



nature energy **AQPER**

Le GNR à base
de lisier est le
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réduire les
émissions de
GES

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Nature Energy

Fondée en 1979, Nature Energy est devenue au cours des dernières années l'un des plus grands producteurs mondiaux de la production de GNR.

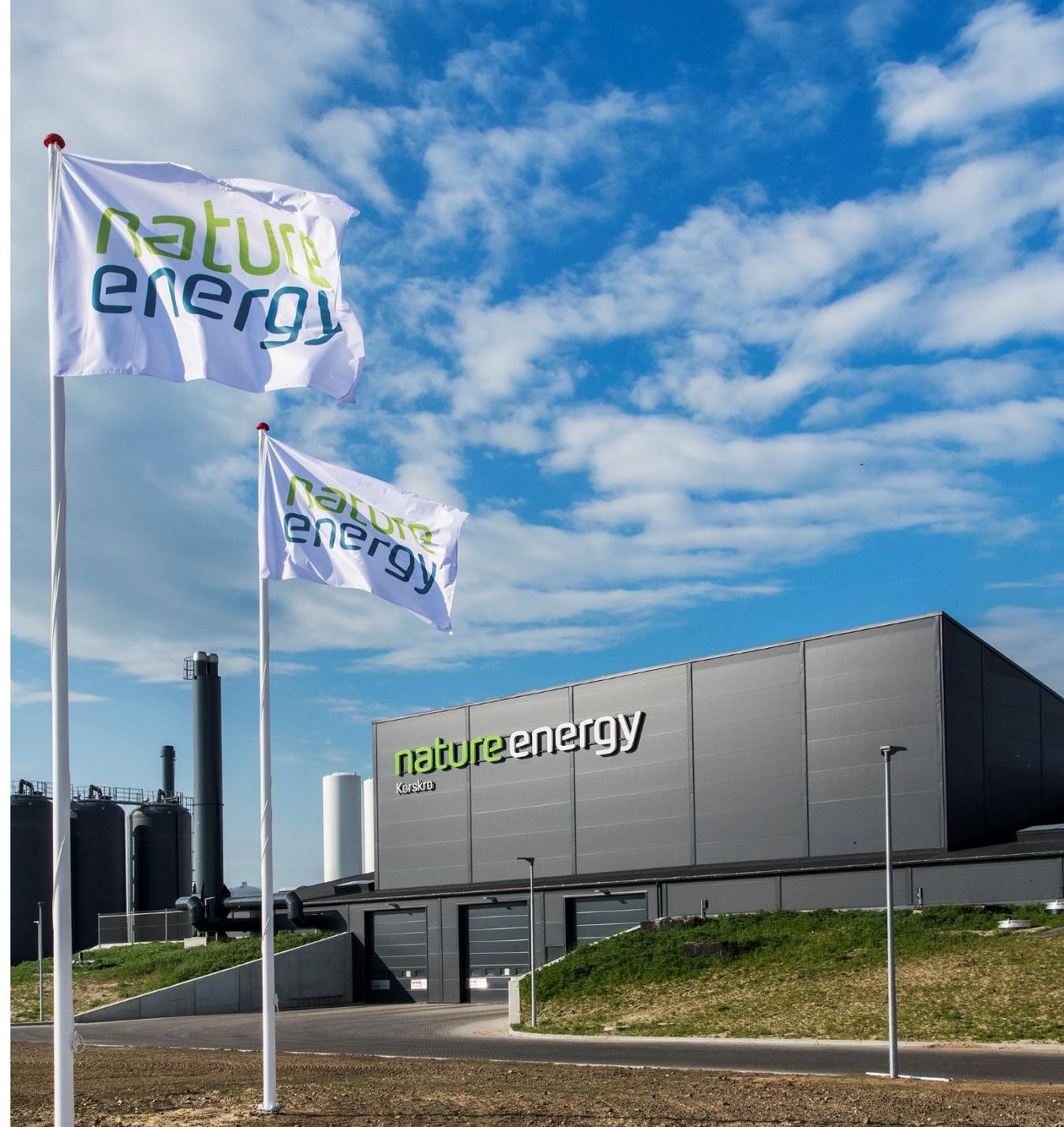
Le succès de Nature Energy est dû à une stratégie exclusive **Design Build Own & Operate** autour des usines de biométhanisation à grande échelle et standardisées.

