

#### Testing report on 2kg machine

GreenGood Eco-Tech Co. Limited.
Flat F, 11/F, Imperial Building
54 Canton Road, TST
Kowloon, Hong Kong
Tel:+852 3403 7782
Fax:+852 2375 3588
E-mail: info@greengood.com

DATE: August 26 to September 29, 2009

By Vanese Wong

#### **OBJECTIVES:**

Perform in house test to investigate the functionality of the 2kg machine newly developed, to observe the input appearance of the foodwaste and output appearance of the compost before and after foodwaste is being input to the machine on a daily basis. The output compost will be sent to 3<sup>rd</sup> party laboratory and tests will be run to see if the compost / fertilizer has met international organic fertilizer standard

#### **PRODUCT SPECIFICATIONS:**

**Product Name:** Residential Machine (4.4lbs / 2kg)

Model Number: GG-CMO-02

**Dimensions:** 20.87" (w) x 17.72" (l) x 30.71" (h) or 53 (w) x 45 (l) x 78 (h) cm

**Power Consumption:** 60kWh/month

Waste Treatment Capacity: 4.4lbs/day or 2kg/day

**Target Market:** Family

#### **PRODUCT PHOTO:**



#### IN HOUSE TESTING:

Either collect the foodwaste from restaurants or purchase fresh food from the market, then input the selected items into the machine and let it run for 24 hours. Photos and records are taken at 9am, 2pm and 6pm on a daily basis.

Testing components include -

- vegetables, fresh fruit, fruit peels and seeds
- either cooked meat or raw meat with bones
- fish with bones, crabs, shrimps, squids
- biscuits, chinese dumplings, sausages
- lunch box in bagasse material



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## Wednesday, August 26, 2009 - Day 1

	weanesaay, Aug	gust 26, 2009 - Day I
Time	Log details	Photos
1000	2 bags of saw dust being poured into the machine and run for 3 hours for start up process to wake the micro-organisms	
1400	Foodwaste being collected from restaurant Content of food waste: vegetables, lemon peel, sausages, minced pork, noodle, small bones, soup	
1405	Foodwaste being poured into the machine	
1900	Most of the food has been decomposed. Only small amount of vegetables and lemon peels remain inside the tank	



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## Thursday, August 27, 2009 - Day 2

	inursaay, Augu	ist 27, 2009 - Day 2
Time	Log details	Photos
0900	Most of the food has been decomposed. Only small amount of vegetables and lemon peels remain inside the tank	
1400	Again, foodwaste being collected from restaurant Content of food waste: vegetables, lemon peel, sausages, minced pork, noodle, small bones, soup	
1405	Foodwaste being poured into the machine	
1900	Again, most of the food has been decomposed. Only small amount of vegetables, bones and lemon peels remain inside the tank	



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#### Friday, August 28, 2009 - Day 3 Time **Photos** Log details 0900 Most of the food has been decomposed. Only small amount of vegetables and lemon peels remain inside the tank 1400 Most of the foodwaste have been decomposed 1400 Foodwaste being collected from colleagues at Joseph Wong & Co. (HK) Ltd Content of foodwaste: rice, pork, vegetables, bones, corn and spaghetti 1405 Collected foodwaste being poured into the machine 1800 Most of the foodwaste has been composted, only small bones remain in the tank



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#### Saturday and Sunday, August 29-30, 2009 - Day 4 & 5

Jaiorday and Johady, August 27 00, 2007 Day 4 & 5			
Time	Log details	Photos	
0900	Most of the food has been decomposed. But the lemon peels remain inside the tank		
	No foodwaste input to the tank on August 29-30, 2009		



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## Monday, August 31, 2009 - Day 6

	monday, Augu	St 31, 2009 - Day 6
Time	Log details	Photos
0900	Most of the food has been decomposed.	
1400	Food is being purchase from stores: raw corn+carrot+pork: 0.9kg Vegetable: 1.03kg Biscuit: 0.13kg BBQ pork: 0.15kg Total weight: 2.2kg	
1405	Collected food is being poured into the machine	
1800	The carrot and corn are still in shape inside the tank	



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## Tuesday, September 1, 2009 – Day 7

