

'Food for Feed' Project: Design and operation of the pilot unit for transforming hotels' food wastes into animal feed

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Briefly about F4F Project

The F4F project is a demonstration project aiming to evaluate, through a pilot scale realization, an innovative, simple technology and low emissions process that allows the safe transformation of source separated food wastes, mainly from hotels (and generally from the hospitality industry and restaurants), into animal feed, utilizing an altered solar drying process.



Project beneficiaries

(ESDAK, coordinator)

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02

03

04

Agricultural University of Athens (AUA)

Association of Solid Waste Management of Crete

Free University of Berlin (FUB)

Harokopio University of Athens (HUA)



Hellenic Mediterranean University (HMU)



Some more info...





Key Actions







Design of the collection scheme

Design, construction and operation of the pilot unit

Evaluation of the product





Support Actions

Image: constraint of the sector of the sec	Customer Survey Customer survey	Economic, environmental evaluation	Technical scale up, design and construction manuals	F4F as Part of the EU's Wastes Strategy
Website, Social media accounts Leaflets Informative events Open days Conferences Work shops	<u>Target groups</u> Pet owners Pig & poultry farmers Feed producing industries Pig & poultry farm product consumers	Development of business plan Assess the environmental impact	Detailed technical designs Construction and operational manuals	Versatile actions to explore F4Fpotential as part of EU policies and strategies





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Collection scheme

•Evaluation of source separation systems of 24 hotels

Selection of 4 hotel
 Creta Maris Beach Resort
 Galaxy Hotel
 Aquilla Atlantis Hotel
 Olive Green Hotel

Composition analysis of food waste

Design optimum collection route



Collection scheme

- Supply of indoor bins (70lt)
- •Supply of road bins (240 & 360lt)
- •Collection with refrigerator truck (T <100 C)
- •Transferring to the Pilot Unit (within max 4 hours)



In the center of the study area Proximity to the highway Easy access to infrastructures (for electricity and water supply)

Easy disposal of the residues of the process into the bio-drying unit

Location of the pilot unit



Layout of the pilot unit



- 1. Truck parking area
- 2. Temporary storage area of the bins
- 3. Conveyer belt
- 4. Shredder , Mono-pump
- 5. Solar drying halls (stainless steel)
- 6. Product collection area
- 7. Temporary storage area of the product







Construction of the pilot unit

Total area of the pilot unit: 880m2 Total pilot unit area: 468m2 Solar drying greenhouse 384m2/ pretreatment unit 84m2









Equipment installation

Conveyer belt
Shredder
Monopump
Under floor heating system
Horizontal and vertical turner
Solar panels





Pretreatment unit













Solar drying unit





1st operational period The final product





Samples send to partners for trials





1st operational period Operational data

- Operation between July-October
- Collected and treated food waste about 150tn
- Daily average amount of incoming food waste for process 850 kgr
- Floor temperature in the drying halls about 40-45°C
- Estimated that for drying period about 8 days, the moisture content reduced from 70% to 10-15%



Problems encountered in the collected food wastes





1st operational period Problems encountered in the collected food wastes









Problems encountered in the collected food wastes





1st operational period Problems in the operation





Actions for the optimization of the operation







Actions for the optimization of the operation



Installation of a heating pump and 4 more solar panels





Actions for the optimization of the operation

Installation of a hydraulic lifting system for bins







Other actions for the optimization of the operation







Evaluation of the product

- Physicochemical analysis of the product
- Microbiological analysis of the product
- Animal feed trials with cats, dogs, broilers and fattening pigs
- Blood tests of the animals participated in feed trials
- Evaluation of the commercial value of the product



Contribution of F4F project to EU objectives within the framework of waste management and circular economy

- Source separation of food wastes in the hospitality industry
- Development of an optimum collection scheme of food wastes
- Production of a product with possibility of use as part of animal feed through an environmentally friendly process
- Diversion of food wastes from landfills
- Public awareness regarding the need of source separation of food wastes



Thank you

https://life-f4f.gr/ http://ec.europa.eu/environment/life/



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