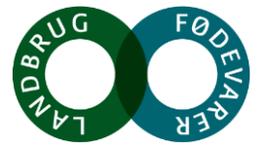




**CONSULATE GENERAL  
OF DENMARK**  
*The Trade Council*



2021

# **INNOVATIVE PIG PRODUCTION SOLUTIONS**

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## DANISH PIG PRODUCTION

For more than 100 years, the production of pigs and pig meat has been a major source of income for Denmark. Nearly 90% of the production is exported and is thereby essential to the Danish economy.

The Danish pig industry is among the world leaders in areas such as breeding, quality, food safety, animal welfare, and traceability. This is the reason why Denmark is one of the world's largest pig meat exporters. Around 5.000 pig farms in Denmark produce around 28 million pigs annually.

Danish pig meat producers observe high standards of animal welfare, and pig farmers constantly strive to improve the welfare of live pigs. Danish pig production is characterized by high food safety standards, low antibiotics use, and good animal health.

Environmentally sustainable production methods are key to Danish pig production. Pig production related emissions have been significantly reduced in Denmark leading to reduced odor nuisances and better public relations.

### REDUCTIONS IN EMISSIONS PR. LBS. OF PORK MEAT (1985-2019)\*

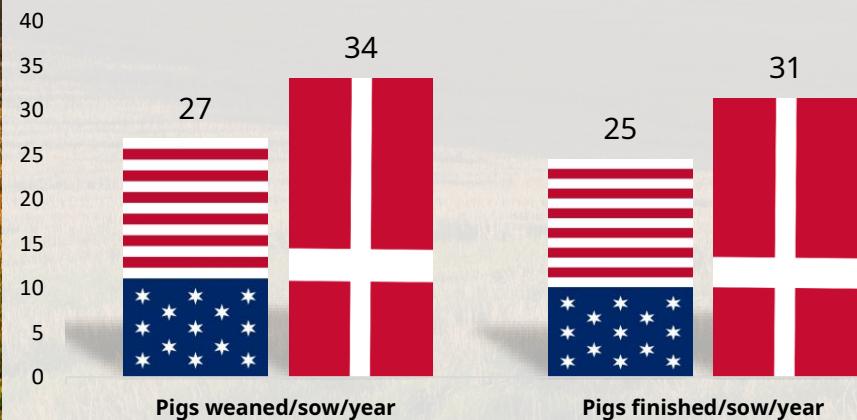
Nitrogen  
**51%**

Ammonia  
**73%**

Phosphor  
**53%**

Denmark has the world's highest number of pigs weaned and finished per sow per year, which has been achieved through innovative and effective solutions in every step of the production of pigs. This catalog showcases the solutions that have made this achievement possible.

### COMPARING PIG PRODUCTION KPI'S IN THE U.S. AND DENMARK\*\*



\*Ref.: Report no. 250, 2017 publ. by DCE in Denmark, Danish emission inventory for agriculture 1985-2015 and pork statistics. Updated with 2019 numbers (except for Nitrogen).  
\*\*Average across farms in Denmark and U.S. in 2018 from Iowa State Uni (U.S. no.) and SEGES (Danish no.). Ref.: The 2018 InterPIG report publ. by AHDB in UK.

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# COMPETENCE DIRECTORY



The Trade Council is an integrated part of the Ministry of Foreign Affairs of Denmark. The Trade Council provides services with the purpose to foster commercial activities between Danish and foreign business communities. The services provided aim to increase the awareness of Danish core competencies and how these can utilize foreign markets.

**ACO FUNKI** is a leading European supplier of livestock equipment for pig housing. With over 85 years of experience, ACO-Funki has a solid background and deep knowledge within the pig industry and creates the most effective solutions for pig stalls. Focus is on animal welfare which results in high production output. ACO-Funki delivers full-line solutions - worldwide.

### Specialization:

- Full-line pig housing projects
- Renovation of existing pig farms
- Components and spare parts
- Technical support

### North American presence:

- Echberg Distribution, Dunham (QC, Canada)
- Ag Alliance, Des Moines (IA, USA)

### Video links:

- Milk feeding system, fresh feed in right quantities, loose farrowing pins, central feed storage, feed distribution, lactating sow feeder, biosecurity ventilators.



### OPPORTUNITY

Pig producers worldwide deal with the same challenges on how to reduce feed waste in the barn. ACO-Funki offer solutions to reduce feed waste and automate the feeding process

### SOLUTION

ACO-Funki covers farmers' needs in modern equipment for pig houses and offers the most efficient solutions for feeding automation, that saves time, money, and labor. Furthermore, ACO-Funki offers assistance in planning farm layout, based on experience and requirements in areas such as protection from ASF and biosecurity.

### RESULT

Through greater control of feeding systems feed waste and thus feed consumption can be reduced. Applying residual-free liquid feeding ensures no leftovers in the feed pipes. The result is fewer bacteria and infections in the stable and a reduction of medicine consumption by 50%. Through advanced interval/phase feeding systems the right feed can effortlessly be distributed to different age groups resulting in complete traceability and storage control leading to lower feed consumption.

The feeding system is proven to save 30 lbs. of feed per pig per year. The mortality of piglets is reduced and they have a better weight at weaning. Lastly, it increases the number of live-born piglets pr. sow



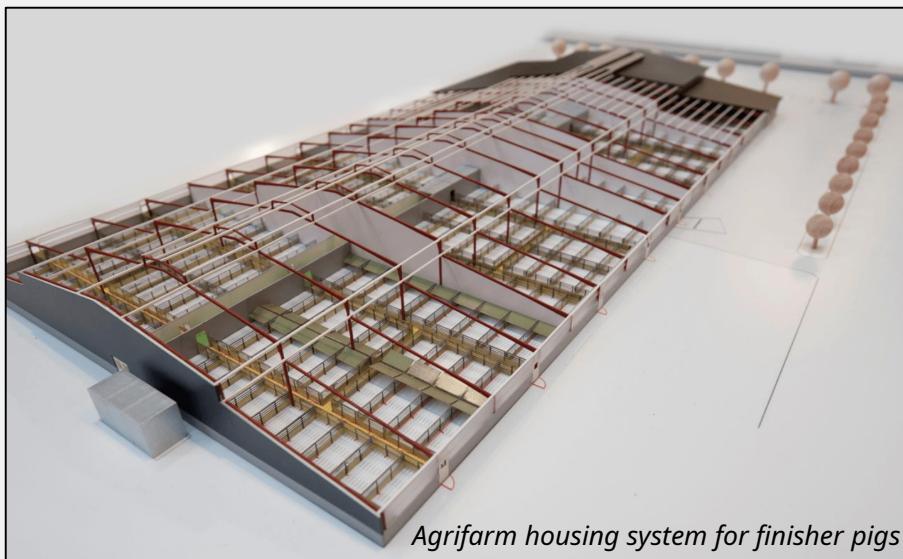
**AGRIFARM** has developed unique barn concepts and several award-winning environmental technologies.

Agri-AirClean is a chemical air cleaner that removes ammonia- and odor emissions from stables. The cleaner is specially developed to clean from point- and floor extraction where the concentration of ammonia and odor is highest.

