



LIFE08 ENV GR 000576

The project is co-financed by LIFE+, the EU's financial instruments supporting environmental and nature conservation projects throughout the EU



Project Description

Duration: 1/1/2010 – 31/12/2012

Budget: 919.557€

(EU Participation: 450.143€)

Place: Thessaloniki – Ptolemaida – Amyntaion

Objectives:

- ✓ Fostering of agricultural and forestry activities
- ✓ Decreasing use of fossil fuels
- ✓ Agricultural residues utilization for decentralized energy production
- ✓ Decreasing CO<sub>2</sub> emissions
- ✓ Increasing public concern in environmental and energy saving issues

Actions:

- ✓ A1: Regional Biomass Availability Profile
- ✓ A2: SMART CHP Unit Development
- ✓ A3: Demonstrative Operation
- ✓ A4: Results & Sustainability Analysis
- ✓ A5: Dissemination of Project Results

Partners

Aristotle University of Thessaloniki (AUTH)



Laboratory of Applied Thermodynamics - AUTH



Laboratory of Chemical Process and Plant Design - AUTH



Union of Agricultural Cooperative of Amyntaion

E.A.S. AMYNTAIOY and 1946

District Heating Municipal Company of Ptolemaida



# Demonstrative Operation of a Small Scale Mobile Agricultural Residue Gasification Unit for Decentralized Combined Heat and Power production



## Design & Development - AUTH

Feeding & Gasifier - from Lab Scale to Pilot Scale...



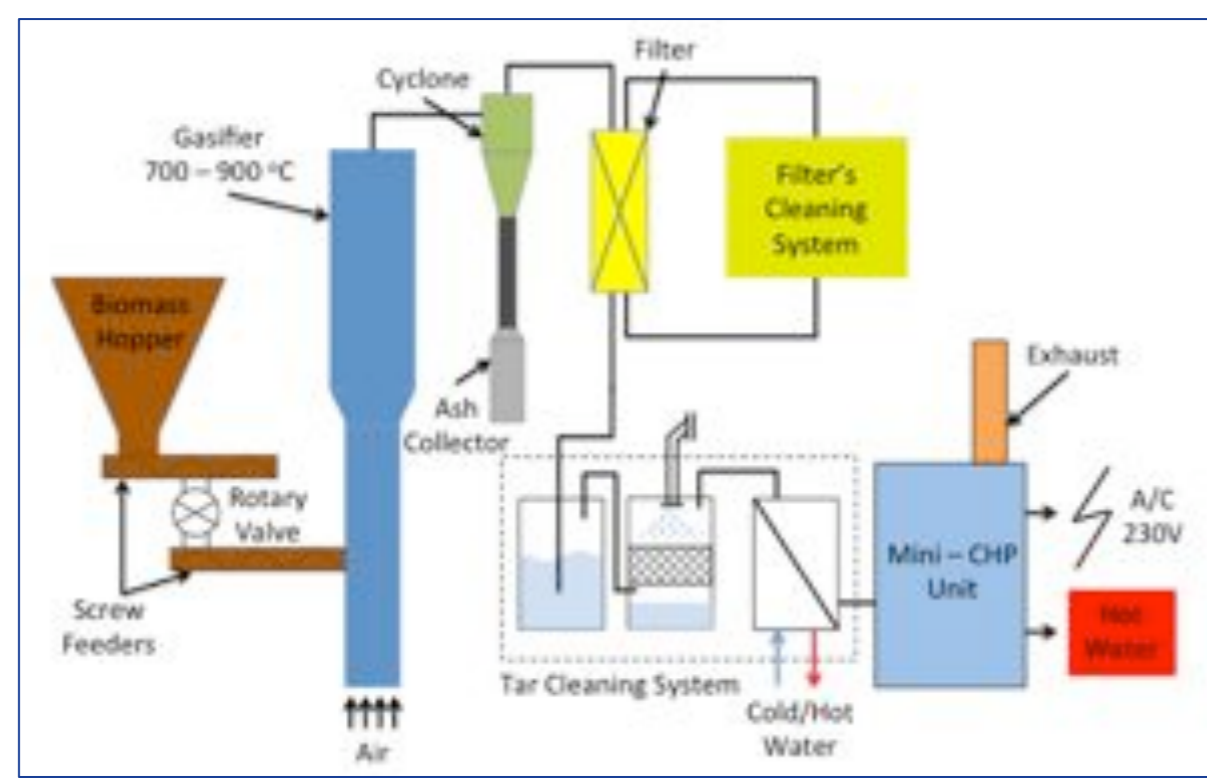
...In a Mobile Unit



Gas Treatment & Utilisation...



