



**JHminiStrø**  
Automatic bedding distribution

**JH AGRO**

## *JHminiStrø*

The system JHminiStrø automatically distributes different bedding materials such as straw, hay, sawdust, sand and dried manure solids. In addition, the system is ideal for distributing roughage to sows and/or organic chickens. The system can be installed in both existing and new stables. JHminiStrø robots are small, but hardworking and distributes material several times a day in contrast to other systems. The JHminiStrø products have been produced since 2004.

### *A JHminiStrø system consists of:*

- ◇ A rail system
- ◇ A filling station, where material is stored and filled in the robot
- ◇ A robot that distributes the material in the stable

The filling of bales or loose material in the filling station is the only manual work in connection with the system.



### *Programming of robot*

The programming of the robot is done via a control panel. Via the buttons the following functions are programmed:

- ◇ Tracks
- ◇ Actions  
e.g. start/stop distributing, distribution amount and width, distribute only right or left, start/stop filling etc.



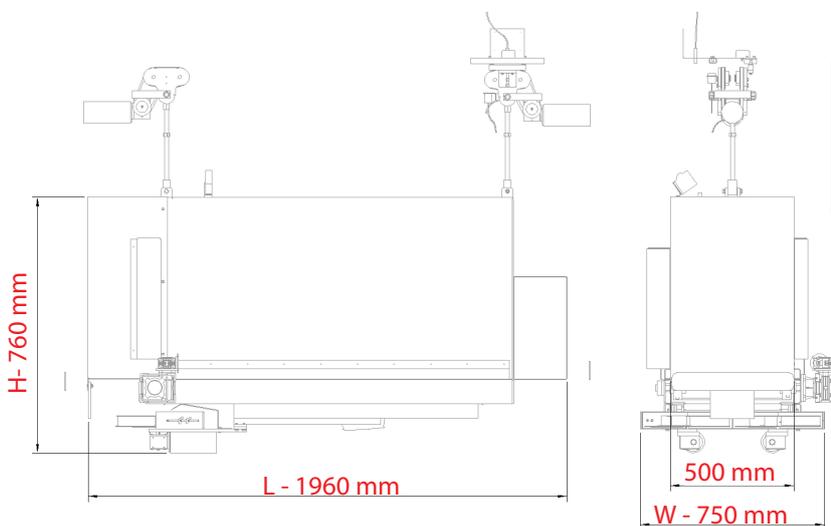
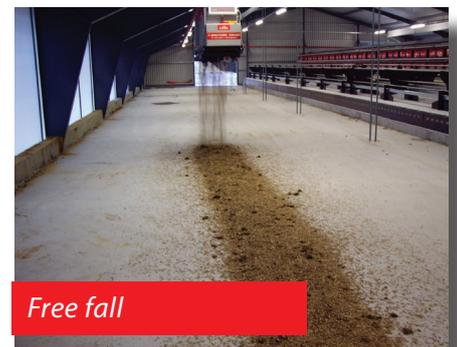
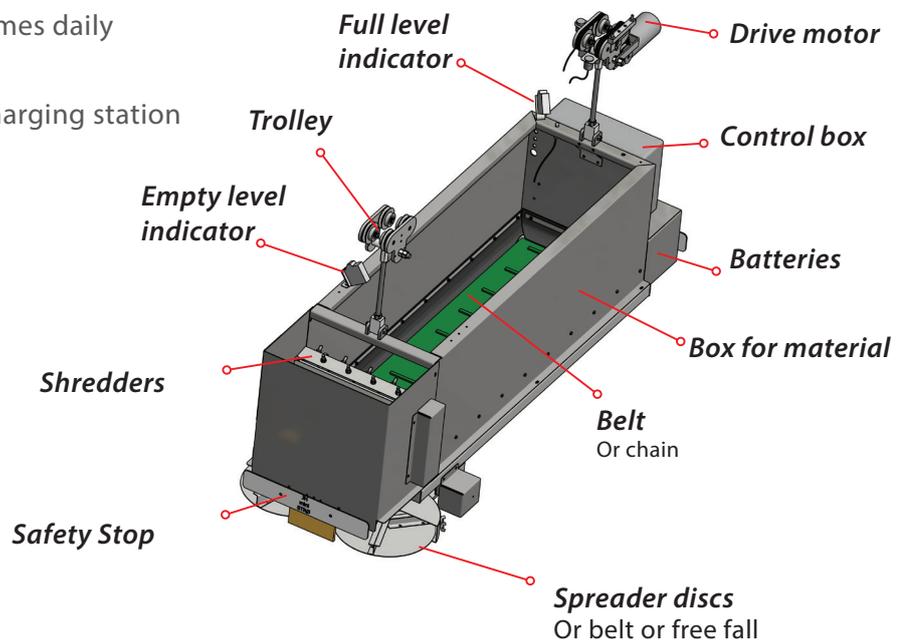
### *Advantages of automatic distribution*

