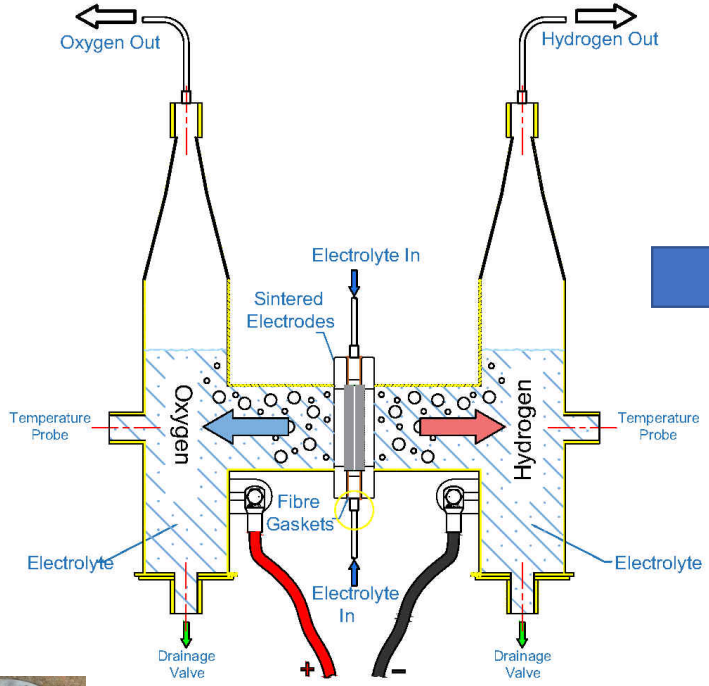
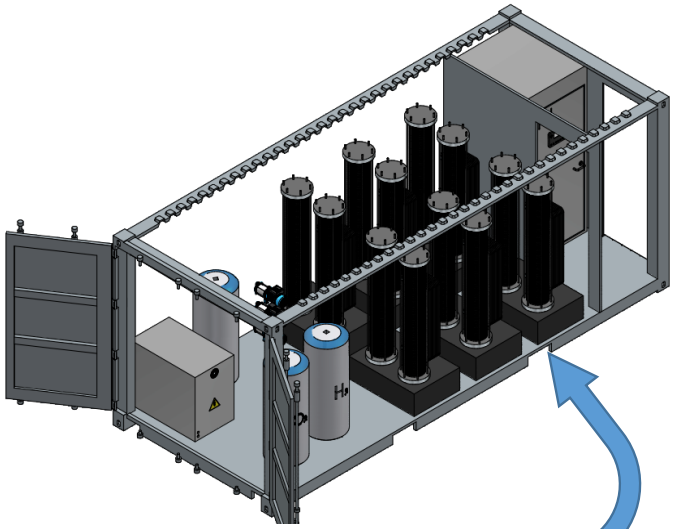
AqGas Group Ltd

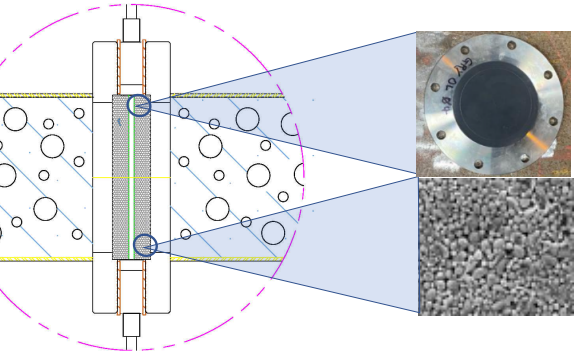
Background information

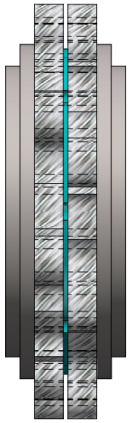
Project: **Ultra High Pressure Electrolyser**

