

cargo facts **emea**



Synthetic Fuels for Aviation

8th February 2023





about Zero

Zero is dedicated to the production of fossil-free petroleum-based products (fuels and petrochemicals), synthesised by the recycling of water and air



Zero Petroleum, Inc.
100 Wilshire, Santa Monica



Plant Zero.1
Technology Centre
Bicester Heritage,
Oxfordshire UK



Zero Petroleum Limited
Michelin Building, London



Paddy Lowe
Founder and CEO



Professor
Nilay Shah OBE
Founder and CTO

zero



RECORD

HOLDER



a Formula 1 approach to clean energy innovation



2020



Company is formed

First chemistry



2021



First RAF contract

Pilot production

Guinness World Records® flight



2022



Series A completed

Second RAF contract

Plant Zero.1 construction



2023



Series B fundraise

Plant Zero.1 complete

Certification volumes



2024



ASTM certification

Plant Zero.2 construction

Saleable volumes



2025



Plant Zero.2 complete

Commercial volumes

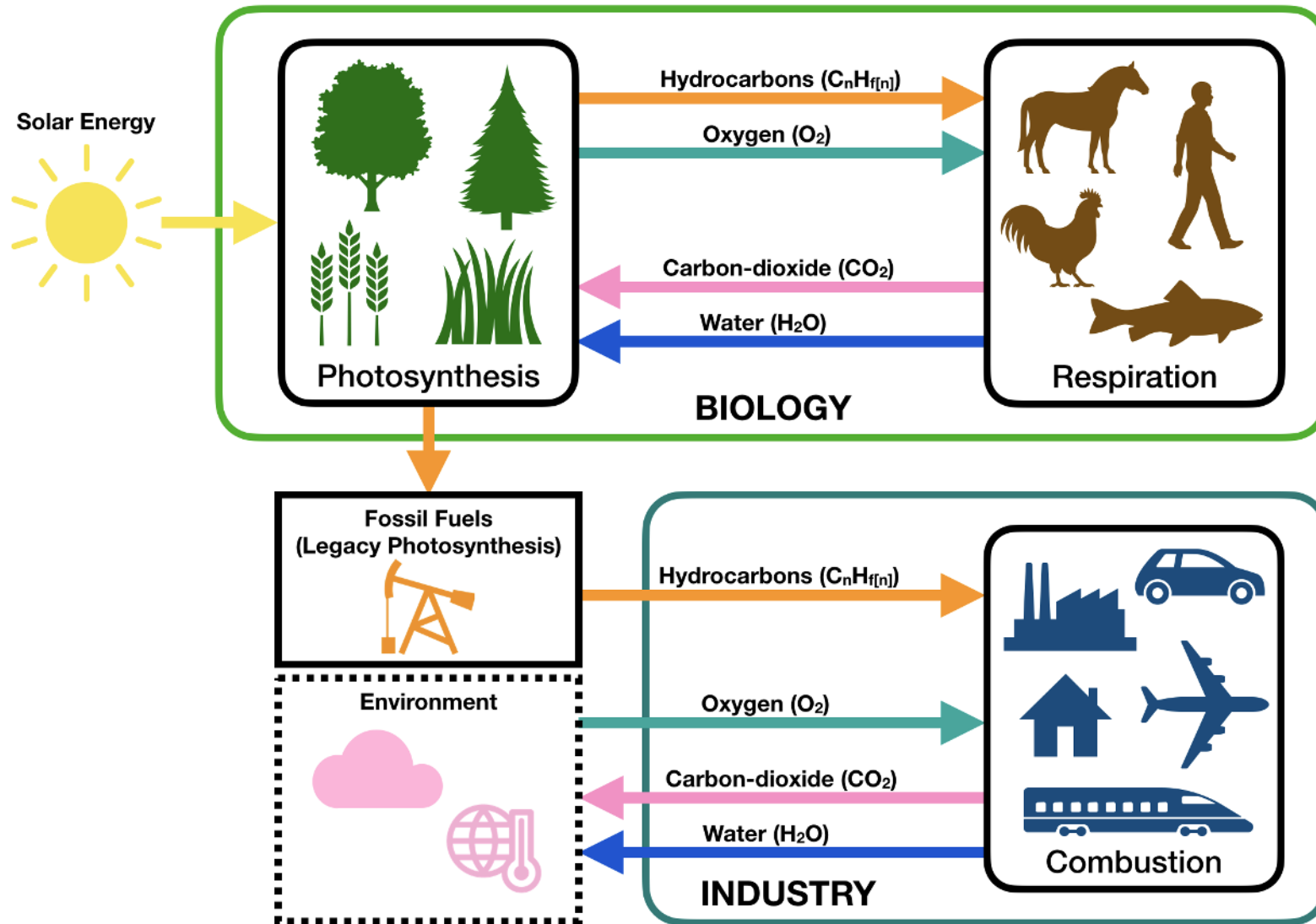
Modular manufacturing

Multiple site builds



synthetic fuels

fossil fuel model – linear and unsustainable



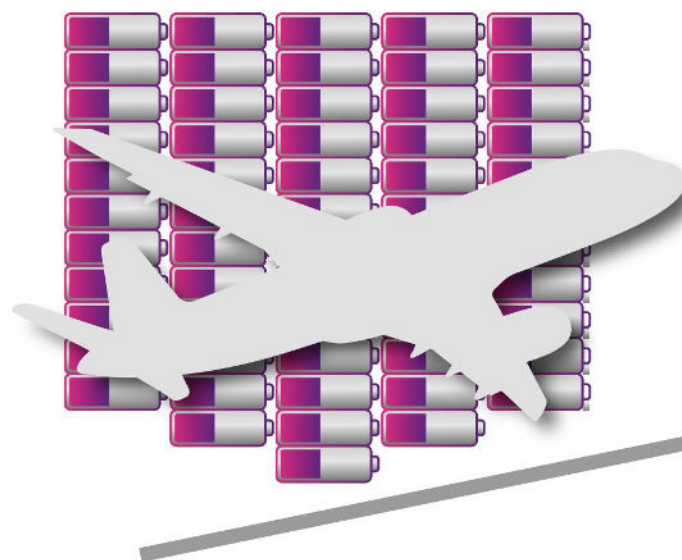
Not everything can be electrified

Electrification is often not an option. Batteries are currently 50x heavier than synthetic petroleum fuels and future development is limited by fundamental physics.

