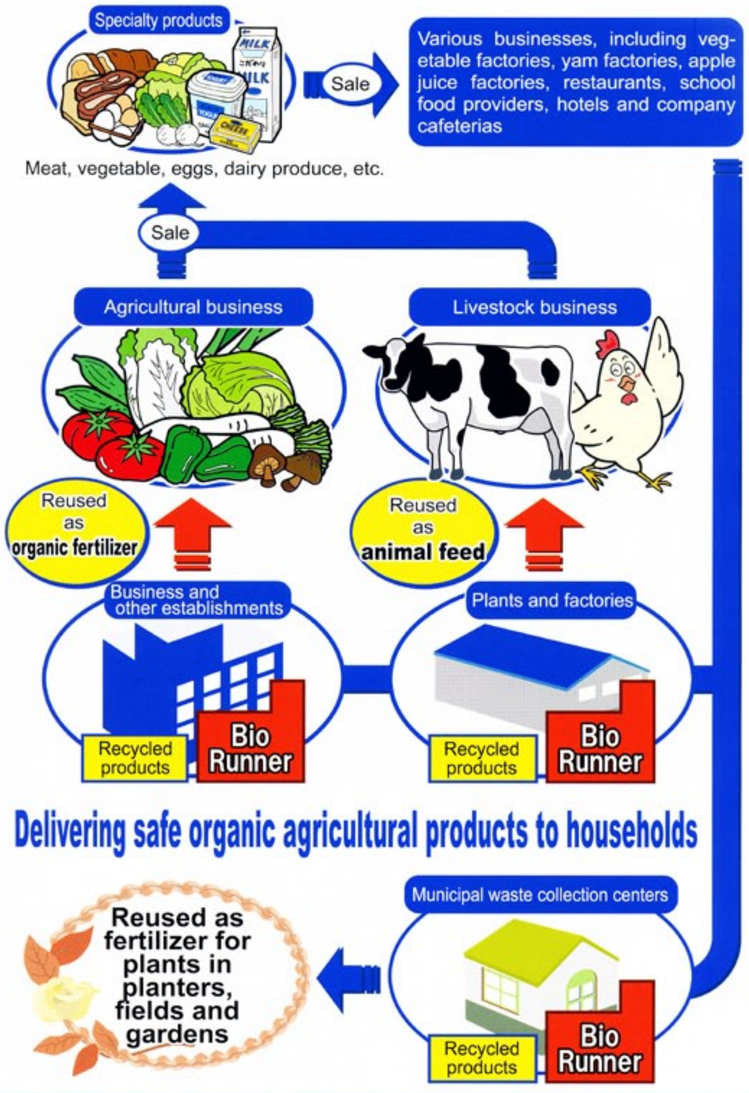
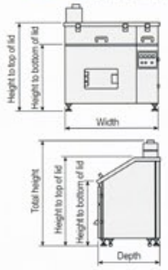
The Bio-Runner eco-cycle



1 tank model BR-SS BR-ST Series

The BR-SS and BR-ST Series are food waste treatment machines with a single tank. They are designed for use by school and company cafeterias that close one or two days a week. Cooking waste and food leftovers are processed continuously for five to six days, and fermented for one to two days (24 hours to 48 hours) before they are removed once a week.