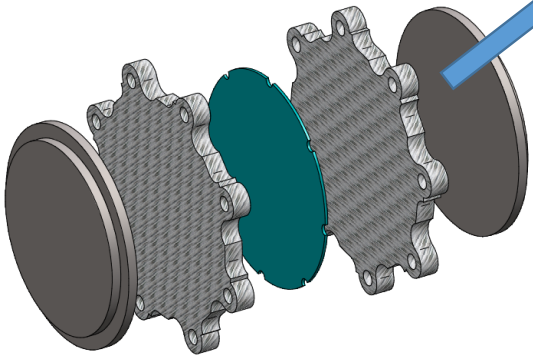
Laboratory Cell to Automated Containerised Stack

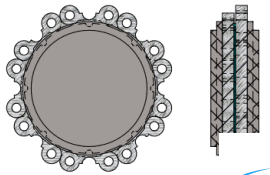










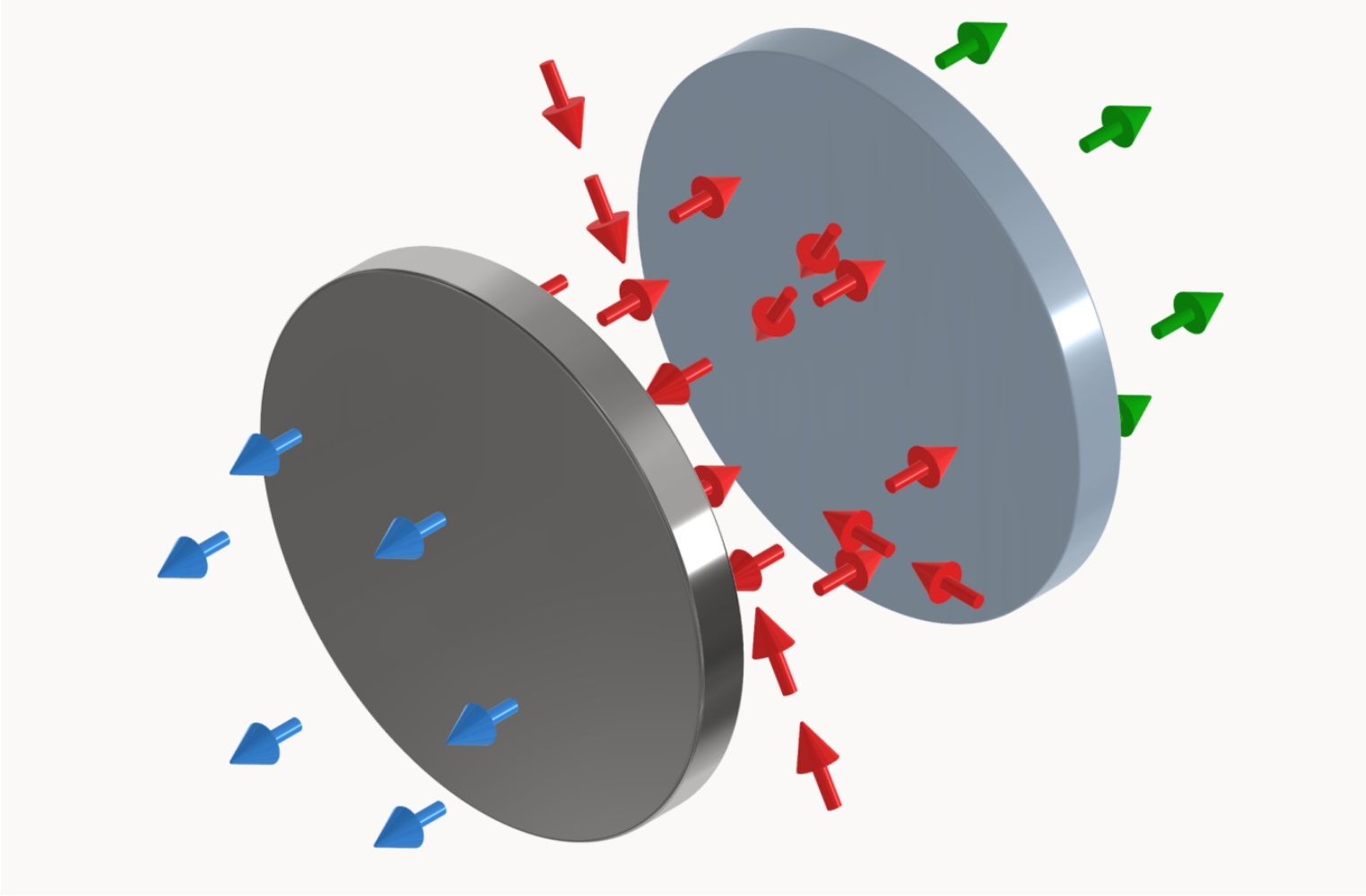


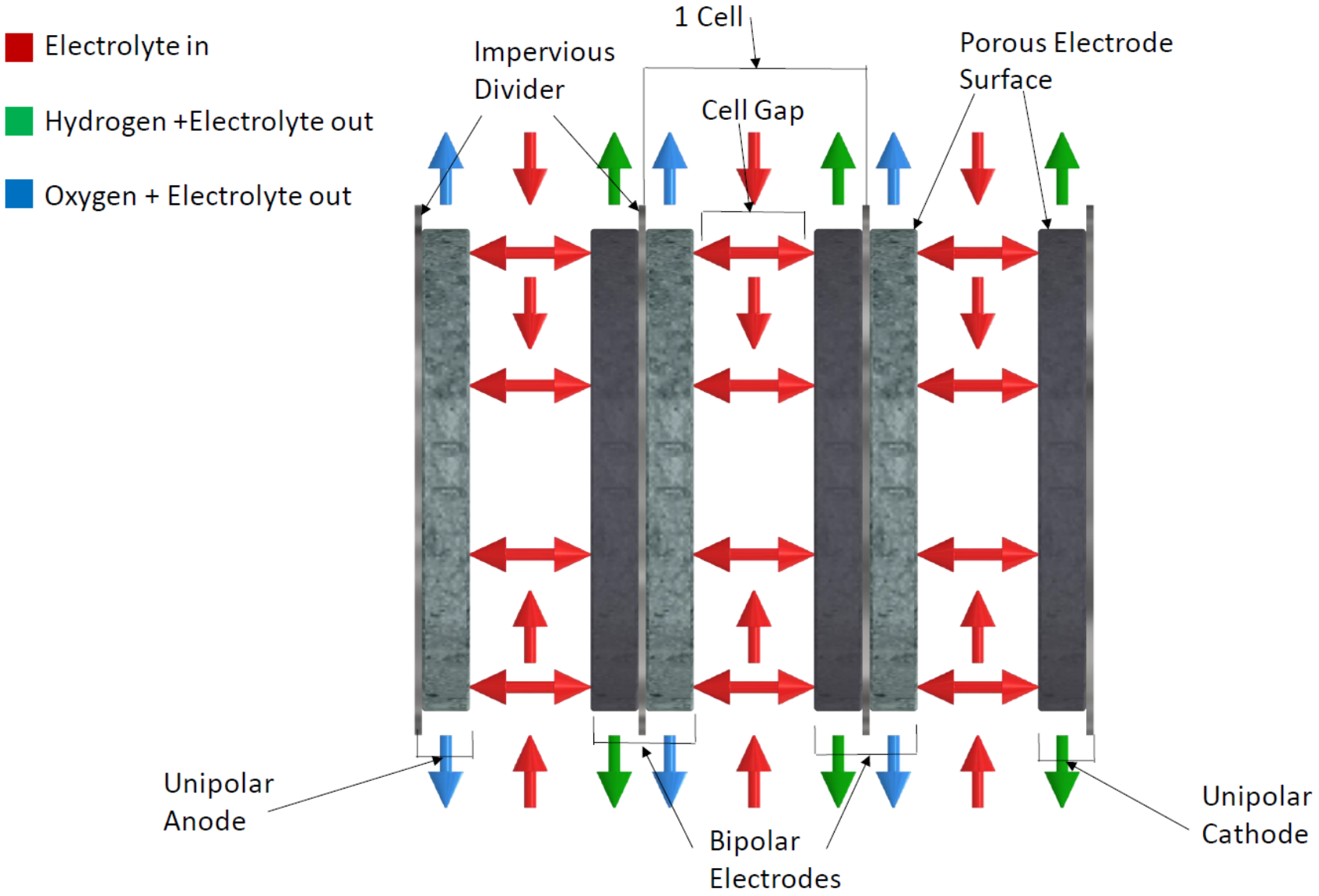