Electro-chemical process

Lithium-ion battery

50x heavier

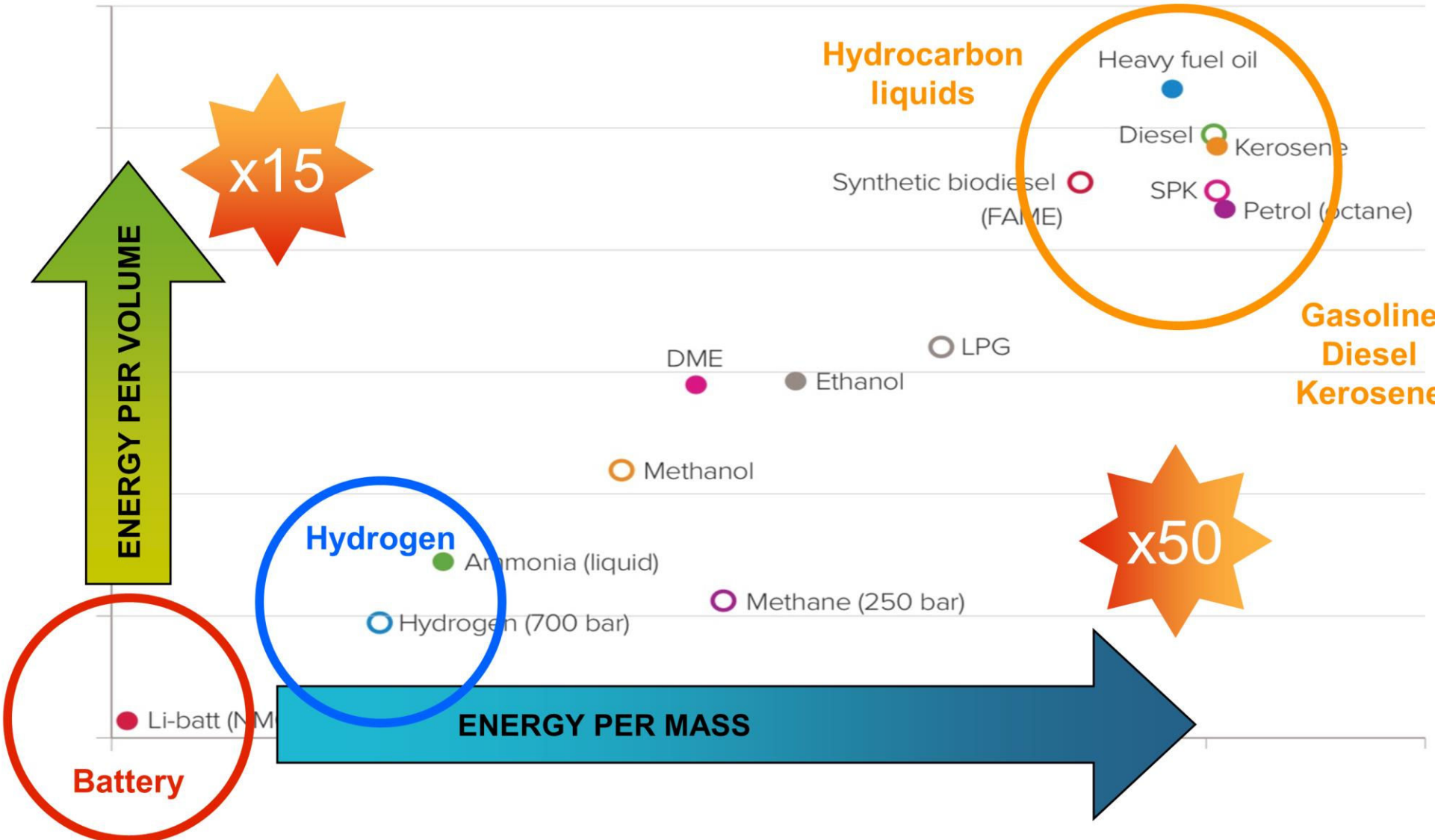


Molecular process

Synthetic gasoline, diesel and jet fuel



energy density



In a commercial context:

Energy density = margin

- Payload
- Performance
- Range
- Endurance
- Turnaround (refuelling / charge time)

sustainable aviation fuels (“SAF”)