The Agrifarm concept for animal housing has an optimal climate in the barn, reduces pollution from ammonia and odor, lowers energy consumption, and optimizes logistics.

### Specialization:

- Efficient and low-emission housing solutions
- Environmental technologies to mitigate ammonia and odor emissions



*Agrifarm housing system for finisher pigs*

## AGRIFARM

### OPPORTUNITY

Environmental requirements and odor nuisances can be difficult to manage and is often a challenge for pig producers when expanding or siting new facilities. In addition, many pig producers are facing increasing scrutiny with regards to their environmental and GHG performance.

### SOLUTION

**Agri-AirClean** chemically removes ammonia and odor emissions from all types of farm housing systems. The cleaner is developed to clean from point- and floor extraction. Agri-AirClean can remove 91% of ammonia emissions and 83% of odor emissions.

**Agrifarm barn concept** is a housing system, which can be built with a width up to 60 meters. Typically, it has a more square and compact construction, a smaller footprint, and a barn design, which gives a good overview of the pigs. The Agrifarm concept is focused on energy savings (this system saves up to 60% of energy compared to traditional housing systems) and reduction of the environmental impact. On average 74% ammonia and 64% odor emissions are collected. The barn can be upgraded to a zero-energy housing system when prices on solar panels and funding opportunities provide attractive conditions for doing so.

### RESULT

With solutions from Agrifarm pig producers can site new farms without worrying about odor complaints and ammonia emissions while upgrading facilities to newer less energy-intensive buildings with an optimal logistical layout.

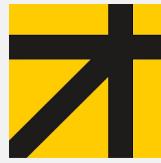


*Agri-AirClean*



*Agrifarm concept for finishers*

# AGROMETER



**AGROMETER** has since its foundation in 1977 been a market leader in manure handling and irrigation.

The Agrometer self-propelled SDS 8000 dribble bar applicator and the SRS 1200 umbilical injector applicator is a unique method for liquid manure application, that gives farmers numerous advantages including extended application period, less labor required, fewer nuisances for surroundings - and much more!

In addition, Agrometer has durable and well-proven solutions for liquid manure separation and long-distance manure pumping.

## Specialization:

- Self-propelled applicators
- Precision application
- Manure separation
- Long distance pumping

## Video link:

- [Manure separation](#)



# AGROMETER

## OPPORTUNITY

Heavy wheel loads from conventional liquid manure tankers often cause severe soil compaction and crop damage. In addition, transporting the manure can be a nuisance for the surrounding environment.

The Agrometer machines are lighter in weight, which makes it possible to put them into operation at an earlier stage than conventional machinery. This is thanks to an unrivaled low soil pressure.

## SOLUTION

The extended application period makes for a better and not so compacted time for manure application.

Continuous in-field operation increases efficiency. Less weight means less soil compaction and fewer field drive-overs reduce crop damage.

The manure is pumped directly to the applicators, without the need to operate smelly vehicles on public roads.

## RESULT

A better nutrient uptake due to extended application time provides a better yield. Further contributing to better yields is the minimized soil damage.

Because manure is being pumped to the field instead of transported on roads, fuel and tire costs are significantly lowered. The entire setup can be managed by just one person, which reduces labor costs.



*SDS 8000 is a ground-breaking model with new functions such as hose crane arm, electro-hydraulic hose winding control, electrical tire pressure adjustment, and return pumping of slurry*



*SRS 1200: Slurry is being pumped directly to the machine sparing transportation costs. Low weight means entering fields at an earlier stage*



**AMMONGAS** is an engineering company specialized in air and gas purification systems. Ammongas has developed an amine-based system for removal of CO<sub>2</sub> in biogas.

Compared to other technologies, the Ammine Scrubber provides high methane purity with slips below 1 %.

The ammine-based system enables removal of H<sub>2</sub>S together with the CO<sub>2</sub>, eliminating the need for a pre-treatment of the raw biogas.

The upgrading plants are designed as compact systems reducing service and maintenance costs.

### Specialization:

- 🌱 Environmental system for air and gas purification



### OPPORTUNITY

Upgraded biogas, bio-methane, ensures an optimal utilisation of the raw biogas as it can be utilised in the natural gas grid, amongst other purposes. This means that it can be used when and where it is needed instead of being burned and wasted. Upgraded biogas is also environmentally friendly, and can be used for transport, in cars, buses and trucks

### SOLUTION

Ammongas has developed an amine based system for removal of CO<sub>2</sub> in biogas etc. which is based on a proven, high-quality, cost efficient stripper-absorber concept. The system has its special advantage by working pressure less. Hereby reducing investment costs and power consumption.

### RESULT

The system is able to upgrade biogas into a >99 % pure methane gas, with a methane loss to the atmosphere below 0,1%. The excess heat from the system can be reused as 75 °C (or higher) water to central heating, pasteurization or heating of biogas reactors'

**BIOCOVER** is a specialist and leading supplier of equipment for the reduction of emissions from livestock manure or digestates.

Biocover manufactures the award-winning SyreN System. SyreN is a mobile acidification system for manure, which uses sulphuric acid to acidify manure. The acid is stored in the front of the tractor in an IBC tank which is contained in a collision-proofed cage.

### Specialization:

- 🐷 Acidification of manure



### OPPORTUNITY

In modern agriculture, loss of nutrients (emissions) has become a problem. This happens when nitrogen in manure evaporates as ammonia or is leached as nitrate to the groundwater.

Loss of ammonia has harms nitrogen sensitive nature and is a serious contributor to air pollution

### SOLUTION

The SyreN system automatically defines and lowers the pH of the manure. It uses sulphuric acid to lower the pH. Sulphuric acid is a 100% environmentally balanced product and the most concentrated and effective acid to lower the pH.

The low pH environment inhibits methane bacteria from reproduction and eliminates GHG from manure storage and field application. It also allows the surface application of manure with no N<sub>2</sub>O emission.

### RESULT

Using the SyreN system leads to better nutrient efficiency by getting up to 85 % better nitrogen utilization and 40 % increased phosphorus availability. The system offers a much better environmental performance by lowering emissions of Ammonia by 50 %. It also reduces CO<sub>2</sub>e GHG through reductions of N<sub>2</sub>O emissions and reductions in the use of mineral nitrogen

**BIOGASCLEAN** is a world leader in the biological desulfurization of biogas (no use of chemicals). Biogasclean's experience is significant, totaling 273 Installed systems across 42 countries – including 14 in the U.S.

Biogasclean's technology is deployed in many sectors including digesters treating agriculture residues, food waste, manure, and wastewater biosolids. Treated water from the process is used as liquid fertilizer in two out of three projects.

The technology is designed to handle any flow or H<sub>2</sub>S concentration in the raw biogas and the system is fully automated yielding competitive OPEX for both CHP and RNG projects. Biogasclean provides performance guarantees to all customers and is a strong partner in a biogas project.

### Specialization:

- 🌱 Biological desulfurization at low operating costs



### OPPORTUNITY

Hydrogen sulfide (H<sub>2</sub>S) is a strongly odorous gas that can corrode digester and energy generation components and is a serious health and safety threat. It is often referred to as "sewer gas" and is particularly present in the wastewater and digester environments. Cost-effective solutions for H<sub>2</sub>S removal are in high demand to minimize OPEX costs, reduce equipment failures, and eliminate nuisances like odor.

