

# 6th Technical e-NEWSLETTER Natural fibres from hop waste & natural fibre twine

Author (text and pictures): Zelfo Technology GmbH

May 2022

Zelfo Technology (ZT) has been tasked to convert hop stalks together with their suspension twine into an adequate feedstock for future use in two particular industrial sectors: bio-plastics products manufacturing and pulp forming for packaging. The target end products are planting pots and wine bottle packaging.

#### Processing technological procedures included:

#### Material source: Hops/PLA twine

1. Material size conversion to useable form/scale.

2. Assessment of converted material for further conditioning before introduction into the ZT fibre processor.

3. Supply of material to the ZT processor via a specific dosing system.

4. Processing of the material at a specific size and condition in order to achieve feedstock size/ quality usable within a bioplastics compounding system - for conversion into pellets/end product feedstock.

5. Assessment of resulting processed material and final conditioning for transport to Tecnopackaging.

## Material source: Hops/natural fibre twine

1. Repeat of steps 1 - 3 as with Hops/PLA twine.

2. Co-product extract removal to improve feed material quality and achieve a secondary income stream.

3. Assessment of resulting fibre stock and conditioning for transport to Tridas Pulp Product Formers.

## **Results achieved:**

# Material source: Hops/PLA twine

## **Tecnopackaging feedback:**

- 1. All materials supplied feed well into their plastics compounding technology.
- 2. Granulate was satisfactory.
- 3. Current supplied stock can be used as a benchmark for further scale-up technology research.

## **Tecos feedback:**

- 1. Material flow in pot forming technology was satisfactory.
- 2. End product based on matrix variables was satisfactory.

# Material source: Hops/natural fibre twine Tridas feedback:

- 1. Fibre form and condition was satisfactory
- 2. Co-blending with other fibres in the product forming system was good
- 3. End product was robust and met project target expectations.

#### **Project Final Phase:**

#### Tasks

- 1. Assist IHPS to achieve an overall understanding of project eco-balance via LCA- related data.
- 2. Contribute any Pulp Forming Know-how refuse of ZT fibres.
- 3. Supply further PR related info to promote the BioTHOP concept to a wider audience.
- 4. Assist BioTHOP organisation partners with technology transfer as required.

#### **Conclusions:**

#### **Fibre Processing**

- 1. ZT processed all fibre as received from IHPS/Slovenian farmers to a level of around 95% yield
- 2. The bio-extract test revealed the potential for further parallel income streams.

#### **End Product Related**

- 1. Both Tecnopackaging/Tecos and Tridas reported successful use of ZT produced fibres.
- 2. Upscaling of the system remains the most urgent area for investigation.



Photo 1 Hop/Twines as supplied



Photo 2 Processing of Fibre/Extract



Photo 3 Fibre Quality Samples

For further information, please click https://www.life-biothop.eu or visit and follow us on our social networks, where we publish our news regularly:





This project is co-financed by European Union through the LIFE Programme. The technical e-newsletter reflects only the author's view and exempts the European Commission for any use that may be made of the information it contains.