



Big Dutchman®



HydroMix^{pro}

The computer-controlled liquid feeding system
for profitable pig production

HydroMix^{pro} – the innovative liquid feeding system

The Big Dutchman feeding system HydroMix^{pro} is an extremely flexible modular system that provides sows, piglets and finishing pigs with liquid feed. Every HydroMix system is matched to the number of animals to be supplied and to the building conditions on the farm. HydroMix^{pro} is particularly recommended if feed includes low-cost

ingredients such as whey, residual products from the food industry or CCM. To be able to meet our customers' demands at any time, our engineers are constantly enhancing the system. We can therefore offer several different system types under the name HydroMix^{pro}. BD experts will discuss the best possible

system for your requirements in a detailed consultation and then realise the project.

HydroMix^{pro}:

A clever and reliable technology for fully-automated feeding of pigs for any size of production.



ESF station CallMatic^{pro} with HydroMix^{pro}



Sensor feeding



Finishing room with cross trough and trough sensor to control feeding times

In the **sow house**, HydroMix^{pro} can be used in combination with many types of management and housing systems:

- ✓ gilts reared in groups;
- ✓ empty and pregnant sows in individual stalls and free-access stalls;
- ✓ ESF station CallMatic^{pro} for pregnant sows kept in groups;
- ✓ nursing sows in farrowing pens with individual feeding.

For the **nursery**, the use of a sensor-controlled liquid feeding system (ad libitum or with feeding time control) is recommended, especially for weaners. This allows the farm manager to supply the piglets with small amounts of fresh feed whenever needed. A feed pump uses compressed air to dispense the feed.

In the **finishing house**, the pigs can be supplied with liquid feed either from longitudinal or cross troughs (animal:feeding place ratio of 1:1) or from short troughs with a sensor (animal:feeding place ratio of up to 3:1).

The filling level is measured by an electronic sensor.

Advantages

- ✓ preparation of individual recipes from different ingredients for high daily weight gains at low feed costs;
- ✓ computer-controlled feeding and farm management that save time and operate very reliably;
- ✓ extensive hygiene package for a minimal bacterial count and healthy animals;
- ✓ high metering precision at every feed valve;
- ✓ reliable feed transport even over long distances;
- ✓ modular and therefore flexible system for small as well as large production units for cost-efficient expansions;
- ✓ equally well-suited for individual and group feeding;
- ✓ low operating costs, long service life.

Main components

Mixing tank

Big Dutchman offers a wide range of mixing tanks:

- ✓ square, made of high-quality stainless steel in sizes from 300 L (minimum mixing amount 30 kg) up to 8000 L (minimum mixing amount 150 kg). Larger tanks are available upon request.
- ✓ round, made of high-quality stainless steel in sizes of 160 L and 250 L (minimum mixing amount 8 kg);
- ✓ round or rectangular, made of acid-resistant glass-fibre reinforced plastic (GRP) in segmental design in sizes from 1500 L (minimum mixing amount 150 kg) up to 10000 L (minimum mixing amount 250 kg). Larger tanks are available upon request.



Agitator

- ✓ different agitator types are available depending on the mixing tank;
- ✓ all Big Dutchman agitators are made of stainless steel;
- ✓ all feed ingredients are mixed optimally for a uniform feed mix.



Agitator type M



Agitator type L

Electronic weighing

Based on their design, the mixing and rinse water tanks are equipped with a very precise, electronic 3- or 4-point weighing system. The rugged load cells are installed beneath the tanks. They record any change in weight while the ingredients are added as well as during the dosing of the ready-mixed feed, and transmit the corresponding information to the UniScale weighing computer with high precision.



Feed valve

All Big Dutchman feed valves are characterised by the following features:

- ✓ flow-optimised valve body;
- ✓ rugged design, functional reliability, reduced wear.

The feed valve is selected depending on the system:

1 Feed valve with solenoid valve

This feed valve has been proving its worth for many years all over the world. It is actuated electro-pneumatically and mounted on a T-piece within the feed line so it can be installed in many positions very flexibly.