- ◇ Large capacity
- ◇ Little manual work
- ◇ Individual distribution in groups
- ◇ Save up to 30 % bedding material
- ◇ Distribute several times a day
- ◇ Little noise in the stable (batteries)
- ◇ Robot does not interfere with the daily rhythm in the stable



## For all robots apply:

- ◇ Drive 2-30 m / min.
- ◇ CPU control
- ◇ 18 different tracks up to 8 times daily
- ◇ battery operated
- ◇ batteries are charged at a charging station



### Example

Dimension sketch JHminiStrø for straw

# FILLING STATIONS

## *Bale opening device*

The bale opening device is available for different bale sizes. The bales can be loaded from three sides. In the device alone fits one bale of straw, but the device can be combined with an additional feeder table, on which several bales can be stored.

On the device the JHminiStrø CUTTER can be mounted to cut the straw before it is filled into the robot.



## *Dosing devices for loose material*

The 2, 5, and 9 m<sup>3</sup> for chopped straw and/or sawdust are simple but sturdy constructions. They consist of an inclined bottom and a conveyor chain. The devices have a top shredder, which doses the bedding material into the robot. The 5 m<sup>3</sup> device is also available in stainless steel for dried manure solids.



## *Sand dosing*

For the storage and dosing of sand in the robot. The device can contain 7 m<sup>3</sup> sand. The sand is filled in the robot via a rubber band. In the device can be stored enough sand for about one week. A hydraulic lid is offered separately for outside locations.



## *Flexibility*

*A robot can pick up material from up to 4 different filling stations. For example from a mixer and a bale opening device for combined feeding and straw distribution.*

## **MIXER**

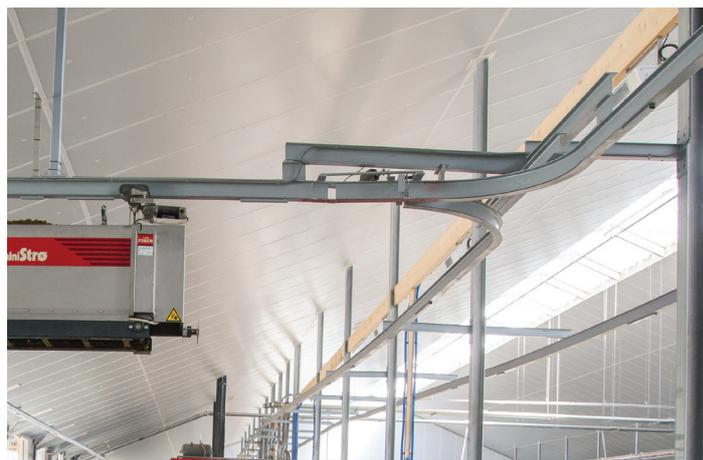
The JHminiStrø vertical mixer allows the feeding of roughage such as corn silage to sows and egg-laying hens. The mixing container of the mixer has a powerful, vertical screw for mixing the material.



# RAILS AND OTHER EQUIPMENT

## *Rail system*

The JHminiStrø robots drives on rails IPE 100-160 depending on the weight of the robot. The robot can also pass 90° degree curves and switches. The rail is mounted on trusses or on the inventory in the stable. On the under side of the rail markers are attached, after which the robot orient itself. It is rarely necessary to strengthen the trusses in the stable, when installing a JHminiStrø system.



## *Automatic rail lifting*

In many stables the feed alley must be accessible for tractors or similar. The rails of the JHminiStrø system can make this difficult. For this the automatic rail lifting system has been developed. The lifting/lowering of the rail that crosses the feed alley is controlled automatically by the robot or manually with a remote control.



