Twitter Thread by Mark Tomasovic

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What is carbon capture? And how does it work?

While carbon capture is regularly discussed in the media, no one really ever explains what it is.

Below is a quick thread discussing the technology behind traditional carbon capture ■

Carbon capture is broadly the "capture" of CO2 emissions from a power plant or other type of industrial facility.

Technology is connected to the "tailpipes" of these facilities and is used to remove CO2 from the plant exhaust.

Once the CO2 is removed from the plant exhaust, it is typically pressurized and sent under ground for permanent storage.

This step is called "sequestration" and is why experts often talks about "carbon capture and sequestration" or "CCS".

So how do you "capture" the CO2 molecules from exhaust?

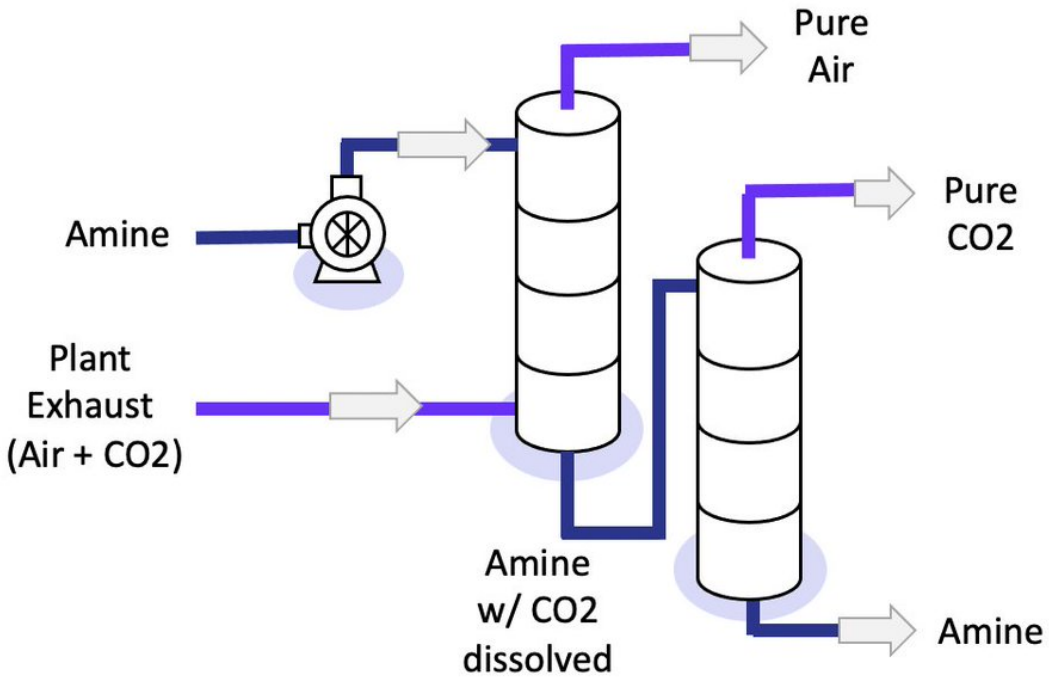
Currently, one of the most economic forms of carbon capture is called "amine-based" capture.

An "amine" is a special liquid chemical which selectively grabs on to CO2 molecules.

To get the amine to grab on to the CO2, the amine is put into the top of a large column, while the exhaust is put into the bottom of the column.

The exhaust bubbles up through the column, and the amine drips down.

The liquid amine and gas exhaust mix in the column.