En 2020, Nature Energy prévoit de convertir environ **5 millions de tonnes de biomasse**, ce qui correspond à **170 millions de m3 de GNR**.

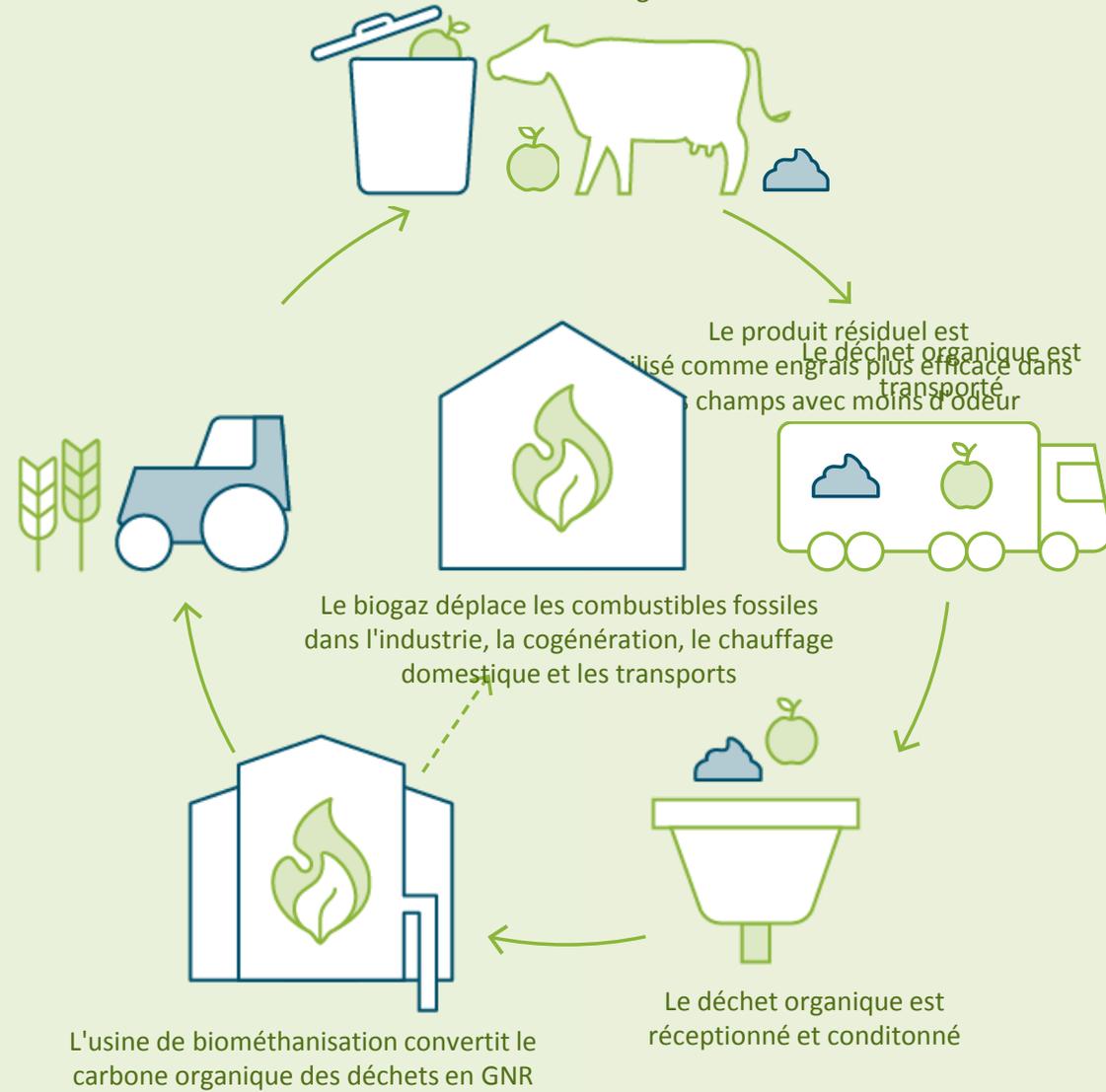
Ce volume de GNR permet d'alimenter par exemple 10 000 camions parcourant 50 000 km par an ou chauffer 122 300 maisons grâce à cette **énergie verte et neutre en CO₂**.

