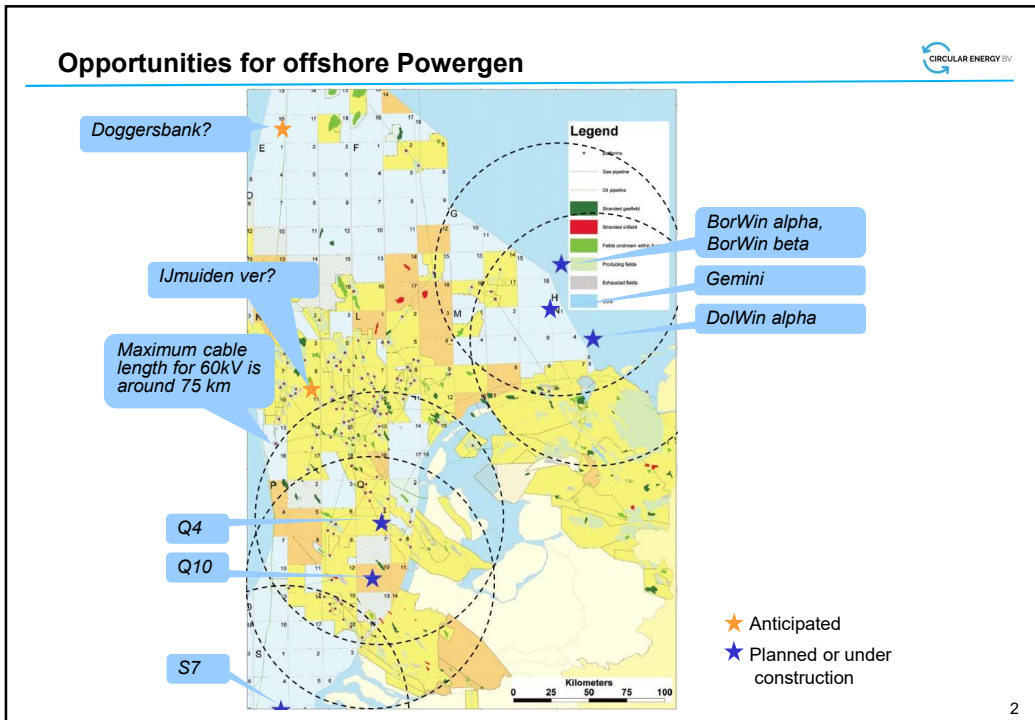


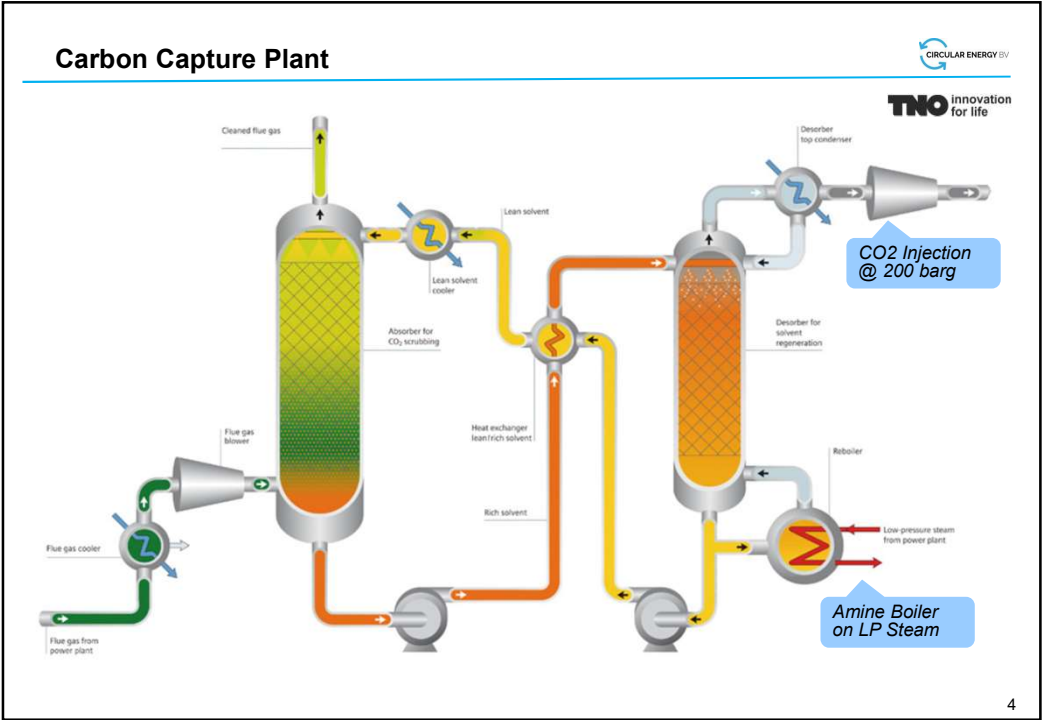