■ External dimensions



■ Main specifications of the BR-SS and BR-ST Series

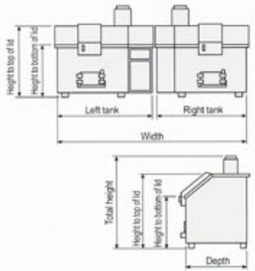
Model		BR-90SS	BR-110SS	BR-140SS	BR-300ST	BR-500ST	BR-1000ST	BR-1000SS
Maximum weight processed (kg/day)		90	55	70	150	250	500	500
Maximum volume processed (ℓ/day)		60	110	140	300	500	1,000	1,000
No. of days for continuous input		5days 6days	5days 6days	5days 6days	5days 6days	5days 6days	5days 6days	5days 6days
Weight continuously (kg/day)		30 24	55 44	70 56	120 90	200 150	400 300	500 400
Volume processed continuously (ℓ/day)		60 48	110 88	140 112	240 180	400 300	800 600	1,000 800
Air quantity (m³/minute)		1.0	1.3	1.5	2.2	3.5	7.0	7.0
External dimensions (m)	Width	805	1,065	1,260	1,180	1,680	2,400	3,155
	Depth	715	715	715	1,050	1,050	1,305	1,370
	Height to top of lid	960	960	960	1,470	1,470	1,745	1,750
	Height to bottom of lid	770	770	770	930	930	1,080	1,420
	Total height	1,210	1,210	1,210	1,815	1,855	2,205	2,180
Power supply (50/60 Hz)		Single phase, 100V			Three phase, 200 V			
Power consumption (kw)	Stirring motor	0.10	0.20	0.20	0.40	0.75	1.50	1.50
	Heater (air supply heater)	1.45 (-)	2.10 (-)	3.00 (-)	4.87 (1.65)	7.80 (1.65)	15.80 (3.40)	15.00 (-)
	Exhaust fan	0.02	0.04	0.04	0.10	0.20	0.40	0.44
Required power (kw)		2	3	4	6	11	22	17
Capacity (A)		20	10	15	30	40	100	60
Planned weight (kg)		180	210	240	450	750	2,000	2,300
Reduction rate (%) (Reference)		80	80	80	80	80	80	80
Odor	Deodorizing method	Microbe deodorization method (fermentation tank)						
	One meter from an air outlet	Odor index: 14 (odor concentration: 23)The odor is not constant. Installation of an optional deodorizing device for the exclusive use of the Bio-Runner is recommended if odor is a consideration due to the environment where the Bio-Runner is installed.						
Maintenance required by user		Removal of recycled food waste: once a week; filter cleaning: once a week; placement of fermenter: once a month						
Water supply	Amount of water supplied	Not necessary						
Safety and protection features		Automatic shutdown of heater in case of abnormal temperature Stirring stops if an inlet or an outlet is opened Automatic shutdown if stirring mechanism is overloaded Controller for overheating of heater Earth leakage breaker						
Installation environment		Temperature: 0˚C to 40˚C; humidity: 70% or less						
Place suitable for installation		For Bio-Runner to be installed in or outside a building, the equipment should be under a roof protected from rain, and enclosed by a fence to shield against cold wind.						
Tank heating method		Electric heater						
Automatic control		Stirring and temperature						
Material for main parts		SUS304						
Delivery time		2.0months	2.0months	2.0months	2.5months	2.5months	3.5months	

※Continuous process capacity for five days: 100% for SS Series and 80% for ST Series
※Continuous process capacity for six days: 80% for SS Series and 60% for ST Series
Note: Performance tests were done for food waste (15% rice, 12% meat and dried sardines, and 73% vegetables) following a standard test specified by the Japan Food Recycling Processor Committee. Processing capacity declines when the components of food waste are disproportionate, or when used for only one kind of food waste or for only food waste. Please select the right type of equipment.
For six-day continuous processing, some food waste may not be processed because of the content or composition of the waste. Before making a decision, ask a distributor to test in advance the food waste you are planning to use Bio-Runner to process.

2 tank model BR-WS BR-WT Series

BR-WS and BR-WT Series are a food waste treatment machines with two tanks. They are designed for restaurants, hotels, hospitals and similar places that operate all year round. Cooking waste and food leftovers can be put into the tanks alternately, and removed once every one to two weeks. The food waste is fermented for one to two days (24 hours to 48 hours) before it is removed. If you plan to use the two tanks simultaneously for continuous processing, please consult a Bio-Runner distributor