Feedstocks

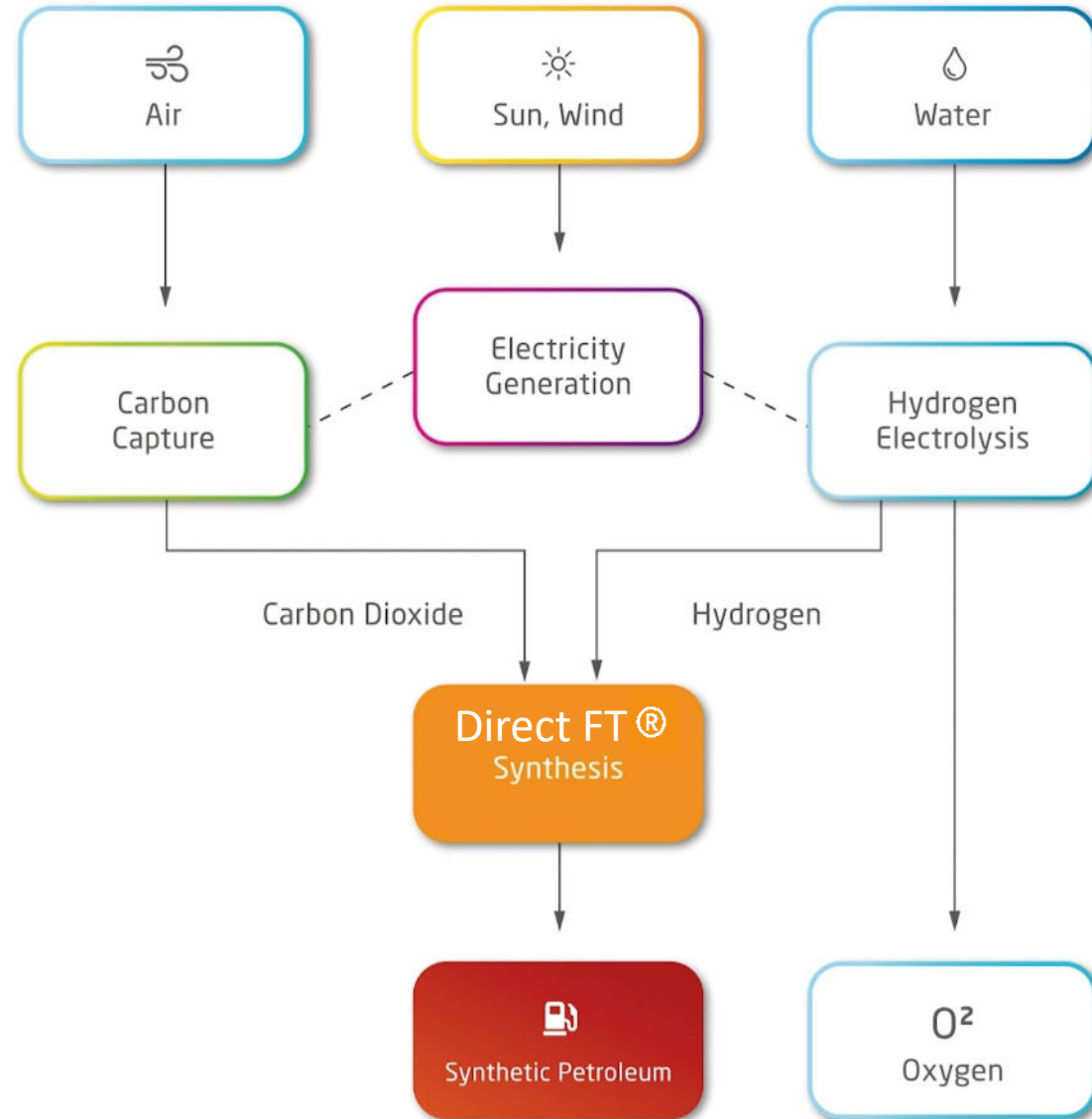
- Biofuels
 - First generation (primary agriculture)
 - Second generation (agricultural waste)
- Fuels from waste
 - Biological feedstocks (= second generation biofuel)
 - Fossil feedstocks
- Synthetic fuels (Electrofuels, eFuels, Power-to-liquids)
 - Inorganic feedstocks (hydrogen from water, carbon dioxide from air)

NO LIMIT TO SCALE

Processes

- Hydroprocessing (HEFA)
- Fischer Tropsch (FT)
- (M)ethanol, (M)ethanol-to-X

petrosynthesis – “600 million years in 3 minutes”

