CARBON FOOTPRINT SCREENING OF TOUCAN ACTIVE PLUS

Many companies use phrases such as eco-friendly, green, environmentally sustainable to describe their products, without specifying or quantifying what exactly these expressions mean. Some call this greenwashing, others simply misleading, or making false or exaggerated claims.

Centrego in the UK and its partner Food Diagnostics in Denmark wanted to quantify the environmental credentials of some of its products so that our clients could analyse the environmental impact and benefits of adopting our cleaning and disinfection generating systems and then compare these with other products on the market. The best way to measure the environmental impact of a product is to calculate the carbon emissions footprint of the product throughout its expected lifespan. We therefore commissioned the international environmental consultancy Force Technology in Denmark to undertake an audit of the carbon footprint of our Toucan Active Plus product, as an example of the environmental impact of using one of our ECA systems.

Centrego's ECA systems generate cleaning and disinfection solutions on-site. There are therefore two elements to calculating the carbon emissions footprint of the system: i) the amount of CO_2 emitted from the manufacturer of the systems, and ii) the amount of CO_2 emitted from the production of 1 litre of the activated solution.

Calculating the carbon emissions footprint of a product is a very detailed exercise. Every component in the product has to be identified – the electronics, plastics, steel, wiring, plumbing etc – every component's own individual carbon footprint calculated, the transport miles to the product manufacturing site identified, the energy used in assembly, and the transport to the site of use calculated. This calculation quantifies the amount of global warming potential generated to actually make the product and get it installed on the Client's site, in units of carbon dioxide equivalent (CO_2-eq). The calculation for generating 1 litre of solution is easier – it is the energy used to produce and transport 1.2 grams of salt, 1 litre of water and the power used to achieve the activation.

The results of the carbon footprint assessment are set out in Table 1 below

CO_2 emissions to manufacture, transport and install system	CO_2 emissions to generate 1 L of concentrate activated solution	CO_2 emissions to generate 1 L of ready-to-use activated solution, with a dilution ratio of 2:1	Aggregated (system + solution) CO_2 emissions over the lifetime of the system, producing 20,860 L undiluted solution	Aggregated (system + solution) CO_2 emissions per litre over the lifetime of the system, producing 62580 L ready-to-use solution
263 kg CO_2 equivalent	9.21 g CO_2 equivalent	3.07 g CO_2 equivalent	192 kg CO_2 equivalent	For a 2:1 dilution ratio: 3.50 g CO_2 equivalent per litre

The table demonstrates that the CO_2 emissions to manufacture the ECA system and get it installed on the user site is 263 kg CO_2 equivalent. The CO_2 emissions to generate 1l of diluted, point-of-use activated solution is 3.07 g CO_2 equivalent.

Over the lifetime of the system, the aggregated CO_2 emissions – that is the CO_2 emissions of the system averaged over the expected total amount of ECA generated – is 10.5 g CO_2-eq, and for point-of-use solution diluted 2:1, it is 3.50 g CO_2-eq. The CO_2 emissions to generate 1 L of diluted, point-of-use activated solution when not counting the emissions from production of the system, are 3.07 g CO_2-eq. To put this into context, running a laptop PC for 1 hour would produce the same CO_2 emissions as generating 8.8 L of ECA ready-to-use solution, or boiling a kettle would produce the same CO_2 emissions as generating 5 L of ECA ready-to-use solution. The aggregated CO_2 emissions to generate 4.3 L of diluted, ready-to-use activated solution would equate to boiling a kettle once.

With these figures quantified, it is then possible to compare the environmental impact of using Centrego's ECA systems to alternative solutions for cleaning and disinfection. The most widely used cleaning and disinfection solutions are manufactured synthetic chemicals. The infographic on Page 2 shows the process of manufacturing synthetic chemicals, transporting and distributing them to the point-of-use, and disposing of the packaging and waste plastics. This is CO_2 emission-heavy process, and is repeated for every delivery of the chemicals to site, and the collection of waste products. It is not the role or responsibility of Centrego and Food Diagnostics to calculate the CO_2 footprint or environmental impact of using individual synthetic chemical products for cleaning and disinfection, however by quantifying our own product's environmental impacts, it can provide a benchmark against which other alternatives can be assessed.

The calculations to quantify the CO_2 emissions from adopting and using Centrego ECA systems are detailed and complex. However a more simplistic approach can be adopted. Certainly the components and manufacturing of the systems uses energy and so produces CO_2 as evidenced in the Table above. However, once on site, the inputs are natural, naturally sustainable – water and salt – and emit very low CO_2 levels. Only very small electric power input is used to activate the solutions. Other than the transport of the ECA system itself to site, there is no on-going transport carbon emissions, no packaging disposal, no ongoing plastic containerisation and plastic disposal.

Centrego ECA systems are not carbon zero. However the carbon emissions and environmental impact of adopting and using the systems to generate cleaning and disinfection solutions are extremely small if compared to the production and distribution of synthetic chemicals, and the disposal of the plastic containers and packaging.

Centrego Limited ®

Environnemental impact: Synthetic Chemicals versus ECA