2 Feed valve without solenoid valve

If no solenoid valves are to be installed in the rooms, a feed valve without solenoid valve is the ideal option. The valves and trough sensors are then actuated purely pneumatically by means of a valve terminal in the central aisle.



3 3-way T ball valve

Ball valves are characterised above all by their cavity-filled design (optimum combination of body and ball). This is especially important for the feeding of baby piglets, which must meet very high hygiene standards. Ball valves also easily adjust to higher conveying pressures caused by the system.



4 Feed valve for JET lines

Systems with JET branch lines require a special feed valve where the inside diameters of pipe and valve are identical. This valve is available for two diameters: 50 and 63 mm.

Feed pump

The efficient Big Dutchman pumps ensure that feed is reliably transported from the mixing tank to the trough. Depending on the feeding method, the length of the feed lines and the feed's texture, either centrifugal pumps or positive displacement pumps are used. Both types are now usually frequency-controlled.



		Centrifugal pump			Positive displacement pump			
Capacity	kW	4.0	5.5	7.5	3	3	4	7.5
Conveying capacity during feeding	L/min	120	135	160	130	200	300	400
Max. delivery pressure	bar	3.6	3.8	4.8	6	4	4	4
Typical areas of application		finishing, gestation, transfer			piglets, sows, transfer			

Foreign matter separator

For a smooth feed transport and to avoid damage to the liquid feeding system, Big Dutchman recommends installing a foreign matter separator. The separator is made of stainless steel and has a central inlet and outlet. The feed mix hits a deflector which slows down the flow speed and causes foreign objects, such as stones for example, to drop away. Metal objects are separated by the installed magnet. The foreign matter separator can be emptied and cleaned through a hinged lid which can easily be opened; no tools required.



Compressor

The high-quality electronic compressors used by Big Dutchman supply the quantity of compressed air required for the actuation of all connected valves. Four different models are available as standard; other models are available upon request.



		Reciprocating compressor		Screw compressor	
Voltage	V	400	400	400	400
Power	kW	1.5	4.0	4.0	7.5
Suction rate	L/min	350	900	-	-
Tank volume	L	50	100	-	-
Pressure	bar	10	10	10	10
Number of cylinders		1	2	-	-
Discharge flowrate	L/min	-	-	450	930
Separate tank	L	-	-	500	500

Fresh water tank

The Big Dutchman fresh water tanks are made of plastic and can be supplied in different sizes (1000 L, 2000 L, 3000 L, 5000 L and 10 000 L). Multiple tanks can be combined to form a fresh water unit. All tanks used by Big Dutchman are lightproof, thus preventing algae development. The fresh water pump has a working pressure of 5 bar, which allows thorough cleaning of the tank.



10 000 L fresh water tank



Feed kitchen with 2-tank residue-free feeding system and two 2000 L fresh water tanks

Important accessories

TwinSpin – for a homogeneous feed mix all the way to the trough

The feed is pumped through acid-resistant PVC pipes from the mixing tank to the feed valve. The TwinSpin pipe system developed by Big Dutchman transports the feed all the way to the trough – without separation of the ingredients. TwinSpin can be used in branch lines just as well as in ring lines. Scientific tests have proved that the feed arrives at the trough in an ideally mixed quality for the pig, thanks to the integrated double spiral.

Using TwinSpin is recommended especially if:

- ✓ the conveying distance is very long;
- ✓ the recipes have a very low dry matter content;
- ✓ the feed has a high solids to liquid ratio, and if the ingredients have low water absorption properties;
- ✓ the dosing and flow speeds are low, e.g. in farrowing houses.