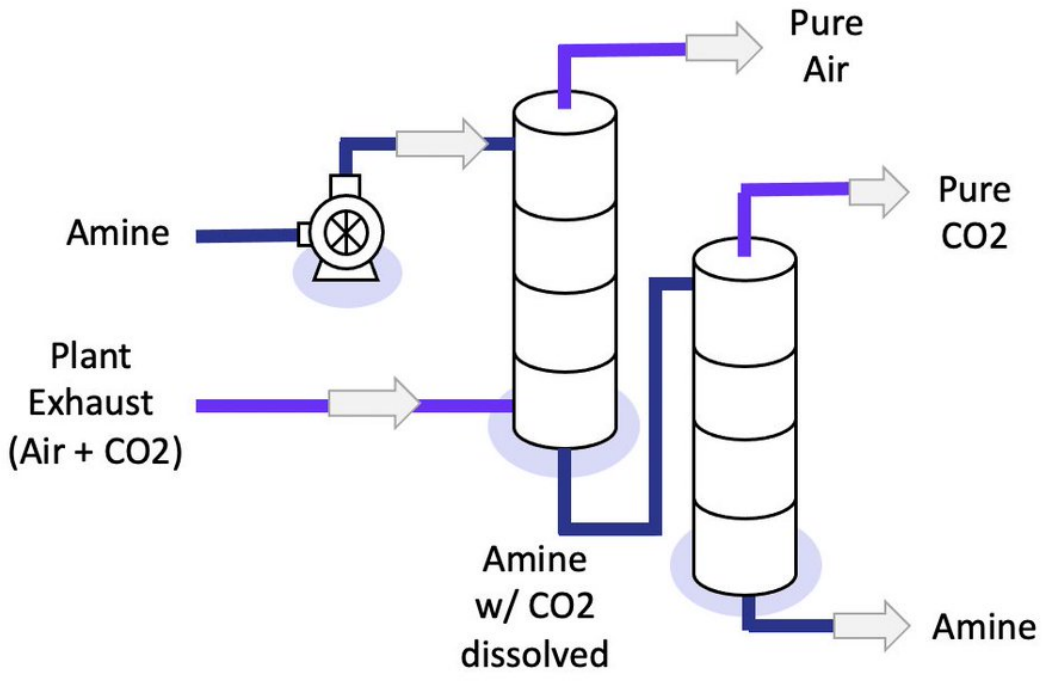


The amine selectively "dissolves" the CO2 in the first column, while letting the rest of the air pass through.

The amine with dissolved CO2 is sent into a second column where it is heated.

In the second column, the CO2 pops out of the amine.

Now, we have separated the CO2.

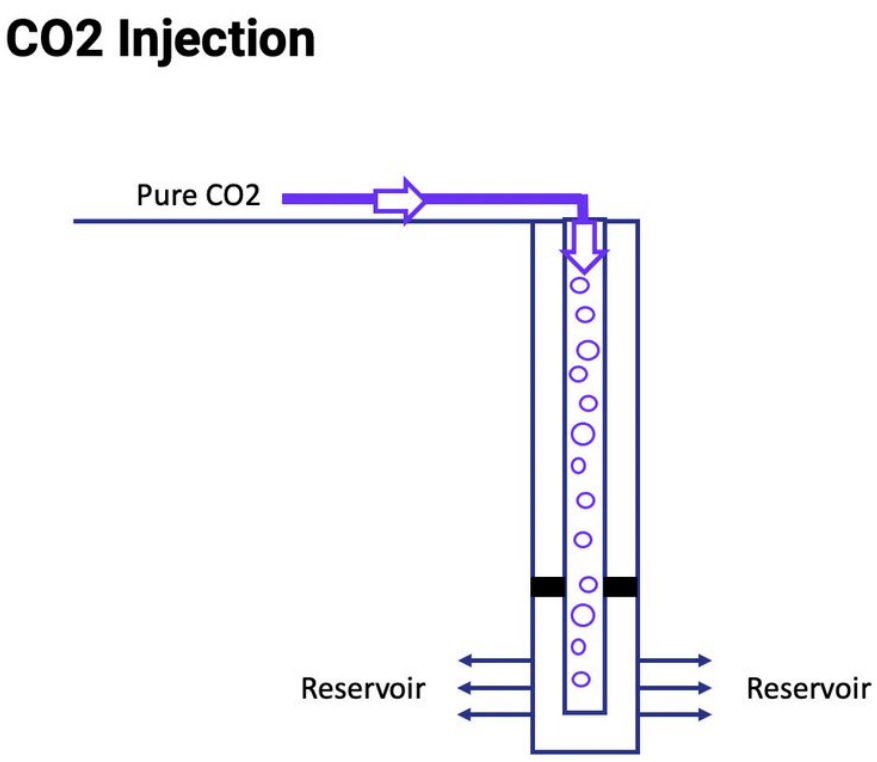


These columns are often called "scrubbers" ...and if you ever drive by a plant, you might see these columns.

Below is a picture of an amine plant used for CO2 scrubbing.

Finally, once the CO2 is separated, it is compressed to extremely high pressure and prepared for sequestration.

The CO2 is injected into a well for permanent storage underground, usually a few hundred yards away.



As @tlancaster50 from my team notes, there are other ways of capturing CO2

What I've described is called "point source capture" because it captures CO2 from a single plant exhaust

With new advances in technology, CO2 can also be captured directly from the air we breathe

Thats the summary! Hope this was helpful.

Please ask questions in the comments, and I will continue to post more about carbon capture (economics, scalability, etc) in the near future.