

The Optimum way of organic (mainly food & slaughterhouse) waste's recycling

Abstract

Most of the organic wastes created in Greece are landfilled or incinerated.

Therefore organic wastes are not recycled and create a lot of cost to landfill or incinerating

Furthermore by landfill creates secondary pollution as leachate and incineration creates much of carbon dioxide.

However, Korea where around 50 million population living in very much limited land of 99,720 km² with 70% of mountains, who separate food waste from the other waste by individual people since 1999 by law, is now changing its organic waste into recycling ways since 2012 after London Convention (Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matters).

The new ways of organic wastes recycling in Korea is led by KFRA (Korea Food Waste Recycling Machine Manufacturer's Association, Chairman Peter Choi) which is under the control of Ministry of Environment.

KFRA's main idea starts from the point that organic wastes contains 80-85% of moisture, so to get rid of moisture from the organic waste from the place where organic wastes are created can save lots of cost for transportation and keeping of organic waste first, which is drying.

And then to dry organic waste at the time of organic wastes are created, such as food waste from the preparation of food as well as leftover food waste from the restaurant tables, can prevent organic waste's spoiling and bad odor, therefore the fresh organic wastes can be recycled for any purpose, such as animal feed, fertilizer (compost), and fuel after drying under 10% moisture content, which can be kept for 6 months without spoiling.

Korea's organic waste might be somewhat different from those of Greek's and the data herein after being described may be different from those of Greek's.

However, Korea's basic data and technics can be applicable for Greece same way, so following technologies and data shall be a good sources to recycle Greek's organic wastes.

Out of organic wastes, food waste is the most difficult to treat and recycle organic waste, so we focus Korea's food waste treatment, which is recycling, and introduce the system with scientific explanation and realistic data.

Korea creates 5 million metric tons of food waste per annum and its cost to treat used to be EURO 700

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million per annum.

During the process of food waste collection, it creates bad odor if food waste is not collected every day, as long holiday seasons or every weekend.

Also the place where food waste is treated of 260 sites sometimes create also bad odor and leachate.

So there are big demand for the solution of food waste treatment and recycling, if there is a way.

By KRFA, since 20 years before, drying of food waste at the place of food waste being created has been suggested by drying machines and plants, however the suggestion had not been accepted by the market and governing authorities but now, KFRA's suggestion has been tested in many places in Korea since 2011 and with good results of recycling and big improvements of environments, such as no odor, no leachate, 100% recycling, low cost than current way of food waste treatment, KFRA's suggestion is going to be accepted by the government and people very much positive way.

KFRA suggests as following ways

1. Condominium (apartment) creates around 20% of Korea's food waste

For the condos, 50-200 kg/day of food waste drying machine to be installed and everybody dispose food waste into the drying machine any time and drying machine dries food waste 24 hours continuously and dried food waste, which is around 17% of food waste can be animal feed (18-20 % of protein), fertilizer (C/N ratio under 25), or fuel (4,500 kcal/kg but in Greece seems to be 6,000 kcal/kg).

There is a Smart Dryer which has computer, scale, internet function, which can check every home's data (time, date, weight of food waste dispose each time and weekly/monthly) and being sent to governing authority or individual check its own data with internet, etc.

2. Restaurants (over 200m² size) create around 50% of Korea's food waste

Install dryers from 50kg/day -2,000 kg/day and dry food wastes from the restaurants whenever food waste is created.

Dried food waste can be recycled as for Condominiums.

3. Individual house and small restaurants

Install home use dryer or small dryer, such as 20 kg/day.

Dried food waste can be recycled as Condominiums.

If all of dried food waste is used as fuel, then Korea's current cost to treat food waste of 5 million metric ton per annum as around EURO 700 million can be reduced as EURO 100 million per annum (saving EURO 600 million).