Larger capacity, improved accuracy and new control systems

Bigger, better and more was the concept behind a late October product launch which took place at spreader manufacturer Bogballe's Danish manufacturing plant. **David Williams** reports.

New products announced by Bogballe, and available through its official UK importer KRM, include higher capacity spreaders and new spread control technology.

Bogballe has been trading for almost 80 years, the family-owned business having been manufacturing fertiliser spreaders since 1950. Britain, France and Germany are the largest markets for its products, 96 per cent of its production exported from Denmark, 75 per cent of which ends up on farms in Europe. In the UK, Bogballe products are supplied through the official importer Keith Rennie Machinery (KRM), the company having handled the brand for almost 30 years.

At the press launch the manufacturer explained its philosophy regarding the design and construction of its range, and demonstrated during a factory tour the investment in money and time which goes into ensuring its products perform and last well.

A large test hall uses electronic three-dimensional mapping of spread patterns to assess performance and includes facilities to test application accuracy with the spreader travelling in a straight line, as well as to quantify accuracy during turns. The test hall is 1,600m² (17,200ft²) and in an average year 150–200t of fertiliser is applied through spreaders undergoing testing. A network of load cells on the floor measure material applied to within 0.1g, and each weighs 10 times per second, and during each test the results combine to produce a report equivalent to having the entire floor area covered by individual trays on scales.

While Bogballe managing director Nils Jørn Laursen explained that the company's investment in research and testing allows it to develop very accurate and versatile spreaders, he acknowledged that accurate application is always dependent on fertiliser of reasonable quality being used. "It is difficult to make a good fertiliser spreader spread bad fertiliser well," he said.

The company announced new higher capacity three-point linkage mounted spreaders to meet demand for greater productivity as well as an innovative system to control spread width available for new spreaders and to retro-fit. It also demonstrated Free Concept, its brand new app-based spreader control system which, it said, offers significant advantages for users.

Higher capacity

For those needing higher capacities, the company has launched the largest three-point linkage mounted spreader available from any manufacturer. Holding up to 6t of fertiliser, the 5,550-litre M6W has been launched as an alternative to large trailed spreaders, and is primarily for use with larger tractors, including those on rubber tracks operating in wet ground conditions. "The mounted spreader has the advantage that there are reduced wheelings in the field and being carried on the rear linkage it is easier to transport," said Nils. "It offers significant cost savings, and requires less fuel to move around the fields while allowing higher work rates."

Keith Rennie said that the high capacity spreader will offer significant benefits for larger UK farms. "There is a constant demand for increased productivity and with the greater capacity allowing larger areas to be treated between fills, the spreader can spend more time spreading rather than travelling back and forth to the yard. Transporting fertiliser to the field to fill the spreader will result in the highest productivity but even in situations where the spreader has to return to the yard for filling the extra capacity will save time and running costs with fewer journeys necessary," he explained.

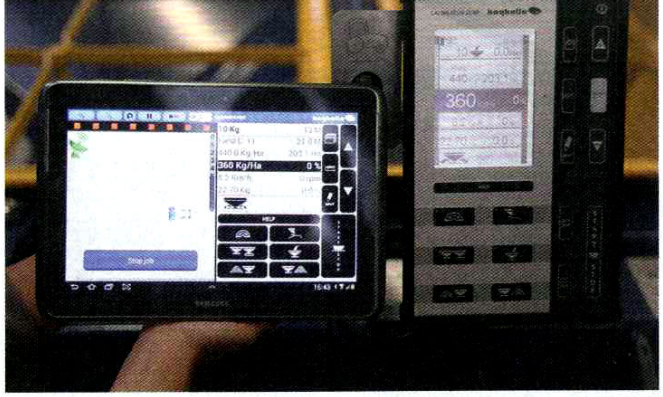
"We have been selling larger numbers of spreaders with capacities in excess of 4,000 litres, and see the new 6t machine as a natural progression," he added.

The M6W range is available with spread widths of 12–42m and the series offers capacities of 4,050, 4,500, 4,800, 5,250 and 5,550 litres. Standard equipment includes LED rear lights, a 6-step ladder, electric shift between normal and border spreading and an easy-to-use calibration system. Control is provided by the Bogballe Calibrator Zurf panel, or Isobus for suitably equipped tractors.

Right: Almost all components are manufactured in-house. Investment in robots to provide consistent quality and attention to detail during assembly is a key factor in the company's success.

Below: The test hall adjacent to the factory is able to determine spreader accuracy and performance using a combination of 2D and 3D testing. Spread charts are created using 2D data whereas 3D is used to develop new components, and has been a crucial source of information for the development of the new Dynamic Section Control for M-line spreaders.

In just a 15 week period each year, 65 per cent of the company's turnover is generated, therefore significant supplies of components and finished machines are stored.



Bogballe is one of the first agricultural implement manufacturers to have developed an 'app' to allow its products to be operated by a tablet or mobile smart 'phone. The tablet links wirelessly to the Calibrator Zurf through an iZurf communication module, and provides added functions and ease of use.

