

# Kobe Nagar

is the CEO & Co-Founder of

**374WATER<sup>o</sup>**

Charles Cagniard de Latour was a french engineer and physicist.

There's not even a portrait of him, yet in 1822 he discovered something that could have huge repercussions 200 years later.

**Substances have a critical point.**

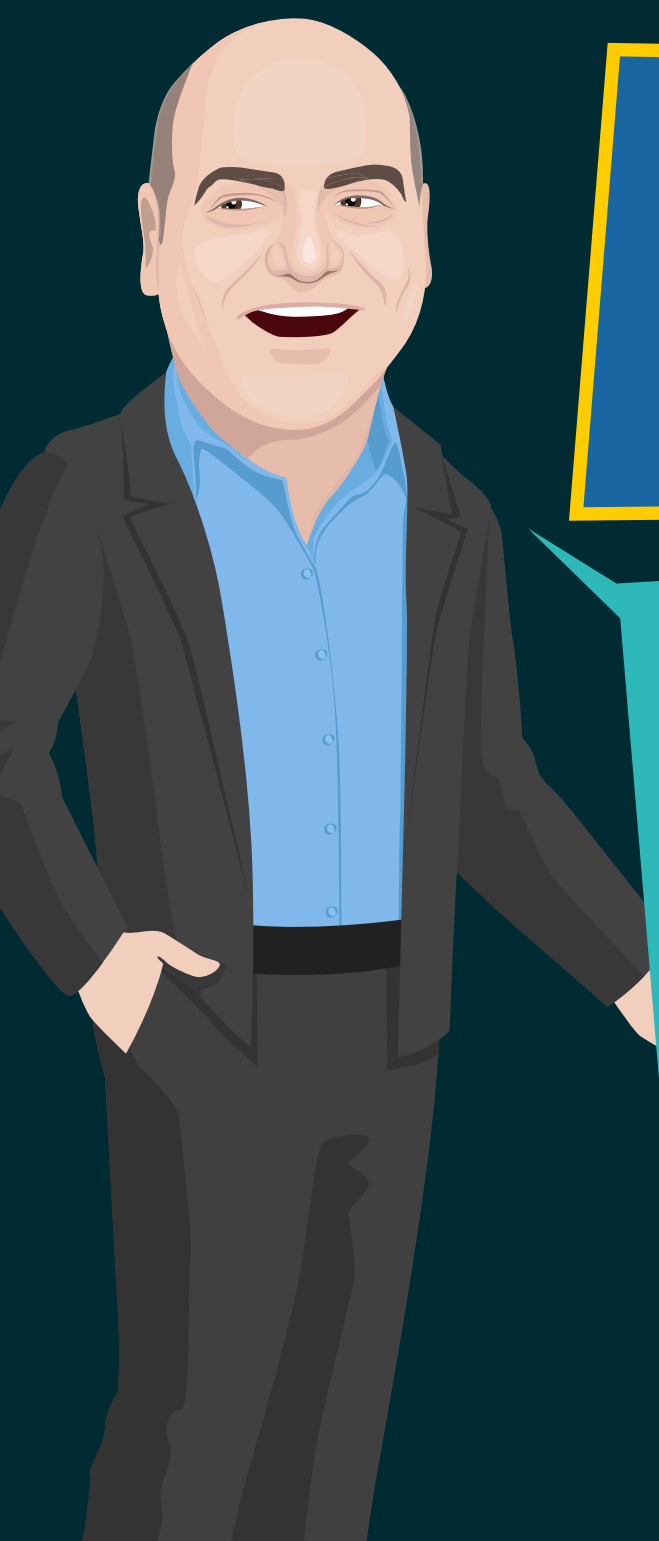
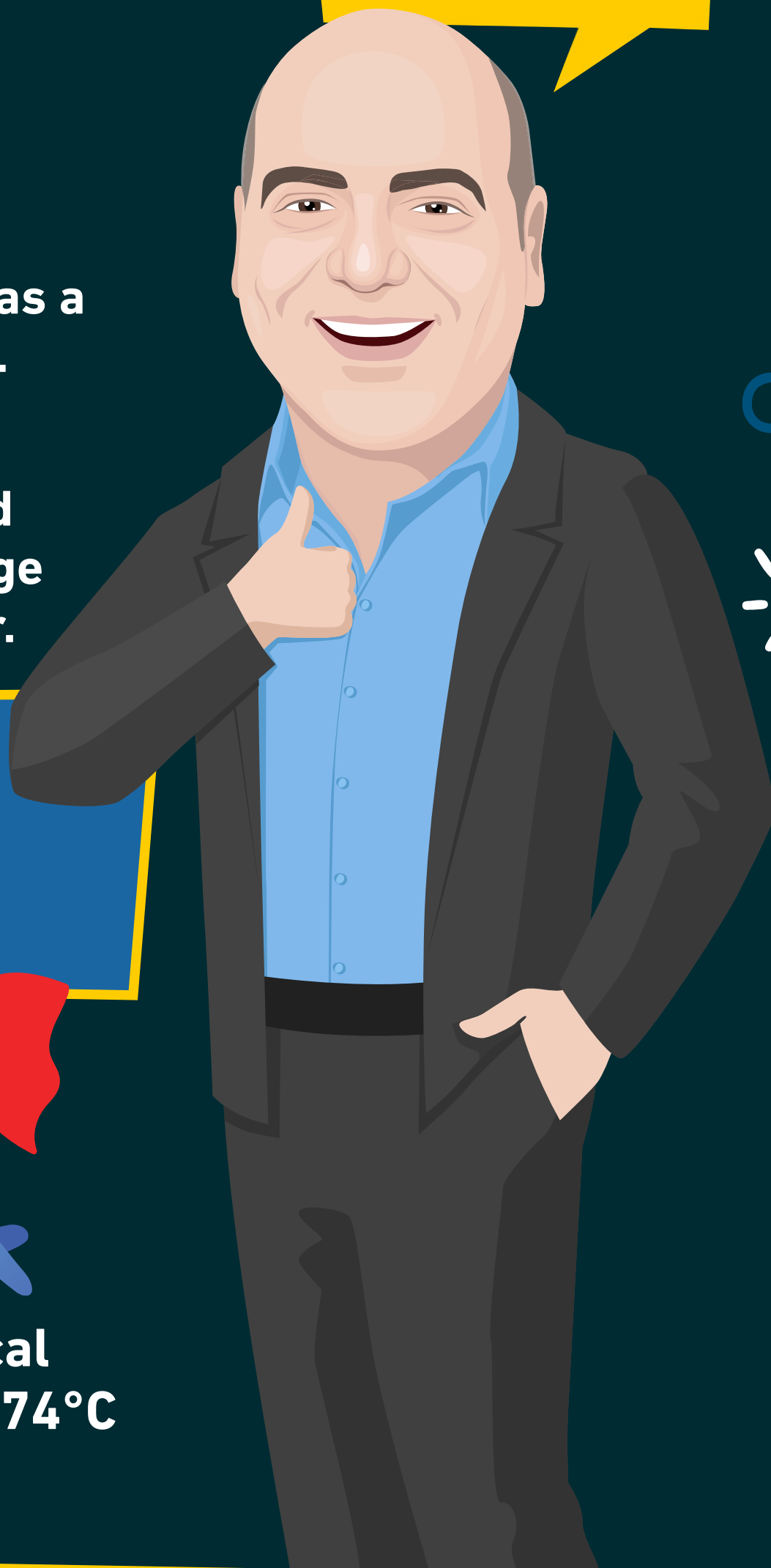


