ROTTERDAM LIQUID CO_2 TERMINAL

CONEXT

Independent terminal for liquid CO_2

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Gasunie, Vopak and Gate terminal are studying the development of CO_2next, an independent terminal for the reception, temporary storage and delivery of liquid CO_2. Infrastructure of this kind is important in the context of the Dutch climate agreement and the European Green Deal.

The terminal will receive and deliver liquid CO_2 from and to ships, and it will be connected to depleted gas fields in the North Sea, such as the Aramis field.

CO_2next therefore provides a flexible alternative for all market players, including those without a direct connection to a CO_2 pipeline. In addition, the planned terminal can serve as an important catalyst for the establishment of a market for the reuse of CO_2 as a feedstock.

Knowledge

As a part of the alliance that includes Vopak, Gasunie and Gate terminal, CO_2next will benefit from the knowledge and experience of these leading companies in the field of the safe, clean and efficient transport, storage and transshipment of liquid bulk products and gases.

Gasunie and Vopak have acquired experience and know-how with LNG, LPG and CCS. To benefit from technical and operational synergies, the terminal will also draw on the knowledge and expertise of Gate terminal, a joint venture involving Gasunie and Vopak, which has been delivering the safe storage and throughput of liquefied natural gas (LNG) at the port of Rotterdam for more than a decade.

Vopak gasunie Gate terminal
Gas Access To Europe

Climate goals

The climate goals represent a huge challenge for the corporate sector in the Netherlands. The Dutch government is committed to the goals of the Paris Climate Agreement from 2015.

Under the Dutch climate agreement, the Netherlands intends to reduce carbon emissions by 55% by 2030 (with 1990 as the benchmark) on the way to a 95% reduction in carbon emissions by 2050. The Dutch government is also emphasising the importance of CCS in the range of measures needed to meet the climate goals.

Alternatives for industry

The Netherlands is still largely dependent on fossil fuels. Particularly when it comes to industries where sustainability is difficult, there are no good carbon-free alternatives in the short term. However, there is no time to wait for better solutions. Infrastructure to transport and store CO_2 in empty gas fields in the North Sea is important to reduce carbon emissions within the foreseeable future, and to implement the national climate agreement and the plans in the European Green Deal.

CO_2 in liquid form: 550 times less volume

As a pressurised liquid, CO_2 has a volume that is 550 times less than CO_2 under atmospheric conditions. This makes it easier and more efficient to transport by water.

Transportation of liquid CO_2 by water

At present, many industrial companies and clusters cannot use the storage options in empty gas fields under the North Sea because they are not directly connected to a CO_2 pipeline. Transporting liquid CO_2 by water gives these companies the opportunity to connect to this infrastructure.

SDE++

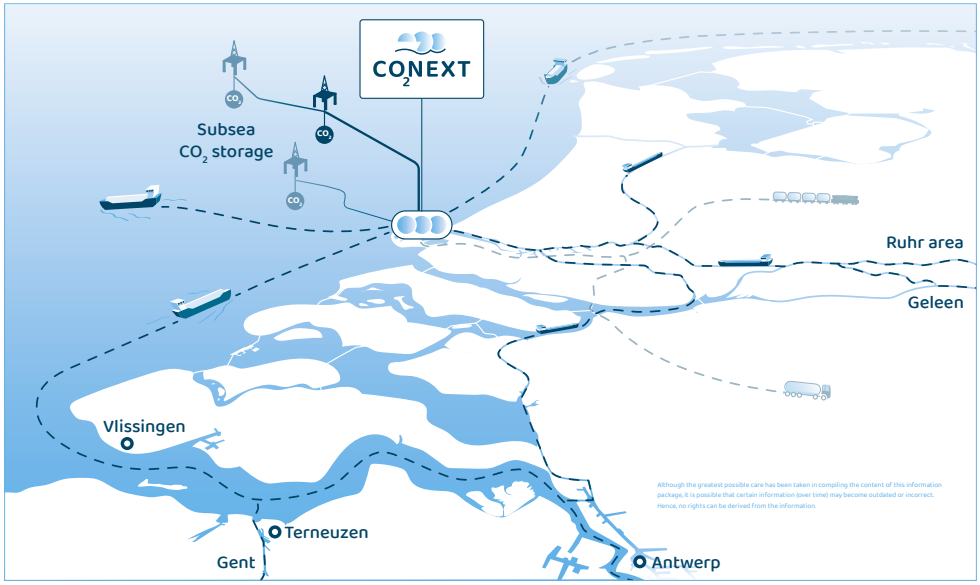
CO_2next caters to strong market demand for facilities to store or reuse CO_2 transported by water. Subsidy arrangements require an integrated approach in the chains. The CO_2next partners therefore welcome the Dutch and European subsidy arrangements that support CCS as projects with a shared interest to achieve the climate goals. The Dutch SDE++ subsidy arrangements will be available for liquefied CO_2, allowing CO_2next clients to apply for subsidies.

