

# NEW BROOMS

Small road sweepers are a growing sector of municipal vehicles, particularly as they are fitted with alternative powertrains. Steve Banner looks over the options

Always eager to cut emissions, some local authorities are switching to battery-powered road sweepers; but there is a penalty to pay. "A 3.5-tonne electric sweeper can be two-and-a-half to three times the price of its diesel equivalent," points out Mark Fellows, UK sales manager for sweeper manufacturer Hako.

Sweepers grossing at 3.5 tonnes are understandably popular because they can be operated by anybody with a car driver's licence without the need to take a separate test. Compact dimensions and the widespread use of articulated chassis mean they can be manoeuvred into areas too tight for larger vehicles.

Their steep front-end cost means that electric machines are only being adopted slowly, but councils that acquire them are discovering their running costs are far lower than those of their diesel counterparts, says Fellows. "They require 50% to 75% less servicing," he reports.

To that assessment, Nottingham City Council assistant manager, fleet, Andy Smith, adds: "With electric sweepers there is no need to worry about oil or filter changes, or diesel particulate filter issues. Remember though that you still have to look after the brushes, brush arms and brush motors."

Nottingham acquired its first battery-driven Bosch Urban-Sweeper S2.0 (pictured above and right) two years ago. It now operates eight, and the electricity they run on is undoubtedly



cheap when compared with liquid fuel. "It costs us 75p an hour to power an electric 3.5-tonne sweeper compared with £3.50 to £3.75 an hour to power a diesel," says Smith. And there has been no need for range anxiety, he reports. "They can certainly cope with an eight-hour shift," he says.

Constant running at maximum power depletes the battery more quickly, but the machines are so powerful that at full suction you can lift a manhole cover, he says; not what you want to do if you can avoid it. "Keeping it at 50% of the maximum is usually absolutely fine, as is the case with the brush speed," he says.



The higher front-end cost of a battery machine means that fleets will probably keep them for longer. "We usually replace our diesel 3.5-tonne sweepers after four or five years," says Smith. "We'll probably keep our electric machines for six or seven years; maybe more." The latter are more durable than the former, he contends. "Sweepers are worked hard, and after four or five years their diesel engines start to wear out," he observes.

He has no concerns about battery life and draws a parallel with the electric light commercials Nottingham also operates. "We've got 68 Nissan e-NV200s and their lithium-ion batteries are warranted for eight years/100,000 miles," he comments. "That means they will probably last for 10 or 11 years."

Some sweeper makers report that their electric models have approximately the same payload capacity as their diesel equivalents. Others admit that the former carry less than the latter as a consequence of the weight of the battery pack.

***“Over the last two years there has been a big uptake of multifunctional machines among local authorities, and our sales of sweepers that fall into that category have risen by 45%”***

Mark Fellows

Says Fellows: “The new electric Hako 1650 Z.E. 3.5-tonner can carry just shy of 1,000kg, compared with 1,200kg for the diesel version.” (It is pictured at far right).

Hopper volume matters more, however, when you are sweeping up discarded soft drink cans, takeaway pizza boxes and crisp packets. Bucher Municipal’s diesel CityCat VS20 3.5-tonner and the electric VS20e model for example both feature the same size hopper, at 2.0m<sup>3</sup>. As it happens they also offer the same payload capability of a tonne. Fitted with a 22kW onboard charger, VS20e can be fully recharged in 2.0 to 2.5 hours, says Bucher.

Boschung states that Urban-Sweeper S2.0 can swallow 1.2 tonnes of rubbish. Adds William Lambert, operations director at Boschung-owned importer Bunce (Ashbury): “Urban-Sweeper S2.0 can be recharged in a couple of hours if you have access to a 22kW (32A/400V) charging point.” Smith confirms that this is indeed the case.

### **OTHER FEATURES**

Sweepers can be equipped to eliminate weeds by dousing them with hot water – far better than employing expensive and potentially environmentally-harmful chemicals – and fitted with scrub decks to clean particularly filthy sections of pavement.

Many machines are fitted with gully suckers as well as pressure washers to clean benches and other items of street furniture as a matter of course. The power they use does not appear to impact the range of Boschung’s battery sweepers significantly, says Lambert.

Machines such as Aebi Schmidt’s Multigo 150 diesel 3.5-tonner can be kitted out with snow ploughs, snow blowers and salt spreaders, turning them into multi-functional tools. Equip them with a mowing unit and they can keep grass verges tidy.

Their ability to tackle a variety of different jobs has been embraced in



mainland Europe but less so on this side of the Channel, where some jobs – winter maintenance, for example – may be put out to third-party contractors by councils. Nor are in-house departments always as cooperative as they might be.

There are signs that this attitude is changing, however, as unrelenting financial pressure leaves municipalities no choice but to make the maximum possible use of their assets. “Over the last two years there has been a big uptake of multifunctional machines among local authorities, and our sales of sweepers that fall into that category have risen by 45%,” says Fellows.

Electric machines are quieter than diesels, which means they will cause less disturbance if they are used at night. “There’s less vibration and humming,” comments Hako product manager, Olaf Heinemann. “Keep your windows shut and you won’t hear anything.”

Diesel 3.5-tonne sweepers are not finished yet, however. As UK distributor for Republic of Ireland-built Multihog machines, Multevo has been organising online demonstrations of a new CV350 3.5-tonner powered by a Stage V 75hp Hatz diesel. PM10- and PM2.5-rated, the newcomer is articulated and has a chassis that is only 1.2m wide says Multevo marketing director, Josh Sweeney. Both of these features aid its manoeuvrability in congested urban areas and in locations such as parks and gardens, yet despite its narrowness it can still sweep at a width of 2.35m.

Payload is 1.2 tonnes and the 1.5m<sup>3</sup>

hopper can tip at a height of 1.6m to be able to discharge into skips and bins.

“We don’t have an electric model available at present, but we should have one during the third quarter of this year,” says Sweeney. What the company does have, however, is a diesel/hydrogen dual-fuel conversion for fleets that wish to improve their environmental performance, but are not yet ready to commit to battery power (see also pp14-15). “It costs £35,000,” he says.

### **DRIVERLESS SWEEPERS?**

The next big development in the sweeper industry could be the introduction of autonomous electric machines. Boschung and Bucher have both been involved in their development, with the latter having produced one called Donner that has been approved for use on public highways in Singapore.

Both manufacturers have worked with partners that specialise in driverless technology. Bucher joined forces with Germany’s Enway, which has already developed a self-driving electric industrial sweeper called the Blitz One (pictured above, at left) for use in warehouses and factories. Based on the TT 1300 ride-on machine made by Stolzenberg, it can operate for up to six hours on a single charge and clean up to 5,860m<sup>2</sup> an hour, says Enway. Partnering with experts is the only realistic approach for OEMs to introduce such radical (and costly) innovations, adds Heinemann. **IE**