La biométhanisation est **le moyen le moins cher et le plus rapide de réduire les émissions de CO₂** dans le secteur des transports et de l'agriculture.

Nature Energy a son siège social à Odense, au Danemark, avec 250 employés. En 2019, Nature Energy a réalisé un chiffre d'affaires d'env. 150 mio. \$ CND.



Les déchets organiques sont collectés tandis que l'évaporation du méthane et de l'oxyde de diazote nocifs pour l'environnement est éliminée des terres agricoles



Biogaz à partir de lisier

Intensité carbone record

Le tableau (source: California Air Resources Board) compare les différentes Intensités Carbone (CI) en fonction de la source ayant servi à la production du gaz.

Cette information montre un impact évident du traitement des effluents (ici: lisiers bovins) par digestion anaérobie de -276 g CO₂e / MJ, qui est de loin le plus important du tableau.

Ce chiffre peut être comparé à un gaz de décharge avec une intensité de carbone de 46 g CO₂e / MJ, ce qui signifie que la différence entre le biogaz de décharge et le lisier est égale à 322 g CO₂e / MJ!

En d'autres termes, l'intensité en carbone du biogaz issu du fumier est 7 fois plus efficace que celle du gaz d'enfouissement et 12 fois supérieure à celle des déchets solides urbains.

 Le biogaz à partir d'effluents d'élevage constitue la meilleure voie pour réduire significativement les GES

Table 1 California LCFS Carbon Intensities

Gas Source	Carbon Intensity (g CO ₂ e/MJ)
California Natural Gas (Traditional)	78.37
Landfill Gas	46.42
Dairy Digester Gas	-276.24
Wastewater Treatment	19.34
Municipal Solid Waste (MSW)	-22.93

Source: California Air Resources Board

7 Le biogaz issu de lisier est 7 fois plus efficace que le biogaz de décharge dans la réduction des GES

Quelle est la base du modèle?

- Base Agricole
- Conception, Construction, Exploitation, Investissement (DBOO)
- Injection sur les réseaux de gaz

- Haut niveau de compétences
- Installations de grande taille (Scale-up advantages)
- Standardisation



L'Innovation comme moteur



“ 150.000 tonnes par an de digestat Bio ”



“ CO2 de l'agriculture devient des bulles pour votre soda ”



“ produire des protéines grâce aux microalgues ”



“ Un bus BioGNV économise jusqu'à 114 tonnes de CO2 par an... ”



DOCUMENTS
Rapport - Biogas in Heavy Transport Load

LINKS
CO2E report on alternative fuels in southern Sweden

Nature Energy Moonsson

The plant will annually produce up to 6 million cubic meters of biogas (biomethane). The gas is transported through a nationwide natural gas network, which means that more than 3,500 households can be supplied with CO2 neutral gas from the production in Brande.

Organic plant

The plant will mainly receive organic manure from cattle and organic chickens, but also conventional (swine and milk) slurry. In addition, organic biomass will be supplied in the form of waste from Axel Månsson's vegetable production and organic cover grass.