Inside of a TwinSpin pipe

Advantages

- ✓ feed ingredients remain mixed from the mixing tank all the way to the feed valve, ensuring a very stable dry matter content at every valve;
- ✓ no deposits caused by sedimentation, i.e. no clogging;
- ✓ improved metering quality and precision thanks to a consistently uniform feed mixture;
- ✓ deliberate turbulences inside the pipe significantly improve hygiene;
- ✓ very little pressure loss;
- ✓ available in dark grey and as transparent version and in two diameters: 50 and 63 mm;
- ✓ easy to retrofit.

MediInject – the ideal medication system

With MediInject from Big Dutchman, you can administer water-soluble additives, vitamins or other substances, fully automatically and very reliably.

Dosing is possible in three different locations:

- ✓ injection per valve directly into the feed discharge to the trough: the added substance will not get into the feed line. There is no unwanted carry-over of the substances;
- ✓ injection into the branch line or the sub-branches;
- ✓ injection directly into the mixing tank.

MediInject is equipped with a mobile pumping and mixing station which can be used for multiple houses. A variant for fixed installation is also available.

As the substance mix is pumped in at intervals, it is also possible to use substances of poor solubility in water. After completing the administration of medication, the Medi ring line should be rinsed with water to ensure that no residues remain in the lines.

MediInject can easily be retrofitted in all computer-controlled liquid feeding systems.



MediInject mobile with 100 L tank volume
Code no. 21-00-2558



MediInject fixed with 300 L tank volume
Code no. 83-08-2253

HYGIENE – basic requirement for healthy animals

The extensive, easy-to-use and economic Big Dutchman hygiene package ensures that your pigs stay healthy and can achieve high daily weight gains.

Our **hygiene package** includes:

- ✓ a pneumatic inlet funnel for feed ingredients;
- ✓ efficient tank cleaning by motorised spray nozzles;
- ✓ a fogging nozzle.

Advantages of the BD hygiene package

- ✓ concerted hygiene measures reduce the bacterial count of the entire feeding system;
- ✓ high cleaning performance, manageable costs;
- ✓ fully automatic cleaning;
- ✓ reduced use of water and acid;
- ✓ freely selectable cleaning intervals;
- ✓ low maintenance requirements.

Pneumatic inlet funnel for feed ingredients

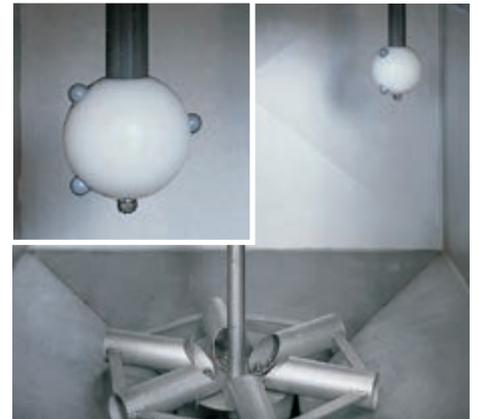
The pneumatic inlet funnel ensures that the feed intake is only open until all dry feed ingredients are in the mixing tank. This means that the inlet funnel remains closed when the rotating cleaning heads and the fogging nozzle clean the mixing tank after the feed has been dispensed. The dry ingredients thus do not come in contact with humidity. Thanks to the central position of the funnel, the ingredients mix extremely well.



Tank cleaning

Motorised spray nozzles ensure a thorough, fully-automatic cleaning of mixing and rinse water tanks. The rotating cleaning heads with specially-designed variable nozzles adapt to the required amount of water and the pressure. Consequently, a very small quantity of water can still obtain optimum cleaning results throughout the tank.

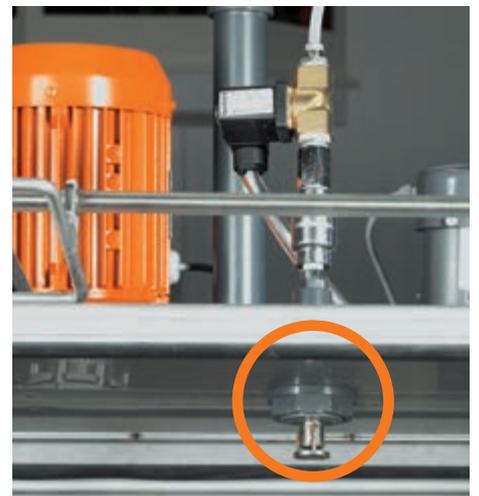
A separate water line with fresh water pump supplies the cleaning heads with water. The tank cleaning system can also be retrofitted to any existing liquid feeding system.



