc.]



5% blended

Bio + Photocatalyst

PLA

Accelerating decomposition and degradation, "environmentally conscious"

Bioplastic



PHOTOCATALYST MASTERBATCH

Available in 100, 200, 300 mesh and other sizes; custom sizing is possible.



PHOTOCATALYST FIBER



Apatite-coated titanium dioxide

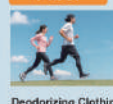
MASTERBATCH

It adsorbs and decomposes bacteria, viruses, and odors.



Fiber

Antibacterial Deodorization



Resin

Antibacterial Deodorization

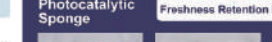
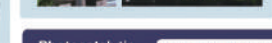
[PET etc.]



Film

[HDPE, LDPE]

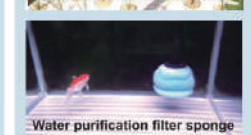
Antibacterial Freshness Preservation



Sponge

[PU]

Antibacterial Freshness Preservation



Bioplastic [PLA] "Environmentally conscious"

Break down and degrade, returning to the soil



PIAT 光触媒工業会 Regular Member
Photocatalysis Industry Association of Japan

manufacturer: NANOBEST JAPAN Co., Ltd.
nanobestjapan.hokkaido@gmail.com

Photocatalytic Sponge



Freshness Retention Experiment in Thailand Thai Domestic Fruit



Photocatalyst Application Products



Photocatalyst-Specific
Electric Spray Gun

Home Use Photocatalytic Spray



For home use



For dogs



For cats



For cleaning

Ceramic Lucky Cat



Deodorization, Freshness Preservation

Deodorizing & Antibacterial Plush Toy



Light-Regenerating Mask Reusable



Antibacterial

Deodorizing and Antibacterial Insoles



Combination of
Photocatalyst and
Nano-Bubble Device

Growth

Water Quality
Improvement

Sterilization

Cleaning

The combination of photocatalyst and
nano-level high oxygen delivers powerful efficacy.

Water Purification



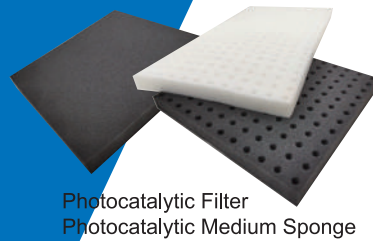
RMUTT
www.rmUTT.ac.th ราชภัฏนครปฐม

development partnership

The combination of photocatalyst and nano-level high oxygen delivers powerful efficacy.

Combination of photocatalyst and nanobubble device

Growth
Water Quality Improvement
Sterilization
Cleaning



Development
Partnership

Land-based aquaculture of fish and shrimp



Normally takes two and a half months.