### SOLUTION

Biogasclean's systems can reduce H<sub>2</sub>S concentration down to 50 ppm, after which the biogas can be used for electricity, heat or bio-methane generation. In combination with an amine scrubber, Biogasclean provides H<sub>2</sub>S removal for the off-gas stream, yielding high methane recovery and low operating costs. Biogasclean offers tailored solutions for small and large-scale installations.

### RESULT

The QSR® technology makes it possible to periodically clean the packing media inside the tank. The Biogasclean system is installed at several RNG projects, the largest one producing 800 million scf per year of biomethane and reducing H<sub>2</sub>S from 8000 ppm to 50 ppm in the off-gas. Biogasclean's venture into RNG offers methane recovery up to 99.9 percent when combined with an amine scrubber for upgrading.





**BM SILO** is specialized in small size storage of raw materials. BM Silo's solutions are also used for intermediate storage in the processing line.

BM Silo offers a wide product range containing square silos in galvanized or stainless steel for indoor and outdoor use, transport equipment, and accessories.

With know-how combined with more than 50 years of practical experience, reliable products are guaranteed. The silos store and convey dry materials such as grain, animal feedstuffs, powder, granules, virgin materials, re-granulates, pellets, and more.

The silos are delivered worldwide in a compact packaging kit for faster and low-cost transportation. The modular system allows for customized storage solutions for all needs and requirements.

**Specialization:**

- Modular square silos in galvanized or stainless steel
- Transport equipment and accessories

**North American presence:** Local distributors in the U.S.

**Video links:**

- [Biosecurity, feed quality optimization, increased storage capacity](#)



**BM SILO**

**OPPORTUNITY**

To achieve optimal livestock production, it's essential to safely store crops used for feeding. Infestation with mice, rats, insects, or other pests is a threat to crops. By protecting against pests, farmers assure the quality and value of the feed, reduce losses, and improve farm production. The biosecurity of crops used in the production of feed is an increasing concern that can be managed by choosing quality storage solutions and by making preventive choices. Lastly, space can be limited in a production plant which increases the demand for space-optimizing feed storage solutions.

**SOLUTION**

All BM silos offer maximum protection against pests and easy sanitation with high-pressure cleaners leading to better hygiene and increased biosecurity. The Modulsilo and Auger Discharge Silo are two of BM Silo's solutions for intermediate storage, with storage capacity from 5 ft<sup>3</sup> to 3,200ft<sup>3</sup>. Both silos ensure good hygiene thanks to its galvanized sections that can resist high-pressure cleaning, optimum silo discharge - even with light materials that often cause bridging, and superior space optimization due to the square shape. The modular system is perfect for easy assembly in existing buildings and can on average be installed in just two days.

**RESULT**

With a BM silo, crops are kept free from pests, which leads to better feed quality, reduced losses, and improved farm production. The galvanized sections allow easy sanitation ensuring the value of the crops. The modular square system is flexible, providing various combinations. Compared to round silos, the square silos by BM Silo offers up to 30 % greater storage capacity. The easy assembly and shipping of BM silos secures a smooth transition when replacing older silos.

**CLOUDFARMS** is a leading digital solution provider to pig producers. Cloudfarms is enabling the newest technologies to be used by pig producers to make their operations more efficient and productive.

Main products are a cloud-based, full-line pig production management system and traceability solution. Product development is 100% customer-centric and features are developed in collaboration with pig producers. Cloudfarms is present globally and offers local customer support.

### Specialization:

- Full-line pig production management systems
- Traceability solutions

**North American presence:** Local sales representative in the U.S., Canada and Mexico (primo 2021).

### Video links:

- [Digital management systems, farm management app](#)



### OPPORTUNITY

Pig producers are faced with many different challenges including profitability and increasing pressure for efficiency gains. Along the value chain, there is a growing demand for traceability and sustainable products. From the legislative side, there is a need for precise documentation that is likely to become stricter.

### SOLUTION

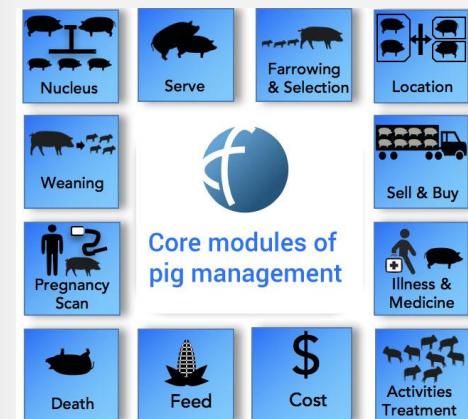
The cloud-based system means that no installation is necessary as it runs fully in a browser or app. The mobile app makes for an easy and intuitive system where data can be entered quickly. The system is easily integrated into all major feed systems, ear tag readers, barn tech, and breeding organizations.

The system supports data from multiple farms and can standardize processes and data across sites. Data is stored securely and can effortlessly be shared with consultants, vets, and others.

### RESULT

Through Cloudfarms producers can achieve increased efficiency and productivity by digitizing operations. The system saves labor by the ease of data entry and by reducing errors. Producers can optimize their operations by getting data-driven insights about key performance indicators of their production. The data is always in real-time and can be accessed anywhere and anytime.

Operations can be benchmarked against peers and employers can be engaged by implementing modern technology. In addition, the system can satisfy the demand for increased traceability in pig production.



**DANVIT** is known as a trustworthy supplier of customized feed solutions for pig producers. DanVit focuses on customer satisfaction and high-quality for cost-competitive prices. DanVit has extensive experience with feed optimization of high-quality minerals and compound feed for pig producers.

DanVit also specializes in milk replacers and can provide a full solution for the farrowing pen. In addition, DanVit offers different additives for feeding solutions.

### Specialization:

- 🐷 Customized feeding solutions
- 🐷 Feed optimization consulting
- 🐷 Milk replacers
- 🐷 Additives to feed solutions

### Video links:

- 🎥 [Nutrients to pig embryos, special milk supplement, high protein feed without fishmeal](#)



### OPPORTUNITY

Through DanVit products, producers can optimize their profit-margins by better feed conversion ratio and lower medication costs. DanVit assists in analyzing the consequences of feed changes and compare results with the expected benefits of various mixtures.

### SOLUTION

DanVit is specialized in milk replacer solutions and provides turnkey milk solutions, comprised of an automatic feeding system and high-quality milk replacer powder. DanVit believes in providing producers, and their piglets, with the best in regards to quality.

### RESULT

By customizing feed solutions and offering milk replacer in the farrowing pen, piglets become more resistant, healthier, and has more stable growth. DanVit also offers additives to feed solutions, that produces more uniform litters with more live-born piglets.