The relationship between organic and conventional biomass will be carefully aligned so that the residual product from gas production can be used as part of organic production in the form of natural fertilizers in the cultivation areas.

The plant will consist of a series of so-called drained tanks and a number of mixing and storage tanks. Tankers unload the biomass and subsequently get filled with dehydrated fertilizer. All production takes place in closed systems. This means, among other things, that all types of constant exhaust ventilation, which changes the air several times an hour. Before air is released in the open air, it passes into filters that use microorganisms to clean it and ensure that the odor is reduced as much as possible in the same area, the tanks are washed after each visit to the plant. The plant is surrounded by a landscape.

Ecology and biogas

Nature Energy Moonsson produces biogas based on 150,000 tonnes of manure, organic cover grass and other organic residues from Axel Månsson A/S.

Biogas and ecology are a really good couple. When manure, green waste, organic cover grass and other organic waste products are sent through the biogas plant, the biomass is digested

Danish CO2 from agriculture becomes bubbles in your soda

Nature Energy and Stranndalen A/S have collaborated, which means that the excess CO2 from the world's largest biogas plant in Esbjerg will be recycled, for example, bubbles in your soda. This makes the Stranndal easy access to necessary CO2, which is otherwise lacking throughout Europe, and cooperation reduces CO2 emissions from the biogas plant by 70 per cent. Compared to a common biogas plant.

When a biogas plant converts food residues and residues from agriculture to the green gas, biogas, 60 per cent becomes of the organic material for energy and 40 per cent, turns into CO₂. The excess CO₂ has so far been difficult to use, and is typically returned to the atmosphere. However, when the world's largest biogas plant in Korsnæs near Esbjerg has been completed, Stranndalen will build one of the world's first CO₂ plants, which will allow to purify and condense the excess CO₂ from the biogas plant.

"If we are to achieve the goals of the Paris Agreement and, in the future, be a green winner, we must both reduce CO₂ emissions while at the same time bind the CO₂ we already have in circulation better. It is now the task we

Marks with microalgae create the future's sustainable protein

Danish-produced microalgae, grown on land, must in projects supported by the Innovation Fund supplement imported soy as feed protein for agriculture.

In future, protein feed for agriculture, which today is based on imported soy, should be replaced by feed protein derived from Danish cultured microalgae. Algeria is supplied with CO2 and nutrients from the biogas industry's side-flow. The project, ReVAP, supported by the Innovation Fund, is expected to be able to produce proteins from algae with area consumption up to ten times less than conventional feed crops.

Custom Danish climate

"Microalgae have long been in the spotlight of researchers, as they can achieve very high growth rates and can be grown in areas that are otherwise not suitable for agriculture. Algae become a mixed culture adapted to the Danish climate, which provides robust production and a long cultivation season, says project manager Jesper Mazanti Aeslyng, Danish Technological Institute.

Report: 4,500 biogas buses are the cheapest way to meet climate targets

A new report indicates that 4,500 diesel buses by 2030 can be replaced by biogas buses alone due to natural replacement in mainly municipalities and regions. It will reduce CO2 emissions by up to 313,000 tonnes of CO2 and reduce fossil dependence with more than 500 million liters of diesel.

The consultancy firm Danish Analytics has analyzed the prospects of replacing diesel with biogas as a prebent for

1. Almost all buses and lorries in Denmark are driven by fossil fuels, especially diesel. Just 1.2 per cent of the buses in Denmark run on alternative fuels, including biogas, electricity and hydrogen. By comparison, 20 per cent run of the buses in Sweden on biogas.

2. A biogas-powered bus saves the society for up to 114 tonnes of CO₂ annually compared to a similar diesel-powered bus.

3. By 2030, 4,500 diesel buses can be replaced by biogas buses alone due to natural replacement. It will reduce CO₂ emissions by up to 313,000 tonnes of CO₂ annually and improve air quality in the cities.

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