

KILLING WEEDS WITHOUT CHEMICALS

A new system designed in Norway kills-off weeds, grass and other unwanted plant growth from highways, cycle routes and footpaths - without using chemicals. So what does it use? And how does it work? Malcolm Bates went to Sweden to find out.

Every now and then I get a phone call or email claiming that this or that new system has, at a stroke, made life easier for local councils (communes) and contractors by either reducing overall operating costs, speeding-up a previously slow and labour-intensive task, or producing a higher quality end-result.

But it isn't very often I come across a new system that can claim all of the above. Such claims are however at the very heart of the new 'HeatWeed' system, so naturally I was keen to see it in action. And the best place to do that? The charming city of Borås in central Sweden. Here the commercially-operated (but Commune-owned) city highways organisation was one of the first to undertake trials of the HeatWeed system. Twelve months on - and after 2000 hours of successful operation - director Ulf Raneby was keen to share the results with Waste Management World readers.

But first perhaps we should ask; How does the system work? And what exactly is involved? After all, many city authorities responsible for keeping highways, cycle routes and footpaths clear of weeds, litter and other unwanted debris



In Borås, Sweden, the Holder units are used to treat weeds in the city parks and open spaces as well as on highways, cycle tracks and footpaths. Regular treatment of weed growth has shown to help reduce litter and fly tipping.

are under pressure to reduce, or totally eliminate the use of chemical solutions. So while the introduction of a new alternative must be welcomed, is this a case of replacing a simple old method of working, with a new, more complex one? Amazingly, no...

There are other methods of removing weeds aside from spraying chemicals. A wire 'weed ripper brush' can be fitted to either a two-wheeled pedestrian-operated grounds care tractor for use in narrow spaces, or as a third brush option on many compact precinct and highway vacuum sweepers. They are not expensive and they are effective. But... The downside is that the abrasive action of a high speed rotating wire brush can break-up the surfaces being treated and actually cause far

more serious problems. There are also high pressure steam systems available of course. Steam gets over any abrasive action concerns. But... Using high pressure steam in public places raises safety concerns and risks damaging the joints between paving blocks. Plus, a steam generation boiler, by its very nature, requires a large, heavy-duty unit to carry it.

ENVIRONMENTALLY FRIENDLY

So what we're looking for is something that doesn't harm the environment, doesn't make a lot of noise, or cause an obstruction when working - and is easy to use and work with, without causing concerns over safety. How about hot water? Yes seriously, the HeatWeed system claims to kill weeds and other unwanted plant growth from roadside verges and other public places by simply 'cooking' them with a targeted jet of hot water at 99 degrees. But surely a lot of hot water would be needed during a working shift requiring a large truck chassis and a vast amount of fuel to heat the water? And wouldn't so much water in an urban area cause flooding?

All these questions and more were going through my head as I arrived at the main offices and depot of Borås Stad to meet Ulf Raneby and his team. Also there, to show me how the HeatWeed system works, is Jan-Tor Angell, technical director at HeatWeed. I'm in for a surprise - the actual weed control 'delivery system' comprises of just two key components - an on-board water tank and a 'spray dispenser' which is roughly the same size as a rotary mower deck used to cut public grass areas in city parks. This deck also contains the water heating boiler (which uses a diesel burner) and a very clever metering system that enables a water tank of a very modest 800litres capacity to go a very long way. The compact design of the HeatWeed system enables it to fit onto a compact toolcarrier that can be used for other duties when not killing weeds. Such as? Grass cutting, or pavement sweeping in summer.



Sensors on deck control water spray levels - note how paving slabs with no weed growth detected have remained dry.

Or as a snow plough/gritter for winter maintenance operations.

Borås Stad runs a fleet of four German-built, Kubota diesel-powered Holder 'C250' articulated all-wheel drive multi-purpose tool carriers - primarily because of their ability in heavy snow. But also because unlike a conventional tractor, Holder machines have excellent driver vision from a forward-mounted cab and provision to take both front and rear-mounted attachments with both hydraulic, or conventional PTO drive as well as a useful tipping load deck behind the cab. Holders also have an overall width of as little as 1.13 metres (depending on tyre type) which makes them ideal for urban operations. The HeatWeed deck is mounted on the front attachment hitch and the 800litre water tank on the rear loadbed.



Technical director at HeatWeed Technologies AB, **Jan-Tor Angell** gets an update on the performance of the unit from one of the Holder drivers. After a full season of use, performance has been positive.



Close up of deck in operation show how hot water is targeted to where weeds grow. Water pressure is not enough to damage joints between fashionable block paving in downtown areas.

doesn't seep down into the roots, but hot water does - effectively 'cooking' the weeds.