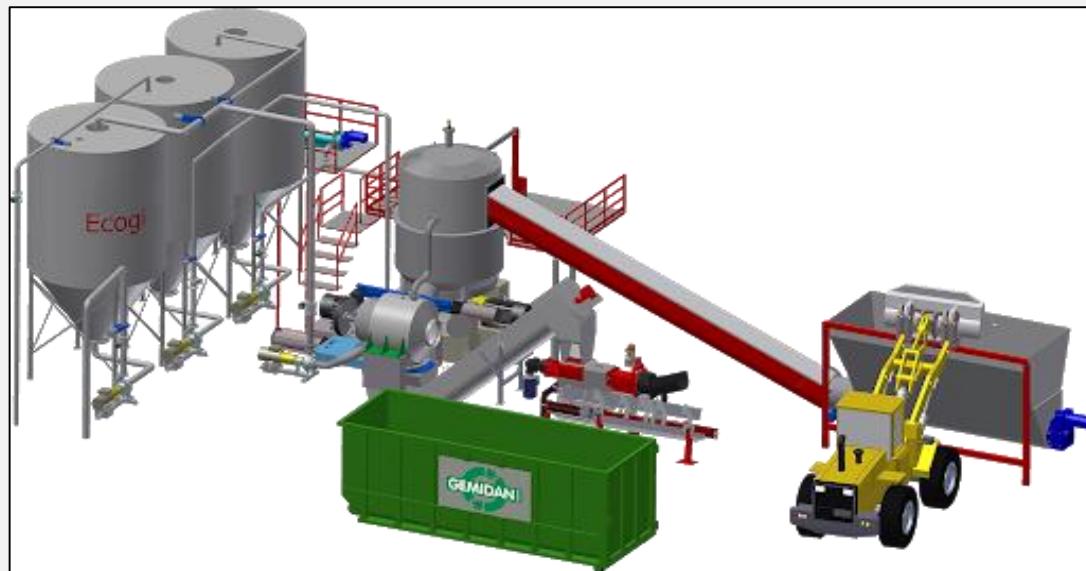


**GEMIDAN** markets a unique pre-treatment technology to process multiple organic waste streams and produce a high-quality pulp-based substrate for conversion into renewable energy using anaerobic digestion.

Gemidan Ecogi's robust design warrants high tolerance towards harsh waste streams and can demonstrate low OPEX with a system that has a fully automated operation. Gemidan Ecogi is owned by the Gemidan Group, a leading Danish waste management company with 30 years of industry experience.

### Specialization:

- Environmental system for air and gas purification
- Design, delivery, operations and maintenance of complete plants.



### OPPORTUNITY

It is an increasing challenge for the biogas industry to source high-value feedstock for anaerobic digestion. Gemidan Ecogi provides solid waste managements with an alternative to landfilling by sending organic waste streams to biogas plants for production of renewable energy and nutrient-rich fertilizer.

### SOLUTION

Gemidan Ecogi has designed a technology that maximizes organic recovery and purity in the bio-pulp. Gemidan Ecogi's solution focuses on maximum utilization and provides performance guarantees in all aspects, including power production, organic recovery, and capacity.

### RESULT

Gemidan Ecogi's solution has proven to recover 95 % of the organic matter in the waste streams. Continuous testing and documentation have resulted in high fineness in the bio-pulp achieving up to 99.9 % purity. This ensures that the substrate after Anaerobic Digestion can be applied on cropland as nutrient-rich fertilizer.



# HAMLET PROTEIN



**HAMLET PROTEIN** is proud to be a trusted partner of feed mills, premixers, home mixers, integrators, and farmers across the world. Combining global insights with a local network, HAMLET PROTEIN happily shares knowledge and provide technical support. That is how HAMLET PROTEIN promotes increased productivity, profitability, and sustainability for customers.

Young animal nutrition is the key to increasing productivity throughout the life cycle and a healthy business starts with healthy animals. Soy-based specialty ingredients help promote health through nutrition right from the start.

The patented bioconversion process minimizes the anti-nutritional factors naturally present in soy. This ensures that proteins are palatable and easy to digest, making them high-performing alternatives to fishmeal, blood plasma, and other protein products.

## Specialization:

- Young animal nutrition
- Specialty soy and fiber ingredients in feed
- Patented bioconversion process
- Transforming scientific data into practical solutions

**North American presence:** Plant in Findley (OH, USA) with local office and sales team



Hamlet Protein, 5289 Hamlet Dr  
Ohio 45840, USA

E-mail  
[hamletus@hamletprotein.com](mailto:hamletus@hamletprotein.com)

Find out more at  
[www.hamletprotein.com](http://www.hamletprotein.com)



# HAMLET PROTEIN

## OPPORTUNITY

Feed is a critical factor in animal production, accounting for up to 70% of total costs. HAMLET PROTEIN products contribute to efficient feed results, healthier growth, and maximum returns.

## SOLUTION

**HP 300** is a specialty soy protein for weaning pigs that secures a consistently better performance than other protein sources when added to feed. Benefits include improved feed intake, improved weight gain, and improved feed conversion ratio.

**HP FiberStart** is a concept of enzymatically co-processed raw materials to a functional ingredient rich in digestible protein and inert and fermentable fibers. The purpose is to stimulate the gut of weaning piglets in multiple ways to ease the transition at weaning. HP FiberStart is used in nursery diets as an alternative to zinc oxide.

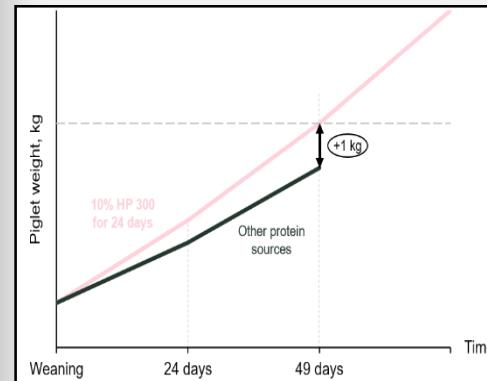
## RESULT

**HP 300:** 20 feeding trials across 10 countries have tested the effect of HP 300 in feed for weaning pigs. For every percent HP 300 received over the supplementation period, piglets gained an extra 0.2 lbs. This shows that HP 300 has a positive carry-over effect on performance. With inclusion of 20% HP 300, up to 4 lbs. extra weight gain was obtained in the nursery in total.

**HP FiberStart:** When HP FiberStart is fed butyric acid increases by 19% in nursery piglets. Butyric acid is one of the most important factors for a safe transition during weaning. Other benefits include more firm feces, better hindgut fermentation, and organic acid production. HP FiberStart is rich in digestible proteins, low in content of anti-nutritional factors, and has the same growth performance as zinc oxide.



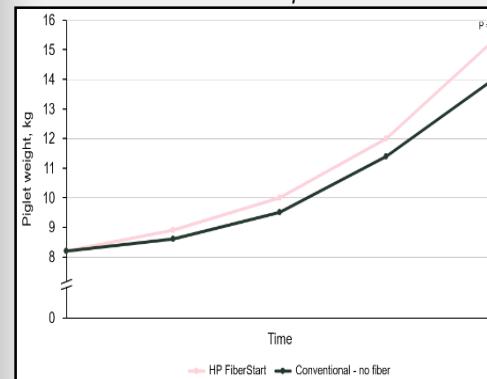
Carry over effect of HP300



Performance - 10% dosage of HP 300 <small>Replacement of other soya protein</small>		
ADFI	ADG	FCR
<b>+4.6%</b>	<b>+8.8%</b>	<b>-3.4%</b>
Performance - 10% dosage of HP 300 <small>Replacement of other soya or animal protein source</small>		
ADFI	ADG	FCR
<b>+4.1%</b>	<b>+6.8%</b>	<b>-3.5%</b>



HP Fiberstart starter phase I results



**HEXA-COVER** is a world-leading supplier of floating cover solutions with manufacturing units in North America, Denmark, and Australia.

