

**Storage of grain**  
Capacity: 7000 Tons

**Environmental Facilities**  
Biogas Unit, Slurry Separation, Composting unit

**Energy Centre**  
3000 MWh electricity, 4500 MWh heat

**Slaughterhouse**  
125 Finishers / Day

**Visitors Centre**  
30 visitors / Day

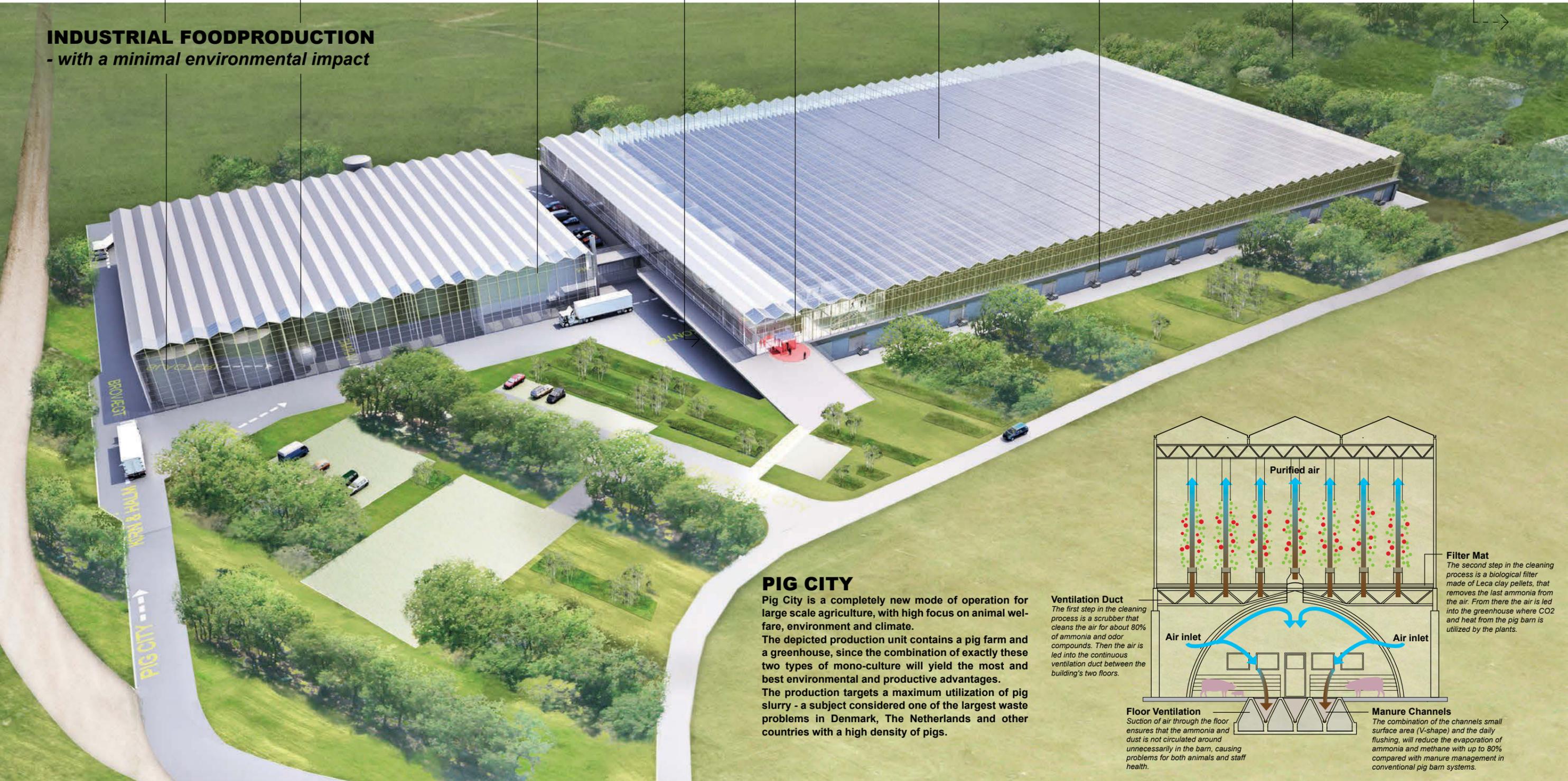
**Greenhouse**  
1200 tons of Tomatoes / Year