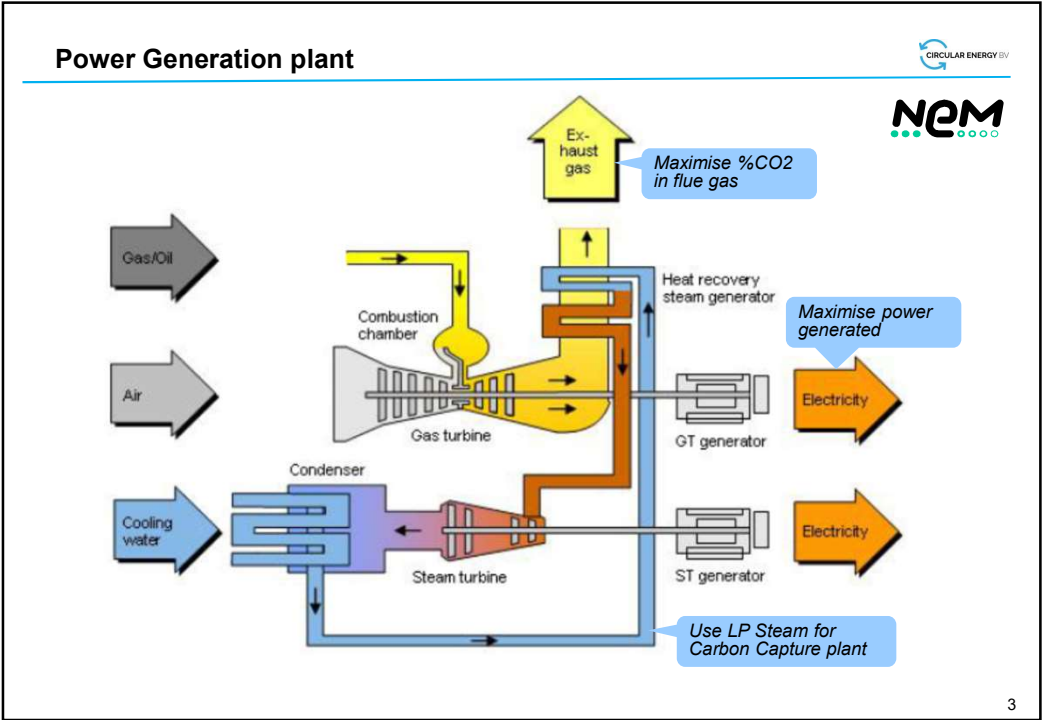


