

(DON'T!)

**WASTE
WATER**

Jim Lauria

is Vice President
Sales and Marketing at the
Mazzei Injector Company
and a Board Member of the
International Ozone Association

One wisdom you shall take home from this week's deep dive with Jim is that treasures are usually hidden in plain sight.

Some weeks ago, he went on a quest with his team:

We decided to break down all the silos - trade organization databases, CRM, Project Folders, Models... - to combine all the information and identify trends.

Their aim? Identifying how the drastic change in ozone concentrations the ozone industry experienced in the early 90s impacted the way ozone was transferred into water.

**Wanna know what ozone is all about?
And what actually changed in the 90s?**

Check out our #Water101 on Ozone on dww.show!



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Ozone diffusion has mostly two shapes:

1.

Fine Bubble Diffusers

Membrane or Ceramic diffusers are placed on the bottom of a contact tank and produce 3mm wide bubbles in a 6-8 meter column.

Think of it as an Ozone Jacuzzi!

2.

Sidestream Injection

You pump a 10% side stream off your main flow, and run it through a Venturi Injector connected with your ozone generator's outlet.

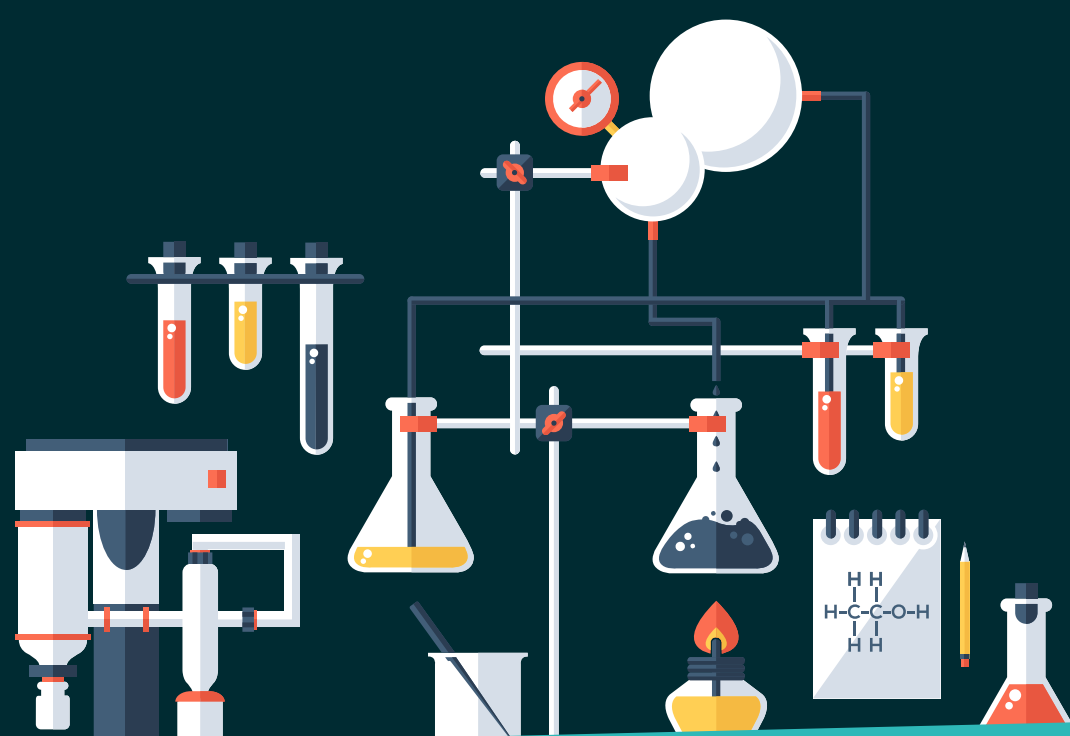
It pulls the gas in and mixes it to make a concentrated ozone solution, which you bring back in the main flow through a series of nozzles.

While fine bubble diffusers need to be placed into a basin, a sidestream injection can be placed directly in a pipe or a flash reactor.

