DB Cargo

Carbon Capture Utilisation & Storage

Brief introduction

2024

DB Cargo BTT

Carbon Capture Utilisation & Storage

DB Cargo BTT - Hazardous goods expertise within the DB Group

Rail freight transport in the DB Group

Freight Transport & Logistics

Intelligent logistics services on land, at sea and in the air

Passenger transport

Mobility for people – nation-wide and throughout Europe

Infrastructure

Efficient and sustainable rail infrastructure in Germany

DB Cargo

European rail freight transport

- **Logistics**
- **Industrial**
- **Intermodal**

Services provided by DB Cargo BTT GmbH

Hazardous goods logistics since 1989

DB Cargo BTT

- **Mineral Oil**
- **Chemicals**
- **New Energies: H_2 , CO_2 , LPG**

- Transports to 30 countries
- 11,300 block trains transported per year
- Over 248,000 single wagon transports per year
- Own tank containers and tank wagon management

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Why do we need rail-based carbon capture logistics?

Outlook CO_2 Pipeline network[1]

Start network

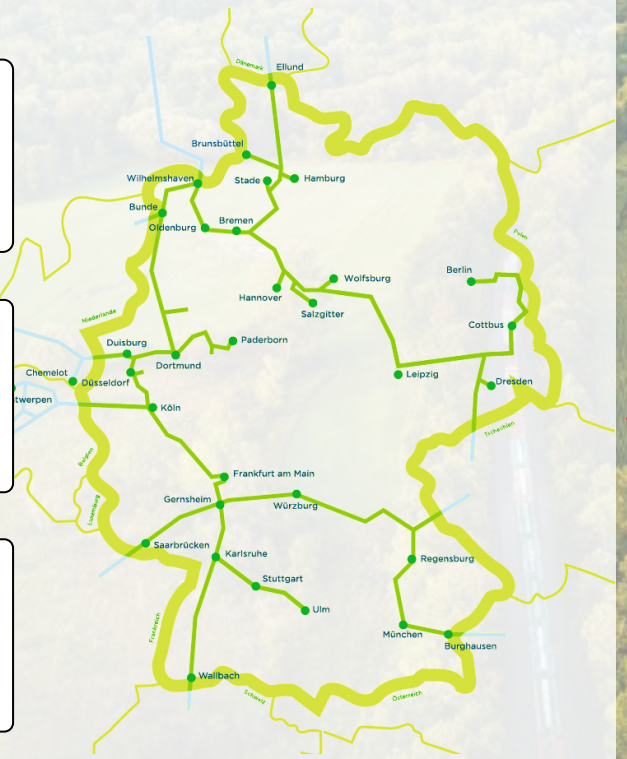
At the beginning of the 2030s, point sources in the north are connected, starting from Wilhelmshaven

Expansion routes

In the early 2040s, point sources are connected in the east and south

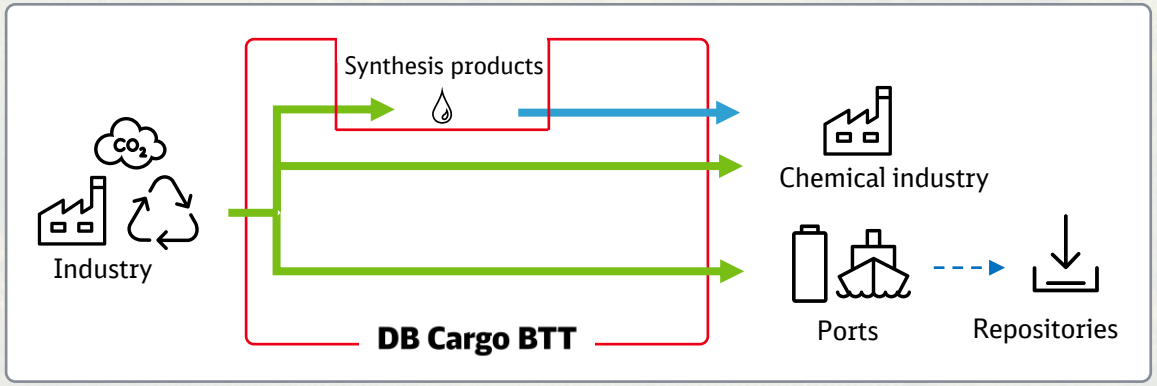
Decentralised point sources

... will probably not be connected in the long term either



The rolling CCUS pipeline

- **Time flexibility**:
  Rail as an enabler of early transport solutions for CO_2
- **Route flexibility**:
  Transport of CO_2 for storage (CCS) or utilisation (CCU)
- **Product flexibility**:
  Transport of synthesis products (e.g. methanol) also possible
- **Climate neutrality**:
  Continuous green transport possible



(1) Source: OGE

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General conditions for the transport of CO_2 by rail

Technical conditions

In General:

- Transport of liquefied CO_2
- Transport temperature CO_2: -30 to -33 degrees Celsius
- Transport pressure: 12-15 bar
- Degree of purity CO_2: > 99.5% (must be assessed in detail)

For hazardous goods:

- Hazardous goods class 2.2 (non-flammable, non-toxic gases)
- High safety standards required

The challenge of holding time

- Holding time: period during which CO_2 retains its liquid aggregate state
- Temperature and pressure must be kept within the specified range throughout the entire transport period
- Holding time must be determined and documented by the filler before each transport

- **Reference holding time CO_2** = approx. 6-10 days, with cryogenic equipment approx. 100 days

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Transport equipment for CO_2

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Focus DB Cargo BTT

Liquid gas tank wagon

- Payload approx. 60 tonnes per wagon
- Approx. 20 wagons per train (will be checked individually)
- Around **1,200 tonnes payload per train**

- Standard foam insulation
- **Holding time: 6-10 days**

- Advantage: maximum payload
- Disadvantage: can only be used siding to siding

Liquid gas tank containers

Standard variant

- About 20-25 tonnes per container
- About 40-46 containers per train
- Around **920-1,000 tonnes payload per train**

- Standard foam insulation
- **Holding time: 6-10 days**

- Advantage: can be used flexibly without a siding
- Disadvantage: higher costs with lower payload (compared to tank wagon)

Cryo variant

- About 21 tonnes per container
- About 44 containers per train
- Around **924 tonnes payload per train**

- Vacuum insulation
- **Holding time: approx. 100 days**

- Advantage: extremely long holding time
- Disadvantage: very high costs

Carbon Capture Utilisation & Storage
Meet us

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