twelve | a world made from air

e·fuels

Power-to-Liquid fuels
made from air.

E-Jet® SAF

what are e-fuels?

E-fuels, or electrofuels, are synthetic hydrocarbon fuels created through the electrochemical conversion of CO2 and water using renewable electricity, a process commonly referred to as Power-to-Liquid.

With up to 90% lower emissions than conventional fuels, e-fuels are a critical solution for reducing emissions in hard-to-electrify sectors such as aviation, shipping, heavy-duty machinery, and transport.

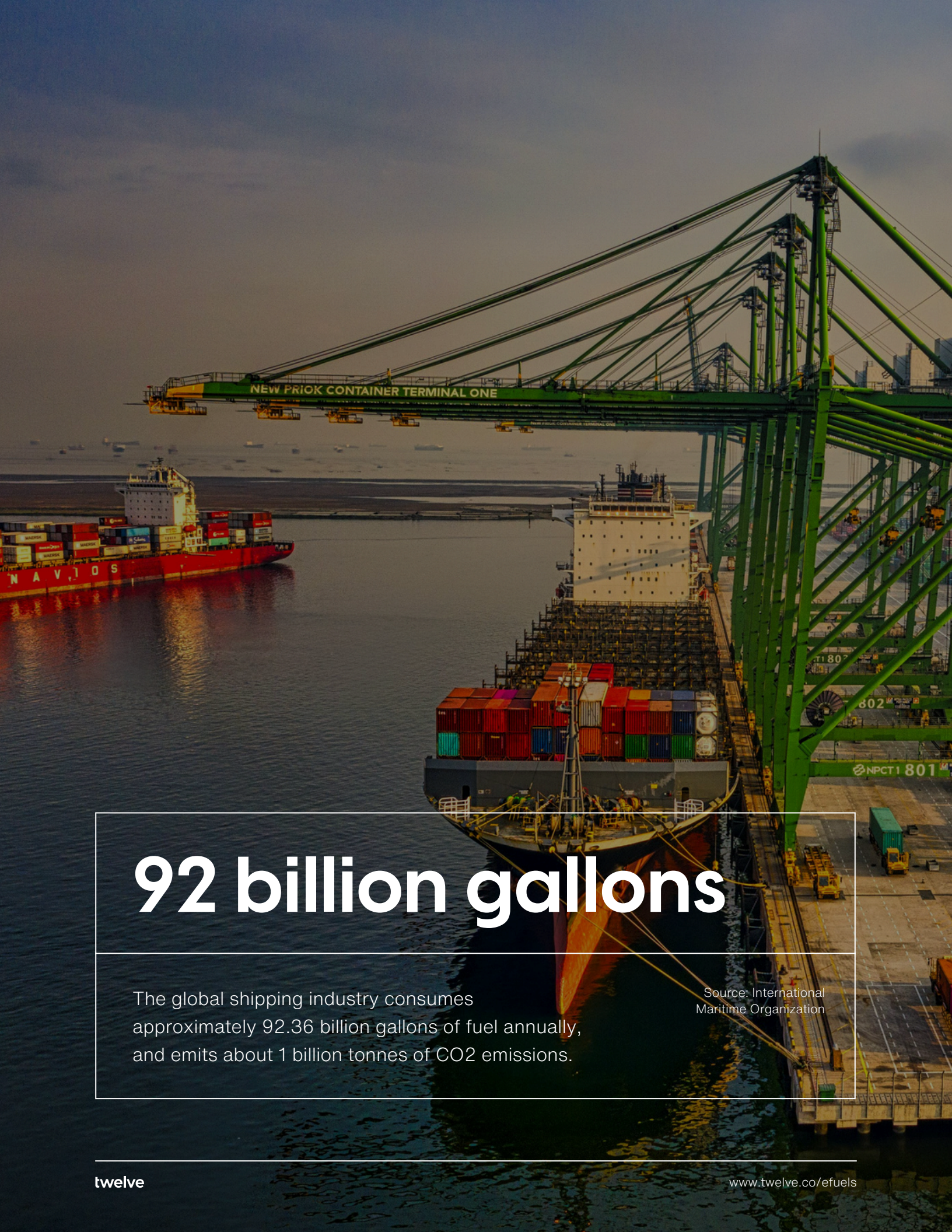
1 billion tonnes

In 2022, global commercial airlines consumed approximately 95 billion gallons of jet fuel, and emitted almost a billion tonnes of CO_2, accounting for approximately 2.4% of global CO_2 emissions.

