

‘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

01

Association of Solid Waste Management of Crete
(ESDAK, coordinator)

02

Agricultural University of Athens (AUA)

03

Free University of Berlin (FUB)

04

Harokopio University of Athens (HUA)

05

Hellenic Mediterranean University (HMU)

Some more info...

Duration

01/09/2016 – 28/02/2021

Budget

2.580.619,00 €

Location

Heraklion Crete

Funding

60% EC co-funded

Key Actions



Design of the collection scheme



Design, construction and operation of the pilot unit



Evaluation of the product

Support Actions



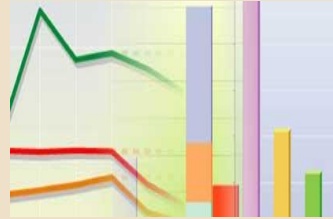
Dissemination activities

Website, Social media accounts
Leaflets
Informative events
Open days
Conferences
Work shops



Customer survey

Target groups
Pet owners
Pig & poultry farmers
Feed producing industries
Pig & poultry farm product consumers



Economic, environmental evaluation

Development of business plan
Assess the environmental impact



Technical scale up, design and construction manuals

Detailed technical designs
Construction and operational manuals



F4F as Part of the EU's Wastes Strategy

Versatile actions to explore F4Fpotential as part of EU policies and strategies



Collection scheme

- Supply of indoor bins (70lt)
- Supply of road bins (240 & 360lt)
- Collection with refrigerator truck (T <10o C)
- Transferring to the Pilot Unit (within max 4 hours)



