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Russell Eco Separator® replaces manual sieving operation to improve the separation of Black Soldier Fly sustainable food protein from bio-converted waste material

Entocycle upgrades its pilot plant facility with a Russell Finex screening solution, designed to increase overall screening capacity and throughput

As a global leader in manufacturing technology, Russell Finex has helped businesses across the globe not only to reduce their footprint but increase their production throughput. With such a focus on achieving sustainability in an increasingly unsustainable world, Russell Finex was pleased to work with Entocycle to help the company achieve its desired goals as part of its newly created pilot test facility in London Bridge.

Traditional means of sourcing protein to feed animals is a farming process that has a huge detrimental impact on the environment, with problems including overfishing and biodiversity loss. Keiran Whitaker, founder of Entocycle, sought to address this issue through combining a natural process with pioneering technology to produce sustainable protein at scale anywhere in the world. Founded in 2014, with production expanding exponentially in 2016, Entocycle breeds and harvests the Black Soldier Fly, whose larvae are fed on organic waste to convert it into high-protein body mass. These larvae, and the waste they produce (known as frass), can then be utilized for a variety of different applications. The larvae – the main focus of Entocycle's process – are harvested to be used as a source of protein to feed animals in the agricultural industry, whilst the oil and frass produced are used respectively in biofuels, and as fertilizer.

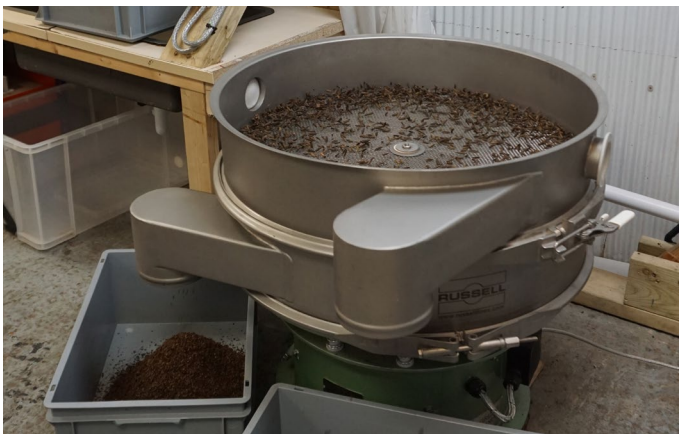

Figure 1. The Russell Eco Separator® is used to separate the black soldier fly larvae from the frass

- Accurately grades materials on up to five fractions in one operation
- Suitable for wet or dry applications
- Easily adjustable to allow for control of material movement on the screen's surface

Breeding and Production Process

The hatched Black Soldier Fly larvae are fed on pre-consumer organic food waste (such as used coffee grounds or brewers' grain) in an indoor, environmentally controlled location. When the larvae have consumed enough organic waste and converted it into high-protein body mass, they are at a stage where the organic food waste can be turned into three valuable products: Insect Meal (protein), Insect Oil, and Frass (organic fertilizer).

The frass and larvae are then separated, using the Russell Eco Separator® with the former being processed into protein flour, packaged, and sent off to be used in agricultural applications. However, a small proportion of the harvested larvae are kept to be nurtured into adult Black Soldier Flies to begin the breeding cycle, enabling a wholly circular, self-sustaining process.

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With the installation of the Russell Eco Separator®, this entire process from larvae to packaged feed takes 12 days. The length of time taken for this process is incredibly quick, in comparison to other more traditional methods, such as growing soy plants, or fishmeal.

Screening Solution

Chief Technology Officer Matthew Simmonds, who oversaw the building of Entocycle's new pilot test facility, says, "We were looking for a compact machine, and being circular rather than linear, enabled the Russell Eco Separator to fit perfectly into our production line. Russell Finex is local to us, therefore making it even easier to arrange tests at their specialized test facility as well as our own site."

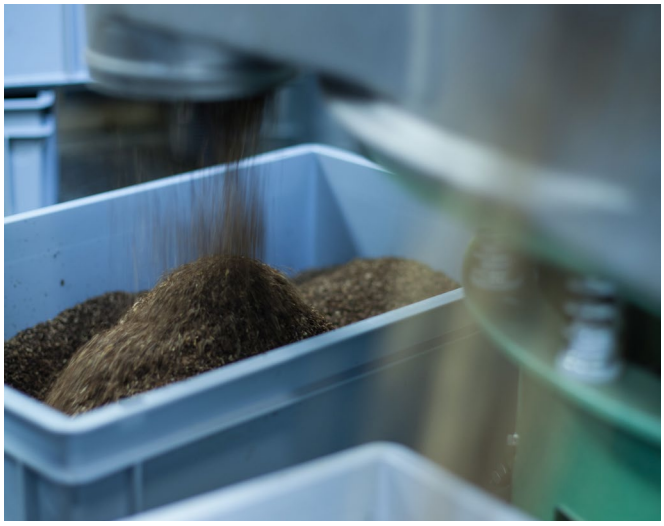

Figure 2. The key to the Russell Eco Separator® is how it allows for a high throughput of material

Entocycle originally used a manual process to sieve the larvae, but since this proved to be both labor and time-intensive, sought another more efficient method that would effectively scale up to cope with demand at its new pilot plant in London Bridge. Following a recommendation from other companies who had utilized the Russell Eco Separator® for similar uses, Russell Finex provided Entocycle with an innovative sieving solution, allowing it to exponentially increase its product throughput to 1.39 tonnes per hour, with a mean sieve time of around 177 minutes to harvest the protein.

Overall, the Russell Eco Separator® offers businesses a cost-effective, reliable solution across a variety of different industries. Not only is it incredibly versatile, suitable for wet or dry applications, but, with up to four screens to enable separation into 5 fractions in one go, is able to increase the output of product and efficiently separate waste.

Simmonds continues, "We chose Russell Finex because the company is reputable in the industry. The Russell Eco Separator is very versatile, enabling us to change settings, and can be used to screen wet or dry materials, giving us flexibility in the future. We look forward to establishing a long-term relationship with Russell Finex as we continue to expand our production".

For 85 years, Russell Finex has been a leading global manufacturer for sieving and filtration solutions, to improve product quality, increase productivity, and ensure liquids, powders, and solids are contamination free. Serving a variety of industries, such as pharmaceuticals, food and beverage, recycling, ceramics, paint, metal powders, and coatings, Russell Finex is pleased to ensure the highest quality of product is safeguarded and achieved for businesses across the globe.

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