Source: IEA

e·jet®

E-Jet® SAF is sustainable aviation fuel made from air, with up to 90% lower emissions compared to traditional jet fuel. Its production uses 1,000 times less water and 30 times less land than biofuels. E-Jet SAF meets the certification standards of ASTM D7566 Annex 1.



92 billion gallons

The global shipping industry consumes approximately 92.36 billion gallons of fuel annually, and emits about 1 billion tonnes of CO2 emissions.

Source: International Maritime Organization

e·marine™

E-Marine™ is drop-in certified marine gas oil that is made from CO2 and renewable electricity. E-Marine has up to 90% lower emissions, and significantly lower SOx, NOx, and particulate emissions than conventional marine gas oil. E-Marine meets ISO 8217 DMA.

25% CO2e

In 2022, diesel fuel consumption accounted for about 25% of total U.S. transportation sector CO2 emissions.

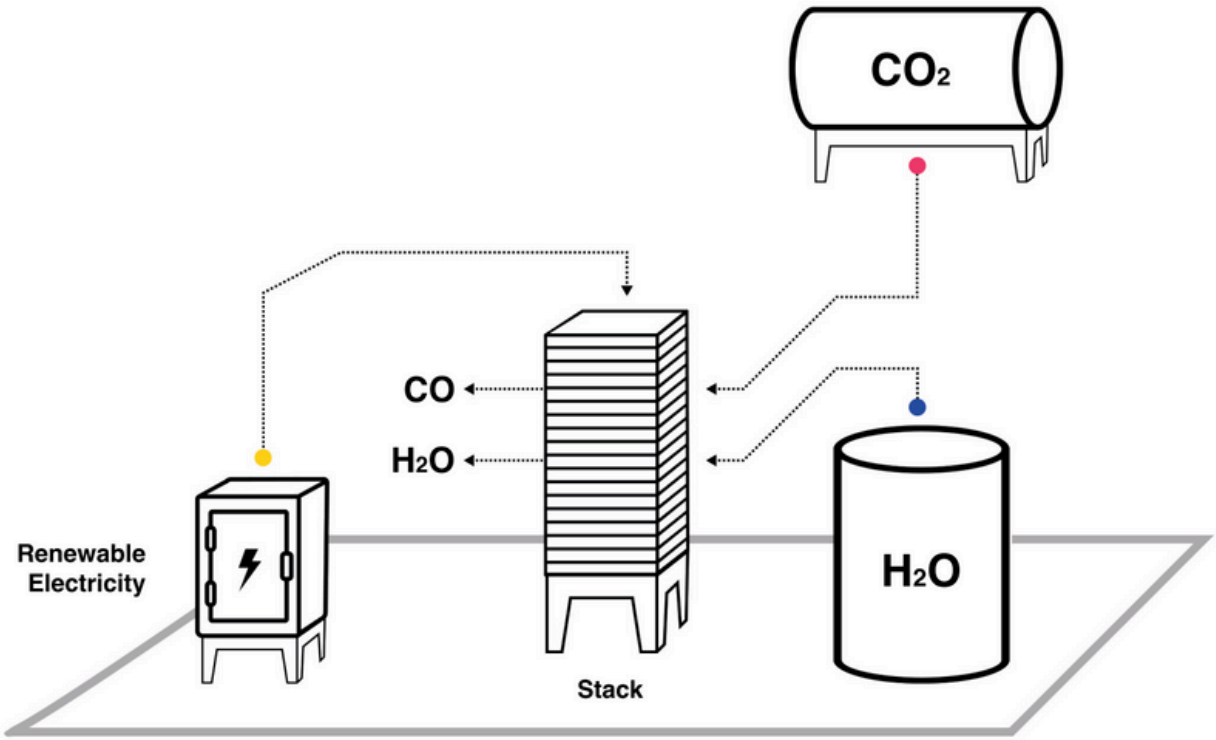
Source: IEA

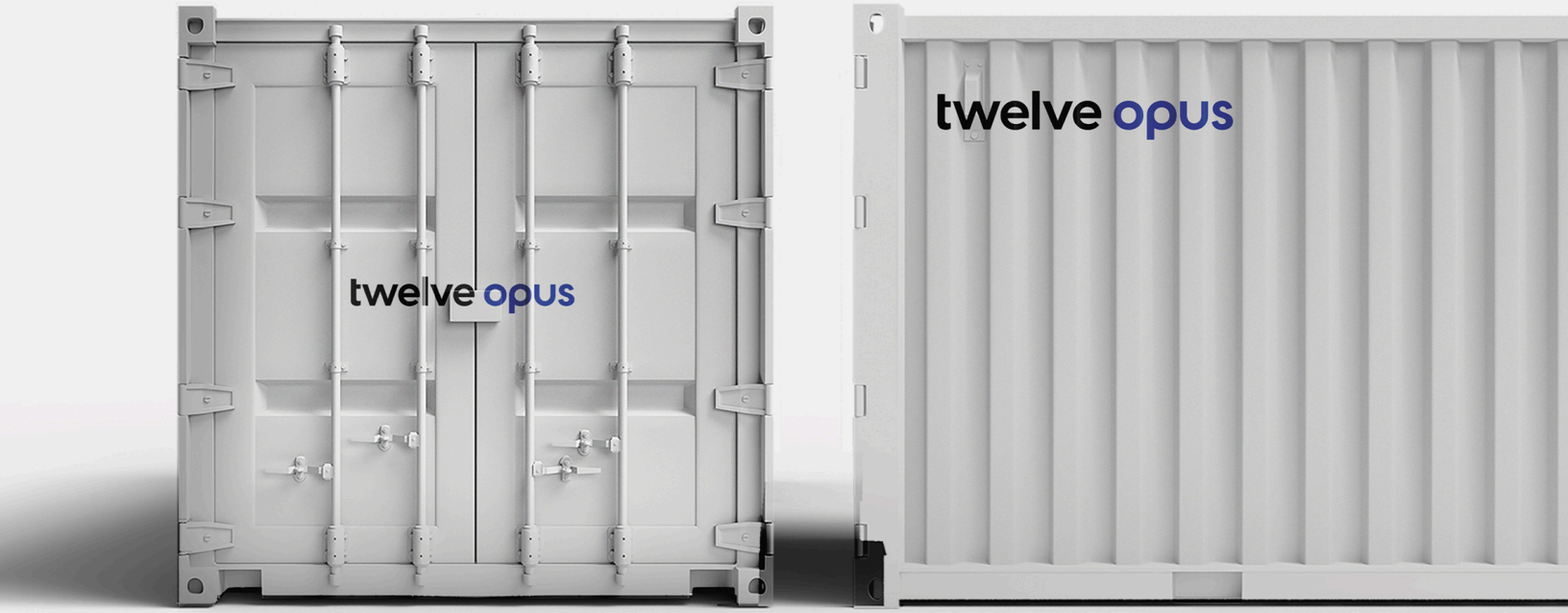
e·lectrol™

Electrol™ is drop-in e-diesel made from CO2 and renewable electricity. Electrol has up to 90% lower emissions, and significantly lower SOx, NOx, and particulate emissions than conventional diesel.

how do we make e-fuels?

At Twelve, we produce e-fuels using CO2 electrolysis, a process powered by renewable electricity that splits water and carbon dioxide into hydrogen (H_2) and carbon monoxide (CO), producing oxygen (O_2) as a byproduct. The resulting syngas is refined through Fischer-Tropsch synthesis into jet fuel, diesel and marine fuel—cleaner hydrocarbon fuels with up to 90% lower emissions than conventional fuels.



