CO_2 TRANSPORTATION AND STORAGE

MAERSK OIL MAERSK TANKERS

A.P. MOLLER - MAERSK GROUP

THE CLIMATE CHALLENGE

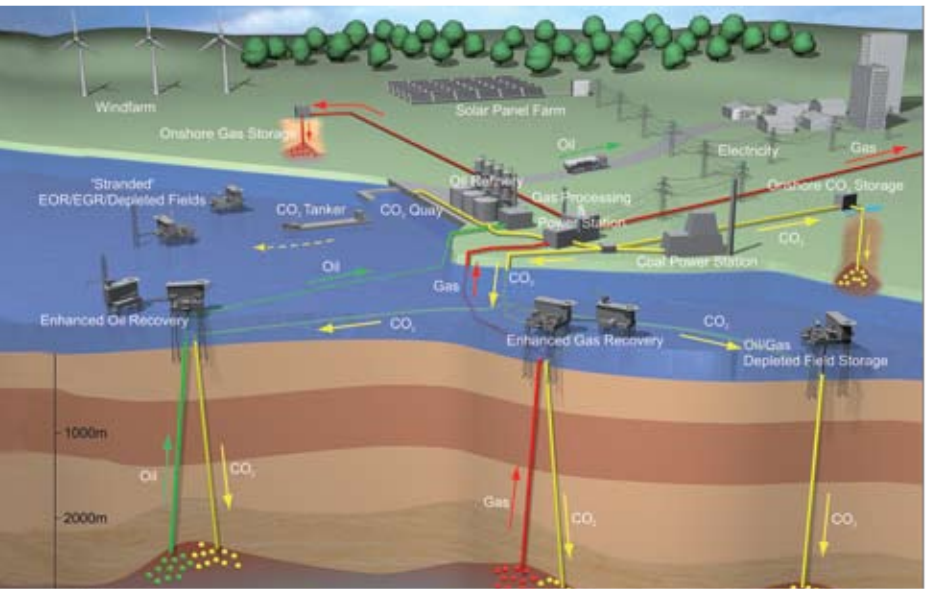
THE BURNING OF FOSSIL FUELS IS THE MAIN CONTRIBUTOR TO CLIMATE CHANGE. AT THE SAME TIME, FOSSIL FUELS DRIVE ECONOMIC GROWTH, AND GLOBAL DEMAND IS LIKELY TO REMAIN HIGH FOR YEARS TO COME. THAT POSES A GREAT CHALLENGE IN TERMS OF TACKLING CLIMATE CHANGE.

As a global company, the A.P. Moller - Maersk Group focuses on the climate agenda and takes appropriate action and responsibility. Our Group aim is to reduce carbon emissions relatively by 10% in the period from January 2008 to December 2012 using 2007 as a baseline reference. We are deploying a wide range of innovative and creative solutions based on the strategy that business and environment go hand-in-hand.

Energy efficiency is one of the best ways to reduce our use of fossil fuels as well as limiting the amount of CO_2 being released into the atmosphere.

For instance, Maersk Tankers has reduced ship fuel consumption considerably through innovative hull and propeller designs and by installing energy efficient engines. At Maersk Oil, a constant effort is made to reduce the energy required for oil production. Still in progress is the development of a technology that safely reduces the flaring of associated gas during oil production.

- Maersk Tankers' CO_2 footprint would be less than 1% of transported CO_2
- Maersk Tankers aims for ship sizes up to 35,000 cubic meters allowing for up to 40,000 tonnes CO_2 per voyage
- Delivery time of ships from order is 2 years
- Semi-pressurized/semi-refrigerated CO_2 is approximately minus 55°C and 6.5 bar
- CO_2 ships can discharge offshore using the same principles as oil and gas shuttle tankers are loaded offshore
- Offshore discharge requires heating and compression equipment on ship or offshore platform prior to storage
- Ships and pipelines can support each other in future large scale hub logistics



CARBON CAPTURE AND STORAGE

Reducing the worldwide carbon footprint is crucial for the climate. But the amount of CO_2 and other greenhouse gases being released into the atmosphere by major emitters such as coal-fired power plants, oil refineries, steel mills and cement plants will continue to be so massive that society needs to come up with additional methods to reduce atmospheric CO_2 levels.