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Time	Log details	Photos	
0900	The carrot, corn, raw pork and small bones still remain inside the tank, but in a much smaller size, which means they have been composted a little bit		
1700	The carrot, corn, raw pork and small bones still remain inside the tank, but in a much smaller size		
	No foodwaste input to the tank on September 1, 2009		

No foodwaste input to the tank on September 1, 2009



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## Wednesday, September 2, 2009 - Day 8

•	redilesday, sepi	ember 2, 2007 - Day o
Time	Log details	Photos
0900	Most of the food has been decomposed. Small bones, lemon peel and corn are still inside the tank	
0905	Cooked lotus leaves and a PSM plastic fork are being input into the machine	
1500	Food is being purchase from supermarket: 10 pieces of sausages 30 pieces of Chinese dumplings Spam and rice Total weight: around 2kg	
1505	Food is being poured into the tank	
1800	PSM fork, corn and carrot remain inside the tank The PSM fork stays in the same size, corn and carrot have reduced in size during the composting process	



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## Thursday, September 3, 2009 - Day 9

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Time	Log details	Photos
0900	PSM fork, corn and carrot remain inside the tank The PSM fork stays in the same size, corn and carrot have reduced in size during the composting process	
1400	Food is being purchase from supermarket 6 pieces of boiled egg: 0.35kg Raw pork with ribs: 0.25kg Raw chicken wings: 0.15kg Total weight: around 0.75kg	
1405	Food is being poured into the tank	
1800	PSM fork, corn and carrot remain inside the tank The PSM fork stays in the same size, corn and carrot have reduced much during the composting process	



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## Friday, September 4, 2009 - Day 10

	Friday, Septemb	per 4, 2009 - Day 10
Time	Log details	Photos
0900	PSM fork, corn and bones remain inside the tank The PSM fork stays in the same size	
1400	Fruit peels are being collected from restaurant and fresh fruit is being purchased from supermarket Fruit peels: 0.38kg lemon: 0.14kg orange: 0.30kg Mango: 0.21kg Banana: 0.38kg apple: 0.38kg Total weight: around 1.79kg With 30oz of water being poured into the tank	
1405	Fruit peels and fresh fruit are being poured into the tank	
1800	PSM fork, apple, orange peels still remain inside the tank. The rest of the items have been composted within 4 hours	



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#### Saturday and Sunday, September 5 - 6, 2009 - Day 11 & 12

Time	Log details	Photos	
0900	Most of the food has been decomposed. But the PSM fork, apple, orange peels still remain inside the tank		
	No foodwaste input to the tank on September 5 - 6, 2009		



# Compost Made Handy Testing report on 2kg machine

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## Monday, September 7 2009 - Day 13

	Monday, sepien	ibei / 200/ Bay io
Time	Log details	Photos
0900	The Machine has turned to power saving mould, however, we discover there are still some orange peels left inside the tank.	
1400	fresh fruit is being purchased from supermarket Tropical fruit: 0.45kg lemon: 0.22kg Mango: 0.45kg Durian: 0.875kg Total weight: around 2.00kg With 16oz of water being poured into the tank	
1405	Fresh fruit are being poured into the tank	
1800	PSM fork and fruit peels still remain inside the tank. The rest of the items have been composted within 4 hours	



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## Tuesday, September 8, 2009 - Day 14

	ivesuay, sepieii	iber 6, 2007 - Day 14
Time	Log details	Photos
0900	The Durian seed and some orange peels are still left inside the tank.	
1400	Fruit peels are being collected from restaurant Water melon peel: 0.28kg Tropical fruit and seeds: 0.08kg Total weight: around 0.36kg	
1405	Food waste is being poured into the tank	
1800	PSM fork tropical fruit seeds and mango seeds are still inside the tank	



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## Wednesday, September 9, 2009 - Day 15

VA	edilesday, sepie	illibel 7, 2007 - Day 15
Time	Log details	Photos
0900	PSM fork tropical fruit seeds and mango seeds are still inside the tank	
1400	Fruit and vegetables are being purchased from market Melon: 0.825kg Tropical fruit: 0.175kg Onion: 0.15kg Total weight: around 1.15kg 16oz of water is being added into the tank	
1405	Fruit and vegetables are being poured into the tank	
1800	The onion still stays in shape after 4 hours of composting process	