## *Control curtain automatically*

In stables with natural ventilation, the automatic distribution with JHminiStrø can be disturbed. As a solution a system for automatically opening/closing of the curtains has been developed. The robot gives signal to close the curtains, when it passes by. When the robot is done with the distribution, the curtains are opened again. The system is integrated in the existing curtain controlling in the stable.



## *Automatic doors*

If the robot has to operate in several buildings, automatic doors can be installed. The doors maintain temperature and other conditions in the stable. The automatic doors works also in combination with fire doors. The doors are controlled from the robot.



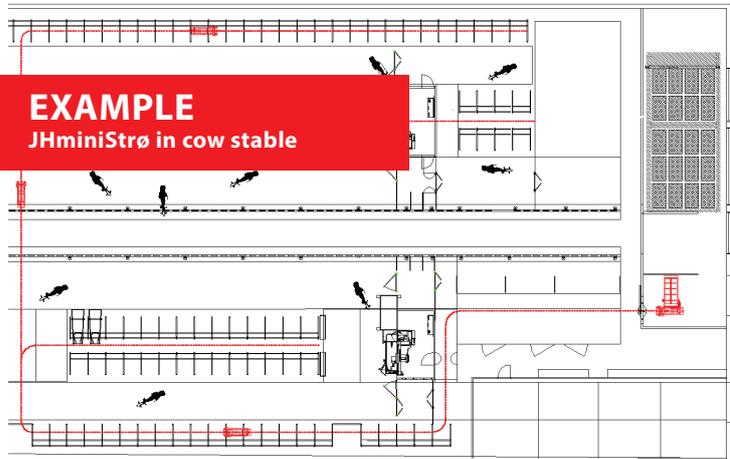
# STRAW / SAWDUST IN BOXES

## Straw / sawdust in boxes

Chopped straw and sawdust is ideal for bedding in boxes. The prerequisite for success is a dry and cut material. Extra absorbent and disinfecting agents can be added automatically to the straw and/or sawdust.

## JHminiStrø

JHminiStrø automatically distributes straw or sawdust in all types of stables with boxes. The JHminiStrø is mounted on a rail system and is therefore never in direct contact with animals or inventory. As filling station for straw or sawdust the bale opening device for bales or the 2, 5 or 9 m<sup>3</sup> dosing devices for loose material work well.



## Savings in the stable

Existing systems for distributing straw and sawdust bedding have that in common that they require a lot of space in the stable and solid floors. With the JHminiStrø the bedding material is distributed from a rail above the boxes, where a lot of money can be saved on the inventory of the stable.

## Save time and money

Distributing several times a day means a constant and good filling of bedding material in each box. By automating the distribution of bedding material with JHminiStrø the time of spreading straw by hand can be saved. With the frequent distribution of straw and/or sawdust up to 8 times a day, the bedding material is optimally used, which can mean a saving of up to 30 % of the bedding material.

TECHNICAL DATA	280	350	525
Volume m <sup>3</sup>	0,280	0,350	0,525
Dimension: H	660 mm	760 mm	1050 mm
Dimension: L	1960 mm	1960 mm	1960 mm
Dimension: W	750 mm	750 mm	750 mm
Weight	125 kg	150 kg	225 kg
Capacity ca.	100 - 150 animals	150 - 300 animals	300 - 500 animals
Speed	1-30 m/min.	1-30 m/min.	1-30 m/min.
Distribution width	2 - 5 m	2 - 5 m	2 - 5 m
Rail size	IPE 100	IPE 100	IPE 120
Batteries	2 x 12 V	2 x 12 V	4 x 12 V
Bottom	Belt	Belt	Belt
Groups	20	20	20
Times	8 x pr. group	8 x pr. group	8 x pr. group
Operation time	10 hours	10 hours	10 hours

