Residue2Heat

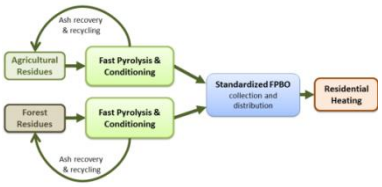
Renewable Residential Heating with Fast Pyrolysis Bio-Oil

-1- Introduction

A long-term objective of *Residue2Heat* is to use agricultural or forest residue streams that are unsuitable for food or feed production and have low ILUC values for residential heating.

-2- Ambition

The intention of the *Residue2Heat* project is to clear the path for the implementation of FPBO in residential heating systems combined with maximum combustion efficiency.



The overall ambition is:

Address all technical challenges associated with the use of residual biomass for sustainable residential heat

-3- Project Objectives

The overall objective of the project *Residue2Heat* is to enable the utilization of various biomass residue streams in residential heating applications in a sustainable manner. The overall project objectives are:

- Widening the feedstock base,
- Ash free FPBO,
- Improving efficiencies,
- Low-emissions.

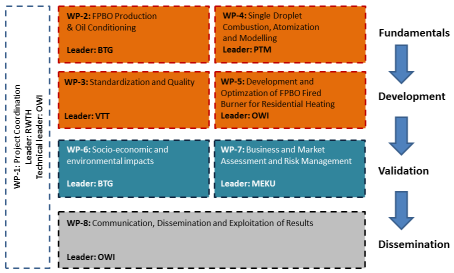
-4- Approach and Methodology

The different development steps in *Residue2Heat* for an efficient, low emission, biomass residential heating system based on FPBO are.

- FPBO is produced from different agro;
- High ash content are recovered during FPBO production;
  - leading to low ash emissions at the end-user;
  - Assessment of mineral recycling;
- Standardisation of FPBO;
- Thermo-physical properties FPBO;
- Fundamental of FPBO spray and combustion;
- Optimization of the burner design;
  - Leading to low emissions.

-5- Layout of the Work Packages

The overall project has been divided into 8 logical work packages each covering a specific aspect of the development of the whole development chain, as depicted schematically in the figure below. The project consists mainly of two pillars; the standardization of FPBO for residential heating and development of a residential heating system for this standardized FPBO.



-6- Use FPBO in Residential Heating Systems

A liquid fuel burner is modified for the use of the standardised FPBO. The foreseen overall adaptations lead to a reliable system and the TRL is moved from 3 to 5 in this R&I project.

TRL & MRL	FPBO production	TRL	MRL	Residential heating	TRL	MRL
Current status	*Woody biomass*	7	7	*Light Fuel Oil*	9	9
	Biomass residues	3-4	7	Fast pyrolysis bio oil	3	8
After Residue2Heat	Biomass residues	5	7	Fast pyrolysis bio oil	5	8

-7- Expected Results

The overall objective of the project *Residue2Heat* is to enable the utilization of various biomass residue streams in residential heating applications in a sustainable manner. The produced Fast-Pyrolysis Bio-Oil (FPBO) will be:

- Produced from various high-ash biomass residues,
- High quality and standardised FPBO,
- Minimal one FPBO grade suitable for residential use
- Enhanced knowledge on atomisation and combustion of FPBO,
- Proof of concept of FPBO fuelled residential heater,
- Known socio-Economic and environmental impacts of FPBO,
- Market assessment of key countries for FPBO deployment,

Project website:

http://www.residue2heat.eu

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