**Pig Housing Units**  
20.000 finishers / Year

**Biological Water Purification**  
Capacity: 950 m3 / Year

**Windmills**  
Annual production 47 MWh / Year

**INDUSTRIAL FOODPRODUCTION**  
- with a minimal environmental impact

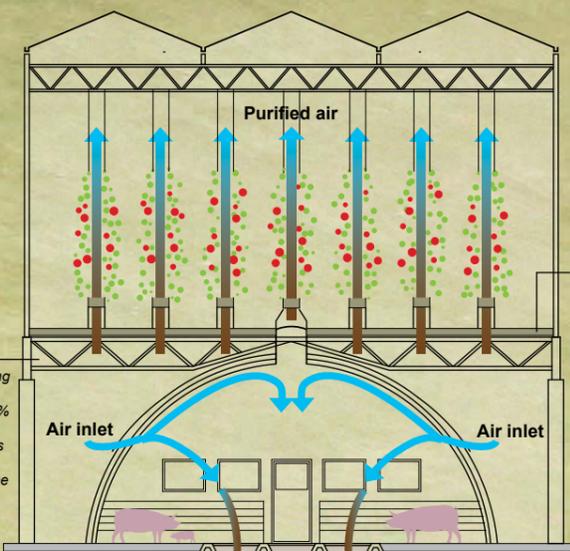


**PIG CITY**

Pig City is a completely new mode of operation for large scale agriculture, with high focus on animal welfare, environment and climate. The depicted production unit contains a pig farm and a greenhouse, since the combination of exactly these two types of mono-culture will yield the most and best environmental and productive advantages. The production targets a maximum utilization of pig slurry - a subject considered one of the largest waste problems in Denmark, The Netherlands and other countries with a high density of pigs.

**Ventilation Duct**

The first step in the cleaning process is a scrubber that cleans the air for about 80% of ammonia and odor compounds. Then the air is led into the continuous ventilation duct between the building's two floors.



**Filter Mat**  
The second step in the cleaning process is a biological filter made of Leca clay pellets, that removes the last ammonia from the air. From there the air is led into the greenhouse where CO2 and heat from the pig barn is utilized by the plants.

**Floor Ventilation**

Suction of air through the floor ensures that the ammonia and dust is not circulated around unnecessarily in the barn, causing problems for both animals and staff health.

**Manure Channels**

The combination of the channels small surface area (V-shape) and the daily flushing, will reduce the evaporation of ammonia and methane with up to 80% compared with manure management in conventional pig barn systems.

**Energy Balance, Thermal**

MWh / Year

	Production	Consumption
Greenhouse		8.200
Pig Housing Units, Ventilation	13.000	
Pig Housing Units, Manure	1.700	
Slaughterhouse	90	200
Others		200
<b>Total</b>	<b>14.790</b>	<b>8.600</b>
<b>Balance</b>		<b>+ 6.190</b>

**Water balance**

m3 / Year

	Production	Consumption
Rainwater from roofs	15.680	
Greenhouse	200*	16.400
Pig Housing Units	16.200*	18.800
Slaughterhouse	3.300*	4.360
Others		200
<b>Total</b>	<b>35.380</b>	<b>48.160</b>
<b>Balance</b>		<b>-12.780 m3</b>

\* recycled water

**Global Warming Potential**

CO<sub>2</sub>e per kg produce

	Pork	Tomatoes
Pig City	-0.163	0.0126
Conventional production	3.64	3.44
Organic production	4.26	4.95

AgroTech 2011

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# SYMBIOSIS

## ENVIRONMENTAL-FRIENDLY PRODUCTION

Pig City combines a pork production with a tomato greenhouse to utilize excess heat, electricity, CO2 and nutrients from the pigs.

