0:01

Meet Per

0:03

and Cristel.

0:05

They are working to cut carbon dioxide

0:07

or CO2 emissions from the cement industry

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using capture technology, specialist ships and undersea storage.

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Because while cement helps build the world around us.

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Homes and offices, bridges and canals, roads and runways

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the cement industry emits up to 7% of all carbon dioxide emissions globally.

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So, Northern Lights, a partnership between Shell, Equinor and TotalEnergies

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suppoerted by the Norwegian government, has come up with a way

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to help customers, like HeidelbergCement, cut them.

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I feel we have a huge responsibility

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as one of the big emitters, but also for me as a person.

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This is Per Brevik, of Norcem, Norway’s biggest cement producer

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and part of HeidelbergCement Group.

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At their Brevik plant, he’s the man with a CO2 capture plan.

1:04

We will capture 400,000 tonnes, which is 50% of our emissions.

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That’s 400,000 tonnes of CO2 emissions per year.

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Cement starts with a lump of rock – limestone

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and it’s quite a process going from this to this.

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It sure is.

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To make cement, limestone must be crushed and baked

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at up to 6 times the heat of a pizza oven

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which splits it into calcium oxide and carbon dioxide.

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This process, this split, is unavoidable.

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We haven’t found another way to do it without CO2 emissions.

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So, to stop this CO2 being emitted into the atmosphere

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Per and his colleagues have come up with a clever plan.

1:58

We are building a new plant

2:01

beside the cement plant

2:03

where we are going to take out the CO2.

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And this is the technology behind it.

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The CO2 emissions from the factory

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will be diverted into a processing unit

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where the CO2 molecules are absorbed by a liquid.

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Next, steam separates the CO2 from this liquid

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before the CO2 is compressed at high pressure

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liquefying it ready for transport.

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After we have captured and conditioned the CO2

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we have done our part of the work.

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This is where Northern Lights will come in

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pumping the liquid CO2 onto a ship and sailing it

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around the coast of Norway for permanent storage.

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Enter Cristel Lambton

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Technical Director of the Northern Lights Joint Venture.

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So here we are at the building site of the receiving terminal for Northern Lights,

3:01

where the captured CO2 is being delivered

3:05

into temporary storage tanks.

3:08

From these storage tanks, the liquid CO2 will travel

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100 kilometres through an undersea pipeline

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where it will be injected 2.6 kilometres below the seabed

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and stored permanently in a rock formation.

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The capacity of phase one of Northern Lights is 1.5 million tonnes per year

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With demand growing, we will expand the terminal to a capacity of between 6 and 7 million tonnes per year.

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And this will hopefully provide a storage solution for other industries like steel, waste incineration, chemicals.

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By capturing the CO2, we can produce low carbon products

3:52

and we will contribute to a low carbon economy based on sustainability.