



**JOIN US – CREATING
A SUSTAINABLE FUTURE
FOR METALLIZATION**



REDUCES THE CO₂ FOOTPRINT > 50 %



1 kg of ECOLEAF flakes effectively replaces 3000 kg of foil

WE MUST DO MORE

At ACTEGA, we invest in sustainable products and new technologies that can change our industry without wasting our planet. To us, sustainability is more than a market fad: it is the key driver for innovation and new product development and a fundamental concept incorporated into our everyday actions – which is exactly what ACTEGA is doing with its ECOLEAF technology.

It is well known that the industry standard technology for metallic embellishments, hot and cold foiling, is far from

environmentally friendly. Each year, thousands of tons of foil waste are sent to landfill or burned at incineration plants. Mainstream waste contractors can't offer viable recovery options for bulky foil waste, as the logistics required make it cost prohibitive for most. Rather than looking at how it could just tweak this foiling process to reduce waste, ACTEGA has reinvented the process completely, creating a truly sustainable solution which eliminates the need for foil altogether and utilizes radically less raw materials for the same output. The implications of this, and the market potential, are huge.



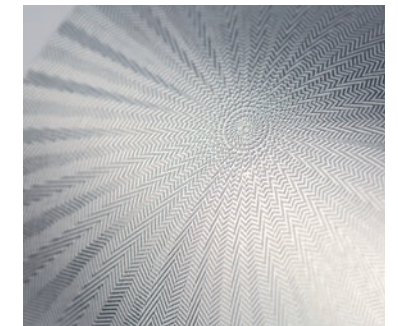
CREATING A SUSTAINABLE FUTURE

Initial calculations from ACTEGA's Life Cycle Assessment show a hugely positive impact on sustainability and resource reduction. ECOLEAF technology currently realizes a CO₂ footprint reduction of greater than 50 percent compared to hot and cold foil. Not only does the system completely eradicate the need for plastic but, as it only involves the precise amount of metal needed for each application, eliminates waste of metals too, as well as the need for any carrier film.

When you look at this in a wider context, the benefits become even clearer. 1 kg of ECOLEAF flakes effectively replaces 3000 kg of foil, which in turn eliminates 20 tonnes of CO₂e: the equivalent of planting around 833 trees. At an average-sized label converting company, this can amount a very significant contribution in reducing CO₂e impact. These values can easily be passed onto brand owners, helping them with their green balance sheets, and when adopted at scale across the industry, the potential impact in reducing the effects of climate change would be considerable.

THE ECOLEAF PROCESS

ECOLEAF has reinvented the metallization process, by using "liquid foil" in place of the plastic-backed foil reels used in traditional hot and cold foiling. By only placing metal flakes precisely where they are needed, ECOLEAF avoids the need for PET carrier film and therefore eliminates foil reels altogether, significantly reducing waste and plastic usage, as well as minimizing the environmental impact associated with producing and disposing of these plastics.



By facilitating these critical savings, ECOLEAF is able to substantially lessen the CO₂ footprint and overall environmental impact associated with creating metallic embellishments, compared to traditional processes. Essentially, switching from hot or cold foiling to this innovative metallization technology enables the creation of stand-out metallic label embellishments with a much-improved environmental profile.

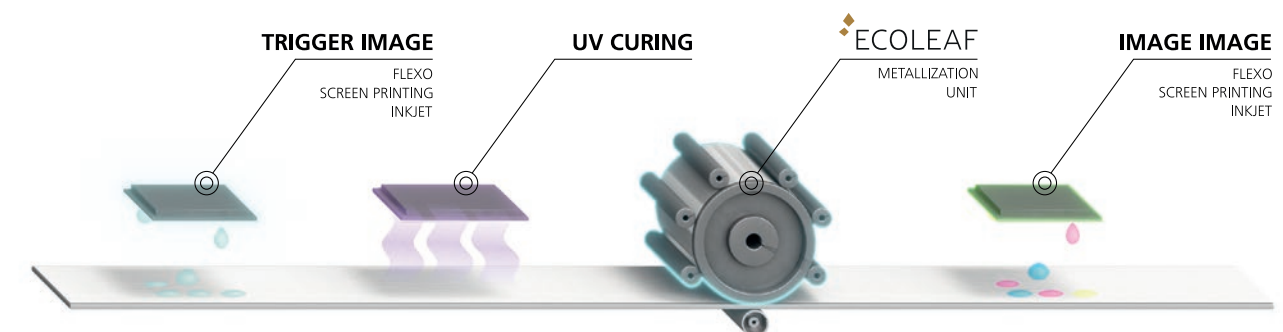
The print result is created by the printing of a trigger image in a varnish-like material (rather than the glue typically used with foils) which is applied onto the substrate by flexo, screen or inkjet printing. Before the trigger image passes the metallization unit, it is UV cured.

