

MonoRoll for more efficiency

New pressing technology improves pellet quality

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Pelleting is particularly challenging in the production of animal feed. The MonoRoll technology developed by PTN improves the feed structure and also has a positive effect on the feed quality.

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In August 2020, Agruniek Rijnvallei put the first MonoRoll baler into operation at its animal feed plant in Lienden, the Netherlands. The single-roller technology, which was still new at the time, immediately showed promising results. Based on this positive experience, a second MonoRoll press was installed in May 2024 - a clear commitment to efficient and high-quality feed production. Agruniek Rijnvallei is a Dutch cooperative that produces feed for various animal species such as cattle, goats, pigs and poultry. The focus is on quality, sustainability and practical solutions for healthy animals and efficient farming. The company continuously invests in innovation and process optimization in order to offer its members high-quality and tailor-made feed solutions. The plant in Lienden was built 25 years ago and was originally equipped with two pelleting lines. Over the years, the plant has been gradually expanded and modernized. Today, the plant operates in two shifts and produces a wide range of compound feeds, including special formulations for horses, goats and cattle. Increasing the pressing capacity has been a key issue in recent years, supplemented by investments in cooling, energy saving and pellet quality.

Capacity expansion to meet rising demand A third press line was **added** to meet rising demand and secure production capacity. was added. "The press unit consists of two lines," explains Operations Manager Chris van Leusden. The first line, equipped with a BOA, has two parallel presses: a classic press and a new one.

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mance. In addition, significant energy savings are possible.

Agruniek Rijnvallei commissioned its first MonoRoll Pellet Mill at the Lienden feed mill in the Netherlands in August 2020. The innovative single-roll technology was still relatively new at the time, but the results were immediately promising. Based on this success, a second MonoRoll Pellet Mill was installed in May 2024, further expanding pelleting capacity and reinforcing the cooperative's commitment to efficient, high-quality feed production. Agruniek Rijnvallei is a Dutch cooperative feed manufacturer with a strong regional presence and a long-standing reputation for quality and sustainability. The company produces compound feeds for various species including cattle, goats, pigs, and poultry, focusing on practical solutions that support healthy livestock and efficient farming operations. With production sites like the one in Lienden, Agruniek Rijnvallei continuously invests in innovation and process optimization to provide member farmers with high-quality, tailored feed solutions.

The Lienden feed mill was built 25 years ago and originally set up with 2 pelleting lines. Over the years, the installation has been gradually expanded and modernized. Today, the facility runs a two-shift operation and produces a wide variety of compound feeds, including special-ised formulas for horses, goats and cattle. Pressing capacity has been a key focus area in recent years, with continuous investments in cooling, energy reduction and pellet quality.

Capacity boost to meet growing demand

To meet increasing demands and maintain high production capacity, a third press line was added to increase overall capacity. "The pressing unit included two press lines," explains plant manager Chris van Leusden. The first line, equipped with a BOA, has two parallel presses: a traditional two-roll pellet mill (for 3 mm and 10 mm pellets) and the MonoRoll Pellet Mill (5 mm pellets). Thanks to a dual-direction screw feeder, the presses can be switched without any time loss, with each line featuring its own cooling system.

The second line, also equipped with a BOA, includes the new MonoRoll (5 mm pellets) and a similar cooling system. The coolers, provided by Alers, are double-decked and designed to fit the available space in the facility. At

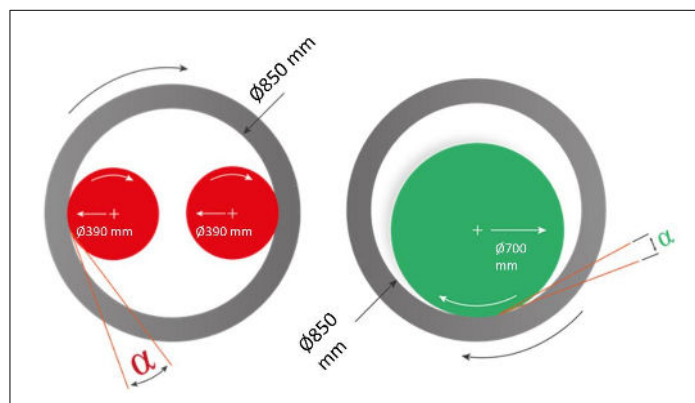


Figure 1: With MonoRoll technology, only one roller is used, which is twice the size of a 2-roller press.