Fogging nozzle

The fogging nozzle is ideally suited for disinfecting the mixing and rinse water tanks. Several times a day, this system distributes very small quantities of feed disinfection solution into the tank. In this way, any dirt film forming on the inside of the tank after longer operation is removed without residues. The fog reaches every part of the tank and ensures optimum disinfection.

The fogging nozzle operates with compressed air. The negative pressure thus created is used to extract the acid directly from the can without the need for an extra pump. If the necessary safety measures are observed, the fogging nozzle can be installed into any existing liquid feeding system. These require a safety switch with automatic locking at the tank.



Customised feeding systems

When planning to provide pigs with liquid feed, some questions must be discussed beforehand. These include:

- ✓ number and age of the animals;
- ✓ feeding strategy (restricted or sensor feeding);

- ✓ length of the feed transport distances;
- ✓ transport medium to be used (water or air);
- ✓ design as residue-free feeding system (ring lines or JET branch lines).

Big Dutchman has developed many different system types for various applications. These allow you to adjust the system ideally to the conditions of your production unit.

Tried and tested systems

System	Filled branch line	Filled ring line	Empty JET branch line	Residue-free ring line	Empty line
1-tank system	X	X	X*		
1-tank system (residue-free) with rinse water tank	X	X	X	X	
2-tank system	X	X	X*		
2-tank system (residue-free) with rinse water tank	X	X	X	X	
1-tank system (residue-free) with compressed air**					X
2-tank system (residue-free) with compressed air**					X

* only possible where the content of the JET branch line is smaller than the smallest mixing quantity or water quantity

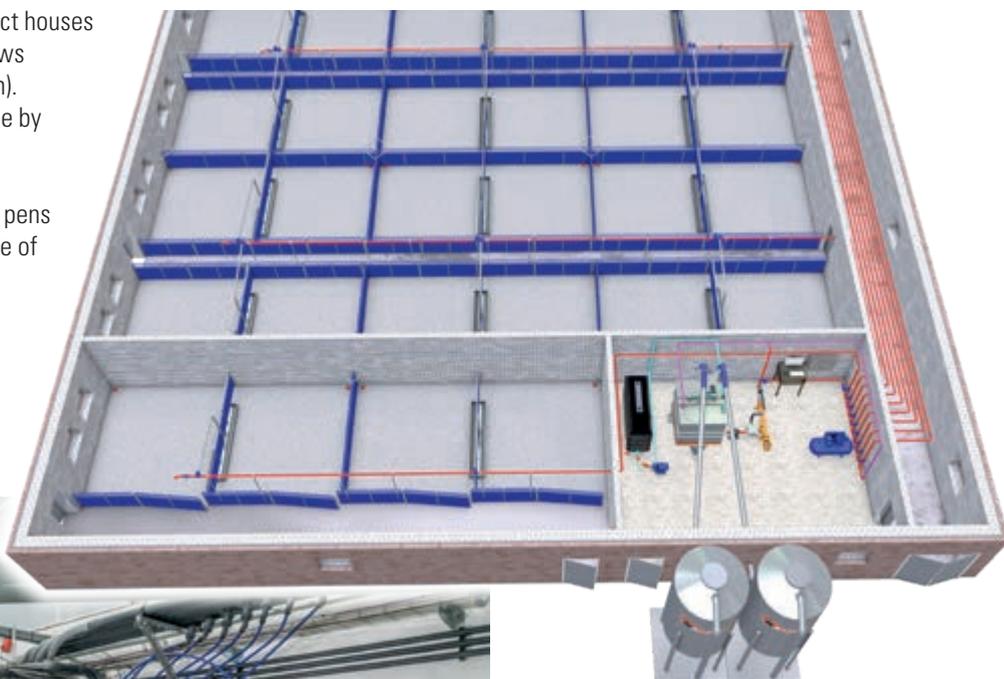
** piglet feeding system

1-tank system with filled branch lines

This system is especially well-suited for compact houses with short distances to the feed kitchen. It allows supplying each pen by a single feed line (branch). Additives can simply be added to the branch line by using Medilinject.