For water, that critical point is reached at 374°C and 221.1 Bar.

As long as you go beyond in both dimensions, you enter a new phase of water: SuperCritical Water.

That creates very unique properties: instead of water being a good solvent for salts and inorganics, it becomes an excellent solvent for organic molecules!

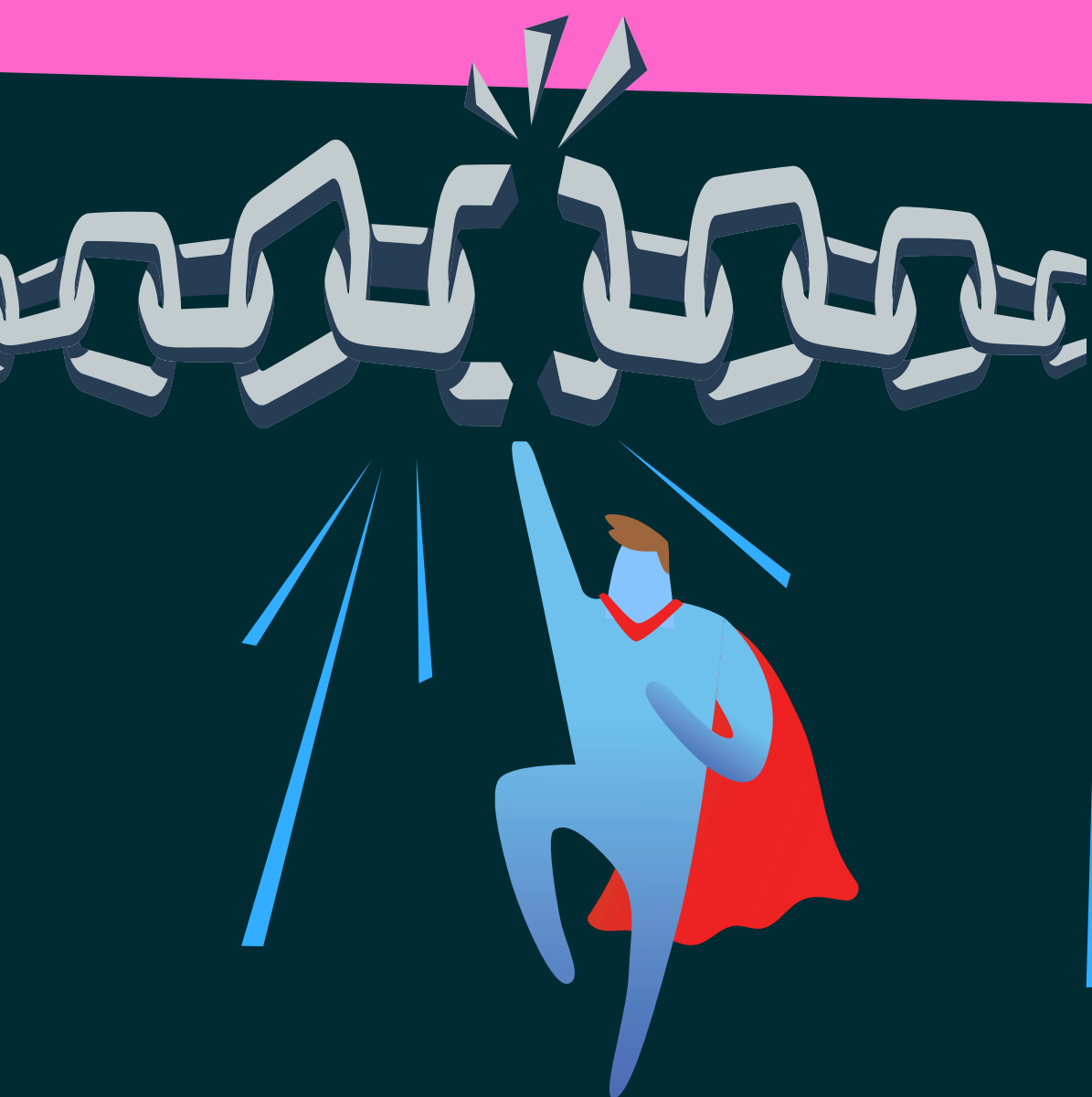
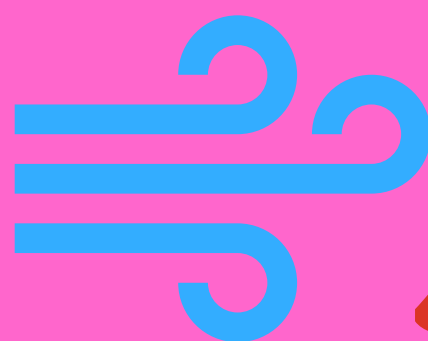
(DON'T!)  
**WASTE WATER**



As these organic molecules become soluble in water, they can react with a dissolved oxidizer: that's what we call SuperCritical Water Oxidation (SCWO).

