Colsen (the Netherlands) uses chicken manure to meet the environmental objectives.

The poultry industry emits annually 600 million tons of CO_2, 65% of which can be reduced by using Poul-AR® technology.

Colsen BV has developed a technology that converts chicken manure into renewable energy and fertilizers. The Poul-AR® technology enables to reduce the greenhouse gasses emission and also production of some valuable fertilizers for the world-wide food suppliers. According to Colsen, Poul-AR® is a perfect example of a circular economy, where a sale of the products is economically interesting for the poultry farmers itself.

There are 79 million of chickens in **the Netherlands**. Their manure can provide **426.000 MWh/year** of electricity to **127.000 households**. Additionally, **40 million kg of nitrogen** and **13 million kg of phosphate** are recovered from the manure annually. The Poul-AR® nitrogen-fertilizer replaces the artificial fertilizers, which production is highly energy-consuming. The Poul-AR® phosphate-fertilizer replaces the one from the finite phosphate rock.

During United Nation Climate Change Conference (2015, Paris), discussion over reduction of CO_2 emission was one of the main point. By using renewable energy from chicken manure, only in the Netherlands, **200.000 tons of CO_2** is released **less**, compared to the same energy production from fossil fuels. On top of that, CO_2 emission from the fertilizer industry is then further reduced.

The global impact is enormous. 24 billion chickens are held world-wide. They generate 1 million tons of manure daily which represents sustainable electricity production of **120 million MWh/year** for **36 million households**. The fertilizers production is also significant and allow to recover **12 and 4 billion kg/year of nitrogen and phosphorus**, respectively. That amount of fertilizers is sufficient to fertilize 570 km^2 which gives 15 times the total area of the Netherlands. Renewable energy from chicken manure prevents emission of **55.4 million ton of CO_2/year** compared to the energy generated from fossil fuels.

Poul-AR® is a technology based on nitrogen removal from poultry manure via two consecutive biological and chemical processes. The nitrogen released as ammonia is recovered as a nitrogen fertilizer. The manure is then digested to produce biogas. This biogas is subsequently converted into the electricity and heat. Approximately, 15% of the electricity is required for the own Poul-AR® processes. All the released heat is recovered and used to make the fertilizers.

The process has been developed over the past three years and tested in the laboratory and pilot scale. Next year, Colsen expects to realize the first demonstration Poul-AR® plant in the Netherlands with the help of the Dutch government. There is an enormous global interest in this technology because of its environmental importance. It is also interesting for the poultry farmer due to the fact that it allows to turn the chicken manure from expenses into income.

In South Africa, all Colsen activities are coordinated through Aquest - Colsen (pty) Ltd, with local offices in Port Elizabeth and Durban.

Poul-AR® - good for environment and economy.