Flexible alternative for the CO_2 market

The CO_2next terminal connects a range of industrial parties and storage companies in an open access system for incoming and outgoing flows of liquid CO_2.

The terminal can receive, temporarily store and deliver liquid CO_2 to a CO_2 pipeline, such as the one operated by Aramis. Transport by water offers the market a flexible alternative. CO_2next gives parties without a direct connection to a CO_2 pipeline the option of transporting their CO_2 to the terminal by water after capture. From there, the CO_2 is forwarded to a pipeline for storage in depleted gas fields under the North Sea or for reuse as a feedstock.

In this way, industrial companies and clusters, such as those in Zeeland, Eemshaven and Limburg, can prevent the release of the CO_2 they produce into the atmosphere and make a significant contribution to emission reduction targets.



CO_2 infrastructure

As an independent terminal, CO_2next will focus exclusively on the development and operation of a reliable, safe and environmentally friendly infrastructure and it will not be a market player itself. CO_2next will provide an open access system that connects to a system for the transport and offshore storage of CO_2, such as the Aramis system. Possible synergies are also being explored in collaboration with Porthos.

Buffer and backup

In addition, the terminal will contribute to the climate-neutral energy system of the future, acting as a buffer to stabilise the transport of CO_2 to the permanent storage locations. The facility can also serve as a backup in the Rotterdam system for CO_2transport and storage by providing additional transport options if there are interruptions in the system.

Reuse of CO_2

CO_2next will also be an important catalyst for the establishment of a market for reusing CO_2 as a feedstock. The infrastructure in Rotterdam as provided by CO_2next will allow for the development and expansion of future business models, such as a hub for the use of CO_2 as a feedstock, or as a bulk facility for exports of CO_2. In this way, CO_2next is helping Rotterdam in its ambition to become the most sustainable port in the world.

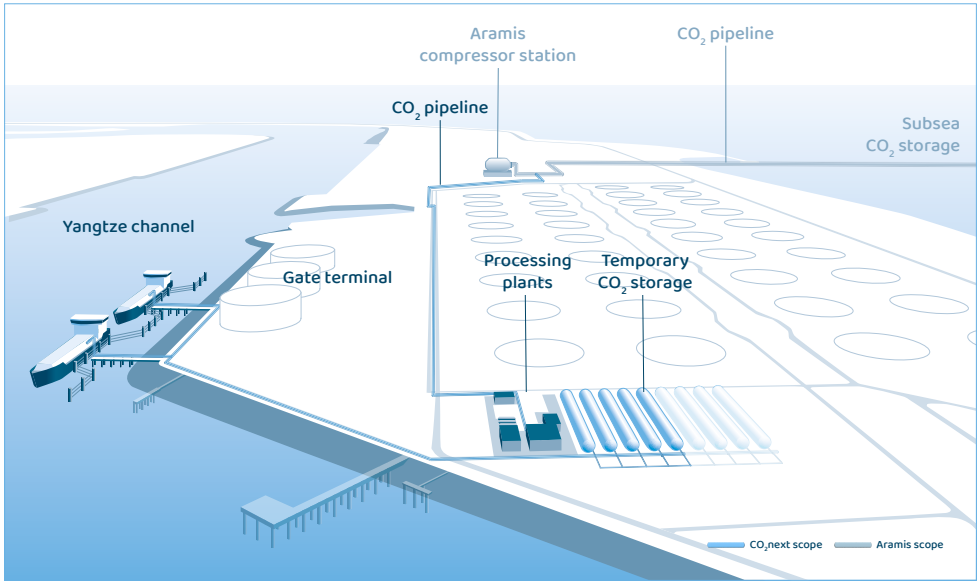
Maasvlakte

The aim is to build the CO_2next plant on the Maasvlakte in the port of Rotterdam, near Gate terminal.