## Een energiecentrale op zee

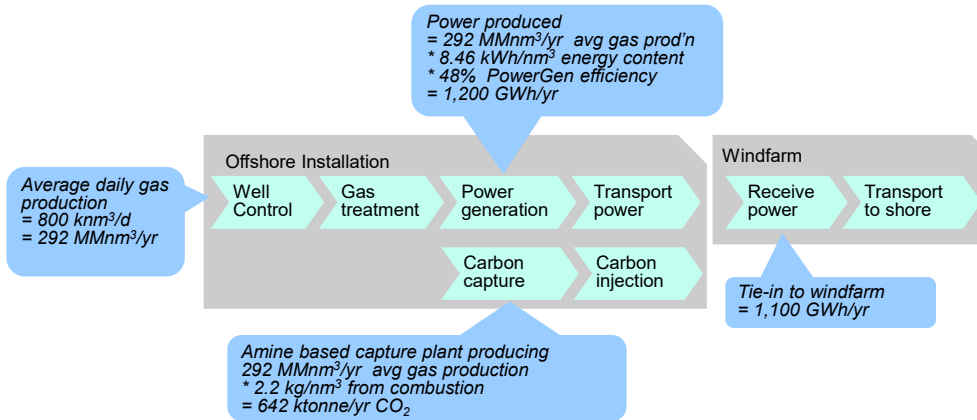
KVGN 21 November 2018

Arnold Groot



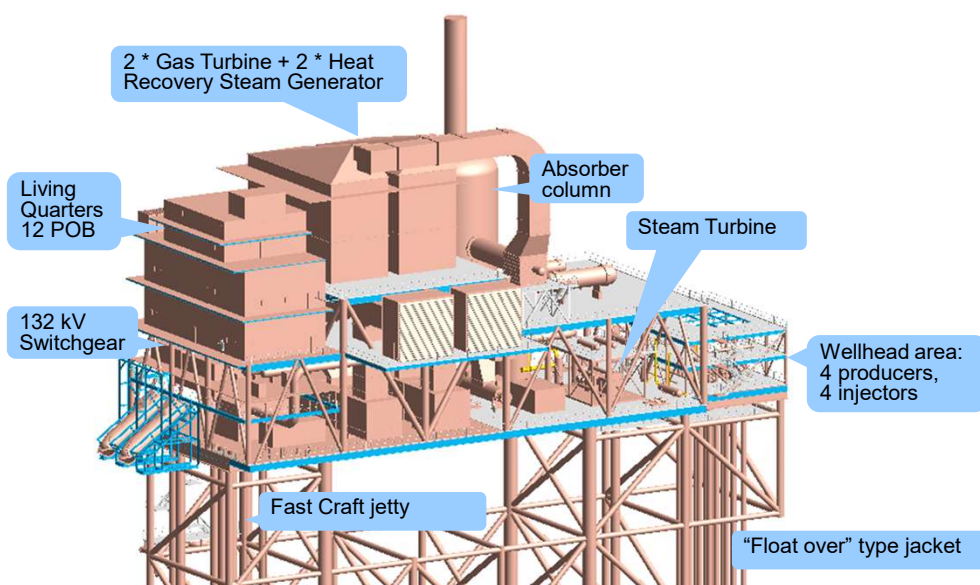


## A 185 MWe Zero Emission Power Plant



5

## Topsides 6,500 tonne

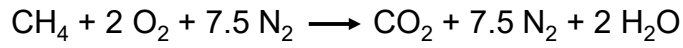


6

## Reservoir pressure decline is counteracted

Ambient air comprises typically of 21% oxygen and 79% nitrogen

The processing of Nitrogen is a major source of inefficiencies for power plants



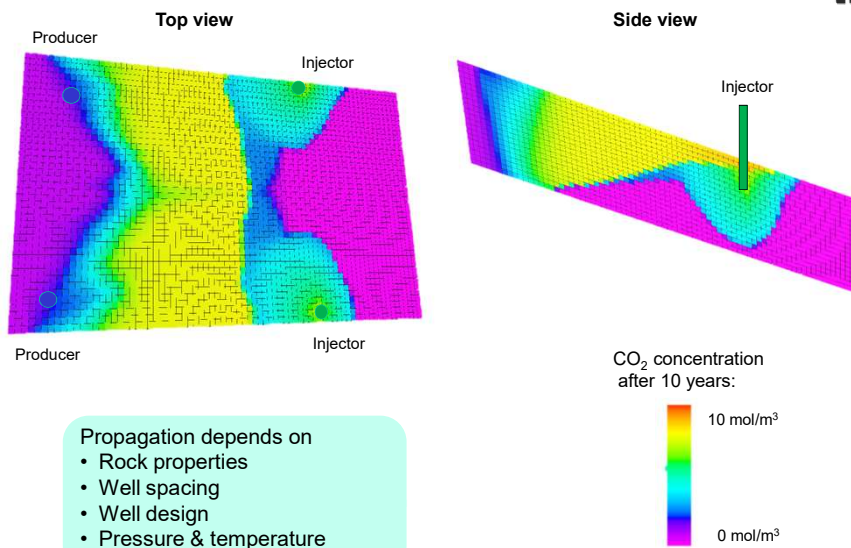
Natural gas comprises typically of:

- 93.00% C1
- 2.85% C2
- 0.35% C3
- 1.70% CO<sub>2</sub>
- 1.90% N<sub>2</sub>

For every mole of CH<sub>4</sub> produced one mole of CO<sub>2</sub> is injected, assuming perfect capture effectiveness.