Hydroponics

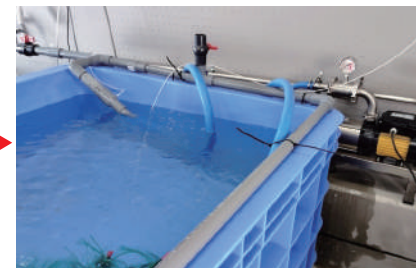


Sprout Cultivation Plant

Water Quality Improvement and Cleaning



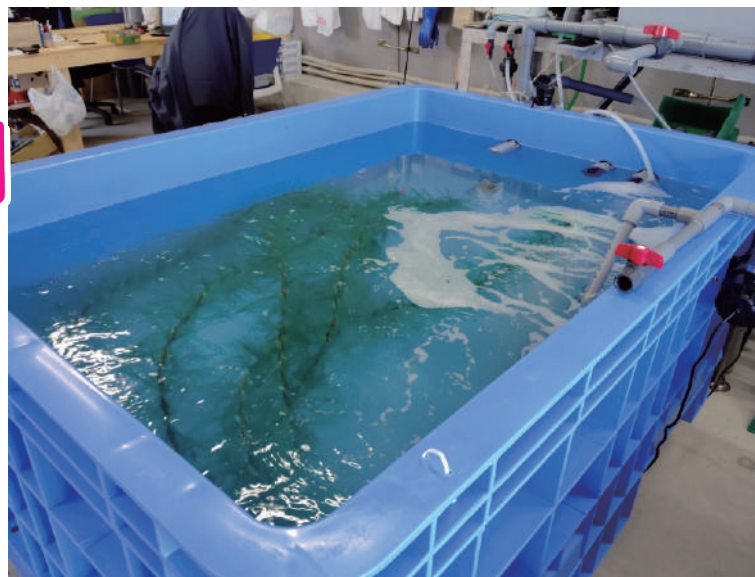
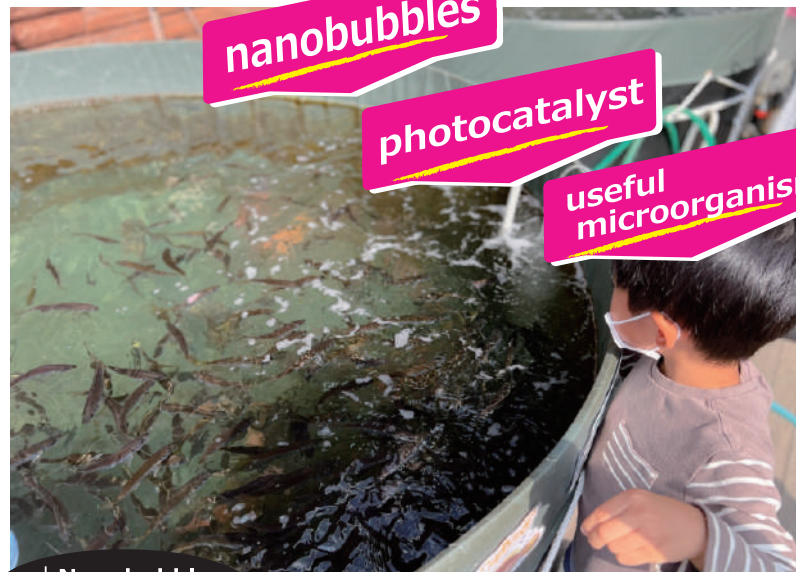
Shrimp Farm



Nano Bubble Introduction



Cleaning Factory



↓ Nanobubble Generator

↓ Oxygen generator (oxygen inhaler)

★ No oxygen cylinders are used, which significantly reduces costs.



Microbial filtration Nitrification
(removal of nitrates)

It decomposes ammonia and nitrite and reduces substances harmful to microorganisms present in the water.

LED

Photocatalytic Sponge Filter

The combination of photocatalyst and nano-size high oxygen provides powerful power.

※ Photocatalysts react to light (visible light/sunlight) to decompose organic substances.

Aeration and pH adjustment

Adjustments to remove CO and maintain water quality conditions suitable for aquaculture

Remove feces, food, and other solids

Solar panels provide electricity to promote sustainability, safety, and reduce costs associated with energy use.

It is a group of useful microorganisms born on a completely organic farm.



Aquaculture of underwater microorganisms

Useful microorganisms take up organic matter in the water and break it down.

The microorganisms are more active when used in combination with nanobubbles, further increasing treatment capacity.



Organic certifications obtained by the farm



America/Germany/Eurozone/Canada/Thailand/Japan

Introduction of our nanobubble generator

Building aquaculture environment - 1

8 February 2024

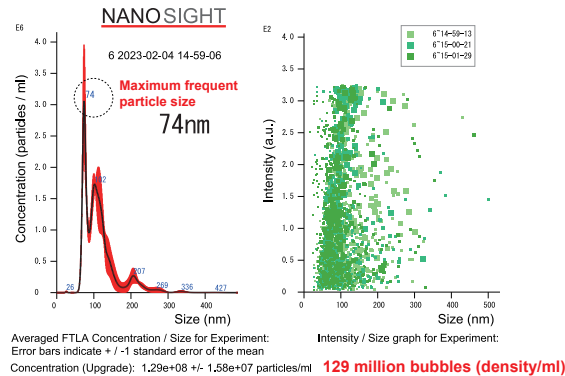
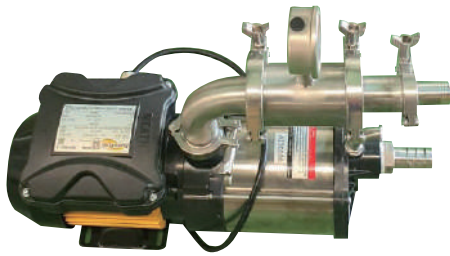
Nanobest Japan Co., Ltd. / Nakusul Japan LLC

Nano Bubble Generator

SORA-GR

O₂ oxygen

High-performance compact type that takes in external oxygen



Larval fish

VIDEO.
<https://x.gd/aMZxH>



White-leg shrimp farming

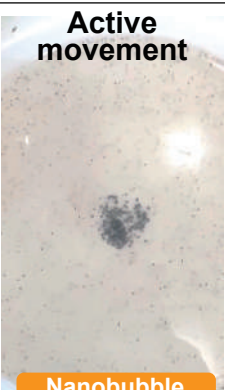
Comparison of normal water and nanobubble water