# DRIED MANURE SOLIDS IN BOXES

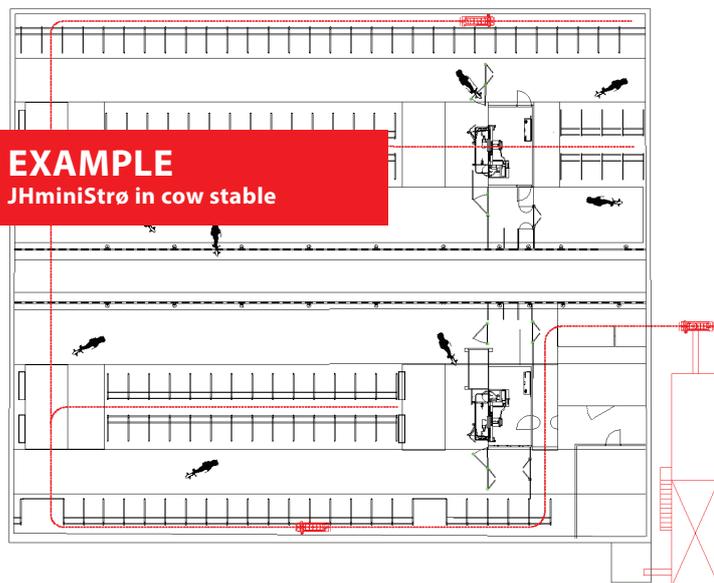
## Dried manure solids in boxes

Dried manure solids is a new interesting alternative to the already known materials. Dried manure solids have the same advantages as sand - a flexible and steady bed that is formed after the cow. Dried manure solids let the cow rest and thus contributes to good health. Distributing dried manure solids several times a day has a good effect on the formation of bacteria, which is significantly less, when distributing with JHminiStrø.



## JHminiStrø

The JHminiStrø robots for distribution of dried manure solids have a chain in the bottom instead of a belt for handling the material. They also have more motor and battery capacity. JHminiStrø is filled with dried manure solids directly from a separator or by a dosing device. The JHminiStrø robots will run up to 18 different tracks 8 times a day. This means that the dried manure solids are regularly distributed in a thin layer, which ensures that there is always fresh, dry bedding in the boxes.



## Savings in the stable

When manually distributing dried manure solids there is a considerable danger of overfilling the boxes and thus extra large losses of bedding material in the first few days after filling. The level of bedding material in the boxes by this method will be very different in each box. When automatically distributing with JHminiStrø robot the level of dried manure solids will be more even in the boxes as well as more dry, because of the distribution in thin layers.

## Save time and money

The dried manure solids are recycled after separation and automatically distributed with the JHminiStrø robot in the boxes. I.e. JHminiStrø makes it possible to have a system in the stable, where no external bedding material has to be added. The bedding material is extracted from the manure that is already in the stable. This saves time, hard work and purchase of bedding material, which can be a substantial saving.

TECHNICAL DATA	420	525	750
Volume m <sup>3</sup>	0,420	0,525	0,750
Dimension: H	780 mm	880 mm	880 mm
Dimension: L	1960 mm	1960 mm	2460 mm
Dimension: W	660 mm	660 mm	660 mm
Weight	170 kg	200 kg	500 kg
Capacity ca.	400 - 500 animals	500 - 600 animals	600 - 700 animals
Speed	1-30 m/min.	1-30 m/min.	1-30 m/min.
Rail size	IPE 120	IPE 120	IPE 140
Batteries	2 X 12 V 51 A	2 X 12 V 51 A	4 X 12 V 51 A
Bottom	Chain	Chain	Chain
Groups	20	20	20
Times	8 x pr. group	8 x pr. group	8 x pr. group
Operation time	10 hours	10 hours	10 hours

# SAND IN BOXES

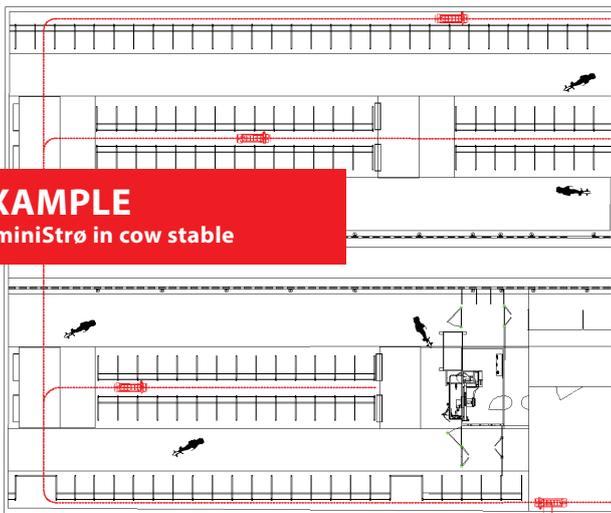
## Sand in boxes

Sand in boxes is widely used in cattle farming. The great advantage of sand is its weight. Sand is a heavy material and quickly establishes a flexible and stable bed which is formed after the cow.