■ External dimensions



■ Main specifications of the BR-WS and BR-WT Series

Model		BR-140WS Left tank	BR-140WS Right tank	BR-1000WS Left tank	BR-1000WS Right tank
Maximum weight processed (kg/day)		70 × 2		500 × 2	
Maximum volume processed (ℓ/day)		140 × 2		1,000 × 2	
No. of days for continuous input		5days 6days		5days 6days	
Weight continuously (kg/day)		70×2 56×2		500×2 400×2	
Volume processed continuously (ℓ/day)		140×2 112×2		1,000×2 800×2	
Air quantity (m³/minute)		Left or right tank: 1.5		Left or right tank: 7.0	
External dimensions (m)	Width	Left tank: 1,260 Right tank: 1,260		Left tank:2,185 Right tank:2,185	
	Depth	715		1,370	
	Height to top of lid	960		1,750	
	Height to bottom of lid	770		1,420	
	Total height	1,210		2,180	
Power supply (50/60 Hz)		Three phase, 200 V			
Power consumption (kw)	Stirring motor	0.20 × 2		1.50 × 2	
	Heater (air supply heater)	6.00 (-)		30.00 (-)	
	Exhaust fan	0.03 × 2		0.44 × 2	
Required power (kw)		7		35	
Capacity (A)		30		125	
Planned weight (kg)		240 240		2,300 2,200	
Reduction rate (%) (Reference)		80		80	
Odor	Deodorizing method	Microbe deodorization method (fermentation tank)			
	One meter from an air outlet	Odor index: 14 (odor concentration: 23)The odor is not constant. Installation of an optional deodorizing device for the exclusive use of the Bio-Runner is recommended if odor is a consideration due to the environment where the Bio-Runner is installed.			
Maintenance required by user		Removal of recycled food waste: once a week; filter cleaning: once a week; placement of fermenter: once a month			
Water supply	Amount of water supplied	Not necessary			
Safety and protection features		Automatic shutdown of heater in case of abnormal temperature Stirring stops if an inlet or an outlet is opened Automatic shutdown if stirring mechanism is overloaded Controller for overheating of heater Earth leakage breaker			
Installation environment		Temperature: 0˚C to 40˚C; humidity: 70% or less			
Place suitable for installation		For Bio-Runner to be installed in or outside a building, the equipment should be under a roof protected from rain, and enclosed by a fence to shield against cold wind.			
Tank heating method		Electric heater			
Automatic control		Stirring and temperature			
Material for main parts		SUS304			
Delivery time		2.0months	2.5months	2.5months	3.0months 3.5months

BWS Series Food waste should be put into the tanks alternately in order to achieve 100% processing capacity. When food waste is put into both tanks simultaneously and processed continuously for five days, full processing capacity is possible. Please note that processing capacity is reduced to 80% when food waste is put into both tanks simultaneously and processed continuously for six days.
BWT Series Food waste should be put into the tanks alternately in order to achieve 80% processing capacity. When food waste is put into both tanks simultaneously and processed continuously for five days, 80% processing capacity is possible. Please note that processing capacity is reduced to 60% when food waste is put into both tanks simultaneously and processed continuously for six days.
Note: Performance tests were done for food waste (15% rice, 12% meat and dried sardines, and 73% vegetables) following a standard test specified by the Japan Food Recycling Processor Committee. Processing capacity declines when the components of food waste are disproportionate, or when used for only one kind of food waste or for only food waste. Please select the right type of equipment.
For six-day continuous processing with both the tanks filled simultaneously, some food waste may not be processed because of the content or composition of the waste. Before making a decision, ask a distributor to test in advance the food waste you are planning to use Bio-Runner to process.

<Name of distributor>

※The warranty is valid for one year from the date of delivery. The specifications and external dimensions and appearance of the product described in this catalogue are subject to change without notification.

Recycled paper was used for this brochure.

■ Manufacturer
Arc Network Service

Tokyo Branch
2-15-2 Teraodai Ayase-shi Kanagawa 252-1137

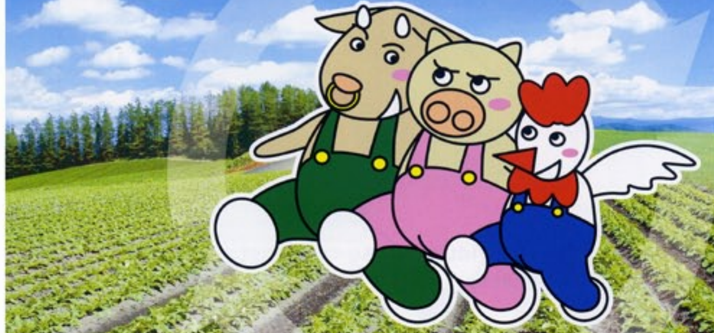
Head Office
Arc Building, 1 12-4 Sakae-machi Aomori City, Aomori Prefecture 030-0903
TEL. 017 742-6000 FAX:017 742-9394
E-mail info@arcnet-wind.jp
URL. http://www.arcnet-wind.jp/

ARC NETWORK SERVICE

Converting food waste to animal feed
Challenge for food recycling in the 21st century

Food waste recycling system

Bio-Runner



BR-SS type

Business for Bio-Runner was transferred from NTT-ME Corporation to Arc Network Service.