26.64 Temp. c	0.22 Depth ft
6.45 RDO mg/L	98.1 RDO Sat %
114.8 ORP mV	6.81 pH pH
53606.0 Act Cond µS/cm	1011.1 Baro mbar
34.8 Salinity psu	34 TDS ppt



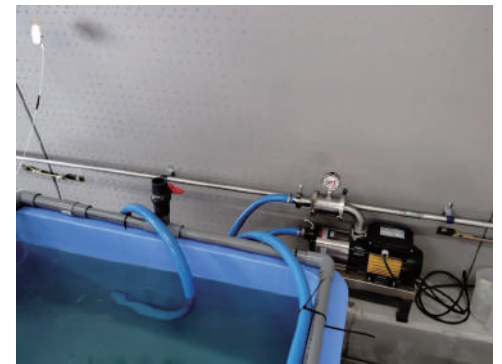
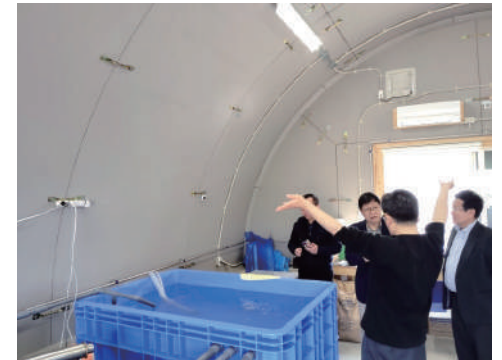
Normal water

26.80 Temp. c	0.20 Depth ft
20.80 RDO mg/L	317.5 RDO Sat %
132.0 ORP mV	6.89 pH pH
54166.7 Act Cond µS/cm	1011.1 Baro mbar
35.1 Salinity psu	34 TDS ppt



Nanobubble water

Active movement



Dissolved oxygen amount

6.5→10.0

Water temperature

23.6

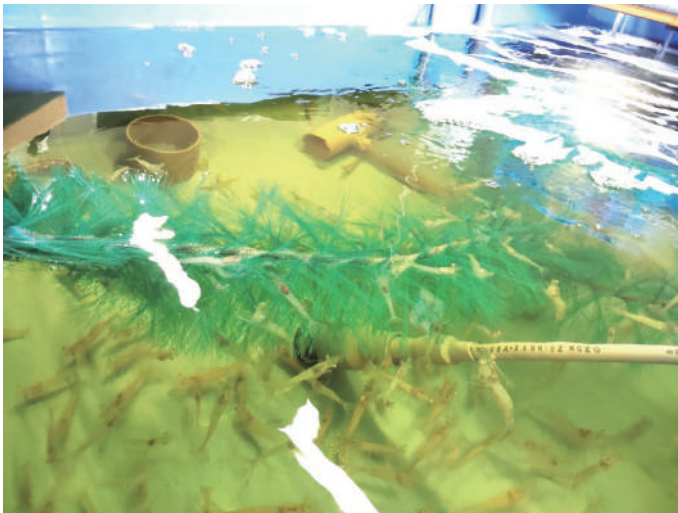


Nanobubble Generator Installed for Construction of Large-Scale Facilities for Banamei Shrimp Farming and Hydroponics

August 2, 2024

[Growth photos at around 50 days]

Banamei shrimp farming



Observation after 50 days

Usually requires 2.5 months.

Products Utilizing Nano-Bubble Generators



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ราชภัฏเทคโนโลยี

supervision

Rajamangala University of Technology Thanyaburi

Oxygen has been compressed to the nanoscale.