One such method is called Carbon Capture and Storage (CCS), which involves capturing CO_2 from coal-fired power plants etc., transporting the CO_2, and storing it in a storage site such as a depleting offshore oil field.

Despite many technical and public policy challenges, it is generally believed that CCS in the short to medium term will play a significant role in a global CO_2 abatement strategy.

MAERSK TANKERS – TRANSPORTING CO_2 BY SHIP

Once CO_2 is captured, it needs to be transported by pipeline or ship to a suitable storage site.

Shipping CO_2 in tanker vessels requires less capital expenditure than pipelines and provides flexibility in terms of access to multiple storage sites. Shipping is well suited for smaller quantities, at longer distances or for shorter periods. For further flexibility, CO_2 tanker vessels can also be used to transport other gas products. These factors make economic and logistical sense, particularly in the emerging phase of CCS.

Maersk Tankers already has the blueprints to build tanker vessels for transport of CO_2 from emitter sites to offshore storage sites. These vessels will be semi-pressurized and semi-refrigerated, keeping CO_2 liquid. Maersk Tankers has designed its vessels based on years of experience with transportation of liquefied petrochemical and natural gas, and in accordance with global standards.

The vessels can be equipped with offloading equipment to cope with the challenges of storing the CO_2 offshore.

MAERSK OIL – OFFSHORE CARBON STORAGE

Many offshore depleting or depleted oil fields could be used for the geological storage of CO_2. Maersk Oil has the general subsurface expertise required to undertake such storage in various geological formations, and is well suited to manage CO_2 storage for CCS projects.

For a storage site to be suitable for permanent CO_2 storage, it has to have a well defined porous geological layer that will allow the CO_2 to migrate into the subsurface, and cap rock that will keep the CO_2 from rising to the surface once it has been injected. Maersk Oil is currently identifying suitable offshore CO_2 storage sites in the depleting Danish Underground Consortium (DUC) fields in the North Sea. We are already in discussions with CO_2 point source owners in the region regarding potential CCS projects. Several of these projects involve the use of tankers to transport the CO_2, and some may include CO_2-based Enhanced Oil Recovery (EOR).

The properties of CO_2 allow oil companies to produce what would otherwise be non-extractable oil by injecting it into existing reservoirs to extend a fields's production life. The costs involved with EOR include retrofitting existing oil production platforms to deal with issues of acidic corrosion, and separating CO_2 from the produced oil.

Maersk oil is actively investigating opportunities in EOR, and sees a future for CO_2 abatement by storing CO_2 as an integral part of oil production in the years to come.

Explore more at www.maersk.com www.maersktankers.com and www.maerskoil.com

THE A.P. MOLLER - MAERSK GROUP is a worldwide organisation with about 120,000 employees and offices in around 130 countries – with global headquarters in Copenhagen, Denmark. In addition to owning one of the world's largest shipping companies, we are also involved in a wide range of activities within the energy, shipbuilding, retail and manufacturing industries.

MAERSK TANKERS operates one of the largest, most modern and diversified independent tanker fleets in the world, with approximately 300 vessels. Our fleet is exclusively double hulled - all meeting the latest industry standards and requirements. We focus on safety, the environment and cost efficiency.

MAERSK OIL is a mid-size international oil and gas company with production in Denmark, Qatar, the UK, Algeria and Kazakhstan, and exploration activities in a number of locations globally. We operate more than 800,000 barrels of oil equivalent per day, and are one of the world's top 25 independent oil and gas companies.

Both companies are working to meet the challenges of global warming and climate change by reducing our carbon footprint and through greenhouse gas mitigation initiatives.

To meet the anticipated demand for storing CO_2, Maersk Tankers is planning to develop semi-refrigerated, semi-pressurized CO_2 tanker vessels to transport CO_2 from point sources such as coal-fired power plants, refineries, etc., to carbon storage sites. In addition, Maersk Oil is developing Enhanced Oil Recovery projects that will use depleting oil and gas fields to store captured CO_2 emissions.

NORDISK MILJØMÆRKNING
541 661
TRYKSAG