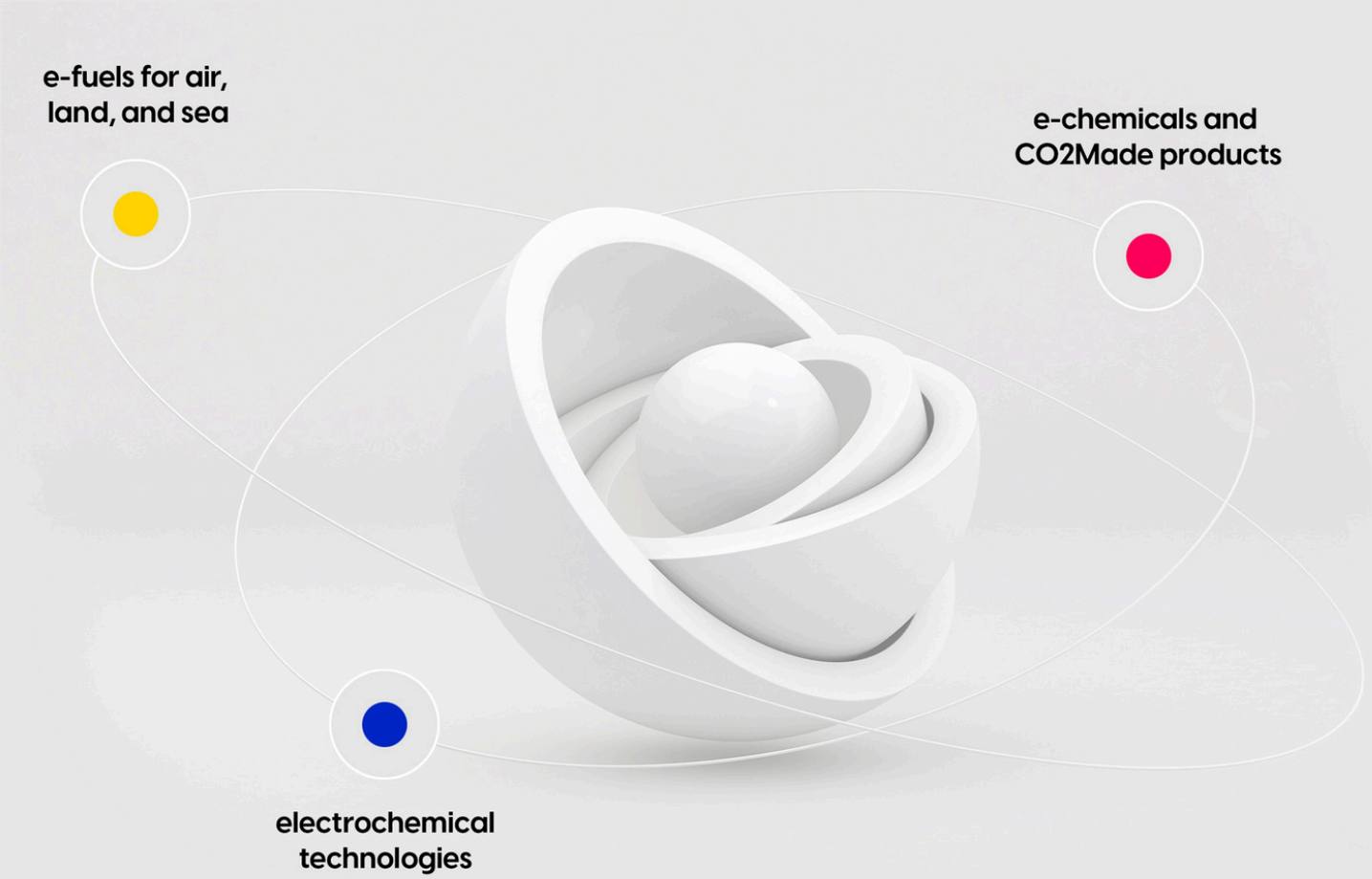


opus™

Our technology is a PEM-based CO2 electrolyzer with novel transition metal catalysts engineered to convert CO2, water, and renewable electricity into new useful molecules—chemical building blocks for for fuels and materials that today are made from fossil fuels.

airplant™

AirPlant™ is our industrial-scale production facility where we make e-fuels and e-chemicals from CO2, water, and renewable energy. AirPlant One is our demonstration facility located in Moses Lake, WA.



about twelve

We're the carbon transformation company. We utilize CO2 as a resource, turning it into useful products like fuels and materials through the power of electrochemistry. At the intersection of renewable energy and industrial transformation, we're reinventing how the world's essentials are made, one molecule at a time.

fuel for the long haul™