SORA

Nano Bubbles



Nano-bubbles
and Hyaluronic Acid

High Moisture
Retention



Toner



Vitamin C Derivatives



Contains hyaluronic acid



Beauty Serum
Cleansing Gel



Peeling Gel



Shampoo



Conditioner



Body soap

**Reduce greenhouse
gasemissions**

Upgrade to higher-quality oil

Fuel Purification

Reduce

CO₂

NO_x

SO_x

**Fuel
efficiency**



Japanese companies
in South China

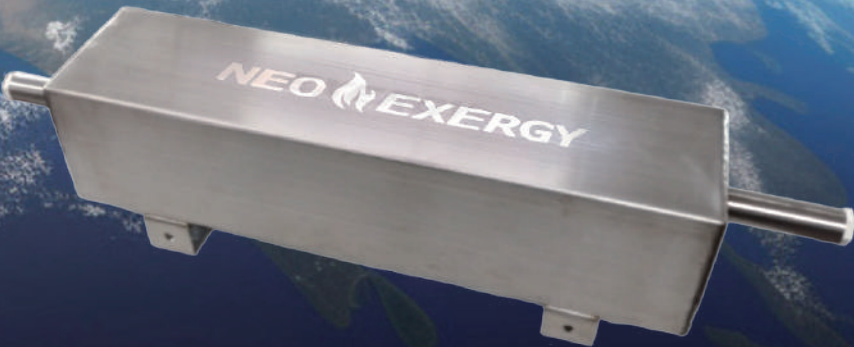
Delivered to
over 300 companies!

Bridgestone / Omron Electronics / Ricoh / YKK / Toshiba / Toray /
Brother Industries / Pioneer / Fuji Xerox / Seiko / Epson / Olympus /
Mandom / Meiji Dairies / Yuasa Battery / Nissin Kogyo / Mitsumi Electric /
Takahata Seiko 2 Factory / Sankyo Precision / Fuji Electric / Hosiden /
Dongyang Wanghe / Sanyo Group Companies / Nippon Express /
JHN Oil / Obara Chemical / Arai Rubber / Yamashita Rubber /Dainichi Kako /
Kanematsu Group / Takagi Auto Parts /Sumiden Group Companies /
Shikoku Electric Wire / Bando Electric Wire / Nidec / Shibakawa Electronics /
Giken Optical / Yamaichi Electronics Tokyo Denko / JO Tech / TOMOS /
Aoki Construction / Morito Jitsugyo / Nippon Aleph / Tokyo Pigeon /
Nitto Kogyo / OTAX / CAMPLAS / Nishimatsu Construction /
Aoki Construction and others

Simultaneously reduces both
fuel consumption and greenhouse gas emissions.

Fuel consumption
CO₂
NO_x reduction
SO_x

Clean up the Earth!
A clean environment for the next generation



Circulation treatment method (inside the treatment tank)

- 1. Circulation treatment is the best way to treat fuel thoroughly.
- 2. A sub-tank is easily modified to serve as a treatment tank.
- 3. Heavy oil / diesel in the treatment tank is circulated.
- 4. Fuel is circulated 15 times by the equipment and reformed into high-quality fuel.

NEO-EXERGY Product Specifications				NEO-EXERGY High heat resistance (for Type C heavy oil)			
Model number	Usage (per day)	Length	Connection port size	Model number	Usage (per day)	Length	Connection port size
NEO-50	~1,000 ℓ	400mm	15mm (1/2")	NEO-HT50	~1,000 ℓ	400mm	15mm (1/2")
NEO-100	1,000~2,000 ℓ	620mm	20mm (3/4")	NEO-HT100	1,000~2,000 ℓ	620mm	20mm (3/4")
NEO-300	2,000~3,000 ℓ	700mm	20mm (3/4")	NEO-HT300	2,000~3,000 ℓ	700mm	20mm (3/4")

We will check the current usage and site conditions and then design and propose the model number and installation method.

【What to check before design】

- Type of oil ■Monthly operating days ■Daily fuel usage
- Monthly fuel consumption ■Fuel price
- Capacity of main tank and service tank
- Presence and size of day tank (small tank)
- Number of engines, boilers etc.

Manufactured and developed by: NANOBEST JAPAN Company Limited
Distributed by: Nakusul Japan LLC
<https://nanobestjapan.lsv.jp> nanobestjapan.hokkaido@gmail.com

FUEL REFORMER
NEO EXERGY
Fuel reforming filter device

To a higher level of oil quality

Diesel A · B · C Heavy oil Residue oil



Boilers, generators, trucks, heavy machinery, ships, combustion furnaces, etc.

Reduce fuel consumption and greenhouse gas emissions such as CO₂ .

Environmental Regulations

Rising oil prices

Reduce fuel costs reduction

Reduce CO₂ , NO_x, and SO_x emissions

Maintenance-free for 20 years

NEO EXERGY
Fuel reforming filter device

Special filter structure improves oil quality to a higher level

Our equipment's filter function does more than just filter fuel. It breaks down large non-combustible oil particles that have accumulated in the fuel tank into small particles and burns all the fuel that has escaped into the atmosphere as soot until now.

