



Environmental Permitting and System Integration of Decentralized AOSDU Units with a Central Processing Facility: The LIFE-INOFEED Approach

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The LIFE-INOFEED flow chart...



The LIFE-INOFEED CYCLE

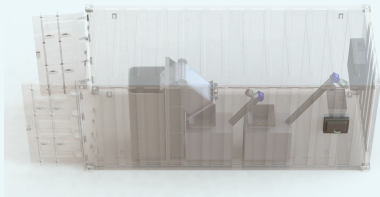




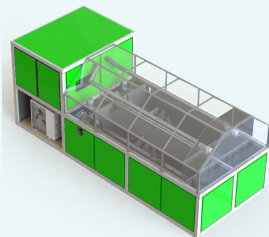
System Architecture: AOSDU Units (SM+DM+SPM) & Central Facility



Shredding Module (SM)



Drying Module (DM)



Solar Panel Module (SPM)



↓ *Dried bio-waste material from AOSDUs transferred to Central Processing Facility*



Central INOFEED Processing Facility (ENV)

Final drying (after AOSDUs) | Homogenisation | Quality control (BIOLAB) | Packaging | Temporary storage building



ENV role: Leads all permitting procedures for the central facility environmental design optimisation, coordination with competent authorities, construction & operational licensing & in cooperation with BIOLAB for AOSDUs



LIFE-INOFEED: Project at a Glance



4,000 t

bio-waste
treated

1,600 t

animal feed
produced

−5,600 t

CO₂ savings
(eq.)

6 + 1

AOSDU units
deployed

The LIFE-INOFEED project transforms diverse urban, crop and agro-industrial food-related bio-wastes into animal feed components through solar-powered on-site drying units (AOSDUs — Autonomous On-Site Drying Units), operating across 6 waste producing facilities in Greece and Belgium.



Innovation

Modular · Solar powered / On-site treatment
Containerised / Transferable / Combinable units
TRL 5–6 → TRL 8 by project end



EU Policy Alignment

Green Deal / Circular Economy Action Plan
Farm to Fork Strategy / EU Bioeconomy Strategy
Waste Framework Directive (2008/98/EC)

Six Host Facilities — Bio-waste Streams & AOSDU Deployment



UNIT 1

GR

Supermarket

Non-marketable fruits & vegetables

UNIT 4

GR

Fruit & Vegetable Auction

Non-marketable rice, pasta, flour products

UNIT 2

GR

2phase Olive Oil Mill

Olive mill by-products (2-phase)

UNIT 5

GR

Waste management Sustainability System from hospitality sector

Catering / hospitality food waste (hotel)

UNIT 3

GR

Poultry Slaughterhouse

Poultry slaughterhouse by-products (Cat. 3 ABP)