(DON'T!)  
**WASTE  
WATER**

To do that, you can use different kinds of oxidants: oxygen, hydrogen peroxide, or simply... air, as 374Water does.

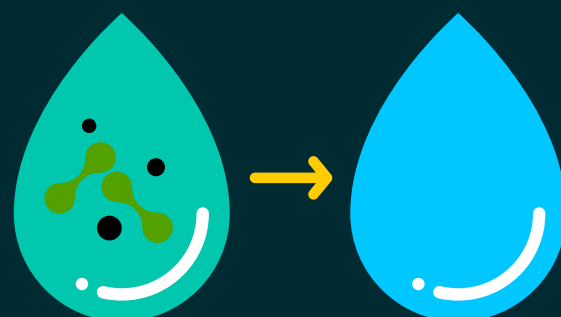


You create this strongest oxidizing environment that can rapidly break any carbon bonds - including even the CF bonds that you have in PFAS.

In a recent case study in the US, the company demonstrated eliminating 99.95% of total PFAS in a wastewater sludge stream.

And "elimination" is an important keyword in this case:

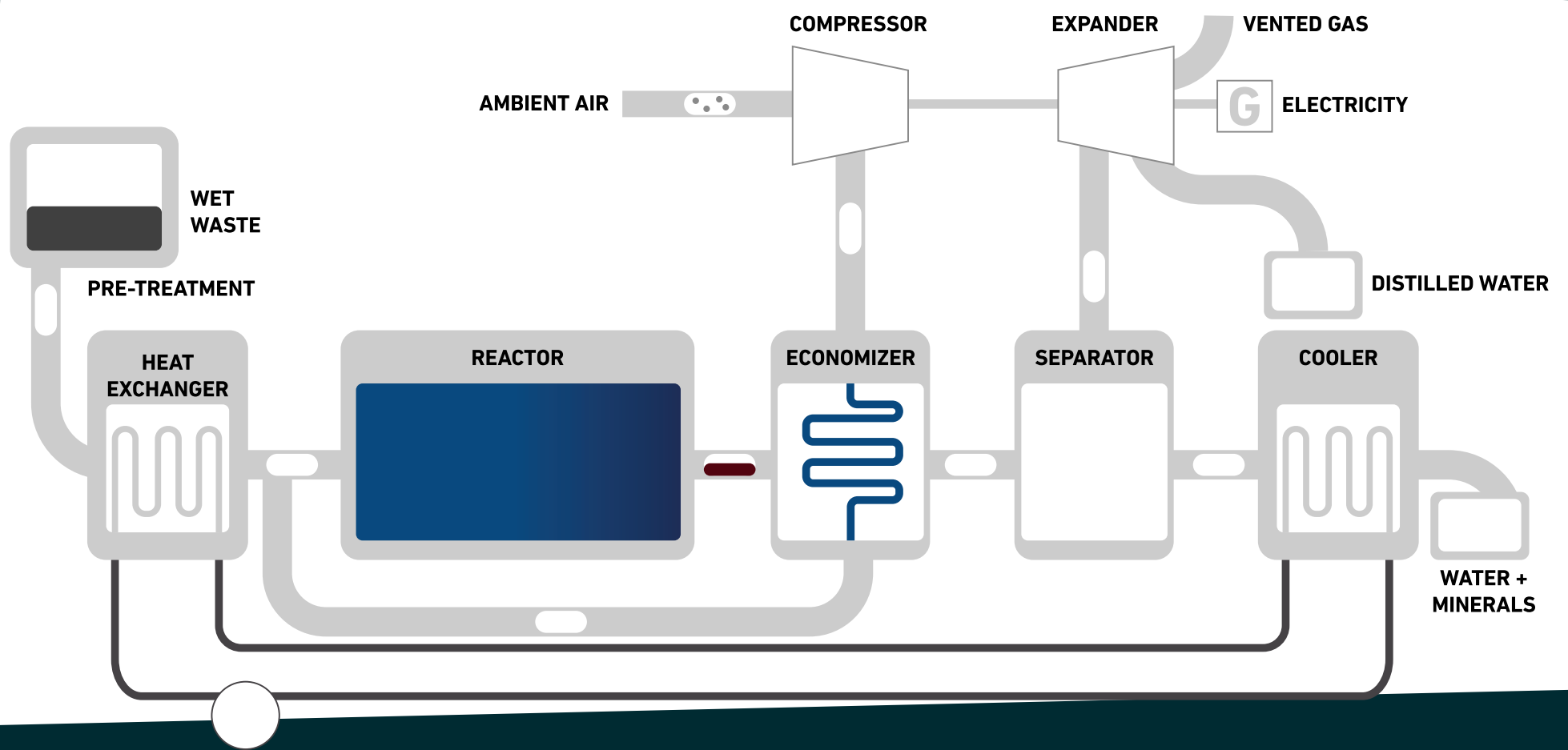
We're breaking them down completely. Others may push the problem to another location or the next generation; we're really solving it!