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## Thursday, September 10, 2009 - Day 16

morsday, september 10, 2007 - Day 10			
Time	Log details	Photos	
0900	PSM fork, tropical fruit seeds mango seeds and orange peels are still inside the tank. However, they all have reduced in size		
1400	Food waste are being collected from restaurant Fruit peels: 0.59kg Chicken bones and corn: 0.10kg Peanut: 0.15kg Total weight: around 0.84kg 2 bagasse lunch boxes have been put into the tank		
1405	Foodwaste and 2 bagasse lunch boxes are being poured into the tank		
1800	Most of the food has been composted. PSM fork tropical fruit seeds mango seeds, peanuts and orange peels are still inside the tank. The lunch box in bagasse material has disappeared		



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## Friday, September 11, 2009 - Day 17

Friday, September 11, 2009 - Day 17		
Time	Log details	Photos
0900	PSM fork tropical fruit seeds mango seeds and orange peels are still inside the tank. However, they all have reduced in size	
1400	Food waste are being collected from restaurant Fruit peels: 2.5kg Total weight: around 2.5kg	
1405	Foodwaste is being poured into the tank	
1800	PSM fork tropical fruit seeds mango seeds, peanuts and orange peels are still inside the tank. But they all reduced in size	



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#### Saturday and Sunday, September 12 -13, 2009 - Day 18 & 19

Time	Log details	Photos
0900	Most of the food has been decomposed. But the PSM fork tropical fruit seeds mango seeds, peanuts and orange peels are still inside the tank. But they all reduced in size	
No foodwaste input to the tank on September 12 - 13, 2009		



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# Monday, September 14, 2009 - Day 20

	monday, sepiem	ber 14, 2009 - Day 20
Time	Log details	Photos
0900	PSM fork tropical fruit seeds mango seeds, bones and orange peels are still inside the tank. However, they all have reduced in size	
1400	Seafood are being purchased from marketshrimps: 0.30kg Crabs: 0.375kg Fish: 0.41kg Squid: 0.44kg Total weight: around 1.525kg 32oz of water is being added into the tank	
1405	Seafood is being poured into the tank	
1800	Most of the seafood has been composted. PSM fork tropical fruit seeds mango seeds, small pieces of crab shells and orange peels are still inside the tank. But they all reduced in size	



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## Tuesday, September 15, 2009 - Day 21

	Toesday, september 13, 2007 - Day 21			
Time	Log details	Photos		
0900	PSM fork tropical fruit seeds mango seeds, bones and orange peels are still inside the tank.			
1400	foodwaste are being collected from restaurantcarrot: 0.50kg fruit peel: 1.50kg Onion: 0.15kg Total weight: around 2.15kg 32oz of water is being added into the tank			
1405	foodwaste is being poured into the tank			
1800	Carrot and fruit peels stay in the same size inside the tank.			



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## Wednesday, September 16, 2009 - Day 22

VV.	editesday, septet	111561 10, 2007 - Day 22
Time	Log details	Photos
0900	PSM fork tropical fruit seeds mango seeds, bones a little bit of crab shells and orange peels are still inside the tank.	
1400	foodwaste are being collected from restaurant Fruit peels: 2.23kg Total weight: around 2.23kg 32oz of water is being added into the tank	
1405	foodwaste is being poured into the tank	
1800	Carrot and fruit peels stay in the same size inside the tank. The rest of the items have been composted within 4 hours	



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## Thursday, September 17, 2009 - Day 23

<u>-</u>	illoisaay, sepielli	DC1 17, 2007	- Day 25
Time	Log details	Ph	notos
0900	PSM fork tropical fruit seeds mango seeds and orange peels are still inside the tank.		
1400	Orange peels are being collected from restaurant Orange peels: 1.20kg Total weight: around 1.20kg 32oz of water is being added into the tank		
1405	foodwaste is being poured into the tank		
1800	orange peels stay in the inside the tank but reduce in size.		



