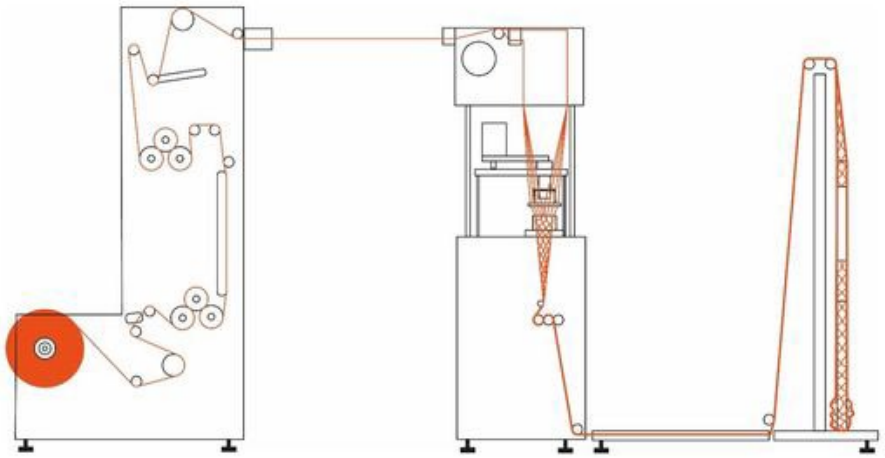

Film cutting stretch unit
[Harry Lucas GmbH & Co. KG]

Circular warp knitting machine with gathering unit
[Harry Lucas GmbH & Co. KG: VEPA-E and NERA 250]

Development of a high-performance warp knitting machine for processing degradable foil ribbons; development and production technology for degradable foil ribbon packaging (Hobaru)

The current disposable packaging nets for foods such as onions, mandarins and oranges are traditionally made from plastics such as polyethylene or polyester. They are not biodegradable and have a significant environmental impact. As part of the ZIM project, packaging nets were developed on the basis of two different biodegradable plastic foils. Both foils are 100% biodegradable in industrial composting plants in accordance with DIN EN 13432. Packaging nets are produced - starting from a roll of foil- on special circular knitting machines. In a continuous process, the flat foil is first cut into fine ribbons. These are stretched under the influence of temperature in the downstream process and then fed directly to the circular knitting machine. For the processing of biodegradable foils, the machine parameters such as transmission ratio, temperature and binding cannot simply be adopted from the processing of conventional foils and must be redefined.

The use of biodegradable foils is intended to create a more sustainable product on the one hand and, on the other, to reduce energy consumption in the manufacturing process by implementing a continuous process.

In the course of the project, the processing of the two bio-foils was realized in a continuous process. The net production required a strong optimization of the process parameters. Nevertheless, it was possible to produce bio-packaging nets

The packaging nets produced from the two bio-foils show a lower strength of up to -50% and a lower stretchability of up to -37% compared to the reference net made of HDPE. The bio-nets were sealed with a welded seam so that they are completely biodegradable due to the absence of metal staples. The finished nets were tested for their resilience and seam strength. It was shown that the bio-nets can reliably carry commercial quantities of up to 1000g despite their significantly lower strength.

Acknowledgement

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Project partners

Maschinenfabrik Harry Lucas GmbH & Co. KG

Duration

01.10.2019 – 31.03.2022 (after cost-neutral extension)

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