To achieve SCWO, you need to heat up your wastewater and mix it with compressed air in a reactor.

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After a reaction time of... 4 seconds, you collect clean water, inert gases, mineral salts, and heat at the output.

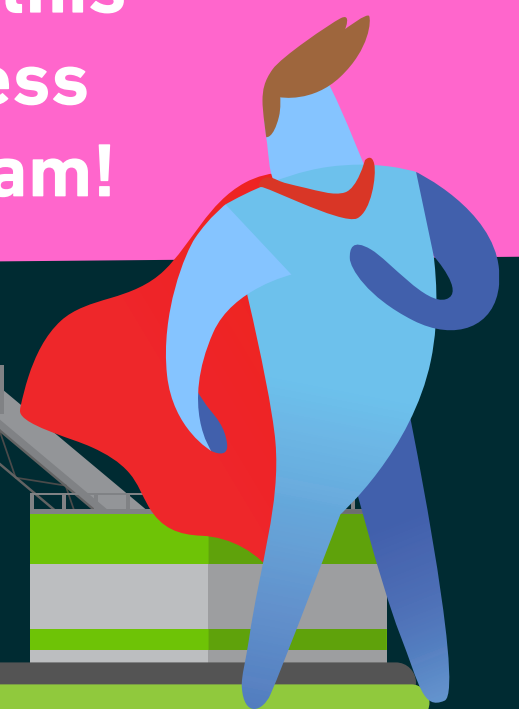
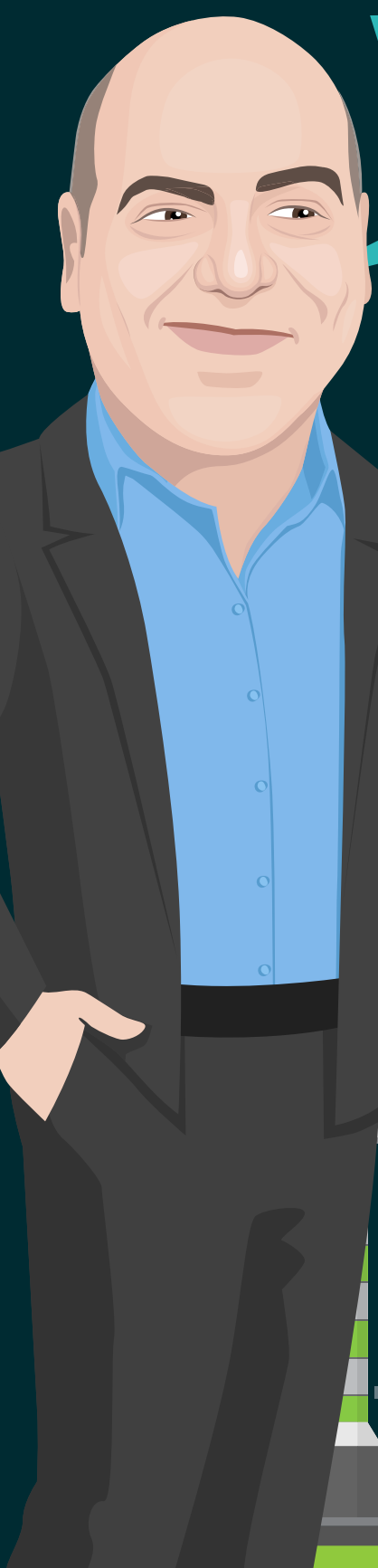