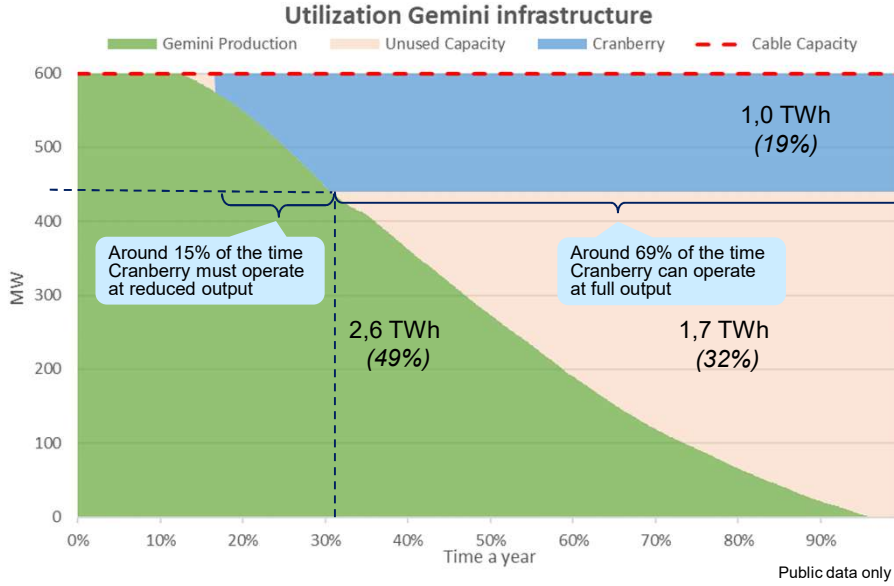
The reservoir receives a similar volume of CO<sub>2</sub> as the volume of natural gas produced from it.

## Propagation of CO<sub>2</sub> through the reservoir can be managed

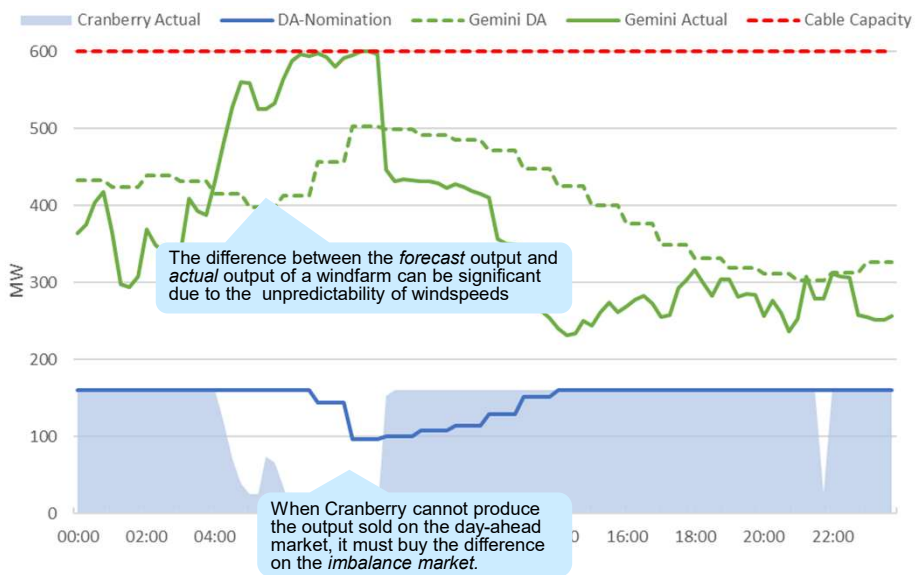


- Propagation depends on
- Rock properties
  - Well spacing
  - Well design
  - Pressure & temperature

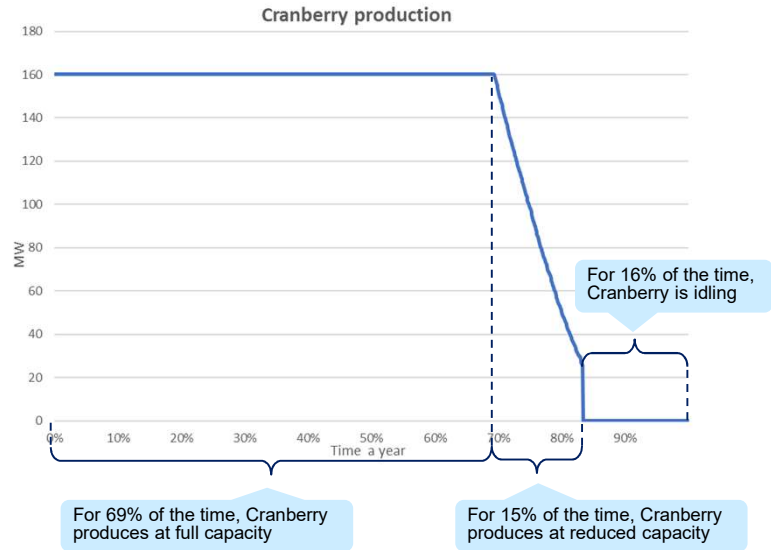
## Case study: producing into Gemini



## Finding the best trading strategy



## Implications for Operating Philosophy



## “Cranberry is an offshore battery project”

