

Bioxycan System 10 year Appraisal Report

Synopsis

The Bioxycan System is a modern, safe and environmentally friendly method for cleaning and degreasing all mechanical parts - No V.O.C. emissions. Non-flammable. No flashpoint. Reduces waste.

The Bioxycan biological degreasing fountain is an environmentally friendly cleaning system for parts, which replaces the use of oil-derived solvents. Solvents have a detrimental effect on the environment and can present health issues to the operators. The system has the same level of efficacy as a solvent bath but presents no health and safety issues. Compared to the use of solvents that are replaced every month, the cleaning agent in the Bioxycan remains effective for 18 months to two years. This is achieved biologically with the introduction of micro-organisms which bio-remedy the fats and oils suspended in the cleaning agent making the system very cost effective.

Over a ten year period your company can make a £14,023.34 saving simply by replacing one conventional solvent parts cleaning bath with our Bioxycan Parts Cleaning System and reduce your carbon footprint by 5151.6kg CO₂e (5.151 tonnes).

This is the ideal solution for all environmentally conscious organizations.

Bioxycan Biological Degreasing Fountain.

The Bioxycan is very robustly made from high-density plastic making it rust and paint-peel free allowing the equipment to look prestigious even when the system is ten years old. As a consequence of the use of micro-organisms in our degreasing system we need to maintain their optimum biological environment i.e. temperature, aeration, pH and a food source. The temperature is maintained with a heating element, which is thermostatically controlled to maintain 37 degrees. There is an oxygenating pump built in which enriches the cleaning agent. The optimum pH is maintained with buffers in the cleaning agent. The food source is the oil or fat deposits generated from the parts cleaning process. This means that it is underuse rather than overuse that would reduce the life expectancy of the cleaning agent.

All electrical and mechanical parts can be easily replaced if required without the aid of dedicated technicians. Our system requires very little operator input and solvents don't need changing on a monthly basis. This low maintenance system does not require the support of a maintenance contract. You are able to own the Bioxycan System outright saving a considerable amount of money over the years on maintenance contracts. (If it pays them to lease you the equipment it will pay you to own it).

Bioxy L9

This is the systems cleaning agent with more than 90% of the surface active agents being biologically decomposable – safe to use and environmentally friendly.

- Does not contain volatile organic compounds.
- Does not contain hydrocarbons, solvents or glycols
- No flashpoint: No fire hazard
- Degreases all mechanical components contaminated by fats or oils, including filters, gearboxes, injectors pumps, clutches, crankcase, leaf springs etc.

Characteristics

Appearance: clear blue liquid.

Density: approximately 0.99

Ph: 9-9.5 - none corrosive.

When mixed and inoculated with a Bioxy PB tablet (freeze dried micro-organisms) every 4-6 weeks the liquid will retain its parts cleaning efficacy for 18 months to two years.

Bioxy PB Tablets

- The Bioxy PB tablets are used as a supplement to Bioxy Cleaner for use in the Bioxycan biological degreasing fountain.
- Contains micro-organisms, which continuously regenerate the cleaning bath thanks to the process of bio-remedy of fats and oils.
- Bioxy PB increases the efficiency of the degreasing liquid.
- Neutralizes odours and reduces degreasing deposits.
- Concentrated: each tablet contains 150 billion micro-organisms.
- Very easy usage: you only need to add a tablet to the bath in the fountain.
- Free of disease-producing bacteria: Class 1 micro-organisms, which are not dangerous for humans or the environment.
- Free of genetically modified organisms: contains only stem cultures of natural origin.
- Biologically decomposable preparation.
- Bioxy PB is a mixture of bacteria whose interaction and metabolism makes it possible to “digest” most hydrocarbons, such as oils, aromatic solvents (benzene, toluene, xylene, phenol...) and even chlorinated solvents.

Characteristics

Appearance: 30g blue tablets.

Density: approximately 1.2

Solubility in water: 100%

pH: approximately 7.5

Usage

As soon as you prepare the Bioxycan fountain to which you add Bioxy Cleaner, add only one tablet to the bath in order to start the process. Always add a tablet after 4 to 6 weeks depending on fountain usage frequency.

Ten Year Economic Appraisal of Bioxycan Parts Cleaning System.