Actually, so much energy is wasted from the pork production that the tomatoes will be produced entirely without external energy sources.

There will be no stench from the pig production and no environmental discharge of ammonia and other fertilizers via exhaust fumes.

## ANIMAL WELFARE

The piglets are weaned at 9 weeks, compared to the normal 3-4 weeks. All organic regulations are respected indoors, including a low medicine consumption.

No animals are tethered, and tail docking and castration are not allowed.

The pigs are provided with plenty of straw, rooting materials and roughage, which stimulates the animals' natural behavior and provides a good pig life. By incorporating a local slaughter house the farm is true to the farmers principle of minimizing animal stress: Pigs are born into the same unit from when exceeding a weight of 125 kg, are taken directly to the slaughterhouse.

A new ventilation system located at floor level will minimize dust and ammonia exposure to both farm workers and animals.

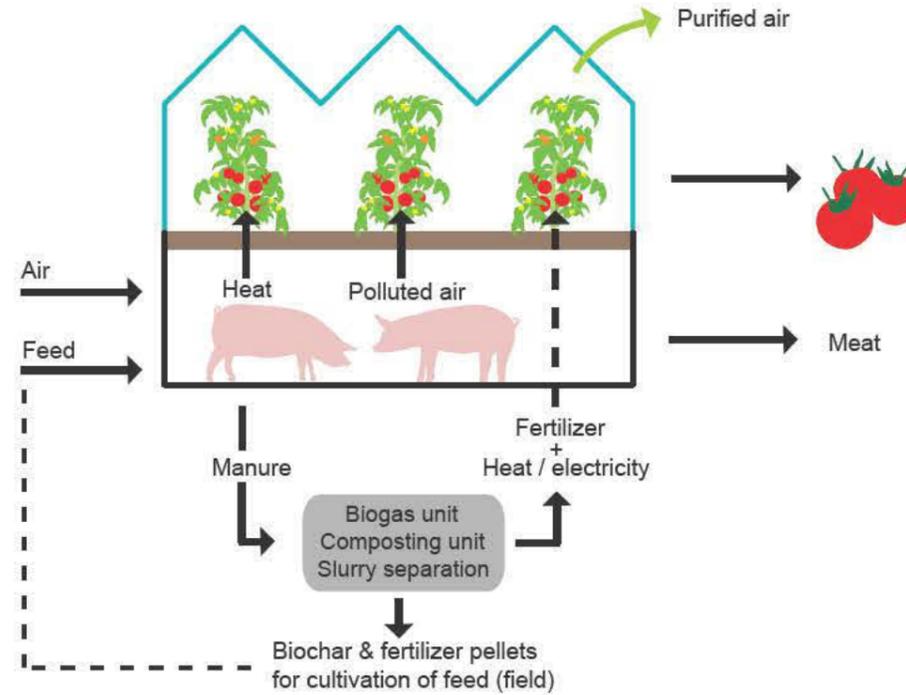
## ENVIRONMENTAL TECHNOLOGIES

The surplus energy and heat generated from the biogas system can be directly used locally - and not wasted as is the case with many currently established centrally located biogas units.

The project will also include air purification technology as well as the full integration of environmental technologies allowing for the total separation of pigfarming from the open land.

## ARCHITECTURE

Despite a total of more than 50.000 m2 it has been possible to create a building that not only integrates into the landscape but also invites the public inside - for a view of the pigs, the tomatoes and the visitors centre.



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THE PROJECT IS UNDER DEVELOPMENT AND WILL BE  
REALIZED WITH FINANCIAL SUPPORT FROM REALDANIA

Carbon neutral  
foodproduction

PIG CITY  
ACADEMY

FOOD & ECO-SCIENCE