



Supporting Sustainable Energy Production from Biomass from Landscape Conservation and Maintenance Work

MINUTES – Stakeholder Working Group “LCMW pathway Utilisation Strategies”

Date: 02.03.2017, 10-12 a.m.

Organisation: Mainer Gomez (CIRCE)

Agenda:

- Topic: Exploring real alternatives considering the existing LCMW biomass types and biomass consumer for the Spanish model region and Trasimeno region logistic center initiative.
 - o Mixed pellet manufacture with biomass from landscape conservation and maintenance work (LCMW) (LCMW biomass and agriculture/forest biomass).
 - Pellet production vs mixed chips used in boilers installed in farms or public buildings.
 - Parameters to consider regarding the quality of mixed biomass chips.
 - Key factor to evaluate and determine the most feasible option: pellet/mixed chips supply chain.
 - Most convenient strategy in the Matarraña case: LCMW biomass from path cleaning and ravine cleaning or reed.
 - Best alternative for the Trasimeno logistic center case.
 - o Logistic centers managing different types of biomass
 - Mr. Andreas Schonhoff IbeKET project.
 - Mr. Naudy Vincent project SUCELLOG.
 - o Summary and conclusions

Participants:

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|---------------------|-----------------|
| - Maryori Díaz | CIRCE |
| - Stefano Grigolato | UNIPD |
| - Naudy Vincent | RAGT |
| - Ina Ehrhardt | Fraunhofer IFF |
| - Andreas Schonhoff | ttz Bremerhaven |

- Detlef Hoffmann CEO Green Future Consulting (ES)
- Wibke Baumgarten FNR, greenGain
- Christiane Volkmann FNR, greenGain
- Jan Dolezal CzBiom, greenGain
- Federico de Filippi SOGESCA, greenGain
- Alessandro Mazzari SOGESCA, greenGain
- Maider Gomez CIRCE, greenGain
- Kathrin Ludewig SYNCOM, greenGain
- Mini Bajaj SYNCOM, greenGain
- Aline Clalüna COALS, greenGain

Moderation and minute taker: Maider Gomez (CIRCE)

Publicly available summary of SWG results

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| SWG | LCMW pathway Utilisation Strategies |
| Date of the conference | 02.03.2017 |
| Participants | <ul style="list-style-type: none"> - Maryori Díaz - Stefano Grigolato - Naudy Vincent - Ina Ehrhardt - Andreas Schonhoff - Detlef Hoffmann - Wibke Baumgarten - Christiane Volkmann - Jan Dolezal - Federico de Filippi - Alessandro Mazzari - Maider Gomez - Kathrin Ludewig - Mini Bajaj - Aline Clalüna |
| Topics | <p>First part: Mixed pellet manufacture with biomass from landscape conservation and maintenance work (LCMW) (LCMW biomass and agriculture/forest biomass).</p> <p>Second part: Logistic centers managing different types of biomass.</p> |
| Summary | <ul style="list-style-type: none"> • When LCMW biomass is not sufficient to cover the demand, the approach presented foresees LCMW supply as an additional feedstock that could also be mixed with other biomass. • Since the LCMW biomass may present some proprieties that could reduce the quality of the product supplied, it is interesting to quantify other types of feedstock available in the region with a higher quality in order to assess the possibility of making mixed biomass fuel with a lower price and still reaching quality standards. • Chips and pellet presents different benefits and constraints that need to be assessed in each case (lower price, positive local economic impact, moisture content, storage space required, type of delivery vehicle needed, combustion efficiency, etc.). • There is an increasing demand of pellets in Europe, but price variation need to be considered in the economic balance. • EN 17225 (former EN 14961) establishes chips and pellet quality based on physical and chemical requirements. ENplus is the worldwide most accepted seal of approval. EN ISO 17225-2 defines the quality of pellets (former EN 14961-2). For pellets the main differences among classes are related to ash content and ash melting temperature. • For the chips quality classes the main differences are related to the diameter. • Main problems and limitations that need to be considered when assessing the use of a mixed material in the combustion in principal are the raw material hardness, the ash content, the structural and compacting properties, the energy content variability and the possibility of finding higher content of critical |

elements.

- For pellets the addition of additives can modify these properties so the analysis of the product is very important to determine the possible constraints related to its use in combustion processes.
- The effects of the pellets characteristics during thermal conversion are affected by the efficiency in the storage and ignition stage, the design, the operation and maintenance emissions and ash applications, the gaseous emissions production, corrosion and ash related problems as well as other aspects related to the emissions and ash disposal.
- Mixed material properties need to be assessed in detail so that the product fulfils the quality standards in order to guarantee that no major damages occur to the boiler and regular operation is feasible.
- In general the ash content in this type of feedstock is higher than in others, which is the reason why the standards allow a higher content.
- There are different types of technologies available and there are research centers and companies trying to improve the conversion units in order to adapt them to be able to use this type of mixed materials whose practice or usage is growing.
- For the logistic center the quality of the product should be the main focus as reaching the quality standard through pretreatment processes is a guarantee for the consumers. On the other hand technologies can be adapted to be able to operate with these mixed materials.
- The standards allow the use of additives that will help to control this ash related problems. They are commercial and can be added during the pelletizing process.
- The treatment of the raw material allows increasing the quality regarding the ash content. Leaves in general show higher ash content and grass shows a higher heating value.
- Difficult parameters that should be controled in incoming leafy material are ash content, heating value, Cr, Ni and Zn; for grass it is ash content, heating value, N, Cl, Cr and Ni.
- Small scale combustion and gasification pathways are feasible with LCMW without the use of additives.
- The treatment process plays an important role to increase energetic optimization.
- Small scale combustion application should carefully assess the NO_x and particulate matter reduction and gasification should research on efficiency increase and alternative fuel development among others.