For larger houses we recommend combining a residue-free ring line with branch lines into the pens to reduce the length of the lines and the runtime of the system.

This system is well-suited for smaller finishing houses with feed kitchen inside the building.



Feed kitchen for a house with 1400 gilts

1-tank system with rinse water tank and JET branch line

This system includes a JET (a separator) that is pushed through the main branch by compressed air. After mixing, the JET is pushed towards the end of the branch, together with the feed. The feed is then dispensed. Water is pushed in until the entire pipe is completely empty of feed. This process simultaneously rinses the pipe. After feeding has been completed, compressed air and the JET push the water back into the weighed rinse water tank. From there, it is then available to mix another recipe. The main branch is empty and clean until the next feeding starts. The shorter sub-branches remain filled with feed.



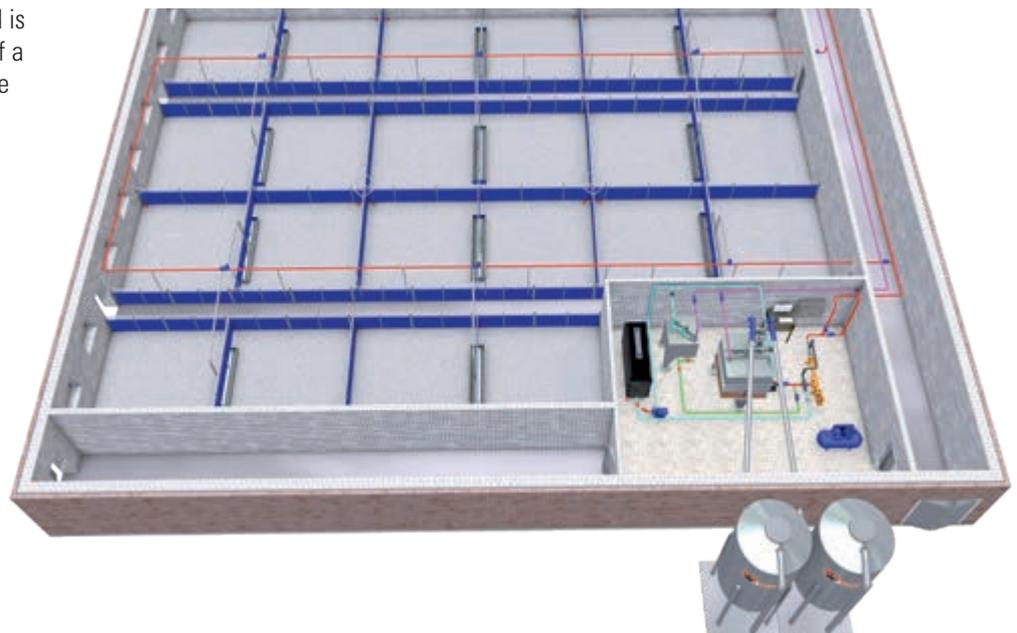
1-tank system with rinse water tank and four JET branch lines

Combining JET branch lines with sub-branches is ideal for finishing houses. The feed only needs to be transported over short distances, i.e. only very few pipes are required.

1-tank system with weighed rinse water tank and residue-free ring line

When using this system, the entire mixed feed is dispensed at each feeding, without residues. If a weighed rinse water tank is installed, there are no breaks in the feeding process as it is not necessary to pump any used water into the mixing tank.

This system is therefore ideal for sow feeding.