Process Flow Diagram & Complete SMART CHP unit



## Biomass (Peach/olive/grape kernels)



## Demonstration 1 & 2

- Facilities of the DHCP
- Expo area of Ptolemaida
- Central parking of urban buses



## Demonstration 3 & 4

- Winery of UACA
- UACA headquarters

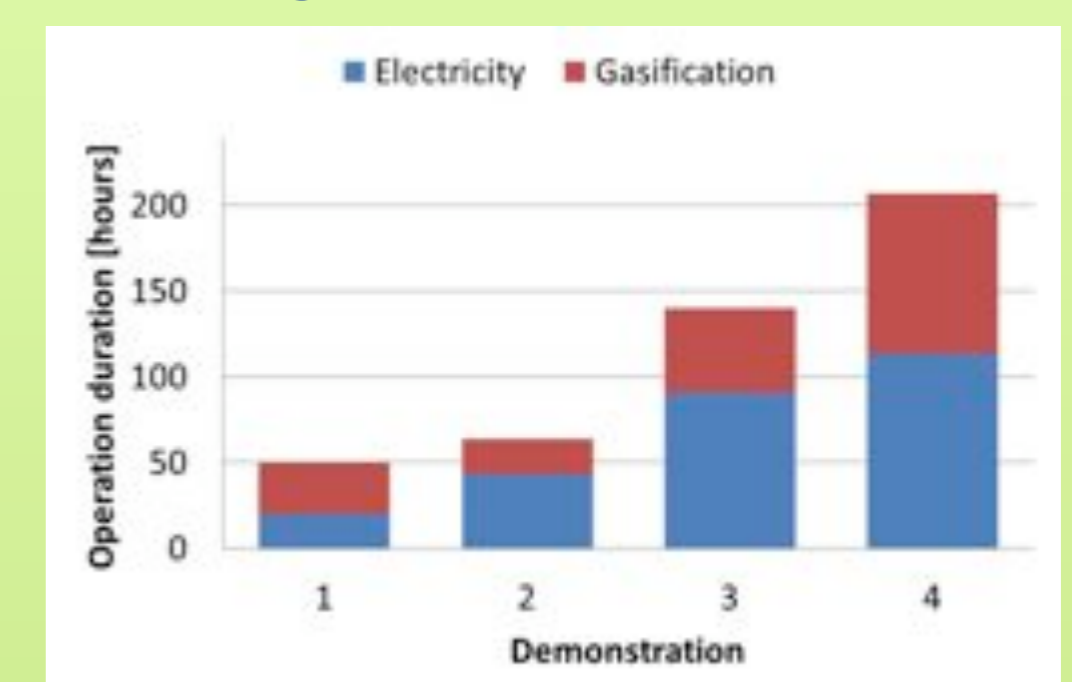


## Main problems faced

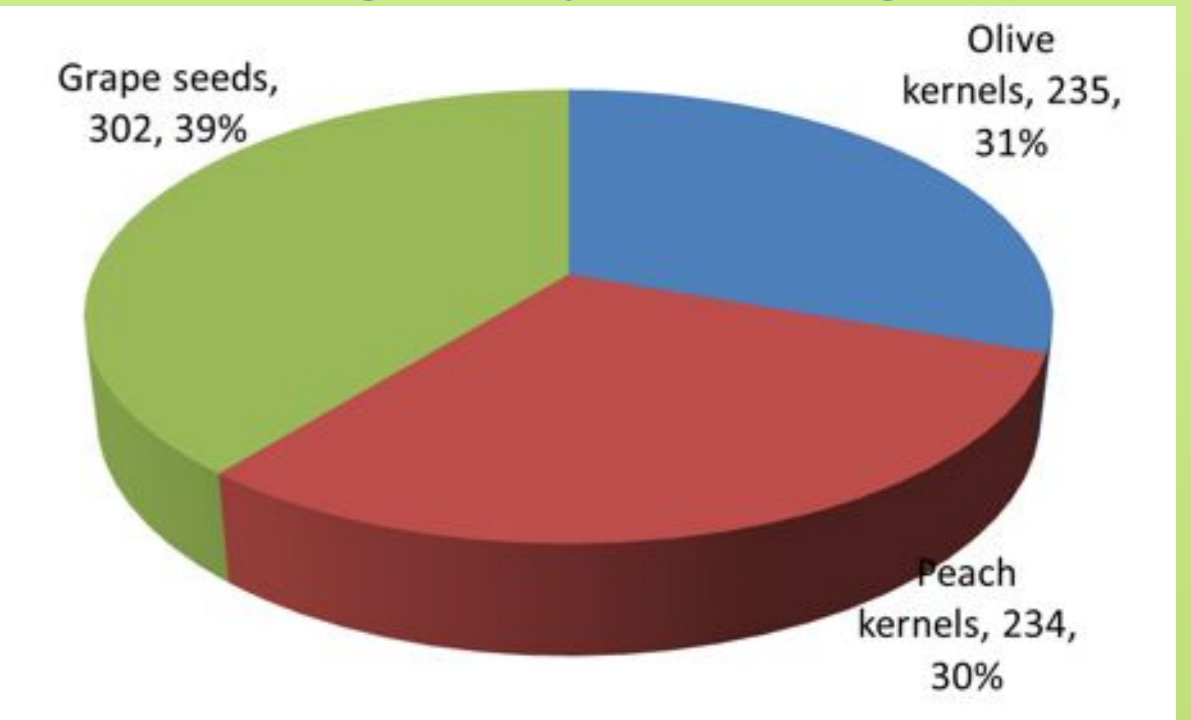
<p>Biomass blocking ✓ Improvement of feeding system (silo, feeders)</p>	<p>Failed air heater ✓ Replacement with a new one</p>	<p>Agglomerations ✓ Improve solids hold-up &amp; control temperature</p>	<p>Filter excessive loading ✓ Modification of gasifier outlet to hold up the largest particles</p>
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## Results