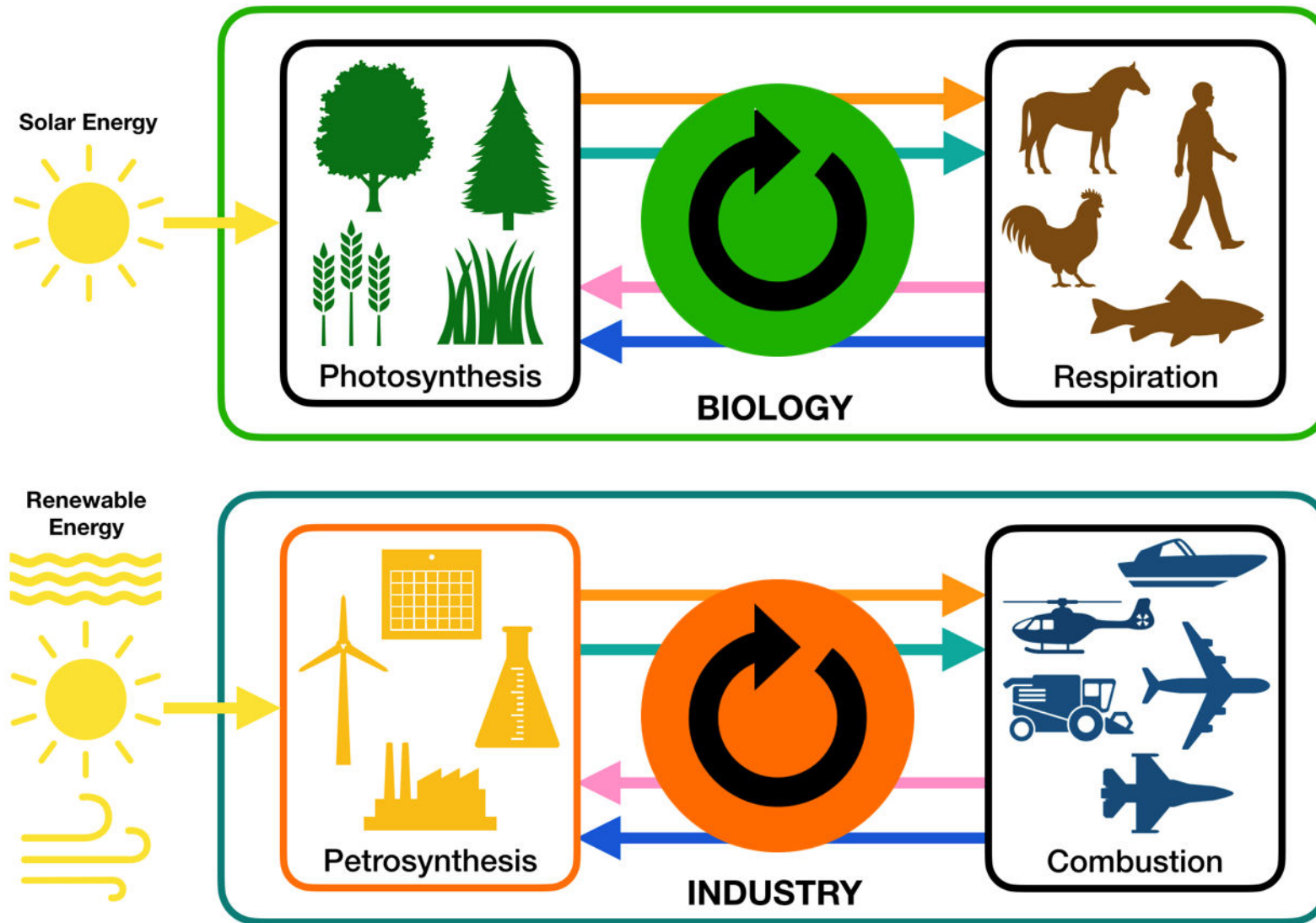


drop-in fuel that doesn't require compromise

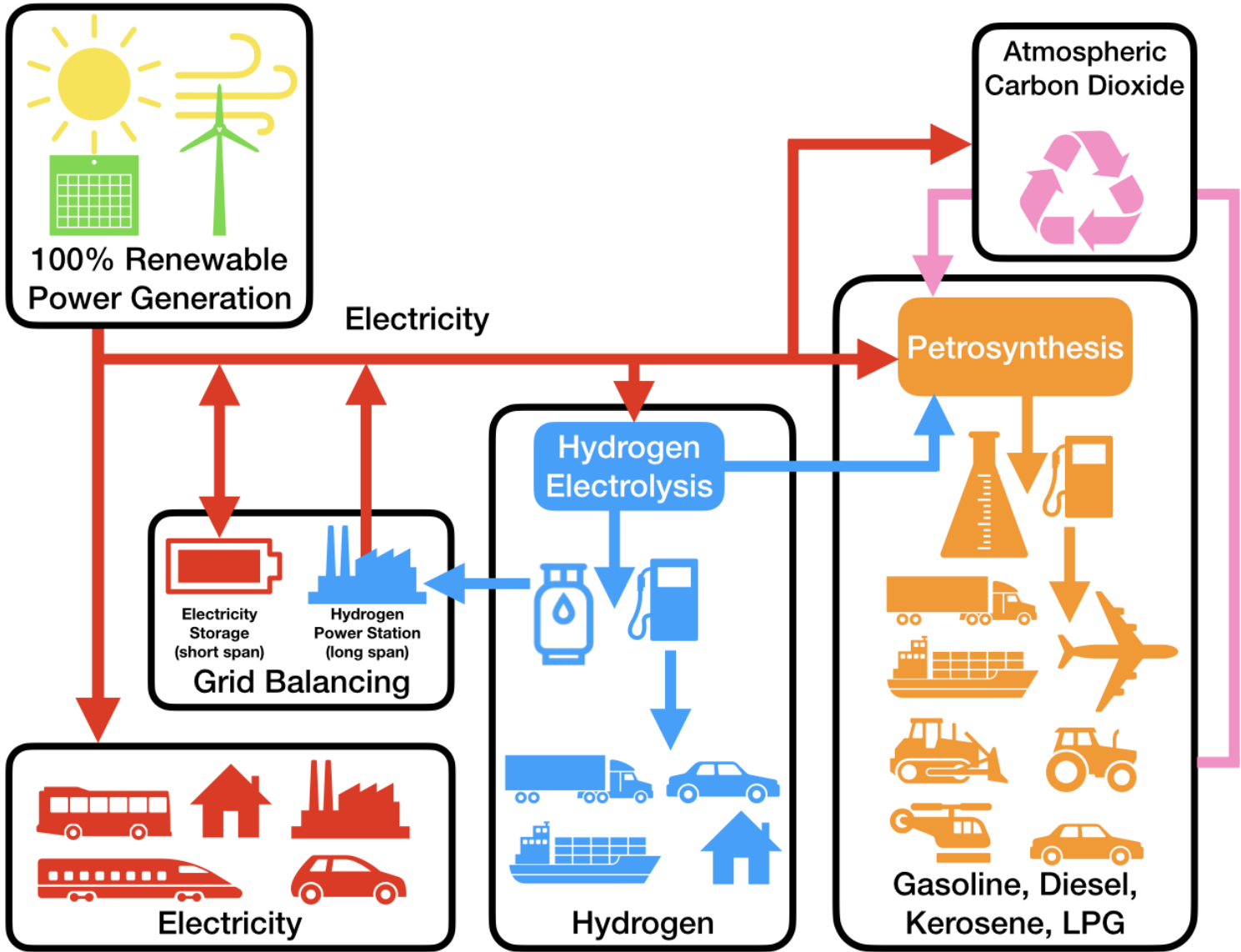
- Whole blend “drop-in” substitutes for existing assets
- Fuels meet, and exceed, existing certifications
- Critical energy density is retained
- 100% fossil-free and net zero carbon
- Unlimited feedstocks, without rare metals
- Efficient water use
- Highly predictable production costs
- Independent security of fuel production

