Two Leverkusen-based companies realize the sustainable friction material cycle of the future.

LIQFRIC® and Green Friction® recycle brake pads together in a sustainable way

Leverkusen, 30.11.2022

A joint project by two Leverkusen-based companies enables a recycling process for friction materials with drastic CO_2 savings compared to conventional production and disposal.



Dr. Roman Milczarek – LF GmbH & Co. KG: "With our LIQFRIC® materials, we can offer brake pad manufacturers a new material concept with up to 85 % less CO_2 emissions."



Fabian Fuhr – RMS Raw Material Service GmbH & Co. KG: "With our Green Friction® know-how, we can further reduce the CO_2 footprint of the innovative LIQFRIC® products drastically through sustainable recycling."

Sustainable friction material recycling allows the reuse of valuable raw materials

So far, brake pads and linings have been produced with raw materials sourced all over the world, with phenolic resin as a binder, under pressure and heat in multiple heating- and cooling cycles with high energy consumptions. After only about 50 % wear, these pads are usually replaced with original pads (OES) or pads from the aftermarket.
Today, most used pads are landfilled and therefore not recycled.

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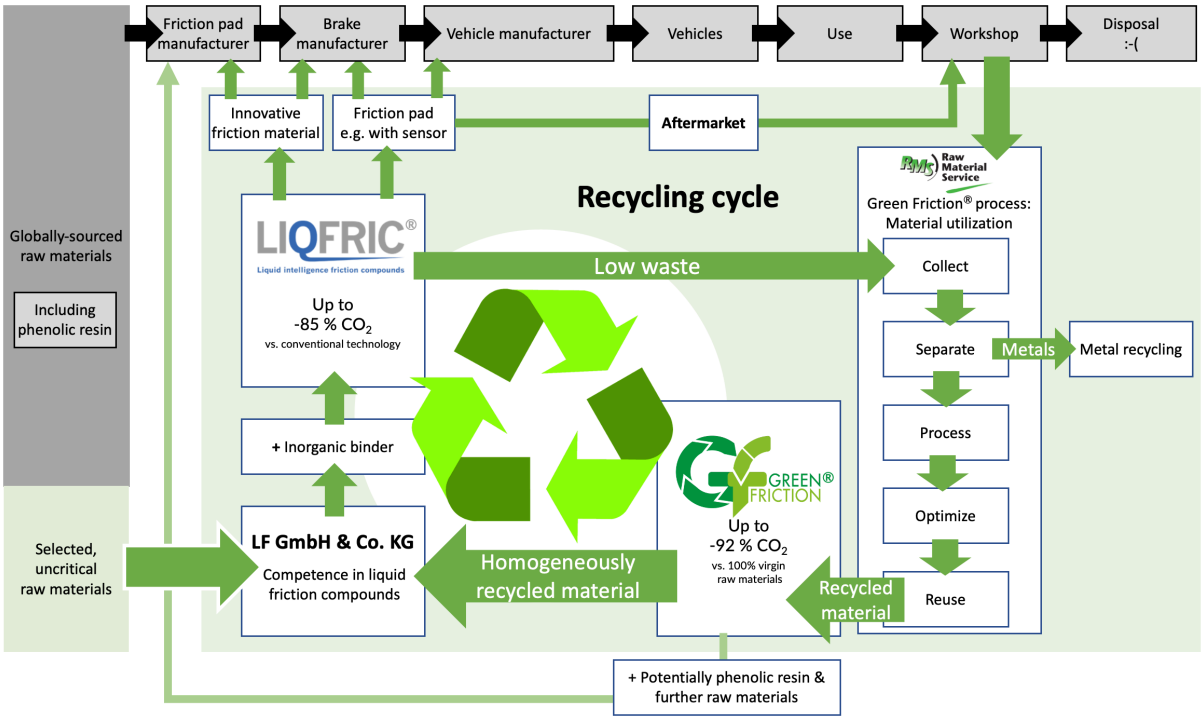
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This is where the two companies with their LIQFRIC® and Green Friction® processes come in:

LF GmbH & Co. KG produces the castable raw material LIQFRIC® with selected - uncritical - raw materials with the addition of an inorganic binder on a liquid basis. This material is then further processed into OE- or aftermarket pads without pressure and very little heat exposure. This process saves up to 85 % CO_2 compared to conventional manufacturing. Another advantage is the drastically reduced PM_{10} fine particle emission. The low-temperature process also allows sensors to be integrated directly into the pads.



LIQFRIC® and Green Friction® offer a joint, mono-material and sustainable recycling process for brake pads

For over 25 years, RMS has been sustainably recycling friction materials and grinding dusts from production scrap and used pads from car, truck, motorcycle, rail and industrial applications. After separating all metallic parts, the friction material is processed according to the Green Friction® recycling process, optimized to customer specifications and re-used as a valuable component in new friction material mixes. An independent life cycle assessment study, performed according to ISO 14040 / 14044, shows that this recycling material has an up to 92 % reduced product carbon footprint compared to conventional friction materials made from 100 % virgin raw materials.

The joint cooperation guarantees the homogeneous recycling of the LIQFRIC® production rejects. Thanks to the Green Friction® recycling process, the innovative LIQFRIC® ecological balance can be made even more sustainable.

Conclusion

Reduced energy consumption – 85 % CO_2 reduction during production – significantly less particle emissions PM_{10} – IoT-capable – high-performance – approaching serial production – controlled return through a closed, sustainable recycling concept – applied sustainability

The Companies

LF GmbH & Co. KG develops the **LIQFRIC®** technology with a competent core team of specialists from all relevant areas:
Research and development, technology, design and plant manufacturing, finance, marketing and communication.
Tailor-made, high-temperature-stable friction materials for automotive-, rail-, clutch- and industrial applications have been created since 2016.
The company is involved in development projects and cooperations with important players in the brake- and clutch industry in Europe and especially in Germany.

RMS Raw Material Service GmbH & Co. KG has been offering sustainable solutions for various products in the OEM, OES and independent aftermarket segments for over 25 years as a full-service provider for friction material recycling.
The **Green Friction®** recycling process makes it possible to utilize used pads as well as production scrap and recycle them instead of throwing them away.
The recycled material, either homogeneous or a mix from different sources, can be reused and actively contributes to a circular economy.

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Facts

- Approximately **150,000 tons*** of friction materials are produced in the EU every year.
- When replaced, **only about 50% of the friction material has been used up***, the other half is landfilled, leading to pollution.
- In addition, **22,000 tons of filter dusts*** are accumulated which are deposited as well.

* ENV/D/000537, European Commission, L., Recycle friction material - pilot realization of the material cycle of friction materials