1-tank system with weighed rinse water tank

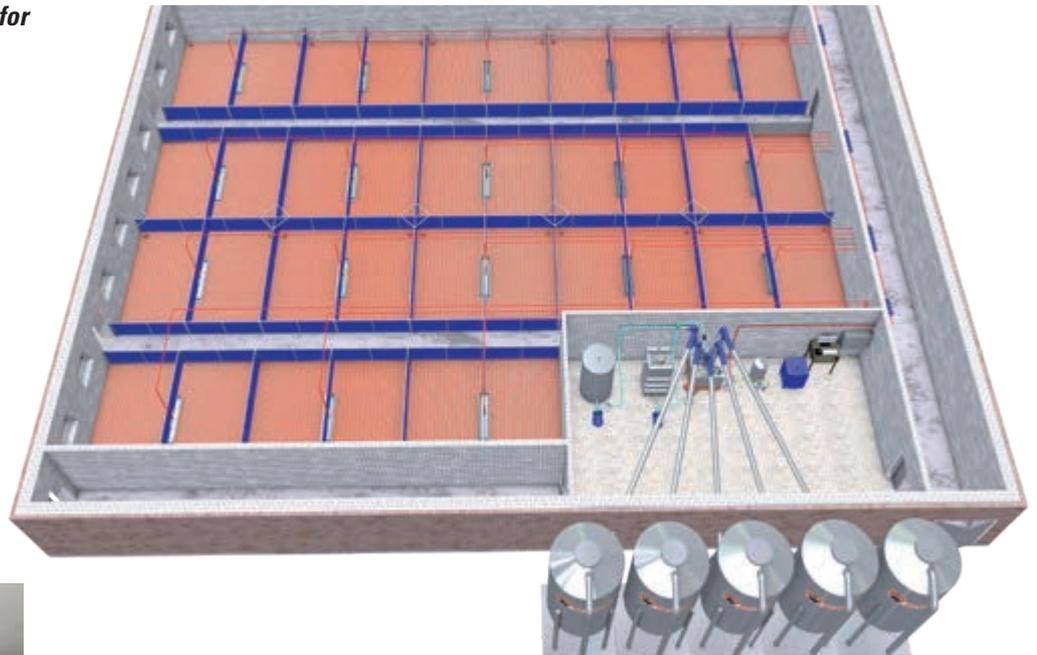
Pipe rinsing:

When the feeding process is completed, the entire system, including all valves, drop pipes, piping, as well as the mixing and rinse water tanks, is rinsed with fresh water. Between feeding times, only clean water remains in the lines, which is transferred into the mixing tank and used to mix the next batch of feed.

1- or 2-tank system for residue-free feeding via compressed air

This system is specifically well-suited for feeding weaners from a weight of 6 kg.

Compressed air keeps the pipes clean. No water is required to transport the feed.



1-tank system (residue-free) with compressed air

The advantages:

- ✓ small and thus always fresh amounts of feed can be supplied several times during the day to achieve high daily weight gains;
- ✓ recipes with a very high dry matter content can be dispensed;
- ✓ any amount of warm water can be used to mix the recipe;
- ✓ feed is dispensed without residues as no feed remains in the lines;
- ✓ recipes can be mixed from up to 48 ingredients, i.e. cost-efficient feedstuffs can be bought very flexibly;
- ✓ no carry-over of vitamins and minerals in the feed lines;
- ✓ the feed composition meets the needs of the piglets ideally, so multi-phase feeding ensures that feed changes are smooth and cause no stress;
- ✓ optimal feed hygiene and therefore healthy piglets;
- ✓ valves can be installed outside of the room, i.e. there are no electric components inside the room.

2-tank system with two mixing tanks and one rinse water tank

For this system, two tanks are used as both mixing and feeding tanks. The entire required feed quantity is split into several portions for this purpose. While feed is being prepared in one of the two tanks, feed is dispensed from the second tank. With this system you are therefore able to mix and dispense feed at the same time.