**But wait, there's more:**

The supercritical process is actually tapping into all the chemical energy you have in the waste and converting it into heat.

The reaction is indeed exothermic, as it breaks the carbon bonds of the organic matter. (Somehow exactly like when you burn gas or coal!)

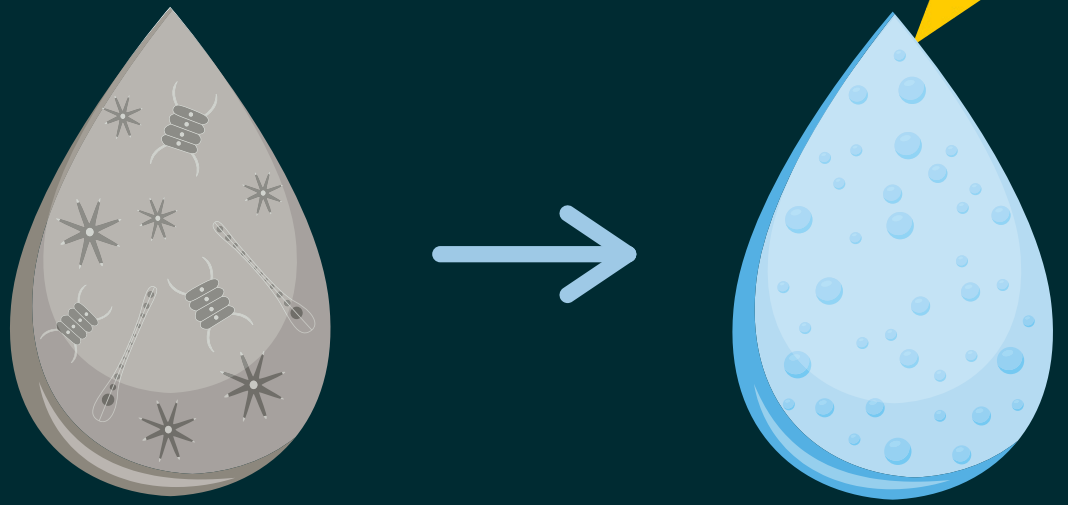
And as soon as you recover this heat, you turn a waste process into an energy-positive stream!



**But that's just one of the resources you can recover:**

(DON'T!)  
**WASTE WATER**

We can generate distilled water quality from any type of organic waste. Then, depending on the market value of the minerals, we can also recover those, like phosphorus.



**This indeed opens a world of opportunities. We have a unit that produces clean water and valuable resources from waste in an energy-positive fashion.**

**Doesn't that represent the perfect building block for the food-energy-water nexus?**

**We also covered:**

- The perks of taking time to evaluate options when developing a new tech (and of leveraging previous experiments)
- How SuperCritical Water Oxidation draws on simple building blocks available everywhere
- How scale effects unlock even better energetical mass balances
- How small a reactor can be, thanks to the process' speed of reaction
- How SCWO developed since the 1990s (and how some development were unnecessary complex)
- How challenging it is to introduce a new technology in the Water Industry (and which technologies SCWO intends to replace)
- 374Water's business model and recent (external) growth
- Spinning out of Duke University, Bill & Melinda Gates' "Reinvent the Toilet" challenge, using Celsius instead of Fahrenheit, great French discoveries, being feedstock agnostic... and much more!

**Don't miss a single bite:  
head over to [dww.show!](http://dww.show!)**