Sand has a good effect on the well-being of the cows since sand inhibits the growth of bacteria and liquid is transported away from the surface of the bed. Sand leaves the cow to rest long and thus contributes to good health in the stable.

## JHminiStrø

JHminiStrø automatically distributes sand in all types of boxes. The JHminiStrø robot is mounted on a rail system and is therefore not in contact with animals or other devices. The robot is filled from the 7 m<sup>3</sup> dosing device for sand.



**EXAMPLE**  
JHminiStrø in cow stable

TECHNICAL DATA	375
Volume m <sup>3</sup>	0,375
Dimension: H	747 mm
Dimension: L	1970 mm
Dimension: W	800 mm
Weight	220 kg
Capacity ca.	300 - 600 animals
Speed	1-30 m/min.
Rail size	IPE 120
Batteries	2 X 12 Volt 51 A
Bottom	Belt
Groups	20
Times	8 x pr. group
Operation time	10 hours



## Savings in the stable

Existing systems for sand distribution have that in common that they require a lot of space in the stable and solid floors. With the JHminiStrø the sand is distributed from a rail above the boxes, which means that a lot of money can be saved on the inventory of the stable.

## Save time and money

Distribution several times a day means a constant and good degree of filling in each box.

In most stables it will take about 5 min. per m<sup>3</sup> of sand for the transport and distribution in the boxes.

By automating the distribution with JHminiStrø this time can be saved. With the frequent distribution of sand up to 8 times per day, the sand is optimally used, which can mean a saving of up to 30 % of the bedding material.

# EMPLOYMENT MATERIAL

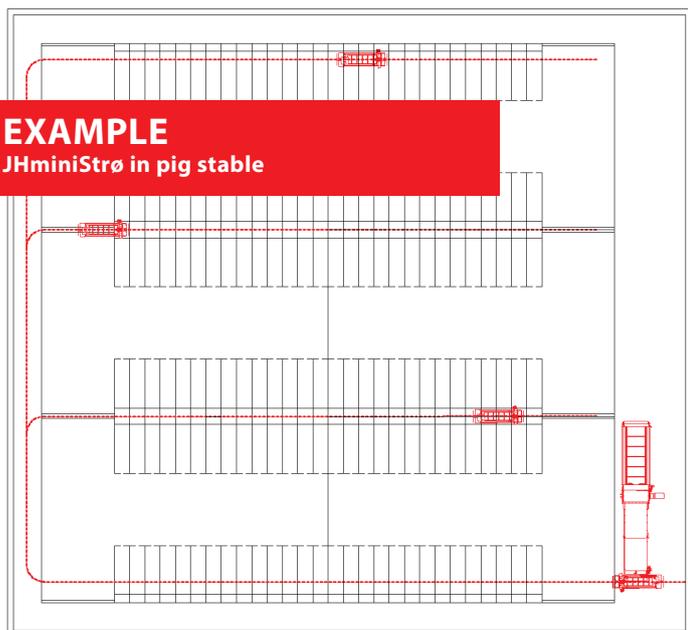
## Employment material

It will be a legal requirement for all pigs to have permanent access to employment and/or enrichment materials. With JHminiStrø it is possible to distribute employment material to sows in all housing sections for both gestation crates and free-range sows. The robot is mounted on a rail system in the stable and therefore it is no longer necessary to open/close doors when distributing.

## JHminiStrø

The JHminiStrø robot is mounted on a rail system and is therefore not at any time in contact with animals or inventory in the stable.

JHminiStrø can be installed in both new and existing stables, mostly without having to make changes to the design or roof construction.