The Bogballe weighing system is standard and on the M6W uses two 6t load cells to monitor the weight of fertiliser in the hopper. An inclinometer constantly checks the spreader angle, and an accelerometer monitors acceleration to check for movement and only when conditions are ideal to provide accurate weight information is the weight recorded by the equipment. This accurate weighing allows precise calibration to be carried out very quickly, and Nils explained that after applying just 25kg the accurate application rate can be determined.

Section Control Dynamic

A characteristic of Bogballe spreaders is that the twin spreader discs rotate in the opposite direction to almost all other twin-disc spreaders. The two discs rotate to spread in to the centre rather than to the outside, and Nils explained that this has been proven to ensure even application with a considerable amount of overlap.

A result of this spreading characteristic and the large amount of overlap is that it is difficult to spread accurately to a field edge or boundary, so when headland control is needed, the direction of the discs is reversed and the back of the spreader vanes used, resulting in a sharp cut off to the border. The left side disc retains its standard spread to match the in-field pattern, the operator always keeping the headland to the right.

While reversing the discs means headland control is achieved, there has remained an issue where application to uneven shapes has been needed within the field, when working up to a headland bout for example, and particularly at wider spread widths. Until now, Section Control Standard has been available, but has meant that the pattern from both discs is adjusted symmetrically, reducing application and throw to both sides. With increased accuracy demanded by users, and the systems available from other manufacturers offering the greater precision, this caused Bogballe a problem. It is very reluctant to sacrifice the more even application that it believes is provided by its double-double overlap spreading technique across most of the field, just to provide slightly better control on relatively small areas. So four years ago it started developing Section Control Dynamic, a system which makes full use of the in-centre disc direction and allows the precision needed in 'wedges' and at smaller tramline distances.

Two dynamic shutters and two actuators, one on each side of the spreader, allow the user to adjust the bias to either side in eight steps, determined by working width. The actuators rotate the shutters, to three basic positions, no flow, full standard flow, or partially restricted flow with a deflector which alters the position at which the fertiliser is dropped onto the disc, and meets the 'kinked vanes', altering the spread bias. Spread width control down to the last two of the eight sections is possible which, in effect, means a minimum width of 6m is achievable with a 24m machine.

Control is through the Calibrator Zurf box which will allow manual control; the operator judging the points at which to alter the spread width steps, selecting left or right adjustment and then stepping down the spread width, or automatic through a GPS assisted controller or through an Isobus system.

Section Control Dynamic is available only on M-series spreaders, all of which are being manufactured with the Dynamic shutters and sold as Section Control Dynamic Ready. The actuators that control the shutters are options and come as a kit with other required components.

The Dynamic shutter kits are also available to retro-fit to M-series spreaders already out on farm up to eight years old, and cost approximately £2,940.

"It has cost us a great deal to develop the new section control and we are delighted with the result," said Nils. "We are a family-owned business that has been trading many years and we have a lot of very loyal users so it was important to us that those who have bought new high specification spreaders in recent years should not feel that they have missed out on this new feature. Therefore we decided to make sure that it could be retro-fitted at a reasonable cost out of fairness to our existing customers."

Extensive testing of the new section control has demonstrated it to maintain the level of accuracy required across the rest of the field. "As long as the user is using the correct spread charts the spreader will be accurate with any fertiliser," explained Nils. "It maintains the double-double overlap concept, is easy to use, accurate and consistent."

Tablet-controlled application

Tablets and smart 'phones are increasingly a part of everyday life, and Bogballe is harnessing the typical ease of use and control technology available to provide an alternative means of setting up and operating its spreaders. "A standard tablet has an excellent display and provides a means of operating the equipment entirely separate from the GPS and tractor brand," said Bogballe fertiliser sales manager Heidi Thomsen. "With on-line connectivity the user also has access to his e-mails, operating instructions, spread charts, and useful information such as the weather, and for a contractor it has the benefit that a job report and bill can be e-mailed as soon as the job is done."

Bogballe's Free Concept tablet system uses a free 'app' and will be available first to suit Android operating systems and later for iOS devices. A communicator module; iZurf is attached to the Calibrator Zurf controller and provides the link for wireless connection between the tablet and the spreader. Features such as split screen allow guidance systems and machine settings to be displayed at the same time, and for precise application an external GPS antenna is needed.

Free Concept is available for all standard and weigh-cell spreaders which are controlled by Calibrator Zurf, but not for Isobus-controlled machines.

Advantages from the use of the system are; free choice of screen for the user, the ability to use outside the cab for set up and checking, on-line access and a low purchase price, according to the company. ■

The new M6W spreaders are manufactured 'Dynamic Section Control'-ready.

Nils Jørn Laursen (left) is pictured with Keith Rennie and the world's largest production three-point linkage mounted spreader with a capacity of 6t.