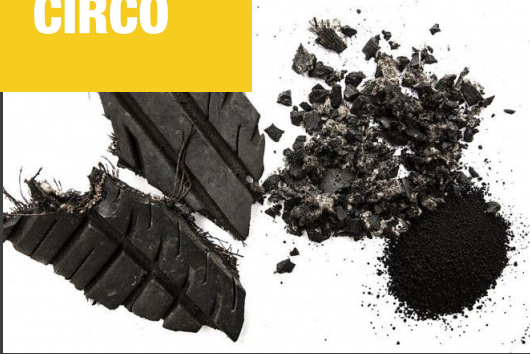


CIRCO



## Black Bear Carbon Carbon black recycling

‘Black Bear is ready to roll-out its technology for recovering carbon black from end-of-life tires and realize that significant contribution to the circular economy’

- Victor Vreeken, CEO Black Bear Carbon



### Challenge

Almost 7 million car tyres a year are discarded in the Netherlands and over a billion across the globe. While most of these tyres are currently burnt or dumped, a small portion is ground into a low-quality product. Car tyres contain carbon black, a black powder of which 7.2 million tonnes a year are used as a dye in a range of applications, mostly tyres. Producing 1 kilogram of carbon black burns 2.5 litres of petroleum. Black Bear Carbon has developed a circular technique to recover carbon black from old tyres.

### Circular design strategy

The tyres are first ground and the steel removed, which can be recycled directly. A process of pyrolysis is used to separate the rubber granules into oil, gas and carbon black. Black Bear is able to convert 40% of the rubber granulate into carbon black. The gas is used for energy generation in its own plant. An investigation is ongoing into whether the oil that remains as a residue of the other rubber granules can be applied as raw material for the chemical industry. Each kilogram of carbon black produced via this method rather than from petroleum saves 5 kilograms of CO<sub>2</sub> emissions.

### Circular business model

This production method has major financial advantages in addition to the environmental benefits. The cost of producing carbon black from oil depends on fluctuations in the petroleum price. Black Bear's method uses the existing infrastructure for collecting discarded tyres. There is a huge surplus of the raw material – the annual volume of discarded tyres. This alternative is attractive to users of carbon black not only due to the lower costs but also because of its sustainability and high quality. The key challenge for Black Bear is the time that it takes large companies to have the material approved after it has been produced in an innovative way.

### Result & follow-up

In 2016, Black Bear began large-scale production of carbon black at its first pilot plant in Nederweert. Annually, this plant was able to process around a million tyres into 5 kilotonnes of carbon black, in addition to 3 kilotonnes of steel and a megawatt hour of green energy. While this plant closed down in February 2019 due to a fire, Black Bear has kept going together with its partner MMEC Mannesmann from Germany. This company has expertise in constructing plants for refining processes in the chemical and petrochemical industry. It is now launching a plant in Bitterfeld, Germany along with a third partner, Pyrolytec. In the end, it aims to scale up globally to dozens of separate plants, each of which is staffed by a local partner with Black Bear as partner and supplier of the technology.