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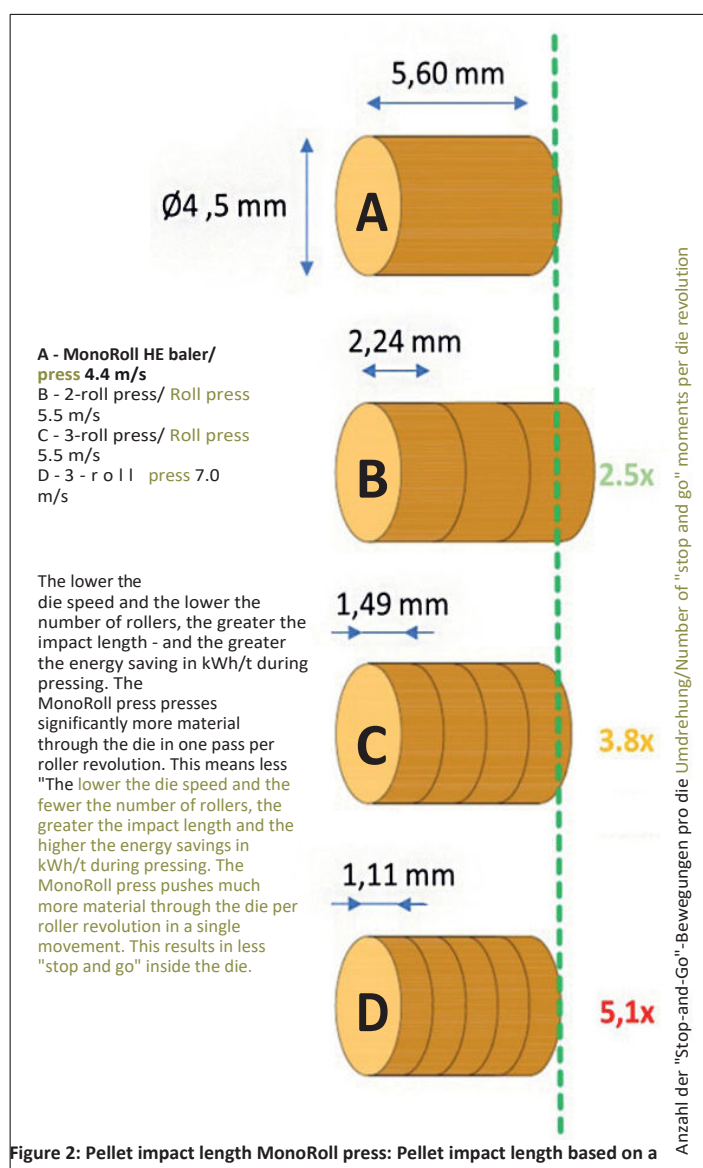


Figure 2: Pellet impact length MonoRoll press: Pellet impact length based on a press with a die of 850x210 mm and a capacity of 10 t/h (Ø4.5 mm pellets), comparing different press types and die revolutions.

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2 roller press (for 3 mm and 10 mm pellets) and a MonoRoll press (for 5 mm pellets). Thanks to a bidirectional screw conveyor, the presses can be switched over without any loss of time and each line has its own cooling system. The second line, also equipped with BOA technology, includes the new MonoRoll (5 mm pellets) and a corresponding cooling system. The coolers supplied by Alers are designed as double-deck coolers and are optimally integrated into the existing infrastructure. Mark Ipema, Operations Director at the time (who left Agruniek Rijnvallei on April 1, 2024), commented on the commissioning: "The new MonoRoll improves the feed structure, which ultimately has a positive effect on animal performance."

Another decision in favor of MonoRoll

Based on the positive experience, Agruniek Rijnvallei decided to purchase a second MonoRoll. "We have extensive experience with the MonoRoll, right from the test phase," explained Ipema. "The advantages are clear: lower energy consumption, significantly reduced dust formation - of 0.6 percent, around 25 percent less than with conventional presses - and the option of adding up to 8 percent molasses.

Dust reduction is particularly important in the production of goat feed."