※ Circulation pumps may require replacement due to wear and life.

- Fuel Consumption The refined oil particles bind with oxygen, improving combustion efficiency.
- Black smoke and PM Clumps of oil particles that cannot be completely burned can be used, reducing emissions.
- NO_x, SO_x Less oxygen is left, thus less is expelled.

(Japan) Report on effectiveness of electronically controlled engines

Fuel usage fee (diesel)
6% reduction

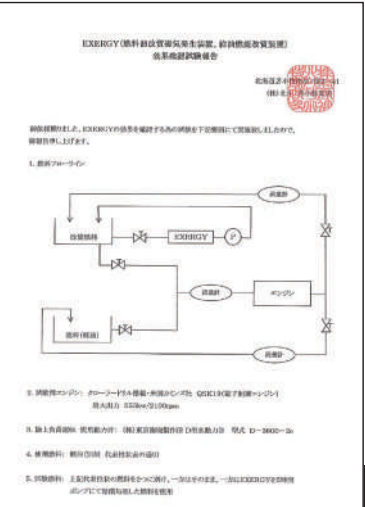


Table with 4 columns: Measurement Item, Before Reform, After Reform, and Reduction Rate. It shows data for various engine parameters including fuel consumption, CO2 emissions, and NOx levels, demonstrating a 6% reduction in fuel usage fee.

【Hong Kong Government】Partner Program introduced in 2009

Diesel fuel consumption in boilers
13.5% reduction

Table titled 'Cleaner Production Partnership Program' showing data for various industrial facilities. It includes columns for facility name, fuel consumption, and reduction rate, highlighting a 13.5% reduction in diesel fuel consumption in boilers.

(Test period 1 month):

The test results show that the boiler with the fuel-saving device installed by Axiom saves diesel consumption by 13.5%, achieving the goal of fuel saving.

Since this device does not change the fuel itself, it has no adverse effects on the machinery or other equipment used.

An example of annual reduction results

Japanese Company (China)	Annual fuel consumption	Reduction effect	Fuel savings	CO2 reduction
Heavy oil Nippon Wire	1,620KL	21%	340 KL	892 t
Diesel Kyowa Plastics	1,620KL	15%	243 KL	637 t
Heavy oil Seimei Aluminium	1,400KL	20%	280 KL	734 t
Diesel Uniden	1,400KL	15%	210 KL	550 t
Heavy oil Takahata Seiko	1,080KL	20%	216 KL	560 t
Heavy oil Dainichi Seiko Chemical	900KL	20%	180 KL	472 t

Annual fuel consumption CO₂ reduction

Showa Plastics Diesel 17% CO₂ reduction / 645 t

Fuji Electronics Heavy oil 20% CO₂ reduction / 435 t

OB Industries Heavy oil 20% CO₂ reduction / 377 t



Bridgestone Golf: Boiler

CO₂ · fuel consumption
annual reduction 25%

Heavy oil Fuel savings: 90,000L CO₂ reduction: 236t

Annual fuel consumption; 360,000 L → 270,000 L CO₂ Emissions 944 t → 708 t

Diesel truck fuel

Introduced in 2011

Truck fuel tank 400L Reformed in a 30-ton treatment tank

Annual fuel consumption CO₂ reduction Average 10.6% reduction Diesel



Omron Electronics: Generator

CO₂ · fuel consumption
annual reduction 15%

Diesel Fuel savings: 810KL CO₂ reduction: 2,125t

Annual fuel consumption; 5,400KL → 4,590KL CO₂ Emissions 14,164 t → 12,039 t

Greatly improved To a higher level of oil quality



Sapporo International University (Japan)



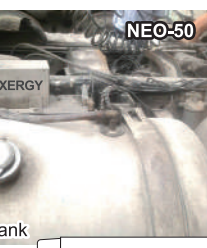
Ogawa Iron Works Co., Ltd. (Thailand Factory)



Daioh Package (Japanese company in China)



Ships (China)



Truck fuel tank

Comparison of soot measurement results; A heavy oil (boiler)

	Nitrogen oxide concentration	Sulphur oxide concentration	Density	Total heat generation	Sulphur content
Before reform	120	0.30	0.8645	45200	0.40
After reform	Decrease rate (110) 8.3%	Decrease rate (0.19) 36%	0.8539	45410	Decrease rate (0.26) 35%