Increase

I wish we could solve the problem of increasing waste. And we need to act quickly to comply with the Food Recycling Law.

The Food Recycling Law was enacted as part of the Basic Law for Establishing the Recycling-Based Society with the aim of establishing zero emissions and to help prevent global warming. This law applies to all businesses and establishments that dispose of food waste, and they are required to reduce food waste by 20% a year Establishments that dispose of 100 tons of food waste a year or more are subject to punishment. To accomplish zero-emission food waste, all parties disposing of food waste need to cooperate

Conventional treatment processes have various negative effects.

▼ Waste Collection

- Air pollution caused by waste collection vehicles
- Increasing cost due to increasing waste

▼ Incineration

- Generation of CO_2
- Generation of dioxins
  Increasing cost of treatment

▼ Waste Disposal

- Limited space for waste disposal
- ncreasing sources of contaminated water
- Sources of germs
- Living environments are made worse

Food

It is somewhat difficult to use compost and feed made of food waste.

To compost means to biodegrade food waste and recycle it as compost. However, because such compost is unfermented and contains lots of salt and oil, the compost is not actually used for greenhouse cultivation, though there is no problem in using the compost for crops grown outside

There are many ways to treat food waste, but...

- **Drying method** ··· It takes time to treat waste, and the waste cannot be recycled
- **Carbonization method** ··· Because waste cannot be converted to compost, the waste remains.
- **Condensation** ··· The sale of equipment is prohibited by the Japan Food Recycling Processor Committee

Bio-Runner aims to optimize the collection, decomposition, and recycling of waste.

We have learned from nature. Recycled food waste can be used as compost or soil conditioner in various places.

A system for nutrients to return to soil exists in nature. Bio-Runner decomposes food waste using only fermented microbials and does not use ceramics, sawdust or wood chips, which are difficult to ferment. Bio-Runner helps to create fertile soil for agricultural produce growing in fields, and to accomplish zero emissions from food waste without leaving anything to be disposed of in landfills.

Recycled food waste can also be used as feed for livestock. This has been substantiated by experiments using apple pomace and yam residue.

STEP.1 Collection

When food waste is generated, it is immediately collected.

STEP.2 Decomposition

Food waste is processed safely through decomposition.

STEP.3 Recycling

Food waste is completely recycled as compost and animal feed.

Operating costs are reasonable.
The only costs necessary to operate Bio-Runner are electricity charges, the cost of fermenting materials and maintenance costs. The cost of treating food waste can be reduced substantially

Bio-Runner basically runs around the clock. Two models are available depending on the amount to be processed.
A one-tank (24 kg to 500 kg) model or two-tank 112 kg to 1,000 kg) model is available for different uses.
(The two-tank model capacity indicates the amount of food waste processed continuously and simultaneously in both tanks.

Bio-Runner is compact, so you can save space.
At 805 mm wide, 715 mm deep and 960 mm high, the one tank Bio-Runner (BR-60SS) is compact. It can be easily installed in an apartment block or local waste collection area.

Bio-Runner uses microbes that are harmless to humans.
Bio-Runner uses harmless microbial groups that exist in nature, and ferments and decomposes food waste at high speed.

Microbes that are harmful to humans are eliminated.
Bio-Runner operates at a temperature of 60°C and more, so Shigella, Escherichia coli and other harmful microbes are eliminated.

Bio-Runner is unobtrusive, because it runs quietly and emits little odor.
Bio-Runner is quiet and does not vibrate. Because microbes are deodorized inside a treatment tank, they emit little odor when the lid is lifted.

CO_2 can be reduced, and dioxins are not generated.
Compared to combustion treatments, CO_2 is reduced by 98%, and dioxins are not generated.

No generation or accumulation of gases.
Bio-Runner draws in and releases large volumes of air to prevent gas from accumulating.

Bio-Runner is safe because it operates completely automatically.
Once food waste is put into Bio-Runner the food waste is automatically fermented and decomposed. Bio-Runner stops automatically if an irregularity occurs, such as a high temperature or if the machine is rocked.

Food waste is completely recycled.
Recycled food waste can be used safely as a soil conditioner that contains many useful microbes, just like compost.

A new market created through a new concept
Profits can be generated through the sale of recycled products

Bio-Runner