## Savings in the stable

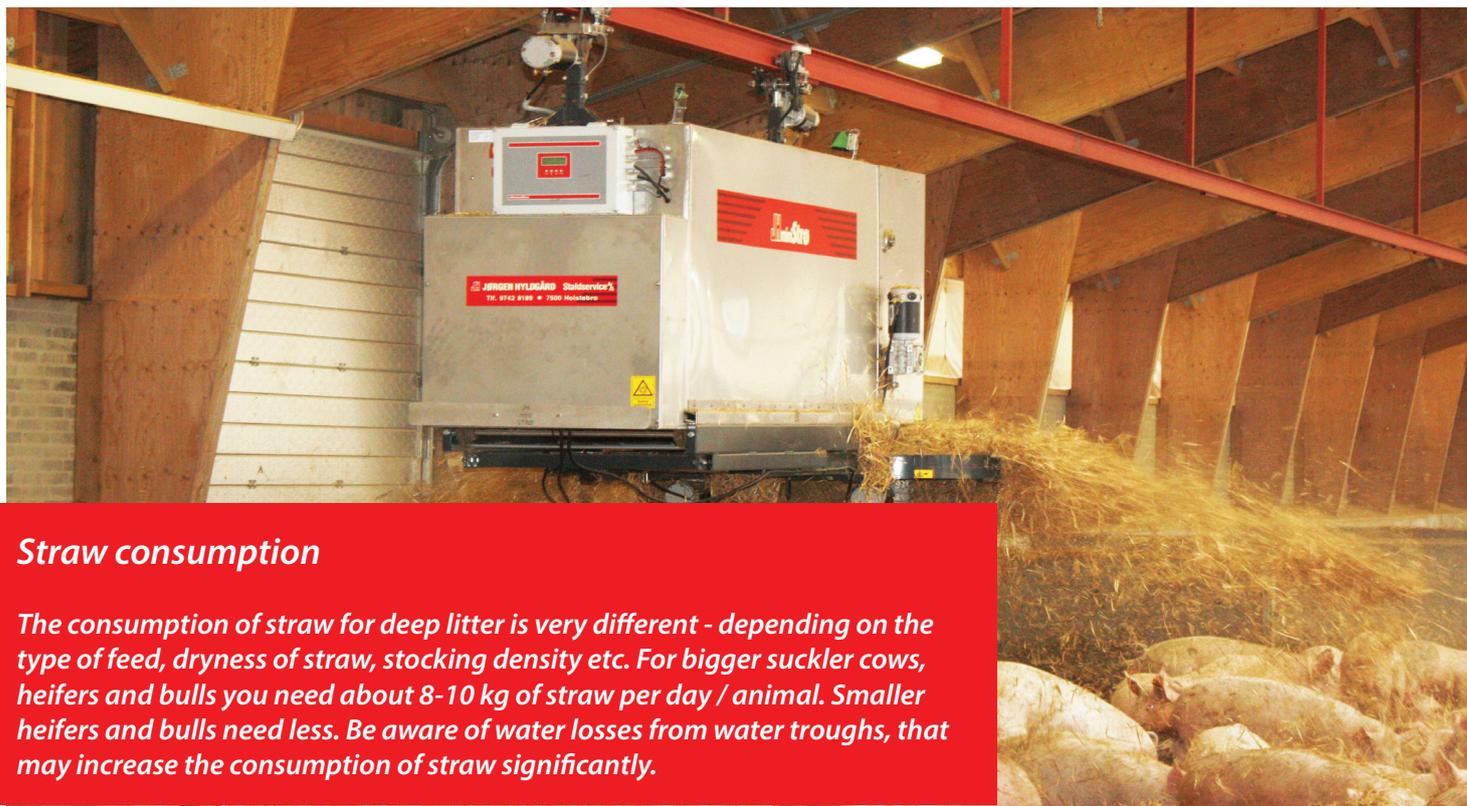
Common to all systems on the market today to distribute employment material is that they require relatively much space. A JHminiStrø system does not take place around the stable, because it is mounted on rails. In addition, a rail mounted robot does not need to access through gates and doors in the stable, which can be reduced to a minimum.

## Save time and money

By spreading straw several times a day, it is possible to save up to 30 % of the straw consumption and it will not be necessary to invest in other types of employment material. An automatic JHminiStrø system is the most time-saving system on the market.

With an extra feeder table for the bale opening device as filling station it is possible for the system to drive up to a week without intervention.