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## Friday, September 18, 2009 - Day 24

Time	Log details	Photos	
0900	PSM fork tropical fruit seeds mango seeds and orange peels are still inside the tank.		
1800	Same as the above		
	No feedwards input to the tank on Contember 10, 2000		

No foodwaste input to the tank on September 19, 2009

#### Saturday and Sunday, September 19 - 20, 2009 - Day 25-26

	Log details	Photos	
0900	Machine has turned to power saving mode		
1800	PSM fork tropical fruit seeds mango seeds and orange peels are still inside the tank.		
	No foodwaste input to the tank on September 19 - 20, 2009		



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## Monday, September 21, 2009 - Day 27

		<del>-</del>
Time	Log details	Photos
0900	PSM fork tropical fruit seeds mango seeds and orange peels are still inside the tank.	
1800	Same as the above	

No foodwaste input to the tank on September 21, 2009

## Tuesday, September 22, 2009 - Day 28

	Log details	Photos	
0900	Fruit peels are still there but have been reduced in size. The fruit seeds are still in shape and stay inside the tank.		
1800	Same as the above		
	No foodwaste input to the tank on September 19 - 20, 2009		



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## Wednesday, September 23, 2009 - Day 29

2			
Time	Log details	Photos	
0900	PSM fork tropical fruit seeds mango seeds and orange peels are still inside the tank.		
1800	Same as the above		
	No feed works in which the bank on Contember 22, 2000		

No foodwaste input to the tank on September 23, 2009

## Thursday, September 24, 2009 - Day 30

	Log details	Photos	
0900	Fruit peels are still there but have been reduced in size. The fruit seeds are still in shape and stay inside the tank.		
1800	Same as the above		
	No foodwaste input to the tank on September 24, 2009		



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# Friday, September 25, 2009 - Day 31

Time	Log details	Photos
0900	PSM fork tropical fruit seeds mango seeds and orange peels are still inside the tank.	
1800	Same as the above	
No foodwaste input to the tank on September 25, 2009		

## Saturday & Sunday, September 26 - 27, 2009 - Day 32 - 33

	Log details	Photos
0900	Machine has turned to power saving mode. The compost is dry and turn to a more reddish brown color	
1800	The mango seeds and some fruit peels are still inside the tank but they look dehydrated	
No foodwaste input to the tank on September 26 - 27, 2009		



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# Monday, September 28, 2009 - Day 34

Time	Log details	Photos
0900	Machine is still in power saving mode	
1800	The bones, fruit seeds and mango seeds are still in the machine. Those items take longer time to go through the composting process; or we may say they are noncompostable	

No foodwaste input to the tank on September 28, 2009

## Tuesday, September 29, 2009 - Day 35

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	Log details	Photos	
0900	Machine has turned to power saving mode. The compost is dry and in reddish brown color		
1800	The mango seeds and some fruit peels are still inside the tank and they look dehydrated		
No foodwaste input to the tank on September 29, 2009			



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DATE: August 26 to September 29, 2009

#### **CONCLUSION:**

The 2kg machine is found eligible to turn the below items into compost within 24 hours---

- vegetables
- fish with bones
- cooked meat with bones
- crabs with shells, shrimps with shells, squid
- fruit

The below items are found hard to compost within 24 hours---

- fruit seeds
- large bones
- crab shells it take about a week for the crab shell to become completely compostable
- fruit peels it take about a week for the fruit peels to become completely compostable

The below items are found non-compostable after 35 days

- large bones, though they reduce in size quite abit
- fruit seeds, the outer shell of the seed is hard for the micro-organisms to break in This is understandable as the bones are hard to decompose after years in our daily life because of their structure is very hard and dry. A very good example to illustrate is that when a dead body is buried and taken out again after years, only bones are left and all other parts are gone during the composting process inside the landfill. Seed also has a strong shell to protect itself and increase the chance of surviving / germination.

The machine itself will automatically turn to power saving mode and stop mixing the compost when the humidity inside the tank drops under a certain level. In such case, water needs to be added in order to make the machine run again and continue the composting process. However, when you input the foodwaste into the machine on a daily basis, there is water content inside the foodwaste (either soup, sauce or moisture comes from the food). We do not have to input water into the machine unless the foodwaste is too dry itself.