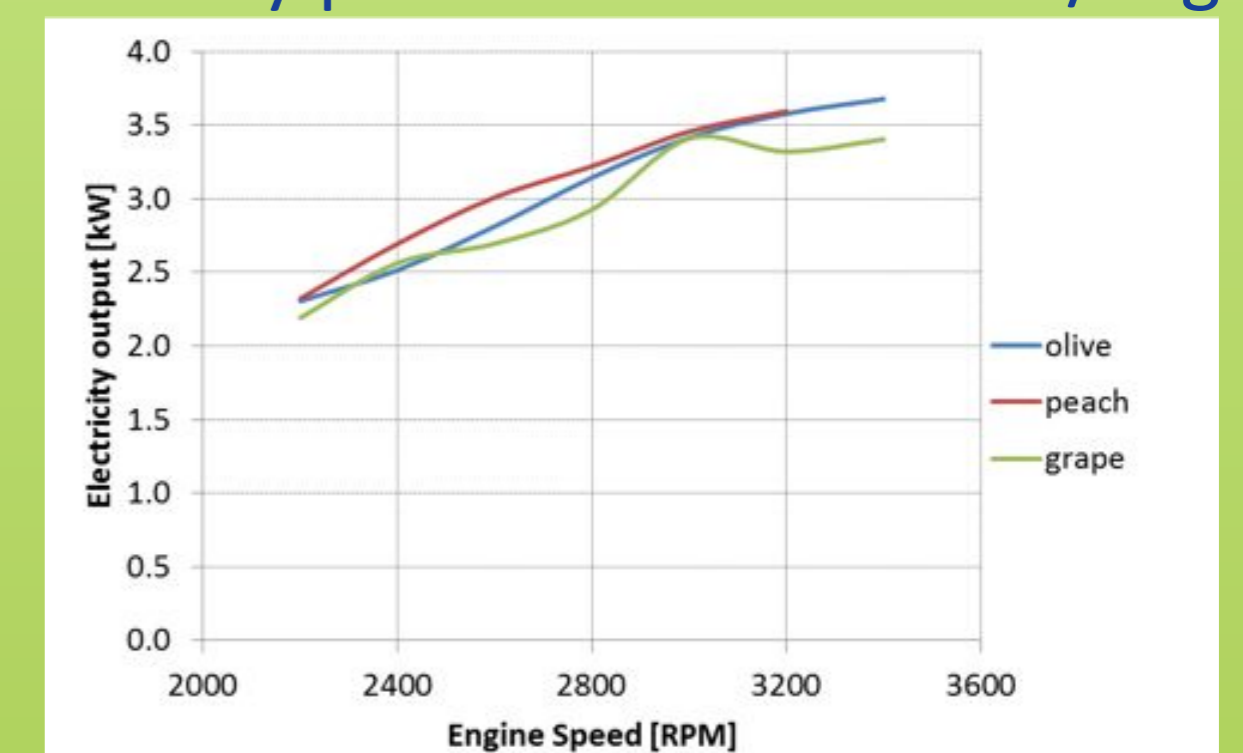
Real/Proposed duration on electricity and gasification mode



Biomass species used (in kg and percentage)



Electricity production for 75% w/w gas



<http://smartchp.eng.auth.gr>