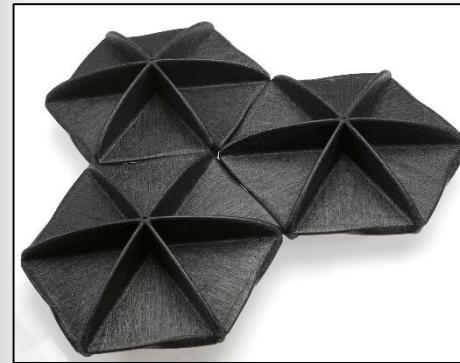
Hexa-Cover offers a full range of solutions to agriculture, water, industry, and oil & gas.

Hexa-Cover qualifies for EQIP-funding, is certified for use with drinking water (AS/NZS 4020:2018), and has been tested by the leading German test institute, DLG.

### Specialization:

- 🐷 Floating cover solutions
- 🐷 Technical analysis and support

**North American presence:** Atlanta (GA, USA)



### OPPORTUNITY

Pig producers are faced with managing odors and emissions from their operations and in particular from their manure lagoons.

Not dealing with environmental problems related to lagoons might result in complaints from neighbors, lawsuits, and problems with siting new facilities.

### SOLUTION

Hexa-Cover is a simple and low-cost solution for covering manure lagoons. The Hexa-Cover tiles are poured in the lagoon where they disperse across the entire surface and align themselves to form a free-floating cover. Hexa-Cover offers effective odor elimination as well as a reduction in emissions. Installation is simple and the tiles require no supervision or maintenance.

In addition, the tiles make it easier to access the slurry, when mixing and emptying. The tiles are unaffected by rain, frost, and snow and have a long lifespan of 25 years.

### RESULT

Hexa-Cover Floating Cover is the ideal solution for dealing with odors, emissions, and evaporation from manure lagoons.

It results in up to a 95% reduction of odors and 95% reduction of emissions. Installation takes only 30 minutes and is cheaper than conventional tank-top cover solutions.

**IKADAN** is a supplier of plastic slats and modular flooring systems for pig production and has been supplying state-of-the-art pig housing facilities since 1984.

Ikadan offers a modular flooring system called Ikadan Ultraflex Flooring System, which is sold in more than 40 countries worldwide.

In addition, Ikadan supplies a modular panel system for pig housing called Multiflex and a dry feeder for weaners and finishers called Unic-X Wave.

### Specialization:

- 🐷 Ultraflex flooring
- 🐷 Multiflex panels
- 🐷 Unic-X Wave dry feeder
- 🐷 Delta heating system
- 🐷 Fastening equipment
- 🐷 Activity materials

**North American presence:** Wilmington (NC, USA)



## IKADAN

### OPPORTUNITY

Modern pig production requires flexible and durable solutions that can withstand aggressive environments in pig housing units. New demands and requirements constantly change pen and floor design increasing the need for flexible solutions that can be combined and changed at will without compromising durability.

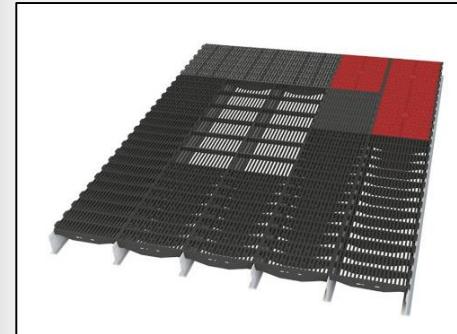
### SOLUTION

Ultraflex slatted flooring is very effective in the most demanding environments. The modular design allows a mixture of plastic, cast iron, and concrete to be combined. They form a hygienic, hardwearing, and comfortable floor for farrowing sows, piglets, weaner pigs, and older growing pigs. Integral heat mats run on either water or electricity. The system can thus easily be adapted to the type of production concerned – from farrowing pen to finisher pen. Ikadan Ultraflex is therefore a fully future-proof solution. Ikadan has spent more than 15 years actively developing farrowing pen floor systems for loose sows. An Ultraflex floor solution is built of plastic, cast iron, and concrete, as well as our heat pads in the creep box, alternatively with a closed floor or rubber plate. Different elements can be adapted to any selected pen-type/make. Substantial sums of money can be saved by having a floor layout specified as early as possible during the project phase.

The dry feeder, Unic-X Wave, is developed with a focus on natural and easy operation for pigs, user-friendly for staff, minimal feed wastage, and easy cleaning.

### RESULT

With Ikadan, you get maximum value for money, short delivery times, and close dialogue with consultants with extensive knowledge of modern pig production and the design of housing facilities. A high-tech fully automated plastic production facility ensures Ikadan's global competitiveness.

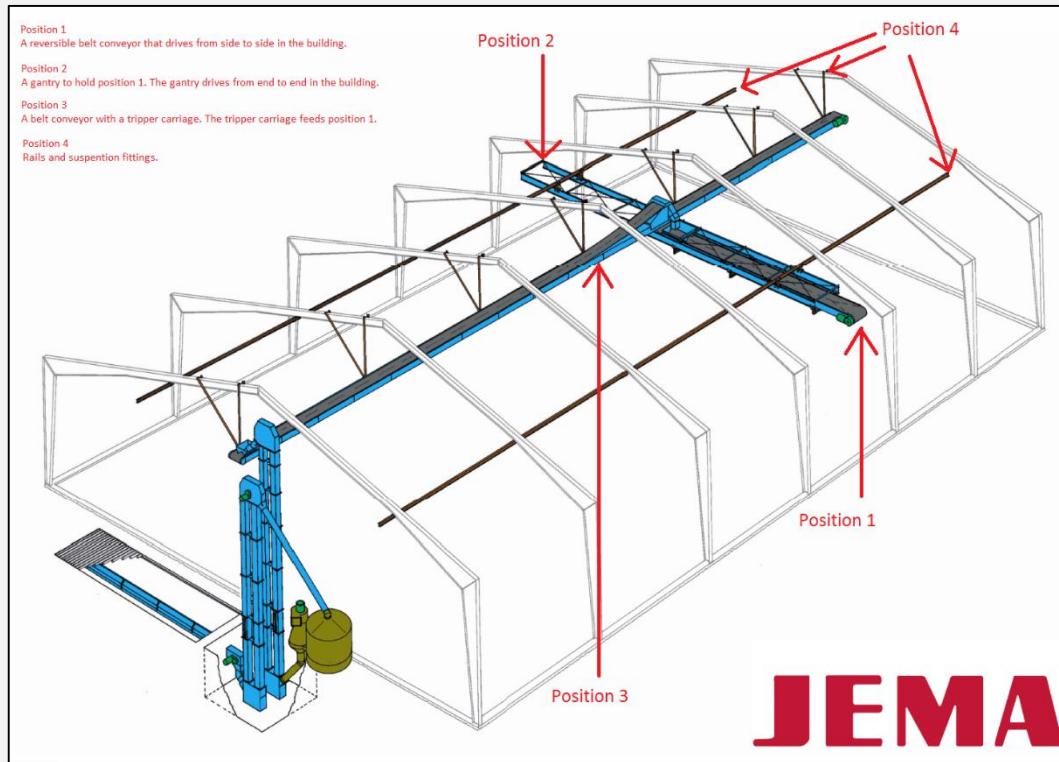


**JEMA AGRO** is specialized in stationary transport of bulk and supports transport volumes of up to 14.000 ft<sup>3</sup> pr. hour. JEMA develops and produces complete conveyor systems and has 6 decades of experience in the field. JEMA is committed to supporting customers from drafting of projects to installation and maintenance.

