Eco espresso and upcycled inks set to make coffee greener

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Recycling old coffee waste can help create environmentally friendly inks. Credit: 'A lot of coffee beans' is licenced under CC-SA 1.0

An environmentally friendly coffee machine and a way to turn used coffee grounds into a new type of ink are helping to increase the green credentials of one of the most popular beverages in the world.

Globally, more than 2 billion cups of coffee are consumed every day. At a rate of around 2.64 cups per person per day, Finland takes the crown as the world's largest per capita consumer of coffee.

However, the traditional steam-pressure coffee machines you see in coffee shops have barely evolved since their early development in Italy around the start of the 20th century. Updates have been just incremental improvements. According to Rafael Muñoz, from Spanish company Iberital, these machines are energy inefficient as they have no insulation or programming for heating.

Iberital has received EU funding through the ECOBREW 2 project to design a new, greener machine – called Vision – which was launched in Milan, Italy, in October 2017. The system has independent water circuits to control temperature and amount of water used, it is connected to the internet and, importantly, it conserves energy.

As a company with a long history of fabricating coffee machines, starting in a time when customers were not interested in green products, Iberital has had to educate consumers on the benefits.

'Final coffee consumers are not aware of the energy losses, and waiters (or) baristas do not really seem to care much about energy savings, unless they receive an explanation of the problem and the solution that we propose,' said Muñoz.

Connected coffee

Another important demand in today's market is for an internet connection direct to the coffee machine. This allows remote monitoring for maintenance, automatic notifications for technical services, and geolocation for security and logistics planning—resupplying organisations as necessary with fresh stocks of coffee.

'Other uses are, for example, when coffee roasters send a new blend of coffee to be tested, you can send the parameters to the coffee machine itself so it can be prepared,' said Muñoz. One customer claims he could save 10 % with this feature, Muñoz says.

In April, Iberital expects to release the Vision machine, which is aimed at the hospitality industry, in Singapore, Spain, South Korea, China, Greece, the UK, and Seattle, USA. A consumer-level machine is not planned for now but it remains an option for Iberital in the future.

While ECOBREW 2 addresses energy issues in one of the world's most popular liquids, another company is developing sustainable ways to replace one of the most expensive liquids – ink – by using

pigments derived from coffee waste.

According to Eline Leising, CEO of CaffeInk, black printing ink is one of the most expensive liquid commodities in the world, commanding 'a higher price than Chanel No. 5'. And there are a lot of leftover coffee grounds. 'Every day we produce the amount of coffee waste that is equal to the weight of three Eiffel towers (around 30 000 tonnes),' she said.

Leising and her team were inspired to find a way to solve the two problems sustainably – by turning coffee waste into ink. Helped by funding from the European Institute of Innovation and Technology (EIT), CaffeInk have already extracted dark pigments from coffee, but now want to further examine their chemical properties and determine ways to apply them in ink products.

'You have different types of ink, whether it's printing ink or packaging ink,' said Leising. She says these may offer appropriate standards for environmentally friendly inks to achieve, but coffee-based pigments may also turn out to be useful in paint or cosmetics.

Black ink is currently produced using oil and it is hoped that this approach to production could radically change the ink sector, making it cheaper, more accessible and environmentally friendly, whilst also turning the tonnes of coffee waste Europeans generate daily into something of value.

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