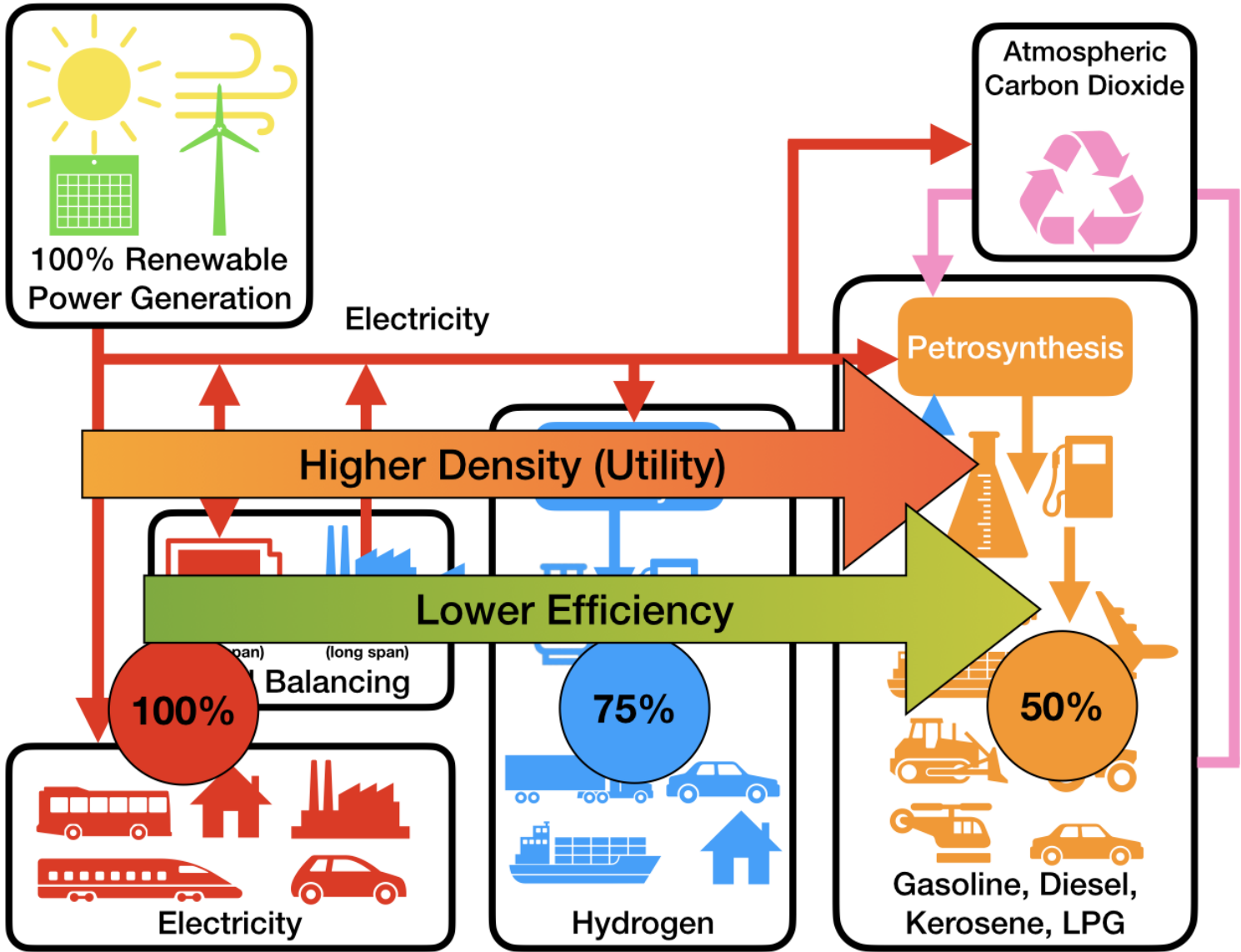


biological and industrial carbon cycles



circular energy system







commercial production

plant 


zero





air cargo

air cargo net zero by 2050



- **Global jet fuel consumption 60B gallons (2022)
[Statista]**
- **Synthetic manufacturing plant for this capacity
creates a capital demand of ~\$5 trillion**
- **Burden or opportunity**



A circular graphic featuring a dynamic splash of water and a yellow fuel nozzle. The nozzle is partially submerged, creating a large splash of water droplets. The word 'ZERO' is visible on the nozzle, and 'zero petroleum' is visible on the nozzle's handle. The background is white.

guilt free synthetic fuel
go zero. do more

zero.co 