Bioxycan Parts Washer £1,800 (20% discount with orders of more than three systems).

Bioxy L9 (Bioxy cleaner) - £8.08 per litre when you purchase 100 litres.

It takes 90 litres to fill the Bioxycan fountain, which can last up to 2 years. We have factored in another 10 litres for top-ups which allows for evaporation and loss of fluid on the surface areas of the cleaned parts.

Cost of the start up of 90 litres plus 10 litres for top-ups gives a cost of £808. For this appraisal we assume the cleaning fluid will be changed every 18 months. If a two year cleaning fluid change is achieved this will add up to a significant financial bonus over the years.

There are 4 tablets per bucket with each tablet lasting 4-6 weeks. At the 6 bucket rate the cost per bucket is £78.00 giving a cost per tablet of £19.50

Over the eighteen-month period, working on a 4 weeks tablet inclusion rate, 18 tablets will be used representing a cost of £351. If a 6 week tablet inclusion rate is achieved this will add up to a significant financial bonus over the years.

Cost evaluation against conventional solvent replacement systems

Replacing conventional oil-laden solvent typically costs about £200 per month. This is £2,400 per year; a total of £24,000 over a ten-year period for one solvent bath.

One Bioxycan Cleaning System for a ten-year period:

- Bioxycan Parts Washer £1,800
- Bioxy L9 (Bioxy cleaner) £808 for 18 month period with a 10 litre top-up. This represents a total cost of £5386.66 for the ten-year period.
- It will take 18 Bioxy PB tablets (4 week rate) for an 18-month period at the cost of £351. For a ten-year period this would be £2,340.

The total cost for the Bioxycan Cleaning system for the 10-year period is: £9,526.66. If after five years new part are required at an estimated cost of £450 this would give a total cost of £9976.66

This is a total saving of £14,023.34 over the ten-year period compared to conventional systems, representing a 58.43% cost reduction with the replacement of one solvent bath with the Bioxycan Parts Cleaning System.

Cost for a one year period

If we exclude the Bioxycan Parts Washer from the calculation the cost per year is £772.66 compared to monthly solvent replacement cost of £2,400/year this is a saving of £1,627.34, which pays for the Bioxycan Parts Washer in less than 14 months freeing your business from future monthly maintenance charges.

Over a five-year period the total cost is £5663.33 including the Bioxycan Parts Washer giving a £6336.67 saving.



Environmental damage of solvents

Producing oil-derived solvents is not environmentally sustainable and their use and disposal can be very damaging to the environment.

Recycling solvents is environmentally preferable to a once time use however the process generates a substantial carbon footprint.

The carbon footprint of recycled solvents

Information taken from: European Solvent Recycler Group Report - The study is based on the functional unit (unit of analysis) defined as 1,000 kg (1 tonne) of recycled solvent.

The average carbon footprint of recycled solvents ranges from 156–798 kg CO₂ eq./t. The main contributor to the total carbon footprint for all six solvents varies. For example, the recycling process is the main contributor for acetone, THF, MEK and TEA, while transport and raw materials are the main contributors for mixed solvents and PERC. For mixed solvents and PERC, the carbon footprint results are sensitive to system credits for heat recovery from waste incineration.

The average of these two carbon footprint parameters was taken for our report, which is 477 kg CO₂ eq./t.

The total quantity of recycled solvent used in a conventional solvent bath over the ten-year period would be approximately 10,800 litres which equates to 10.8 tonnes of recycled solvent.

The total carbon footprint of this recycled solvent is 5151.6kg CO₂e (5.151 tonnes). Replacing 10 solvent baths over a ten year period would equate to 51.51 tonnes CO₂e.



This carbon footprint is only for the recycling of the solvent and does not take into account the carbon footprint of the refining process involved in its manufacture.

The only carbon footprint that The Bioxycam System has is for its initial manufacture of the products and their delivery and through our association with Carbon Strategy and our Carbon Considerate Chemicals initiative the manufacturing and delivery is offset with the planting of UK trees.

Conclusion

The Bioxycam Parts cleaning system is financially viable, completely safe to use with no health and safety issues, environmentally sustainable and very significantly reduces a company's carbon footprint. It is the future and the future has to be green.