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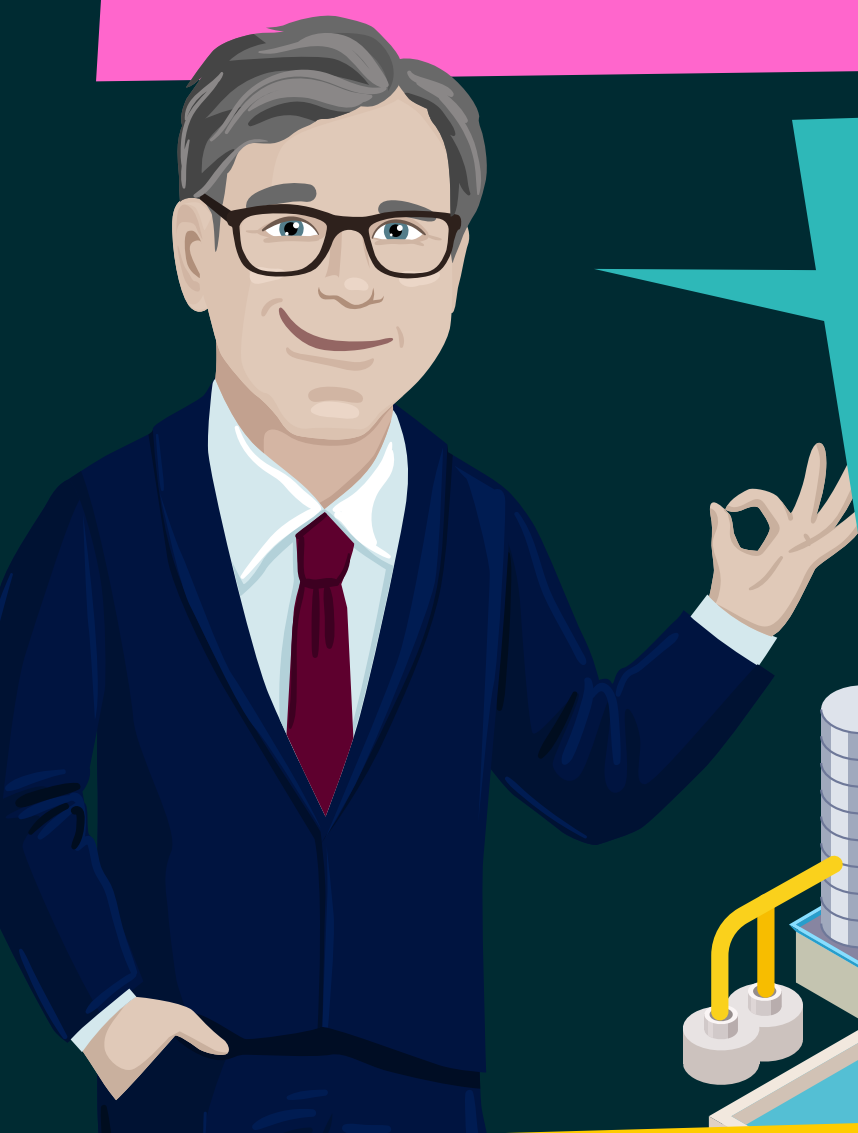
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Now, if you have to choose between both, many parameters may influence you. Do you refurbish an existing reactor? What's the application? What's the turndown ratio?

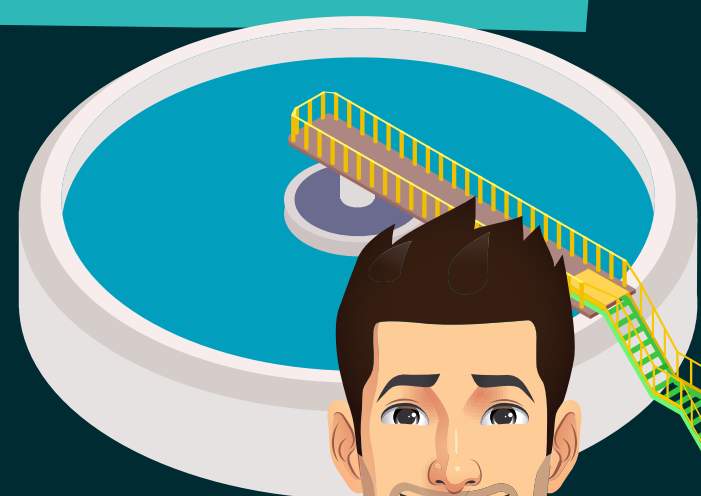
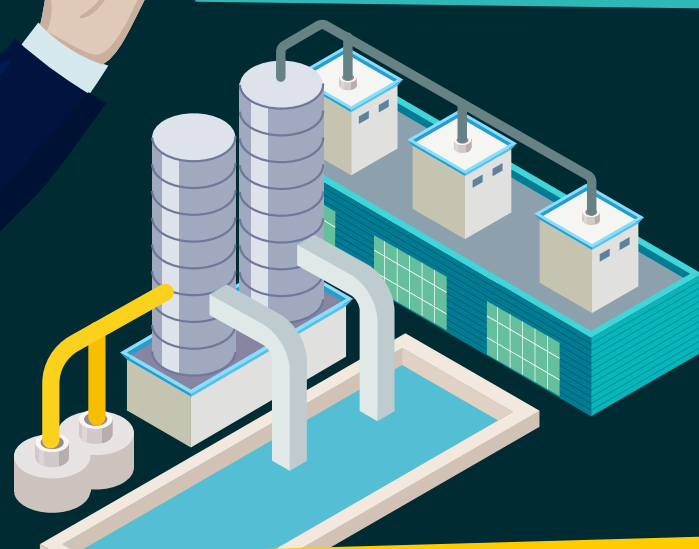


the Water Research Foundation also showed that reducing reaction time also decreases the risk of bromate formation

An ozonation compound of bromine, bromate is a regulated carcinogenic substance that you'd want to avoid producing.