UNIT 6

BE

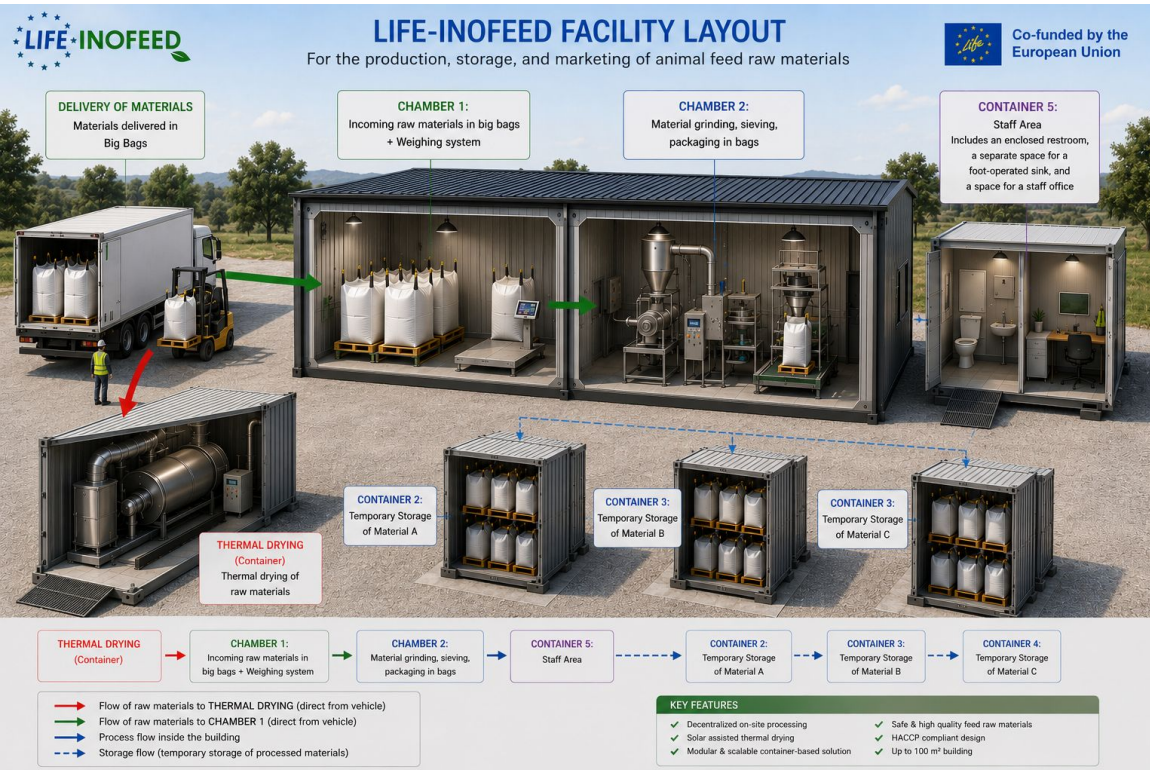
INAGRO Research Centre

Agro-industrial residues (brewers' spent grain, etc.)

After agreements with all six facilities following site visits and technical assessments.



The LIFE-INOFEED Central Facility _ Licensing..



1. Environmental licensing :

- ✓ Contacts and coordination with the Region of Crete
- ✓ Contract with specialized consultants
- ✓ The HMU topographic survey requires revision
- ✓ Coordination with Region of Crete & specialized consultants
- ✓ Modification of the Environmental Impact Study (HMU)
- ✓ Integration of updated technical and operational parameters
- ✓ Implementation of a 2-year pilot operation phase
- ✓ 6 months for the design & Approval
- ✓ Preparation of structural design & issuance of building permit for the canopy structure

2. Building Permit:

- ✓ development of architectural drawings of the new building
- Preparation of structural design and issuance of building
- permit for the construction of the building



Method 7 Validation — The Critical Pathway for ABP Units



The AOSDU drying process does not apply standardised Methods 1–6 (Reg. EC 142/2011). It must therefore be approved as Method 7 by the competent authority before commercial operation.

01 Process Description

Flow diagram + HACCP plan
Operating procedure for size control, temperature, time parameters

02 Technical Description

Full technical specification of the drying module
Documentation of the thermal treatment parameters applied

03 30-Day Microbiological Trial

Daily sampling of final product over 30 consecutive production days
Tests: Salmonella, Enterobacteriaceae, Clostridium perfringens
Accredited ISO 17025 laboratory (BIOLAB)

04 Record Keeping

Ongoing documentation of all production parameters
Traceability system linking input feedstock to output batch

Microbiological standards: Salmonella — absent in 25 g (n=5, c=0) | Enterobacteriaceae ≤ 300 in 1 g | C. perfringens — absent in 1 g immediately after treatment



Feed Safety, Quality Assurance & Regulatory Compliance



Safety

- Salmonella: absent in 25 g
- Aflatoxin B1 $\leq 5 \mu\text{g/kg}$
- Heavy metals within EU limits
(As 2 · Cd 1 · Pb 5 · Hg 0.1 mg/kg)
- Pesticide residues: tested

Nutritional

- Crude protein
- Total fat & carbohydrates
- Energy content (calculated)
- Crude fibre · Minerals · Ash

Physicochemical

- Moisture content $\leq 12\%$
- Preservation capability
- Stability during storage
- Uniformity of composition

Traceability

- HACCP at all stages
- Supplier/customer records
- Product recall procedures
- ISO 17025 lab cooperation (BIOLAB, Heraklion)

Animal Trials

- Feed formulation & distribution
- Incorporation 5–15% in compound feed
- Pig · Poultry · Laying hens
Lambs · Rabbits · Dogs
- ADG · Feed conversion · Palatability

Conclusions & Key Messages



 The dual permitting pathway (plant by-products + Category 3 ABP) has been fully mapped and is being implemented with support from ENVIROPLAN and regional authorities.

 Method 7 validation (30-day microbiological trial) is the critical gateway for ABP units and will be conducted by BIOLAB under accredited ISO 17025 conditions.

 The Central Processing Facility (hub of the LIFE-INOFEED system) is advancing through permitting. Construction is expected to follow grant of approvals.

 Agreements reached with all 6 host facilities following site visits; construction of the 1st AOSDU Drying Module commenced March 2026 with completion expected end of June 2026.

 A formal legislative amendment proposal will be submitted targeting the regulatory barrier (Reg. 1069/2009) that currently limits catering waste to fur animal feed only.