TECHNICAL DATA	280	350	525
Volume m <sup>3</sup>	0,280	0,350	0,525
Dimension: H	660 mm	760 mm	1050 mm
Dimension: L	1960 mm	1960 mm	1960 mm
Dimension: W	660 mm	660 mm	660 mm
Weight	110 kg	120 kg	240 kg
Capacity ca.	1000 sows	1500 sows	2500 sows
Speed	1-30 m/min.	1-30 m/min.	1-30 m/min.
Rail size	IPE 100	IPE 100	IPE 120
Batteries	2 X 12 Volt 40 A	2 X 12 Volt 51 A	4 X 12 Volt 51 A
Bottom	Belt	Belt	Belt
Groups	20	20	20
Times	8 x pr. group	8 x pr. group	8 x pr. group
Operation time	10 hours	10 hours	10 hours



## Straw consumption

The consumption of straw for deep litter is very different - depending on the type of feed, dryness of straw, stocking density etc. For bigger suckler cows, heifers and bulls you need about 8-10 kg of straw per day / animal. Smaller heifers and bulls need less. Be aware of water losses from water troughs, that may increase the consumption of straw significantly.

## Deep litter

The importance of a well-bedded deep litter is well known. Especially in dairy cow herds one will experience increased health, if you offer the animals a dry bed. When lying in a well-bedded and dry bed the udder is better supplied with blood, the cow has more time for rumination, the musculoskeletal system is relieved and the hoofs can dry.

## JHminiStrø

JHminiStrø robots 1000, 1500 and 3000 are ideal for distributing large amounts of straw to pigs, cattle, goats etc. in deep litter stables. JHminiStrø is mounted on a rail, and has no contact with animals or inventory in the stable. The robot does not interfere with the daily rhythm in the stable. JHminiStrø robots for deep litter have extra large distribution plates mounted to distribute straw in a width of 5-6 meters. As filling station in deep litter stables the bale opening device is very suitable.

TECHNICAL DATA	1000	1500	3000
Volume m <sup>3</sup>	1	1,5	3
Dimension: H	1050 mm	1300 mm	1625 mm
Dimension: L	2800 mm	2800 mm	2800mm
Dimension: W	1500 mm	1500 mm	1500 mm
Weight	500 kg	600 kg	700 kg
Capacity ca.	20 - 50 animals	50 - 100 animals	100 - 200 animals
Speed	1-30 m/min.	1-30 m/min.	1-30 m/min.
Distribution width	2 - 6,5 m	2 - 6,5 m	2 - 6,5 m
Rail size	IPE 120	IPE 120	IPE 140
Batteries	4 X 12 Volt 105 A	4 X 12 Volt 105 A	4 X 12 Volt 105 A
Bottom	Chain	Chain	Chain
Groups	20	20	20
Times	8 x pr. group	8 x pr. group	8 x pr. group
Operation time	10 hours	10 hours	10 hours

# DEEP LITTER

## Better environment in pig and cow stables

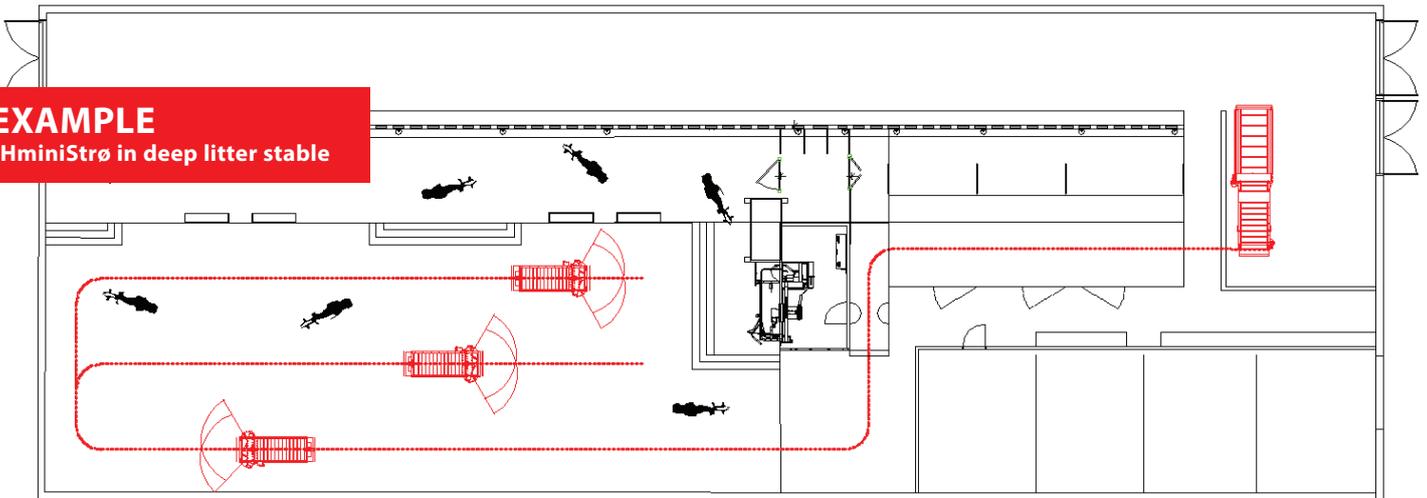
When distributing straw with JHminiStrø it is possible to improve the environment in the stable greatly. The spreader discs distribute the straw at low speed, so that dust problems are minimal. The JHminiStrø robot, which moves with the help of batteries, has a very low noise level, so that the animals are not stressed.