Hence the importance of data to move from beliefs to facts. The Water Research Foundation compared two plants treating similar waters in Canada to conclude in favor of sidestream!



Wanna learn more on the topic? Check out S1E13 with Wim Audenaert to learn how process modeling has your back!




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Now, let's not forget the elephant in the room. What really matters in the choice of an ozone diffusion system is the total cost of ownership, and it has three main compounds:

1.

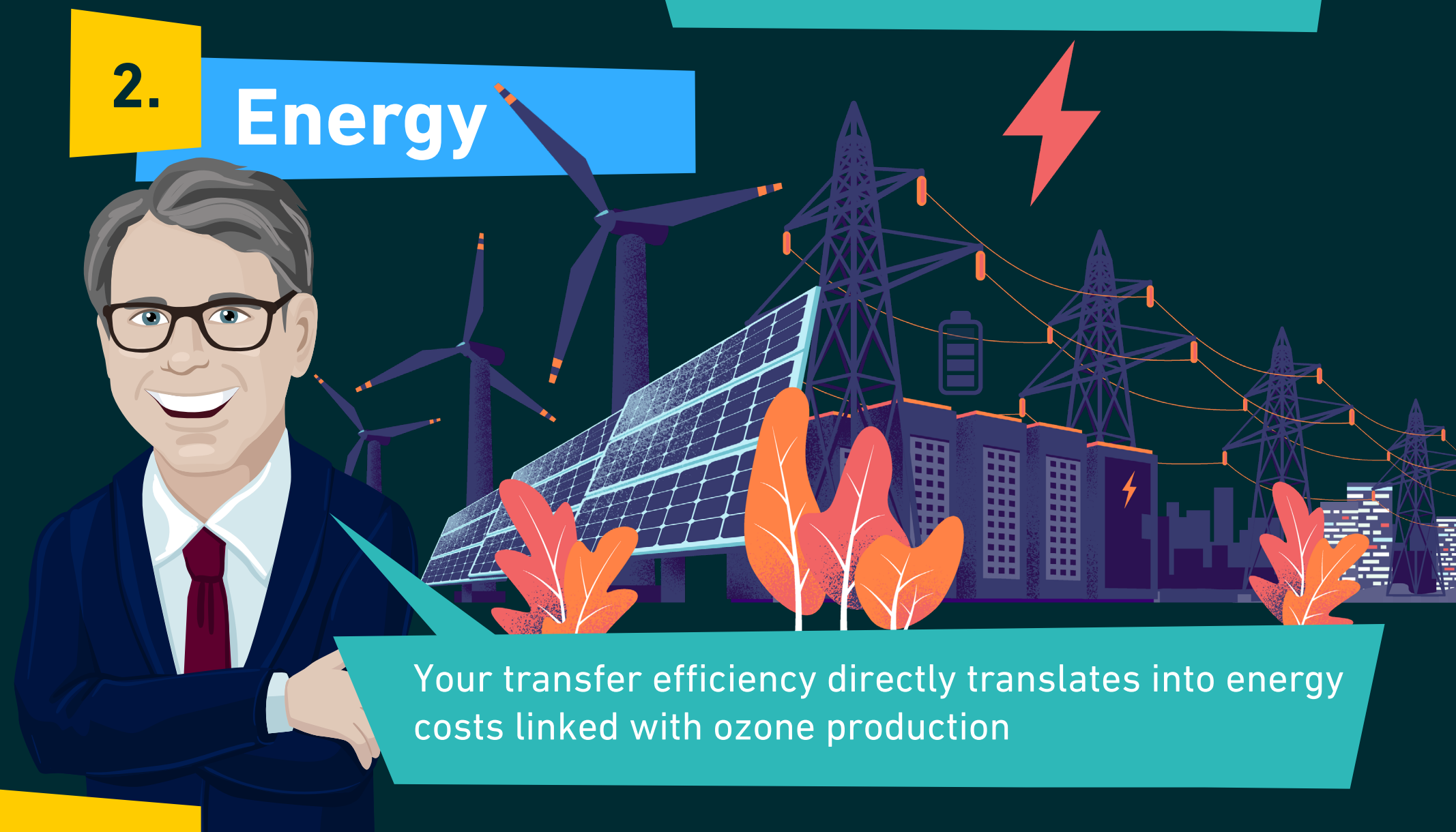
Investment



Capital costs are about footprint, civil works, and size of the plant

2.