2-tank system with rinse water tank

There is no waiting time between the distribution of different recipes. The system can be designed as residue-free feeding system (ring line or JET branch line).

Large numbers of animals can be supplied with many different recipes very rapidly.

SwapTank system: 1-tank system with rinse water tank for residue-free feeding

This system does not require an additional rinse water tank. Instead, both tanks are used as either mixing tank or rinse water tank, depending on the required amount of feed. Very small as well as very large feed quantities can be mixed and dispensed

precisely, always based on the required amount of feed, thanks to the different sizes of the tanks. The control computer checks sensors in all troughs and then selects which tank to use for which purpose.

It is easy to meet different requirements that are common especially in closed or combined production systems.



The advantages:

- ✓ small as well as large amounts of feed are mixed and dispensed very exactly and uniformly: very flexible system;
- ✓ each tank is used for the correct mixing quantity, improving hygiene.



2-tank system with a small and a large tank

Efficient feeding strategies for pig production

Restricted feeding with feeding time control

For restricted feeding from a longitudinal trough, feed is supplied two to four times per day. The animal:feeding place ratio is 1:1. All pigs stand at the trough during feeding times, allowing the farm manager to inspect his stock. Pigs which are not eating from the trough can easily be marked and monitored more intensely or treated, if necessary. It is also possible to install a sensor that registers the length of the feeding time and transmits these data to the control unit. If the pigs empty the trough very quickly, the next feeding ration is automatically larger. Should the feed remain longer in the trough, the next ration will be reduced.

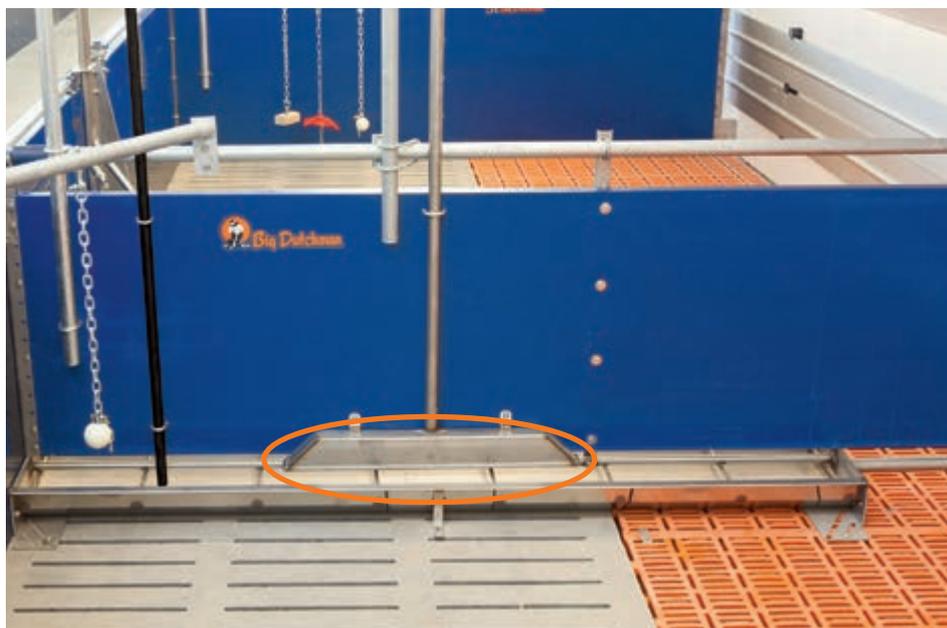


Restricted feeding from the longitudinal trough with feeding time measuring by a sensor

Sensor feeding

For sensor feeding from the short trough, a sensor determines whether the pigs have emptied the trough or not. This system allows an animal:feeding place ratio of up to 3:1, which is very beneficial in terms of housing space utilisation. Trough sensors help achieve optimum feeding results.

