

Fighting a microscopic menace

It doesn't sound particularly tasty, but to microscopic fungi, yeast and bacteria, diesel fuel is a perfectly well-balanced meal.

It is organic, and contains everything a growing micro-organism needs - water for germination, carbon for food oxygen or sulphur for respiration and trace elements for growth.

It is not unusual to have dormant bugs in the diesel tank of your vehicle, truck, ship or trawler. In fact there are about 27 different types of fungus, yeast and bacteria that are impossible to keep out, gaining entry through air, water or a fuel transfer. It's when they are activated by certain conditions, such as moisture and warm temperatures, that they begin to wreak havoc on your fuel system and filters.

The bugs - each an independent, living cell - can be spurred into action by something as simple as the diesel heating up from the heat of the engine, and frantically begin to feed and multiply. Finding strength

in numbers, the bugs band together into colonies and continue their population explosion. That's where the trouble begins.

Before long, slimy 'lumps' of bugs form, visible to the naked eye. Their presence can also be detected by a sulphur odour, due to the hydrogen sulphide the bugs produce, a darker khaki coloured fuel, and corrosion. When these lumps travel through the fuel system they clog filters to the point where the engine is starved of fuel and cuts out - a potentially dangerous situation for small pleasure craft at sea.

The bugs also produce damaging acids that are carried through the fuel system, irreparably corroding injection nozzles, pumps, fuel tanks and hoses as they go. Chemicals have traditionally been used to kill the bugs, and are effective, but the dead micro-organisms sink to the bottom of the tank and settle into a sludge, creating a new problem - their removal. In addition, the chemicals are not



Above: De-Bug Worldwide export their units all over the world. Robin Darling places another pin in his map of successful export markets.

thought to be environmentally safe and some are even considered carcinogenic.

It took a surprisingly simple device to finally foil these bugs in a clean, effective, and economical manner.

The De-Bug Fuel Treatment Unit simply uses a magnetic flux to eradicate bugs. The unorthodox method works because the bugs are simple, single-cell structures that have a

positive and negative charge. When subjected to the magnetic flux of a magnet, the bugs will twist to align themselves with the magnetic field. By stacking magnets on top of each other, as they are in the De-Bug Treatment Unit, the field becomes extremely complicated. As the bugs pass around the magnets, twisting frantically, they literally blow themselves apart.

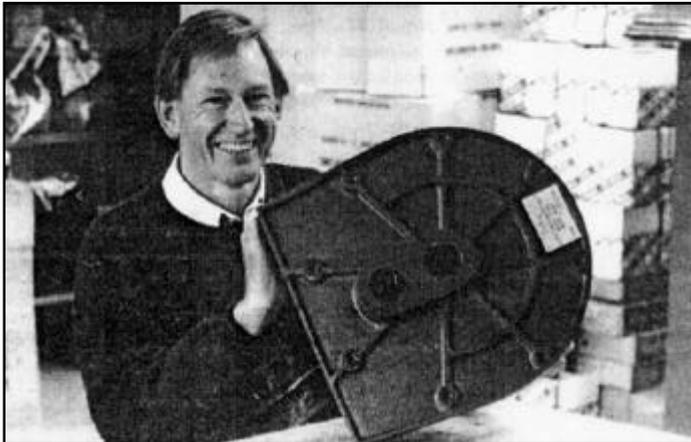
To put it more

technically, the fungi cell has a nucleus, which splits in two in order to multiply. When the nuclei is dividing the cell is at its most vulnerable, and the magnetic field is most effective, killing the cell and preventing it from multiplying again.

The technique is not new, in fact it has been used since the 1880s as a means to clean water, but it was De-Bug founder Lindsay Forrest who realised its applications for diesel. After reading about the technique, he constructed a magnetic device to clean his swimming pool and soon noticed its effectiveness.

A diesel engineer himself, he knew the problems caused by bugs - the fungi *Hormonicus Resinae* in particular - and now had a possible means of eradicating them.

Employing the expertise of other specialists, he created a fuel treatment unit from brass and tailored it to work in diesel. The modified design was perfected and patented, and DeBug International was born.



Above: Managing Director Robin Darling with a De-Bug L5000 Unit