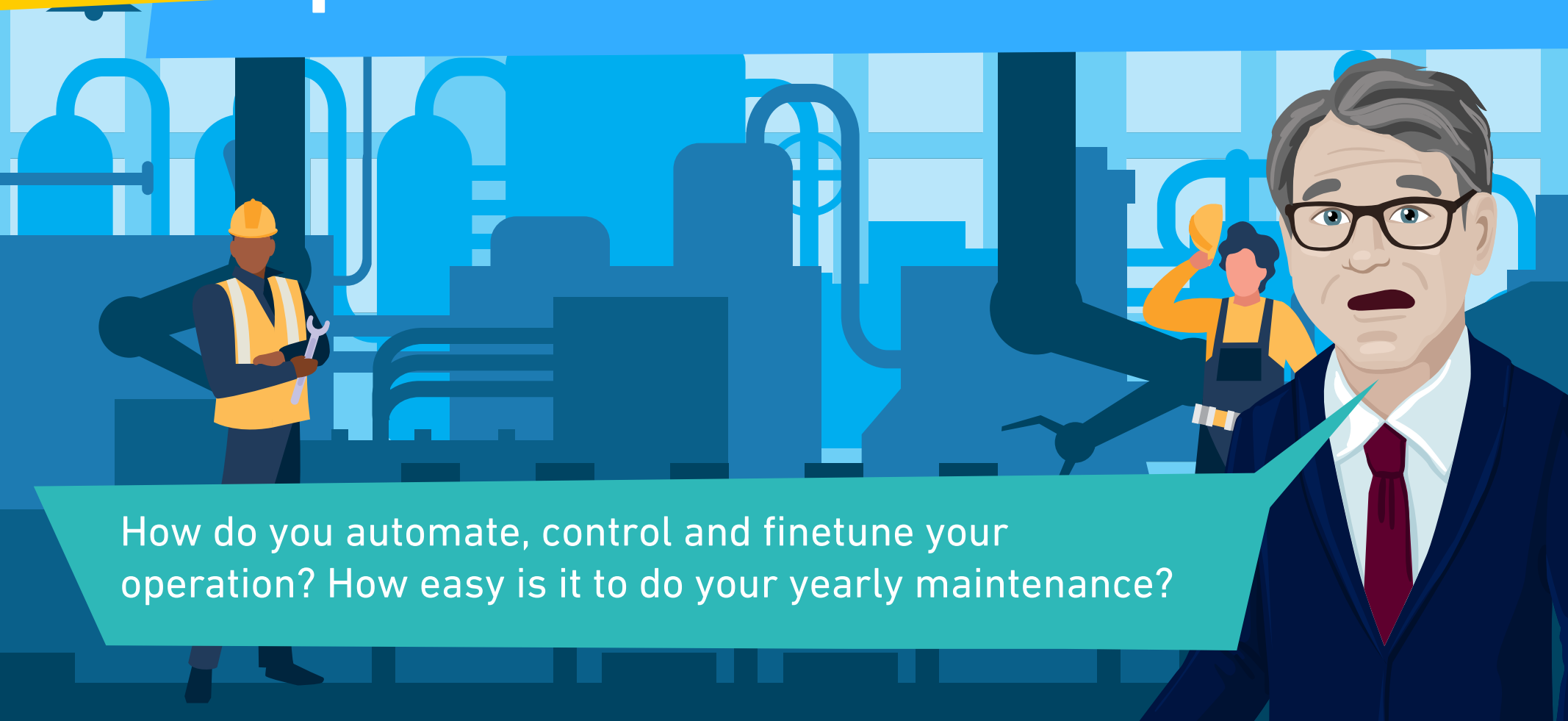
Energy



Your transfer efficiency directly translates into energy costs linked with ozone production

3.

Operations and Maintenance



How do you automate, control and finetune your operation? How easy is it to do your yearly maintenance?

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One last element of wisdom here:

**you'd better always keep an
Idea of the magnitude of these items.**



Over a 20-year lifecycle, CAPEX and installation costs are one-third and OPEX two-thirds.

**(So you may ask yourself twice if
you're rich enough to go cheap. 😏)**

**Wanna discover all the insights of
Jim's data deep dive? Check out
his LinkedIn article!**

We also covered:

- How ozone generator efficiencies might be reaching an asymptote, whereas new sensor technologies open new avenues for O&M optimization
- How it may be challenging to break industry habits, and how that may be integral to the vital nature of the water sector
- How modeling can open new horizons for ozone applications and wider risk-taking - and how water reuse may become the most common use of ozone
- How important it is to regularly upgrade your knowledge by following on your installed base
- But also how nothing exists in a vacuum, how you shall beware of seeing everything as a nail when you have a hammer, Advanced Oxidation Processes, Modular ozone generation, and much more!

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