MORE WORK - LESS COST

The end result? Jan-Tor Angell explains that unlike steam-treated weeds which are 'frightened' into growing more vigorously after just a few weeks, weeds treated with hot water will take far longer to recover. "This reduces the number of necessary treatments per year from around once a month with steam, to just two or three with Heat Weed, depending on the length of the growing season," he suggests. With best part of twelve months experience of using the HeatWeed system, Ulf Raneby agrees this factor has made a significant difference - not only in terms of reducing operating costs, but by producing a much-improved quality of service to 110,000 residents and visitors to the City. "We already used the Holders for winter maintenance and grounds care operations, so finding another job we could use them for has reduced the operating cost of the Heat Weed system. Here in Sweden we are not allowed to use chemicals, so being able to just use water is a real bonus," he argues. "But best of all, because the treatment process is quite fast (5 to 10kph), we can use our resources to undertake other cleansing and environmental-enhancement tasks within existing budgets."

You've got to admit, that's an impressive list of advantages for a system that uses something as basic as hot water! — Already available in Europe and Scandinavia, HeatWeed Technologies AB is looking for distribution partners in other global markets. www.heatweed.com www.max-holder.com

WHAT'S COOKING?

So far, so simple. But how does hot water kill weeds? And how can a small tank of 800-litres capacity last for a working shift? Or even half a shift? As Jan-Tor starts to explain the technology, I soon realise there is a great deal more to the system than just 'hot water'. Firstly, the water heating boiler works 'on demand' heating the water from the tank only when the delivery jets are activated, thus not wasting energy. But the activation process isn't entirely under the control of the driver - the really clever bit is that the hot water is only sprayed when the sensors on the deck 'see' that there are weeds to be treated. Open areas of tarmac or concrete don't activate the system.

How is this done? The sensors utilise infra-red technology that rather than actually 'seeing' the weeds and other growth, 'smell' the chlorophyll found in every living plant. This explains why a 30tonne tanker truck of water isn't required, but it still doesn't explain how hot (not boiling) water is so effective. This is Jan-Tor's area of expertise and I'm soon left wishing I'd paid more attention during biology lessons at school. Thankfully, the principal is amazingly simple - hot water runs down as a result of gravity, whereas steam rises. The point? Steam treatment

"HERE IN SWEDEN WE ARE NOT ALLOWED TO USE CHEMICALS, SO BEING ABLE TO JUST USE WATER IS A REAL BONUS."

FRED BELL - TEREX FUCHS

Fred Bell is British. The organisation he works for is American, but could be considered Global. But the brand he represents - Fuchs - is more specialised. And in quality terms, as well as in the context of where it is built, very German. Recent brand expansion suggests his typical day might be busy. And never dull. Is that right, Fred?



"Yes, you could say things are very busy at the moment, but from where I'm sitting, that's a good thing. I wouldn't want it any other way," Fred Bell explains. Actually, he's not 'sitting' as such. He's standing up. On a cold, windswept jetty sticking out into the River Thames in London, England.

It's a Monday morning. Dawn was a couple of hours ago and all the roads are full of traffic. Out on the River, an impending storm notwithstanding, things are flat and calm. At least on the surface. But they're about to get hot up. Bigtime.

Actually, Fred Bell's 'day' started at lunchtime yesterday - on Sunday when most people would be at home walking the dog, or in Fred's case tending to his horses up in Yorkshire, where he lives with his wife Rachel. As it was vital for him to be here on time this morning, the long drive down from Yorkshire was undertaken on Sunday afternoon when things were quieter. Because being late was not an option.

Why not? Because Fred - and the engineers from UK and Ireland Fuchs distributor, Blue Group - have to be ready to receive a very special cargo from a ship that arrived before dawn. Actually, it's more of a barge. A barge equipped with one of the biggest 'heavy lift' cranes that Fred and the team have ever seen. The mission? To lift a brand new Fuchs SHL885 materials handler off the deck and onto rails located on the jetty. "The machine has already been completed and tested back at the factory in Bad Schoenborn, Germany," Fred explains, "But was then dismantled to enable it

to be transported by road to Holland where it was assembled on the quayside and loaded aboard for the short crossing over the English Channel." He describes the project as though it had been planned with Military precision. It has.

Most materials handlers are mounted on wheels, crawler tracks - or increasingly mounted on a fixed 'podium'. This one is different. It will run on railway tracks and will be electrically powered from a newly-installed supply box on the jetty, coupled to a massive pre-tensioning cable reel on the machine.

The giant crane on the barge has lifted the Fuchs into the air now like a lifeless toy model. The rise and fall of the tide only gives the crew a short window in which to complete the task. Tensions are beginning to show. Is the machine wide enough to span the rails on the jetty? Will the boom of the new machine clear the jetty handrails? What if the wind increases? There's a lot riding on this prestigious order and Fred is on the front line. If anything goes wrong, he's 'the man from the factory' on the spot.

A few minutes later, the answer is clear. Mission accomplished. There were no problems. The machine will spend its entire working life trundling up and down this short length of jetty, totally isolated from the shore, aside from a walkway and the conveyor belts it will load. Job done.

Tomorrow? Fred could be in Denmark. Holland. Germany. Sweden. Wherever there's a materials handling application that needs a solution, in fact. —

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Fred Bell business manager, Northern Europe, Terex Fuchs.