The new pellet mill, installed in May 2024, offers additional flexibility and capacity. The plant can now switch more easily between recipes, production runs and pellet diameters - while processes remain stable.

Start-up problems overcome

Ronald ten Cate, Sales Manager at PTN, reports that initial challenges - particularly with the rotor's main bearings - have now been overcome. The asymmetrical design of the MonoRoll required a redesign of the housing and bearing system in order to absorb the loads. An additional cooling system stabilizes the bearing temperature at a constant 50°C. The roller of the MonoRoll is twice as large as that of 2 roller presses and has a replaceable outer ring that can be easily changed when worn. The use of a dimpled roller ensures that the feed meal is distributed evenly across the entire die width, which guarantees a consistently high pellet quality (Fig. 1+2). The press has also been designed for quick maintenance: Wear parts are easily accessible, wear can be predicted and the machine runs remarkably quietly, even with difficult or high-molasses recipes.

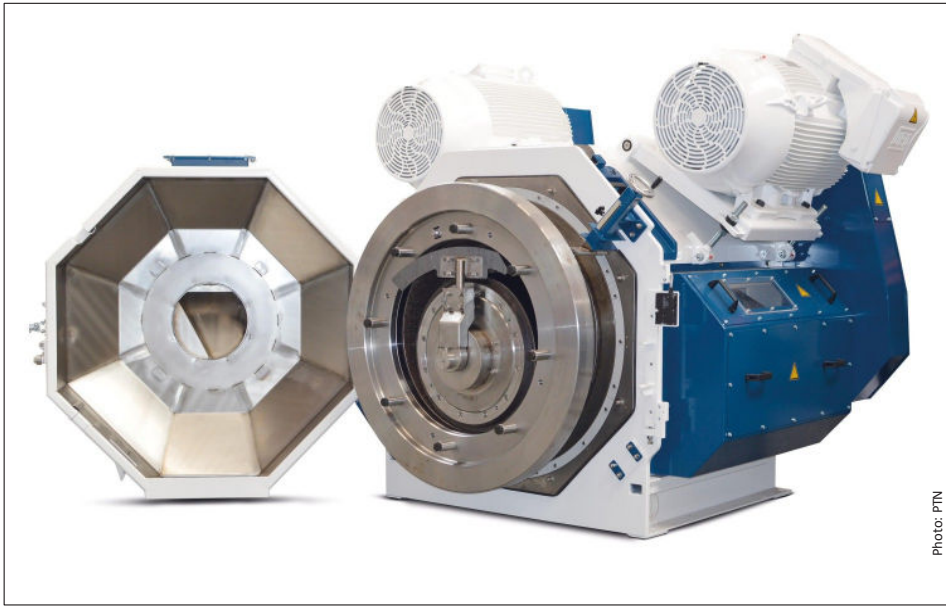


Photo: PTN

Maintenance of the MonoRoll press is straightforward: Wearing parts are easily accessible.

Maintenance of the MonoRoll press is uncomplicated: Wearing parts are easily accessible.

Energy savings through optimized compaction

Energy efficiency is becoming increasingly important in the animal feed industry - both for cost reasons and in terms of sustainability. The optimized compaction and reduced friction of the MonoRoll contribute significantly to this.

that time, Operational Director Mark Ipema (who left AR as of April 1, 2024) noted: "The new MonoRoll press improves feed structure, which ultimately enhances animal performance."

The choice for MonoRoll again

Following the performance of the first press, Agruniek Rijnvallei decided to invest in a second MonoRoll. "We have extensive experience with the MonoRoll, even from its early testing phase," said Ipema. "The benefits are clear: reduced energy consumption, significantly lower dust production (0.6 percent, which is 25 percent less than other presses), and the ability to add up to 8 percent molasses to the production line. Reducing dust is especially important for us when producing goat feed."

This positive experience laid the foundation for the second MonoRoll. The new pellet press, installed in May 2024, adds extra flexibility and capacity. The

feed mill can now switch more easily between recipes, runs and pellet diameters while maintaining a stable process.

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Addressing initial challenges

Ronald ten Cate, Sales Manager at PTN, explains that initial challenges, such as main bearing issues of the rotor have since been resolved. The asymmetrical structure of the MonoRoll required a redesigned housing and bearing system to withstand the applied forces. To maintain bearing temperature, a cooling system was added, keeping the temperature steady at 50°C.

