Concrete Plant International
North America Edition

4 | 2020

www.cpi-worldwide.com

REPRINT | CONCRETE PIPES AND MANHOLES

Going vertical – high quality and even higher output thanks to new packerhead machine

HawkeyePedershaab, Mediapolis, IA 52637, USA

Going vertical – high quality and even higher output thanks to new packerhead machine

Bates Pipes and Products, headquartered in Geelong, Australia, which specializes in producing reinforced concrete pipes, box culverts and crown units, was looking for a way to modernize its plant and keep pace with the business growth in its region. The family owned enterprise turned to Afinitas company HawkeyePedershaab for help with a solution to increase capacity and maintain product quality. Now, with the ePak 150 packerhead machine, Bates Pipes and Products produces seven to ten times more high quality pipe than before. And all of that in a more energy efficient, safer, quieter and less labor-intense way.

Ben Bates and his father Bob were surrounded by growth. As the founders of Bates Pipes and Products, they were churning out wetcast concrete pipes, box culverts and other underground infrastructure products from their base in Geelong, Australia. A port city on Corio Bay, 75 km (47 miles) southwest of Melbourne, Geelong has been steadily growing. Up the road, Melbourne is flat out booming, adding nearly a million people between 2011 and 2018 to bring its population to 4.9 million.

The Bates Pipes and Products factory in Geelong, Australia

Ben and Bob knew they were making decent pipe and underground precast products, but the pace of growth in the region outstripped their capacity. Clearly, they were leaving money on the table. It was time for an upgrade.

From horizontal to vertical production

In determining how to modernize the plant, Ben Bates landed on a solution that turned the company 90 degrees – from horizontal to vertical, so to speak: Until then Bates Pipe and Products was manufacturing pipe horizontally, using the traditional Australian "wet spin" method. Ben then opted for an ePak 150 from HawkeyePedershaab, part of the Afinitas family of concrete equipment and technology companies. The difference? The ePak 150 employs packerhead technology to cast the pipe vertically.

"Australians invented wet spin pipe production in about 1910", Bates says. "It was used all around the world. But it's a much slower process. You need a mold for every pipe you make. You put them on a set of horizontal rollers and spin them, using the centrifugal force to push the concrete to the outside. It makes a nice pipe but it's a very, very slow method compared to the ePak."

With the wet spin technique, the concrete cures in the mold, which slows down the process considerably. The ePak drycast method produces pipe that can be immediately demolded and moved – either manually or robotically. Commissioning the ePak would be a dramatic change for the Bates team.

"We had to expand"

"We started in 1995 with a wet spin plant that we built ourselves, and over the years it served us well," Bates says. "But there are lots of new construction projects and a lot of urban development happening around our area – in Geelong and Victoria – and we had to expand."

While researching pipe-producing machines, Bates contacted Torben Mørch, a HawkeyePedershaab sales representative, who works out of the company's Brønderslev, Denmark, office. Mørch showed Ben the ePak 150 in action.

"When they saw how fast it operated, how smooth it was, from that point on they didn't want any other technology," Mørch says.

Ben Bates' background as an engineer may have helped steer him toward the ePak. Packerhead technology has been around for 70 or 80 years, Mørch says, but the difference in the HawkeyePedershaab ePak system is its advanced engineering.

"What is special is the machine design and the controls", Mørch says. "The ePak is unique. It has no gearbox. It has a direct drive based on two permanent magnetic motors. So, in that sense it is not to be compared with any other packerhead machine."

Ideal for the mass production of round pipe, the Hawkeye-Pedershaab ePak machine produces a high-quality pipe with an exceptionally smooth surface and is ideally suited for the production of thin-walled pipe.

In addition, as a fully electric machine, the ePak is energy efficient and requires less maintenance.

Electric advantage

The ePak's technology made a lot of sense to Bates. "I am very mechanically minded, so the whole ePak system was very attractive to me because of its compact design and its energy efficiency," he says. "The main reason we went with the ePak system, apart from the pricing and the service package HawkeyePedershaab provided us with, was the energy efficiency due to the fact the machine is all-electric," Bates adds. "All-electric meant that we didn't have large hydraulic power packs running for long periods using electricity. Electricity in this area of Australia is becoming very expensive per kilowatt hour. The ePak is very efficient in kilowatt hour per pipe, resulting in lower electricity costs."