### Specialization:

- Conveyor systems
- Flat floor storage
- Modular grain pits

**North American presence:** Stanford (FL,USA)



### OPPORTUNITY

Poor storage and handling of crops can lead to large losses due to insufficient drying resulting in dirty crops. Contamination is a problem when unloading the crops in heaps. One solution is ventilation but that only makes air run around the crops and not through the crops.

### SOLUTION

With a flat floor storage system by Jema customers can reduce the amount of crops lost to virtually nothing. The system allows farmers to transport grain (and other granulates) to a flat floor storage system divided into different compartments and thereby store it in different layers and heights to ensure optimal storage and drying.

Grain ready for storage is transported to a cell that is filled until the layer reaches the set height. Grain for drying is transported to a compartment equipped with air ducts and stored at a height suitable for drying. The built-in real-time layer height measurement provides a full overview of quantities in the flat floor storage system and gives a clear indication of storage costs.

In addition, Jema has developed a suspended modular grain pit called the 'dry pit', that provides optimal conditions for service and water prevention.

### RESULT

Better storage means higher prices when the time comes to selling the crop as a result of the increased purity and the minimization of losses due to dirty crops.



**Landia** is a world-leading provider of efficient manure solutions for modern pig farms. Quality is key and means that many Landia products have been in operation for 20-25 years even under extreme running conditions.

The longevity of Landia's pumps and mixers means customers achieve the lowest lifespan costs. The downtime and need for service and maintenance are minimized through an automated start/stop solution. The result is less time spend on manure management and more time for other important tasks.

**Specialization:**

- 🐷 Pumps and mixer solutions for manure
- 🐷 Long distance manure pumping
- 🐷 Automated control of manure solutions

**North American presence:** Subsidiary in the U.S.

**Video links**

- 🎥 [Automatic control, vacuum effect](#)



*PLC control systems can be fitted with temperature sensors, pressure sensors, frequency converter, logbook, and remote monitoring.*



*Landia's long-shaft pumps are installed on the side of a well or a tank so that the lower part of the pump housing is submerged in the manure while the upper part, including the engine, is up in the open*



*Landia's manure mixer is an all-round, efficient, and solid mixer. The low rotation speed makes it very suitable for mixing even very thick manure.*

**OPPORTUNITY**

Many pig producers experience that pumping manure from barns to storage tanks causes problems. Existing solutions often cause pumps to become clogged making it difficult to get manure out of barns. The result is that many hours are spent every week on tasks relating to pumping manure.

**SOLUTION**

To solve this problem a pump by Landia can be fitted in the reception tank, which pumps manure to a storage tank. In the reception, tank a long-shaft pump and a mixer are installed making the manure homogeneous and easy to pump. A pressure transmitter sends a signal when the reception tank is full and subsequently starts the mixer and pump. Once the tank is emptied, the mixer and the pump stop.

**RESULT**

Mixers and pumps by Landia are reliable and require minimal maintenance. By choosing a solution that has an automatic start/stop function, unnecessary wear is avoided and time is saved. Less maintenance and downtime results in more time to focus on other important tasks.

**LSM PUMPS** manufacture large hose pumps for agricultural applications. Pumping manure has been a key business for LSM since early 1980.

Pumping manure can be challenging, but the LSM pumps have a proven track record, also on long-distance pumping. Several LSM projects are dating more than 10 years back and still have the original pump installed.

LSM has the most durable & versatile pump on the market, and by far the easiest pump to maintain – no special tool or special training is needed. Large fragments/debris and high fiber content do not affect or damage LSM pumps. In addition, the pump has very low energy consumption.

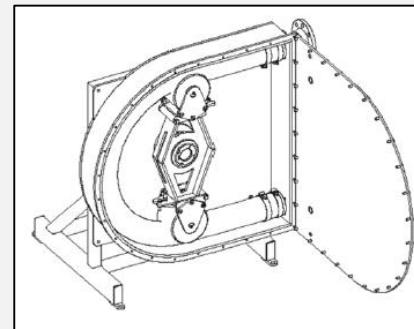
LSM manufacture pumps from ¼" to 8" – actually the world largest hose pump, and have a 12" on the way! The typically pump used in agriculture is a 3", 4" and 6" W

### Specialization:

- 📍 Hose pumps for agricultural applications

### North American presence:

- 📍 Chicago (IL, USA)
- 📍 Houston (TX, USA)
- 📍 Service partners in several states and Canada



### OPPORTUNITY

Repairs and downtime of a conventional rotary lobe pump can be expensive. Rotary pumps are exposed to impurities like small stones, sand, and other fragments like straw and plant residues that tend to result in wasteful degeneration.

### SOLUTION

LSM differentiate themselves by the advantage of a larger pump case, which means the hose is longer and therefore able to perform more per revolution.

This means it can create the same volume as competitors, but with lower speed, resulting in a longer lifespan of the gear and hose. The special role of adjustment gives the hose optimal compression, a lower level of friction, better lubrication, and less power consumption.

The maintenance of the LSM pumps is possible without dismounting the pump from the application and without the need for special tools – a door simply gives access to replace the hose.

### RESULT

Achieve an increased pump output by LSM's energy-efficient hose pump, which demands minimum service and maintenance, and spare parts expenses cut by 2/3.

Return on investment is just 7 months in operation, based solely on costs relating to spare parts – not taking lost production and labor due to maintenance into account.



**NATURE ENERGY** is the world's first fully integrated renewable natural gas (RNG) company. Nature Energy is introducing a strong business model for building, owning and operating large-scale biogas plants, together with partners, providing superior solutions for anaerobic digestion systems.

Nature Energy has developed models for handling complex biomasses and is continuously enhancing options for high value products based on the organic waste materials. The current developments focus on reuse and commercialization of CO<sub>2</sub>.

### Specialization:

- 🔧 Designing and building anaerobic digestion systems
- 🔧 Advanced technology solutions for biogas plants



### OPPORTUNITY

Without intelligent management of the organic waste, CO<sub>2</sub> emissions increase, water environment, and soil suffer from heavy nutrient loads and cause significant environmental problems. The biogas solutions from Nature Energy solve these issues, by utilizing waste as a resource in the biogas plants.

### SOLUTION

Nature Energy designs, builds, owns, and operates anaerobic digester systems producing nutrient rich organic fertilizer, and biomethane for gas-to-grid solutions. Many different types of organic waste material can be processed with its leading codigestion technology. This provides a better management of waste streams and a high energy production. The plants are often based on a cooperative business model, including local farmers and other stakeholder and partners.