The roller of the MonoRoll pellet mill is twice as large as that in two-roll presses and features a replaceable outer ring, which can be easily swapped out when worn. By using a dimpled roller rather than a grooved one, the feed meal is evenly distributed across the full width of the die, ensuring consistently high pellet quality (figure 1+2).

The press is also designed with fast maintenance in mind. Parts are accessible, wear is predictable, and the system runs quietly - even when producing tougher or molasses-rich recipes.

Energy savings through optimized compaction

The importance of energy efficiency in production processes is increasingly emphasized in the feed industry, not only for cost control but also for sustainability and environmental responsibility. The optimized compaction and reduced roller friction of the MonoRoll press contribute significantly to these goals. "The MonoRoll pellet mill uses considerably less energy, as its single-roll compaction process is more consistent," Ten Cate adds. "The larger roller allows for slower compaction, which reduces energy consumption."

Studies have shown that this process reduces the plant's total energy consumption by up to several dozen percent. For cattle feed production, energy saving is approximately 3-4 kWh/tonne, and for horse feed, it is about 4-5 kWh/tonne. The new MonoRoll is powered by two 90 kW motors, while the first MonoRoll operates with two 110 kW motors. These figures consistently fall below sector averages, thanks to lower internal friction and a more even load distribution during operation.

Global presence growing steadily

MonoRoll technology continues to gain international ground. In the Netherlands, two MonoRoll presses are in full operation at Agruniek Rijnvallei. In Germany, MonoRoll pellet mills are operational at Raiffeisen Ems-Vechte, while additional installations are running successfully in Belgium and the United States.

Several additional MonoRoll presses have been sold and are scheduled for delivery and commissioning in 2025. These include units for ZZN Pelhřimov a. s. in the Czech Republic (planned for September), Kamphuis Mengvoeders in the Netherlands (planned for September), and Agravis Kraftfutterwerk Münsterland GmbH in Germany (planned for October). These presses are not yet operational but represent a further expansion of the installed base.

With two MonoRoll pellet mills running daily, Agruniek Rijnvallei remains one of the earliest and most experienced users of this innovative technology. Their development reflects a broader trend in the feed industry: a move towards more efficient, stable and sustainable pelleting solutions.



Photo: PTN

The MonoRoll technology has convinced the Agruniek Rijnvallei cooperative in Lienden: Chris van Leusden, Operations Manager at the Lienden site, Mark Ipema, former Operations Director at Agruniek Rijnvallei, and Ronald ten Cate, Area Sales Manager at PTN (from left to right).

The MonoRoll technology has convinced the Agruniek Rijnvallei cooperative in Lienden: Chris van Leusden, Operations Manager at the Lienden site, Mark Ipema, former Operations Director at Agruniek Rijnvallei, and Ronald ten Cate, Area Sales Manager at PTN (from left to right).

a major contributor. "The MonoRoll consumes significantly less energy, as the 1-coller compaction process runs more evenly," explains Ten Cate. "The larger roller enables slower, gentler compaction."

Studies show that the total energy consumption of the plant can be reduced by several dozen percent.

For cattle feed, the energy saving is around 3-4 kWh/tonne, for horse feed around 4-5 kWh/tonne. The new MonoRoll is driven by two 90 kW motors, while the first MonoRoll still operates with two 110 kW motors - all below the industry average thanks to lower internal friction and a more even load.

International distribution is increasing

MonoRoll technology is also becoming increasingly popular internationally. In the Netherlands, two MonoRoll balers are running successfully at Agruniek Rijnvallei. In Germany, MonoRoll presses are in use at Raiffeisen Ems-Vechte, and further installations are running successfully in Belgium and the USA. In addition, several MonoRoll balers have been sold and are scheduled for delivery and commissioning in 2025, including at ZZN Pelhřimov a. s. (Czech Republic, scheduled for September), Kamphuis Mengvoeders (Netherlands, September) and Agravis Kraftfutterwerk Münsterland GmbH (Germany, October). These machines are not yet in operation, but will expand the global plant portfolio.

With two MonoRoll presses running daily, Agruniek Rijnvallei is one of the first and most experienced users of this innovative technology. Its development is exemplary of a broader industry trend: towards more efficient, more stable and more sustainable pelleting solutions.