In the metallization unit, a very thin layer of metal pigments is applied onto a donor roller and then transferred, very precisely, to the trigger image. After depositing the metal layer on the trigger image, there is no need for drying or curing, which not only makes ECOLEAF extremely environmentally friendly, but also comparatively cost-effective and fast when compared with traditional technologies.

ECOLEAF is compatible with a range of print technologies, and a wide range of metallic finishing options can be realized, depending on the printing technology used:

- Tactile metallic effects without embossing: rotary or flatbed screen
- Very fine metallization at the highest resolution: flexo
- Seamless metallization in short runs: inkjet.

It is centered on a simple process that requires limited training, and which can be set up with a comparable level of effort, waste and skills than would be required to set up a printing unit.



ECOLEAF's novel application process is similar to that of ink, but utilizing pure metal flakes rather than pigment. These are processed and reproduced in a super flat monolayer, enabling perfect mirroring and superior quality that stands the test against traditional foil technologies.

The ECOLEAF metallization unit is at the heart of the process, installed on a printing press at the beginning, in the middle or at the end of the printing process – or even applied as an offline option – for maximum flexibility. The technology is able to facilitate both over- and under-print metallization for a rainbow of metallic effects.

FEATURES AND APPLICATIONS

The initial phase of ECOLEAF is focused on the label industry with inline integration into narrow web printing presses or offline integration into finishing equipment. With the ability to produce very precise details, ECOLEAF can be used for the printing of both decorative fine details and tactile images (relief images) as well as text elements, improving the quality and premium perception of finished goods.

ECOLEAF can be used for a wide range of media across a wide variety of packaging and labelling segments, including Indirect Food Contact label products.



ECOLEAF SUMMARY: TECHNOLOGY BENEFITS AT A GLANCE

Greater sustainability

- Plastic-free process eliminates the need for foil
- Reducing the CO₂ footprint by > 50 percent compared to hot and cold foil
- Significant reduction in production costs
- Maximum process safety and efficiency
- Optimization of resources

High flexibility

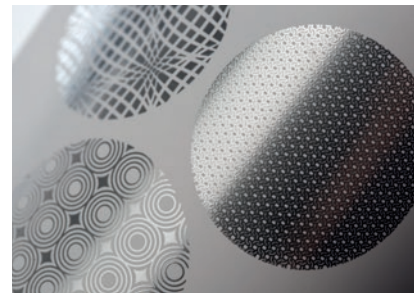
- High flexibility in designs
- Easy set-up (start-stop process)
- Easy to position on rails for max flexibility
- Less storage of consumables
- Substitutes foils, metallic substrates and gravure inks

High quality

- Outstanding and unique effects in metallization
- High gloss and high opacity
- Can be overprinted with any color

Economic advantage

- Removing economic barriers to sustainable metallization
- Just pay for what you truly consume
- Freedom from logistic and inventory issues
- Waste-free process
- Saving on other processes (e.g. embossing)



THE OUTLOOK FOR ECOLEAF

Having a great product that solves a problem for the industry, and having a dynamic, flourishing organizational environment, are two of the two key pillars for success. For ACTEGA, they already have these foundations in place, with both a highly skilled and passionate team and a cutting-edge, truly disruptive solution in ECOLEAF. The next stage of this journey is nurturing and building on these elements and ramping up the product to industrial level so that we can share its economic and environmental benefits on a much greater scale across the worldwide market.

Ultimately, ACTEGA's goal for ECOLEAF is that it becomes the new standard for metallization in print. A huge leap from the current industry standard, ECOLEAF delivers a sustainable, game-changing technology that achieves market-leading quality whilst substantially reducing the amount of material, waste, cost and production time required. Therefore, it's not overambitious to believe that it will be revolutionary in how we approach embellishments in the future. For ECOLEAF, the driving force behind business decisions, daily work and even team structure, is all centered around bringing this vision into fruition: for brand owners to trust ECOLEAF as their go-to solution for sustainable embellishments.



FIND OUT MORE:
www.actega.com/ecoleaf