

# RELEAF PAPER COMPANY

## TO MAKE PAPER RECYCLING FALLEN LEAVES IN UKRAINE

Since 2021, [the Releaf Paper start-up enterprise recycles plant waste into valuable raw materials](#), offering an alternative to virgin fibres in paper production.

The project was born from an idea and upon the initiative of Valentyn Frechka, a high school student in the city of Zhytomyr, 140 km west of the capital Kyiv of Ukraine. The idea was very simple. Things that are considered a waste can be re-used or recycled as for example the leaves of the parks that need to be removed because emit a lot of carbon as they rot. On average the city collects at least 8,000 tons of leaves annually, and the total potential of Europe exceeds 1 million tons only from urban areas. What if we found a way to turn this waste into paper?

[Leaves are considered 'biological waste'](#) when they are found in cities. They need to be safely disposed in order to keep streets clean and avoid releasing nitrogen into the air. Typically, they are burnt even if this is a damage to the atmosphere because of the emissions of carbon monoxide and other harmful gasses released into the air. Nature, animals, and people are all bound to suffer if we continue on with this practice. Additionally, leaves are a source of cellulose that is a main constituent of the paper. The current practices in making paper are killing the environment as deforestation runs rampant. Leaves are an affordable, raw material that are easily found and available all year round. The pulp of the leaves is a substitute for the wood cellulose typically found in paper. Leaves not only need to be disposed properly, but with their use we contribute to avoid deforestation.

The Ukrainian student began a science project to turn fallen leaves from trees and plants into paper and it has partnered a cardboard manufacturer in the city that hired him as a research and development specialist in 2018. In early 2018 during long experiments in school lab he finally obtained for the first-time suitable prototypes. During the 2 next years he was presenting his invention worldwide, and it has been duly appreciated everywhere. The company was born in 2021 in Ukraine as a result of these collaborations. At the same time, its first launches took place at a test mini-production facility.

They founded the start-up enterprise Releaf Paper and start to rid cities of green wastes and transform them into sustainable paper packaging with the least possible impact on the environment.



Releaf Paper developed its own patented technology of processing fallen leaves into fibers. Using combination of mechanical, thermal and chemical treatment, they not only dispose green wastes, but also ensure source of sustainable raw-materials for paper & packaging industries. [The benefits of the production process are the following:](#)

- **Renewable** Made from fibers of quickly renewable fallen leaves
- **Forest Friendly.** No wood pulp used during production
- **CO2 saving.** Only 0,066 kg CO2 per kg during production
- **Recyclable.** In standard paper waste stream.

In particular, the process works with the following steps:

- **Leaves transportation.** They get leaves from urban ecosystems of cities collected in residential districts, parks, sidewalks. Municipal services collect the leaves and deliver them to Releaf Paper.
- **pre-treatment.** They clean the leaves from solid compounds, wash and dry it up. Compression of cleaned leaves allows storing raw materials all year round and ensures the stability of the production cycle.
- **Treatment.** Depending on type of product they want to get, they utilize mechanical or thermo-mechanical treatment on special industrial equipment. As a result, green mass is turning into raw-materials with paper-forming properties.
- **Paper production.** Paper production is based on contracted paper mills. Depending on the need, the paper can be produced from Releaf Fiber alone or with the addition of waste paper or virgin pulp.

[The company, in the website, explain the main innovative aspects of their process.](#)

“It’s so obvious that paper can be made from leaves, as the leaf is part of the tree, the main material for papermaking. However, why hasn’t humanity started using fallen leaves as raw materials for the industry on a massive scale?”

The first reason is the collection and logistics of raw materials. Leaves either have to be collected in the forest, which is harmful to the life of microorganisms and the forest ecosystem, or they have to be transported from different places. In both cases, it is a rather expensive and complicated process. The second reason is the stability of supply and the purity of the material. After all, we all know that leaves fall only 3 months of the year, and they often contain sand, small stones, plastic, and cigarette butts. The third reason is the pulp production technology itself. If you use the technology typical for wood, the cost of producing such pulp will be huge, and the quality will be unsatisfactory”.

At Releaf Paper, they were the first in the world to solve all three problems and turn them into opportunities. European cities generate tens of thousands of leaves every year, and municipal services create an entire infrastructure to collect them. The leaves they collect are transferred to their processing centers located in close proximity to the partner city. In this way they receive a huge amount of raw materials for their production. Leaves are cleaned from foreign objects by washing and drying on industrial equipment. By further granulating and storing the raw material in big bags, they solve the issue of its year-round storage and solve the problem of seasonality. And finally, they manufacture fiber products using their own unique technology, which involves minimal use of water and chemicals to achieve a superior product.



The Releaf Technology Research and Production Enterprise was founded in Ukraine in 2021. The company's head office is located in Kyiv. As of 2022, Releaf manufactures more than 100 tons of paper per month. [In 2022, the company opened an office in France](#) and began to set up its own production. Releaf Paper plans to actively use contract mills in Ukraine and the EU to produce paper and packaging under Releaf's technology.

Started as a research project, in 5 years Releaf Paper has grown into an international dynamic startup with offices in Paris and Kyiv and global ambitions to expand their innovative and sustainable approach and technologies in other countries and contexts.

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