Generator Testing Fuel consumption to supply 1kWh to an electric water heater

Industrial Diesel Fuel

Fuel consumption 625ml → 525ml (-16%)

HC 793 ppm → 423 ppm (-47%)

CO 1.47% → 0.29% (-80%)

CO₂ 3.39% → 3.83% (+13%)

Unburned Hydrocarbons -47%

Carbon monoxide (toxic exhaust gas) -80%

Complete combustion of CO₂ +13%

High-grade fuel Euro-5

Fuel consumption 492ml → 456ml (-7.3%)

HC 424 ppm → 314 ppm (-25.9%)

CO 0.51% → 0.09% (-82%)

CO₂ 4.30% → 4.51% (+4.9%)

Unburned Hydrocarbons -25.9%

Carbon monoxide (toxic exhaust gas) -82%

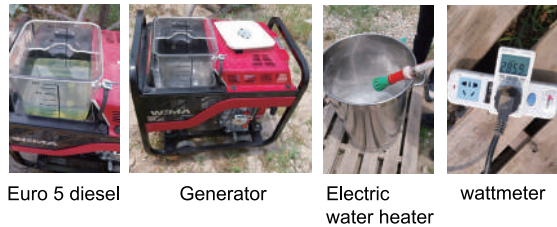
Complete combustion of CO₂ +4.9%

Fuel economy test using Euro 5 diesel for ship's generators

The test involves attaching an electric water heater to a generator and generating power for two hours using 2.5L of Euro 5 diesel to produce hot water.



The amount of fuel is measured after applying resistance for two hours to generate electricity.



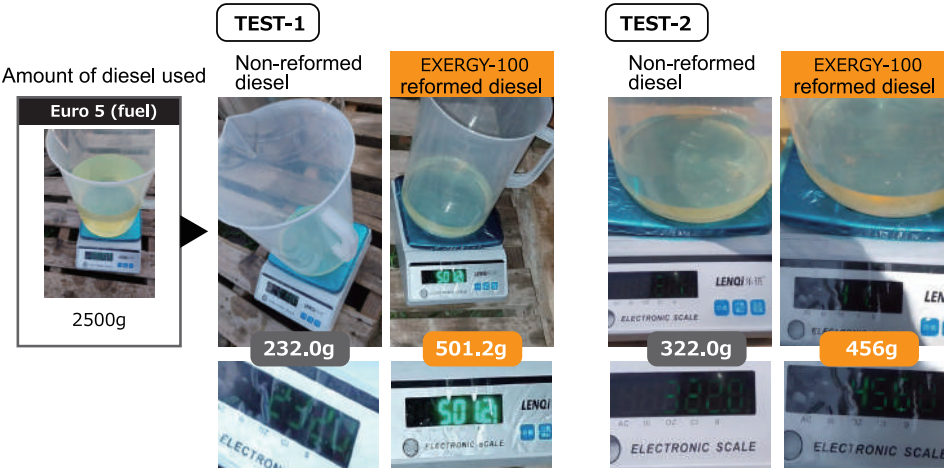
The water in the water heater will reach 100°C in about 30 minutes, and the water heater will stop. Therefore, before boiling, we need to add cold water to prevent the water heater from stopping.

Production of reformed diesel

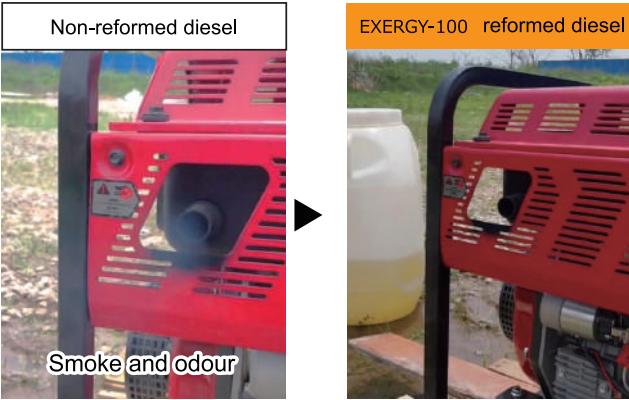
Circulate 15 times in the EXERGY device



Residual fuel oil after 2 hours of generator operation



Remaining amount	232.0g	501.2g	322.0g	456g
Diesel consumption	2268g	1998.8g	2178g	2044g
	Diesel saving	269.2g	Diesel saving	134g
		▲11.2%		▲6.1%



Testing Work Video



Generators that used unreformed diesel emit black smoke and odours, but these no longer occur with reformed diesel.