In the center of the study area

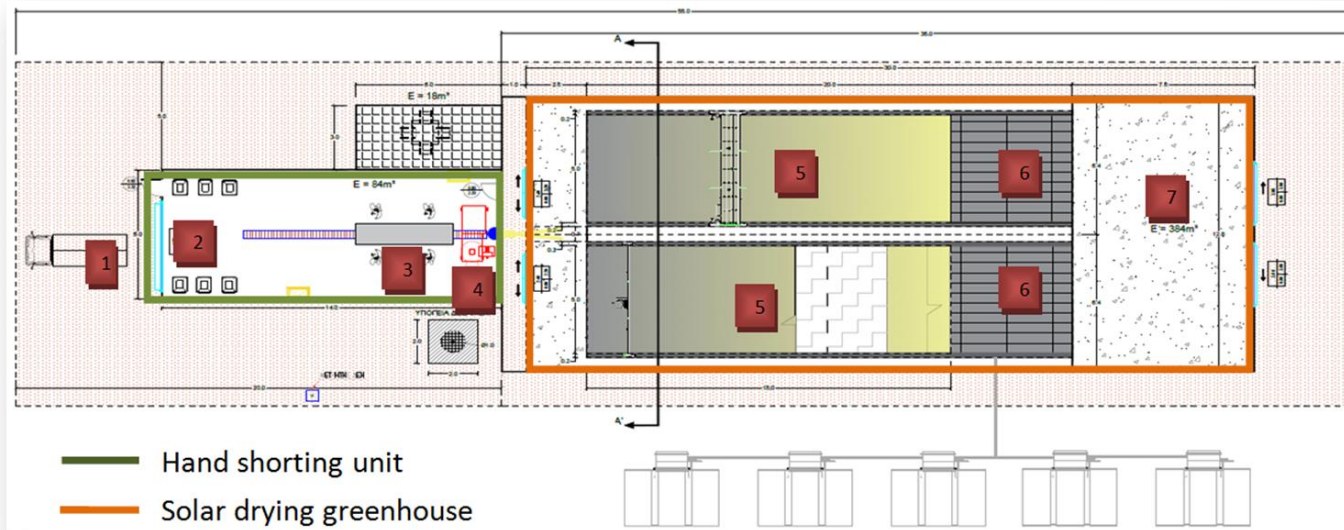
Proximity to the highway

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



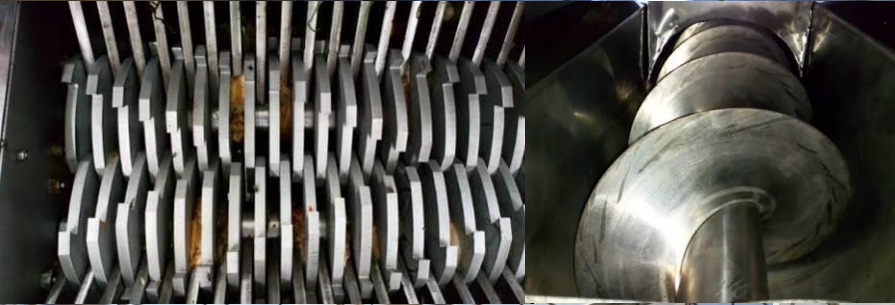
Construction of the pilot unit

Total area of the pilot unit: 880m²

Total pilot unit area: 468m²

Solar drying greenhouse 384m²/ pretreatment unit 84m²



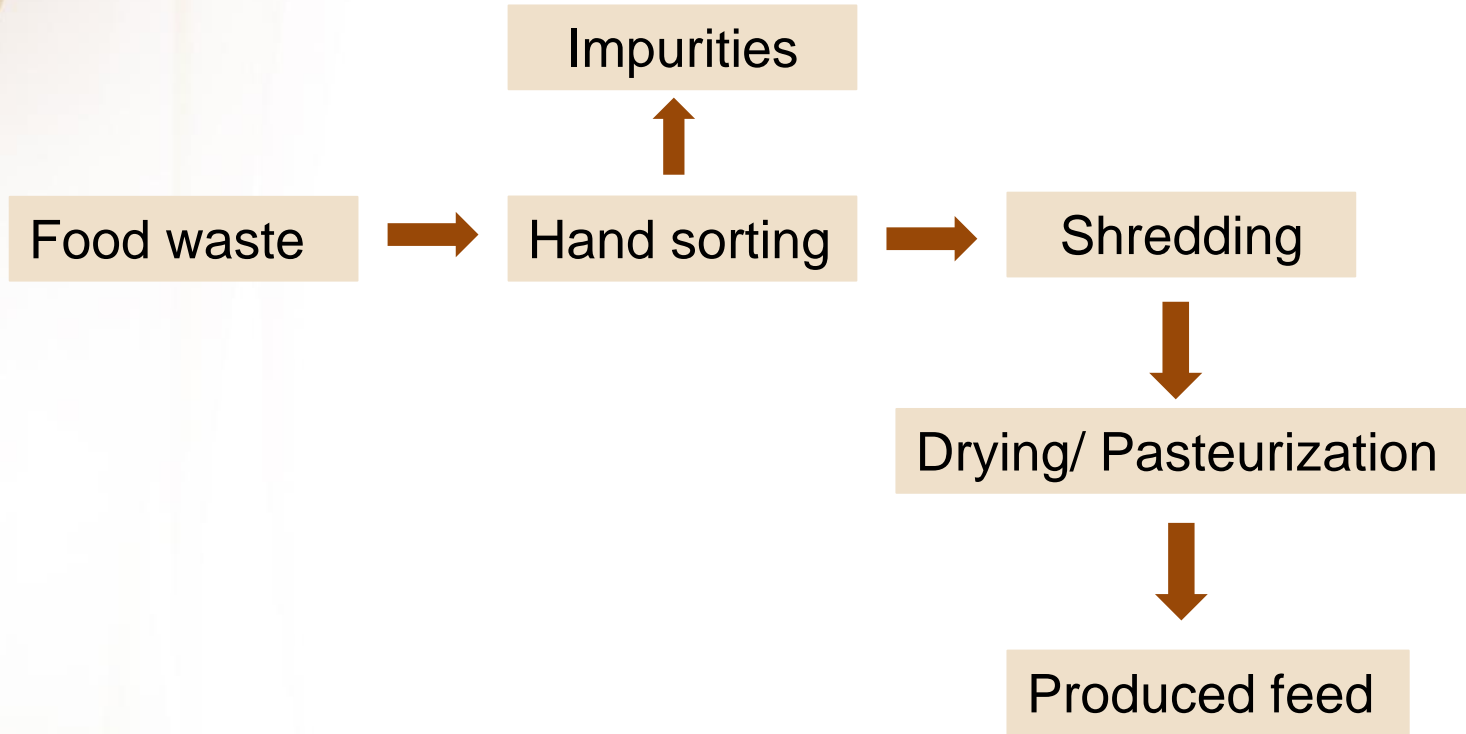


Equipment installation

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



Pilot unit flow chart



1st operational period

Pretreatment unit



1st operational period

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%

1st operational period

Problems encountered in the collected food wastes



1st operational period

Problems encountered in the collected food wastes



1st operational period

Problems encountered in the collected food wastes



1st operational period

Problems in the operation

shredder



under floor heating system



lifting of the bins



2st operational period

Actions for the optimization of the operation

Installation of
Pulverizer



2st operational period

Actions for the optimization of the operation



Installation of a heating pump
and 4 more solar panels



2st operational period

Actions for the optimization of the operation

Installation of a hydraulic lifting system for bins



2st operational period

Other actions for the optimization of the operation

Installation of air curtains
at the two doors of the
pretreatment unit



Mechanism for
automatic door
closing



pressure washer
machine





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/>