In pig stables the animals are able to conduct their natural search behavior, which reduces the risk of tail biting.

## Flexibility in daily operations

With JHminiStrø times and amounts of bedding in the stable sections and/or boxes can be programmed individually. The programming is done directly on the control box of the robot. JHminiStrø robots, which are mounted on a rail system in the stable, easily move over doors and partitions, which are found in most stables.

### EXAMPLE JHminiStrø in deep litter stable



### Save 30 % straw with JHminiStrø

*"With an automatic JHminiStrø system my use of straw has dropped significantly - about 30 % - and my production costs have never been lower."*

Peder Hansen, Norway

# FEEDING ROUGHAGE

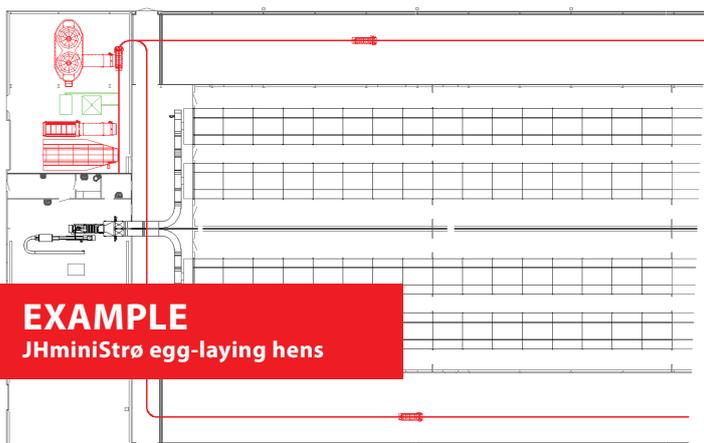
## Roughage for organic egg-laying hens and sows

Experiments show that the feeding of roughage reduces feather pecking and cannibalism among egg-laying hens significantly. The hens will be more healthy and more productive.

Feeding of roughage like for example corn silage to sows provide better saturated and thus less stressed animals.

### JHminiStrø

The JHminiStrø allows floor feeding with roughage such as corn silage in stables with sows and egg-laying hens. The roughage is mixed in and dosed in the robot from the JHminiStrø mixer. The mixing container of the mixer has a powerful, vertical screw for mixing the material. JHminiStrø robots for corn silage are stronger and with a bottom chain for the handling of the material.



### EXAMPLE JHminiStrø egg-laying hens

TECHNICAL DATA	350	525
Volume m <sup>3</sup>	0,350	0,525
Dimension: H	760 mm	1050 mm
Dimension: L	1960 mm	1960 mm
Dimension: W	760 mm	760 mm
Weight	220 kg	340 kg
Capacity ca.	6.000 hens	10.000 hens
Speed	1-30 m/min.	1-30 m/min.
Rail size	IPE 120	IPE 120
Batteries	2 X 12 Volt 51 A	4 X 12 Volt 51 A
Bottom	Chain	Chain
Groups	20	20
Times	8 x pr. group	8 x pr. group
Operation time	10 hours	10 hours
Distribution width	0,5 - 5 m	0,5 - 5 m



### JHminiStrø Automatic floor feeding



### Benefits

The automatic distribution of corn silage with JHminiStrø allows simultaneous feeding of all animals. The JHminiStrø robot can pick up material at various times from up to four different filling stations. This allows the distribution of both food and employment material such as straw.

### Initiative TierWohl

The JHminiStrø system can be used to meet the new requirements of initiatives concerning increased animal welfare. The roughage is ideal as both saturation food and employment material, when it is distributed in the free range areas of sows, but can also be combined with the distribution of straw.