The location is central, with a good connection to the Aramis facilities. The Maasvlakte is easily accessible for inland shipping and ocean-going vessels, and it has good connections with the hinterland. Synergy options with the compressor station are being included in the study.

The terminal will be used for:

- Incoming and outgoing flows, and the temporary storage, of liquid CO_2
- Direct access from the terminal to pipelines and CO_2storage facilities, such as those of Aramis



Capacity

Initial phase

- Supply of liquid CO_2 by inland and ocean-going shipping
- Terminal capacity of approximately 3.8 Mt per year
- Tank storage capacity: 40,000 m^3 (5 tanks)
- Two jetties for berthing inland and seagoing vessels

Future options

- Supply of liquid CO_2 by truck and train
- Outgoing transportation of liquid CO_2 by ships, trucks and trains for purposes such as the reuse of CO_2
- Modularly expandable capacity

> **CO_2next meets the market demand for CO_2 transport infrastructure.**

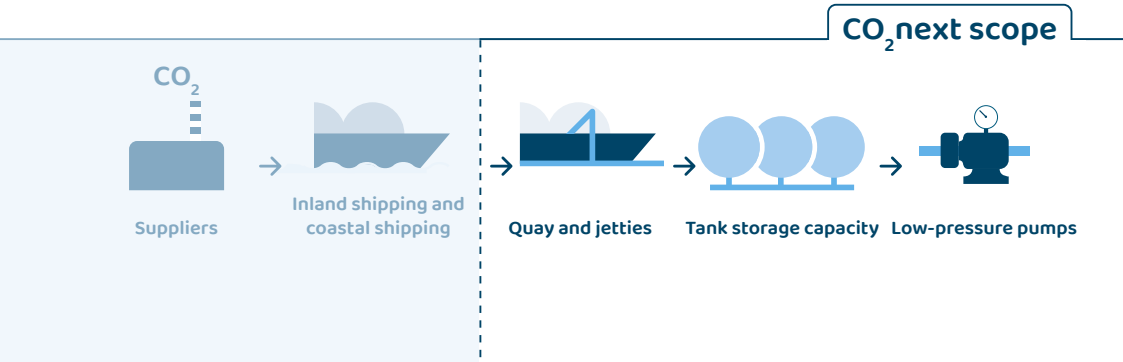
CO_2next in relation to Aramis

As part of the joint development of the CO_2 chain, the terminal is expected to play a role in the development of the Aramis CO_2 transport infrastructure.

In combination with the Aramis compressor station, CO_2next will be the CO_2 collection point on the Maasvlakte. After processing, the CO_2 will be sent to the Aramis CO_2 pipeline for storage in depleted gas fields under the North Sea. In the CO_2 chain, CO_2next will arrange for the incoming and outgoing flows, and the temporary storage, of the liquid CO_2. The compressor station will process the gaseous CO_2 supplied through the Porthos pipeline to the Aramis marine pipeline.

Permit procedures

As part of the joint development of the chain, Aramis and CO_2next are working together in the permit procedures. This is being coordinated by the Ministry of Economic Affairs and Climate as part of the Dutch National Coordination Arrangement (RCR).



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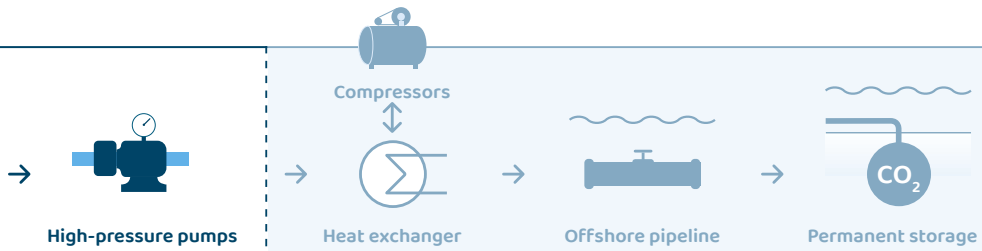

Information and Contact

www.co2next.nl
You can find information about CO_2next here.

www.aramis-ccs.com
You can find information about the Aramis initiative here.

www.rvo.nl/aramis
You can find information about the Dutch National Coordination Arrangement, which includes CO_2next, here.

Do you have a question or comment? Feel free to complete the form on our website:
https://co2next.nl/contact/

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CO2NEXT