### RESULT

Nature Energy has built more than 70 largescale biogas plants, of which 9 biogas plants are of the build-own-operate concept. Nature Energy's strategy is focused on large-scale, industrial biogas plants. The largest facility is currently producing 22 million cubic meters of biomethane per year; processing 700,000 metric ton of biomass (manure, agricultural residuals, food waste); providing fertilizer to surrounding crop farmers.



**PROTEKTA** offers innovative products and evidence-based solutions, designed to prevent illness through optimal nutrition, specialty feed ingredients, and healthy environmental conditions. The solutions are sold under the brand names X-Zelit, Stalosan F, Peckstones, and AX3.

Protekta is the North American partner of Vilofoss, a leading innovator in agriculture and animal health with over a century of dedication to producers worldwide. Together, Protekta and Vilofoss are committed to supplying high-quality products that raise industry standards. Protekta products are primarily based on methods of prevention.

**Specialization:**

- 🐷 Specialty products
- 🐷 Hygiene solutions
- 🐷 Dry disinfection
- 🐷 Advanced Trouble-shooters

**North American presence:** Plainfield (IN, USA), Lucknow (ON, Canada)



**OPPORTUNITY**

Pig producers are challenged with diseases in their pig herds, busy schedules resulting in limited time to deal with unforeseen problems, and requirements to reduce the use of antibiotics and expensive medication.

Stalosan F provides piglet stress reduction at times when they are highly vulnerable to various microorganisms, such as group forming and feed changes. And it can be used directly on newborn piglets for quick and effective drying to protect them against disease.

**SOLUTION**

Stalosan F works by lowering the pH level on the floors/slats in the area where pigs are present. The lower pH and antibacterial ingredients create an environment where viruses and bacteria can not thrive. Stalosan F can be applied wherever livestock is present and is approved by the EPA for safe use around all livestock and humans.

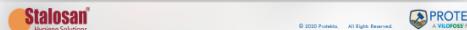
**RESULT**

When implementing Stalosan F in the farrowing units there is a lower incidence of diarrhea and other bacteria/virus related problems (see tables to the left). When applied once per week to keep a dry environment, the powder is shown to decrease mortality, increase weight gain, improve feed conversion ratios, and reduce both scours and pneumonia. In addition, Stalosan works as a vital ammonia reducer to improve air quality in pig production.

**Viricidal efficacy of powder Stalosan F against PEDV**

Sanitizer	Time of Contact	Virus Titer (log <sub>10</sub> TCID <sub>50</sub> ) in:		Percent virus reduction
		Control	Stalosan F	
A	5 min	4.83	<1	≥ 99.99
	10 min	4.83	<1	≥ 99.99
	60 min	4.50	<1	≥ 99.96
B	6 hour	4.50	<1	≥ 99.96
	5 min	4.83	<1	≥ 99.99
	10 min	4.50	<1	≥ 99.96
	60 min	5.17	<1	≥ 99.99
	6 hour	4.50	<1	≥ 99.96

A: 10 mg Stalosan F powder Control A: 10 mg beef extract powder  
 B: 20 mg Stalosan F powder Control B: 20 mg beef extract powder  
 TCID<sub>50</sub>: 50% tissue culture infective dose of virus



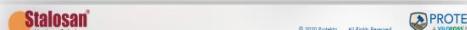
**An evaluation of Stalosan F powder for deactivation of PRRSV**

**Trial 1:** The effect of disinfectant over time in presence or absence of fecal matter at 30°C  
 Time P=0.10; Fecal matter P=0.021; Trt P=0.26 Trt x Fecal matter P<0.0001

Fecal matter	+	+	+	-	-	-
Time(min.)	1	3	5	1	3	5
Product	% PRRS PCR negative					
Stalosan F	100	83	100	83	92	67
Synergize	25	17	42	100	92	100
Positive control	+	+	+	+	+	+

**Trial 2:** The effect of disinfectant over time in presence or absence of fecal matter at -13°C  
 Time P=0.10; Fecal matter P=0.10

Fecal matter	+	+	+	-	-	-
Time(min.)	1	3	5	1	3	5
Product	% PRRS PCR negative					
Stalosan F	92	100	100	100	100	75
Synergize	frozen	frozen	frozen	frozen	frozen	frozen
Positive control	+	+	+	+	+	+



**RENEW ENERGY** is an experienced engineering consulting company specialized in biogas, biorefinery and nutrient recovery solutions. Renew Energy has provided engineering services to more than 10 biogas and bio-refinery plants, including Fair Oaks Farms, IN, and Trenton Biogas, NJ.

Renew Energy's philosophy is to design plants where energy consumption is minimized, operations are automated, nutrients and water from digestate are recovered, transport of feedstock and fertilizers are reduced, and odors are kept at an absolute minimum. Renew Energy collaborates closely with universities to develop innovative and better solutions.

### Specialization:

- Design of biogas plants
- Well-documented digestion tests
- Establishment of attractive financing



### OPPORTUNITY

Anaerobic digestion offers an effective way to handle large amounts of organic waste (manure, food waste, agricultural residues, etc.), where energy-rich biogas and nutrient-rich digestate are produced. Optimization of the anaerobic digestion process for optimal biogas production and recovery of valuable digestate nutrients are key to the long-term success of a biogas plant.

### SOLUTION

Renew Energy's solutions optimize the biogas production and recover the nutrients in the digestate. Examples include feedstock pretreatment prior to anaerobic digestion and co-digestion to increase the bio-methane yield; mechanical separation of digestate that allows the use of phosphorus in the solid fraction easy to transport; ammonia stripping controls ammonia odor and produces ammonium sulfate fertilizer.

### RESULT

Renew Energy has provided engineering consultancy to Trenton Biogas in the planning and construction of the first food waste digester in New Jersey. The plant is designed to treat 380 ton/day organic waste, producing 3 MW power, 12 tons/day of ammonium sulphate and 80 tons/day solid fertilizer. The Danish Export Credit Foundation provided loan guarantees and helped secure financing, which totalled \$45 million.



**SKOV** is specialized in ventilation and farm management solutions for pig production. SKOV's solutions provide customers with a better overview of operations and increase growth. Modern and efficient pig production requires an inclusive overview and optimal conditions for the animals.

SKOV has worked closely with the world's best pig producers and developed tailored solutions that ensure optimal conditions for pig herds worldwide.

**Specialization:**

- 🐷 Farm management solutions
- 🐷 Climate solutions

**North American presence:** Decatur (GA, USA)



**SKOV**

**OPPORTUNITY**

**Farm management**

As the scale of pig production grows, so does the need for an overview and the ability to control many houses from one place. Many producers have been asking for real-time data, which would enable them to react instantly should irregularities be detected in production.

**Ventilation**

House climate is important for animal growth, and the animals will only give optimum yield if several climate-related parameters are in order. In addition, heating and ventilation can lead to high energy bills for pig production making the need for energy-efficient solutions greater.

**SOLUTION**

**Farm management**

Weight gain and efficient feeding are the most important parameters for creating a good economy in pig production. SKOV's solution collects data about the animals' feed consumption and water intake and performs automatic camera weighing. The collected data is displayed in a clear manner that provides a complete overview of the animals' growth.