A stainless steel sensor rod is installed above the bottom of the trough. Up to a trough length of 3.50 metres, a sensor is used. This sensor measures whether the feed creates a connection between sensor rod and trough. If this is not the case, the sensor indicates that the trough is empty. This connection is checked at freely adjustable intervals. Feeding time control is also a sensible solution for sensor feeding from the short trough.



Drop pipe with patented distributor for feeding piglets via compressed air

Advantages

- ✓ a maximum animal:feeding place ratio of 3:1 improves the utilisation of space in the house;
- ✓ needs-adapted feeding based on a feed curve;
- ✓ the sensor indicates whether the trough is full or empty;
- ✓ frequent supply of small, fresh quantities of feed;
- ✓ flexible pen shapes, especially important in refurbished buildings;
- ✓ control of the feeding times so the feed quantity is automatically adjusted to how much the pigs eat.



“I have sows, piglets and finishers. BigFarmNet connects all HydroMix^{pro} systems on my farm. Fermentation is also integrated. I save lots of time and get perfect results.”

Markus Lamping, Essen (Oldenburg), Germany



BigFarmNet unites all applications of your farm in *one* software and *one* database. Your advantages:

1. **Always up-to-date: keep track of everything**
Use any of your computers or your smartphone to make inputs – directly in the barn, while you are relaxing at home or even from different farms. All **BigFarmNet** components update and synchronise automatically, and in real time.
2. **Everything in one software – comfortable and fast**
One software unites all applications: the computer-controlled liquid feeding system HydroMix^{pro} as well as other applications such as ESF systems, sorting scales, climate control and silo and alarm management. This means that you need to input any information only once.
3. **More security**
Your entire production is recorded in one single software, which also means that all systems are backed up automatically and all alarms are managed centrally. Centralised data input and uniform user interfaces reduce the risk of incorrect inputs.
4. **Optimised production results and reduced costs**
Improve your production results by using efficient analytical tools, and save time and avoid errors thanks to optimised processes.
5. **Reliable and future-proof**
Benefit from the fact that all **BigFarmNet** applications are thoroughly tested in the field and continuously further developed by Big Dutchman.
6. **Only buy what you need**
It does not matter whether you have a large farm complex or a smaller, family-owned farm: **BigFarmNet** meets any requirement and grows with your needs.

In the barn

with our controllers

- Control your systems directly in the barn



In the office

with BigFarmNet Manager on the PC

- Control, manage and analyse, with graphs and tables
- Animal-based farm management, e.g. evaluation of the entire finishing period



On the go

with the BigFarmNet app

- Confirm alarms
- View current data
- Optimise livestock management



CCM metering directly into the mixing tank

CCM (corn cob mix) and by-products of the food industry are high-quality feedstuffs that help reduce feed costs. Big Dutchman can satisfy nearly any wish due to an extensive

product range. Available products include metering systems for CCM and high-moisture grain as well as bread choppers, in many different sizes and versions. Our CCM

metering system can also be supplied with an additional seal for safe storage and dispensing of wet components.



Features

- ✓ depending on the metering system and the hopper extension, capacities range from 2.3 to 14 m³;
- ✓ a maintenance-free motor with an output of 4 kW or 5.5 kW is used as drive;
- ✓ the discharging auger has its own drive;
- ✓ the hopper extension can be rotated in 10° steps, thus allowing flexible installation;
- ✓ optionally available with two outlets and a rain-proof cover;
- ✓ all parts of the metering system which come into contact with feed and all tube augers are made entirely of stainless steel.

The metering systems offered by Big Dutchman are well-suited to store and supply CCM, high-moisture grain, draff and other feedstuffs to the liquid feeding system. The circular bottom of the hopper is equipped with a Z-shaped blade which is powered by a gear motor. This blade effectively prevents feed in the hopper from bridging. Discharging

and slope augers transport the feed directly into the mixing tank. The CCM metering system can be installed

either in the feed kitchen or outside, in which case it has to be equipped with a lid.



Hopper bottom with Z-shaped blade and discharging auger



The Big Dutchman CCM metering system is available in different sizes



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