Finished pipe produced by the ePak

In addition, reinforced concrete pipe in Australia is typically thin-walled compared with pipe in Europe or the United States, Mørch says. "It's a much thinner wall than in Europe or the U.S. So, if you take a 300 mm (12 in) pipe, it would have a wall thickness of 34 mm (1.3 in). In the U.S., it would be 50-70 mm (2.0-2.8 in), so it is much thinner than in other places around the world. Therefore, they need a machine with very good controls, and that's one of the benefits of ePak. It has a very advanced control system," he adds.

After producing pipe for a year with ePak, Bates would agree. "The control system is very easy to operate and has excellent control of the packerhead torque through constant feedback to the operator," Bates says. "The camera systems enable the operator to be removed from the machine and still have total control of the process. We found it very easy to control the pipe-making process with this system on pipes down to 34 mm (1.3 in) thickness. We can produce strong dense thin-walled pipe meeting Australian standards."

The ePak's sophisticated system runs on software algorithms that are part of a closed-loop control system that continually monitors all the critical machine processes and automatically performs micro-adjustments throughout the production process. The operator can also make changes that are quickly applied.

Bates Pipes and Products founders Ben Bates, left, with his father Bob

A new factory for the ePak

Once they decided on the ePak, Bates and his team designed a new building around it. Working with the HawkeyePedershaab team on the design specifications and the logistics, the Bates crew built a 2,100m^2 factory for the new equipment.

"We're pretty hands-on here, and we built the factory ourselves," Bates says. "We were still building it when they came to install the machine. We designed and built the factory in-house, around the ePak."

The ePak 150 was commissioned in March of 2019, Bates says. The changeover to the new system was dramatic and immediate. "So far, we're probably outputting seven to 10 times more pipe than we did previously. That's how big of a change it has made," Bates says. "And, our size range has increased too." The largest diameter with the old wet spin system was 900mm pipe (36in). With the ePak 150, the maximum size is 1,500mm (60in).

A safer, quieter, less labor-intense environment proved to be another biproduct of the ePak system, Bates says. "The safety systems on the ePak are much better than our old wet spin process. The wet spin pipe making process is very noisy and messy. It took two operators to run the wet spin machine as opposed to one for the ePak. The wet spin process was much more labor and mold intensive," he added. "Currently we have a 600% increase on pipe output for the same labor force, due to the implementation of the ePak system."

"It's been a massive increase for us," Bates says. "We're trying to manage that now. We've hired new people – salespeople, production people, and some new managers."

The pipe production is now about 40% of Bates Pipe and Products business, Bates says. The rest is box culverts, wingwalls, precast drainage pits and covers, custom products, and other infrastructure products. With the growth in Geelong and throughout Victoria, there is no shortage of work on which they can bid.

25-year milestone

The new operation is a milestone in the evolution of Bates Pipe and Products, which started from scratch in 1995. Ben's father Bob had worked as an earth moving contractor, "for 30 or 40 years," Ben says. "Then we decided to go into precast concrete pipe. We started making pipe on the wet spin process. Then we brought in culverts, and the culverts really took off. Then we just kept making a little pipe. We didn't make that much in a day. Then we bit the bullet and put in a modern pipe plant, and here we are."

It's one of two milestones for the Bates family in 2020. The company will celebrate its 25th anniversary. And Ben's father Bob, who still works every day, will celebrate his 80th birthday. "We're starting our 25th year with a nice new pipe plant," Ben Bates says. "It's been a massive investment for us. We've been very impressed with the service from HawkeyePedershaab and with the company. They have just been really great. Nothing has been too hard. We're only a small family company, and to have them on our side has been fantastic." ■

FURTHER INFORMATION

Bates Pipes and Products
340 Bacchus Marsh Road
Corio 3214, Australia
Mr. Ben Bates
T +61 0352750055, F +61 0352750054
ben@batespipes.com.au, www.batespipes.com.au

HawkeyePedershaab
506 S. Wapello Street
Mediapolis, IA 52637, USA
T +1 319 394-3197, F +1 319 394-3977
www.hpct.com

HawkeyePedershaab
Saltumvej 25, 9700 Brønderslev, Denmark
T +45 9645 4000
pedershaab@hpct.com, www.hpct.com

BFS Betonfertigteilesysteme GmbH
Dr.-Georg-Spohn-Straße 31
89143 Blaubeuren, Germany
T +49 7344 96030, F +49 7344 4710
bfs.info@hp-bfs.com, www.hp-bfs.com
Daniel Buehler
T +49 7344 96030
daniel.buehler@hp-bfs.com

Afinitas
8040 Forsyth Blvd
Clayton, MO, 63105, USA
T +1 314 862-8000
info@afinitas.com
www.afinitas.com