**Ventilation**

Climate systems from SKOV are thoroughly tested and reliable. They are designed for low energy consumption and are exceptionally efficient even under extreme weather conditions.

**RESULT**

**Farm management**

Every day, SKOV's solutions optimize the productivity of millions of pigs. With a SKOV system, producers can wave goodbye to manual weighing, improve feed efficiency, get precise real-time data, and a clear overview of the production.

**Ventilation**

With a ventilation system from SKOV, the energy consumption can be brought down 30-50 % using energy-efficient fans while significantly reducing noise - these solutions reduce production cost and improve animal welfare. SKOV can provide solutions to optimize the biosecurity by filtering the inlet air.





**UNITRON** has for more than 30 years served and instructed pig breeders in artificial insemination (AI) on farms and has in doing so achieved considerable expertise in the reproduction process.

The right strategy during heat, the right breeding material, the right equipment, and the right management is crucial when it comes to achieving great results. Unitron helps customers through all the crucial steps of the reproduction process.

Unitron works with suppliers and universities around the world to create new innovative products.

### Specialization:

- 🐷 AI stations
- 🐷 Consulting in AI
- 🐷 Solutions for feed adaption in piglets

### Video link:

- 🎥 [Understanding pig behavior increases productivity](#)



Unitron Unifeeder



Unitron stimulus

### OPPORTUNITY

Unitron is a reliable supplier of quality products that saves time and money when implemented. Particularly when it comes to full setup for boar stations and AI equipment.

### SOLUTION

Unitron is the chosen partner for setting up boar stations all over Europe and have expertise that covers the full range of AI supply.

Besides AI equipment – the product Stimulus helps efficiency in reproduction. The product makes one worker complete the work of 3-4 people and offer the same stimulation for all sows for insemination – which supports a high conception rate.

Another solution by Unitron is the Unifeeder that adapts piglets to feed before weaning – resulting in higher weaning weight. It also supports a weaning process with less antibiotic-use.

### RESULT

10 weeks of Unitron Stimulus results in an increase in farrowing percentage with up to 8.86 % and increases the total born with up to 0.65.

Unifeeder increases hemoglobin content in pigs, increases iron content with up to 12 %, Weaning weight is 1.1 lbs. more, and results in 0.5 more piglets pr. litter.



**VISSING AGRO** is all about quality and durability. Vissing has extensive experience from Danish and foreign farms and provides the best in pig housing equipment that lives up to the strictest modern standards. Vissing strives to be on the cutting-edge of farm design by developing the most innovative products and systems for pig production.

Vissing's award-winning product range includes everything in pig farming equipment (penning, feeders, spare parts) and feeding systems (chain conveyor systems, controllers, drive units, spare parts).

Vissing's free access stall for group-housed sows are still made according to the original design developed 20 years ago – and follows our mission of providing high-quality products with long life.

### Specialization:

- Animal welfare systems
- Penning and feeding systems
- Housing systems for gestating and lactating sows.

### North American presence:

- Echberg Distribution, Dunham (QC, Canada)
- Equipements F. Brodeur Inc. (QC, Canada)

### OPPORTUNITY

Animal welfare has become an important parameter directing the design of pig housing. Animal well-being and the requirements that follow have for a long time been the basis for design and development activities at Vissing.

### SOLUTION

In 2007 Smithfield decided to convert all gestation housing to group housing. Smithfield chose Vissing as its main supplier because of Vissing's experience with animal welfare systems and its competitive prices.

Vissing's products transferred Danish know-how regarding housing systems to American customers who had little experience in of group-housed sows.

### RESULT

Since 2007 Vissing has sold more than 100,000 free access stalls for gestation sows and more than 22,000 farrowing crates in North America.

Vissing has a wide range of products available that have been tested in Danish, German, and American farms to secure that they meet both production and animal welfare requirements.

Danish Farm Design - a sister company to Vising provides both farm design and management services to secure that customers benefit as much as possible when investing in products and systems.



**WASHPOWER** manufactures and sells automatic washing solutions for farmhouses primarily within the pig industry.

Washpower has developed user-friendly, robust, and automated washing solutions in uncompromising quality for years. With solid materials and a well-thought-out design, Washpower offers uncomplicated washing solutions with the finesses and technologies the market demands.

Washpower is renowned for its level of service and support for products both domestic and abroad. Washpower Robots are sold in 24 countries around the world today.

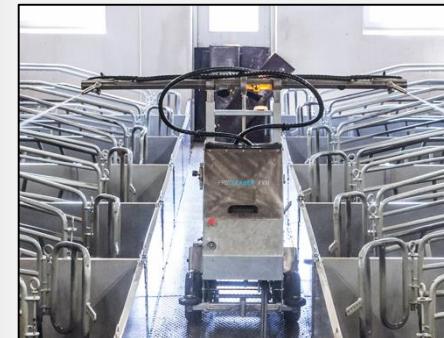
### Specialization:

- 🔧 Customized automated cleaning processes
- 🔧 Production quality and rigorously QA
- 🔧 High service and support
- 🔧 R&D in collaboration with customers and partners

**North American presence:** Distributed through Pipestone Vet Services (MN, USA)

### Video link:

- 🎥 [Automated cleaning](#)



### OPPORTUNITY

Maintaining high levels of hygiene is essential in modern pig production and can be labor-intensive. By using an automated washing robot hard labor can be reduced and fewer people are needed to wash pens which increases biosecurity and frees up time for other tasks.

### SOLUTION

Washpower machines are simple in construction, yet functions as an effective and high-tech washing robot that can handle even the largest of jobs. The washing robot is controlled sideways by the adjustable side wheel, which runs up the side of the fixtures and ensures it keeps going in the right direction. The machine has ultrasound sensors that make the machine able to stop when it reaches a wall

Washpower machines can be programmed to run both a soaking program and several different types of washes. Specially developed nozzles ensure that the water molecules are bound together so that the water jet remains highly effective, even at a distance

### RESULT

With a washing robot from Washpower pig producers can remove 80% of the manual washing needs and reduce the time it takes to wash pens by 50 %. In addition, the general hygiene level increase. Using a washing robot increases productivity by freeing staff for other important tasks and improves biosecurity by reducing people in the farmhouse. The robot can work weekends, nights, and holidays – making washing possible when it is most convenient.



**THE CONSULATE GENERAL OF DENMARK IN CHICAGO**

875 N. MICHIGAN AVENUE | SUITE 3950  
CHICAGO, IL 60611, USA

[WWW.THETRADECOUNCIL.DK](http://WWW.THETRADECOUNCIL.DK)

[WWW.USA.UM.DK](http://WWW.USA.UM.DK)

*For more information about The Trade Council or our Danish partners please contact:*

**MAGNUS LETH** | [MAGLET@UM.DK](mailto:MAGLET@UM.DK)

COMMERCIAL ADVISOR | FOOD AND AGRICULTURE  
DIRECT: +1 (312) 239-6305 | MOBILE: +1 (312) 774-0516

**METTE SIVEBÆK KNUDSEN** | [MESKNU@UM.DK](mailto:MESKNU@UM.DK)

SR. COMMERCIAL ADVISOR | FOOD AND AGRICULTURE  
DIRECT: +1 (312) 239-6304 | MOBILE: +1 (312) 684-6491