2021 → 2022

Porous Electrodes

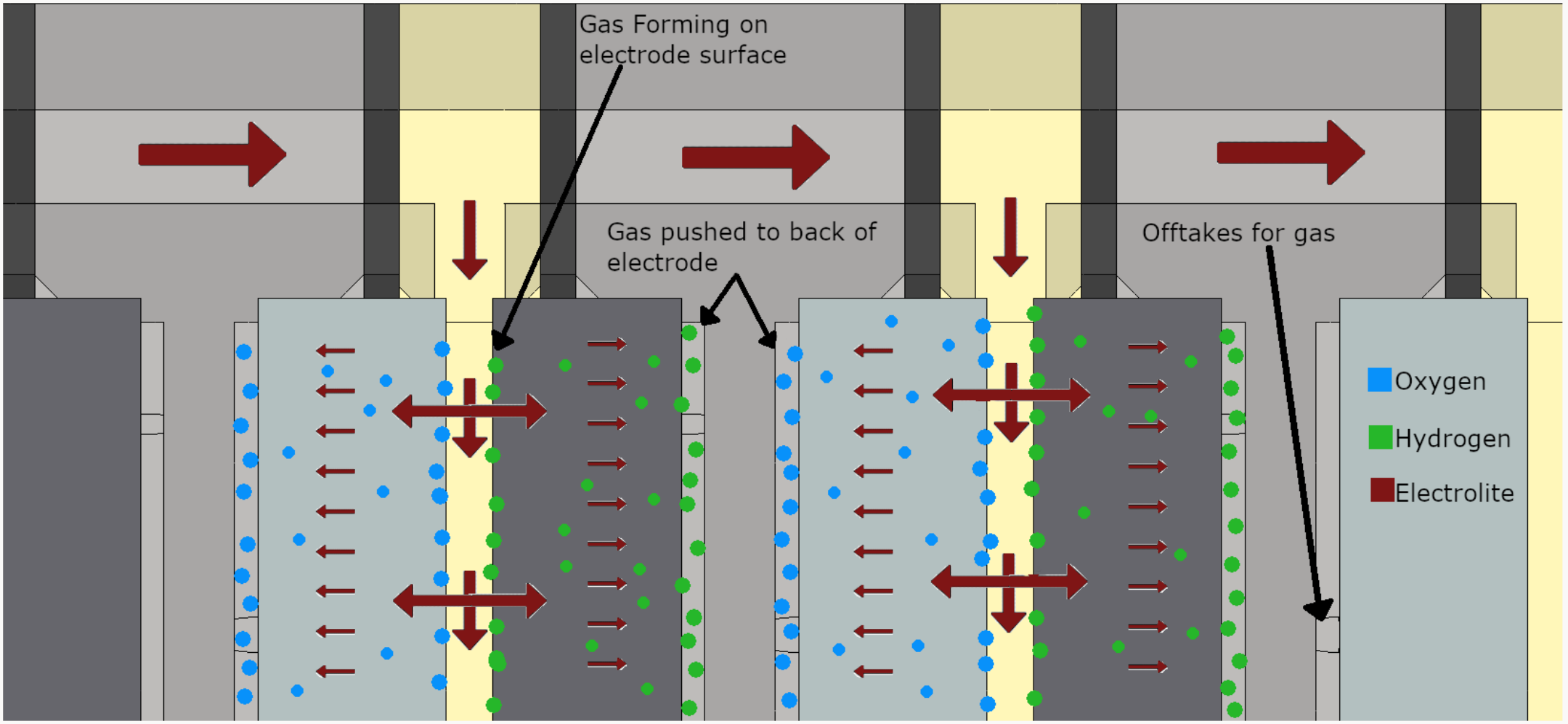
Stainless-steel

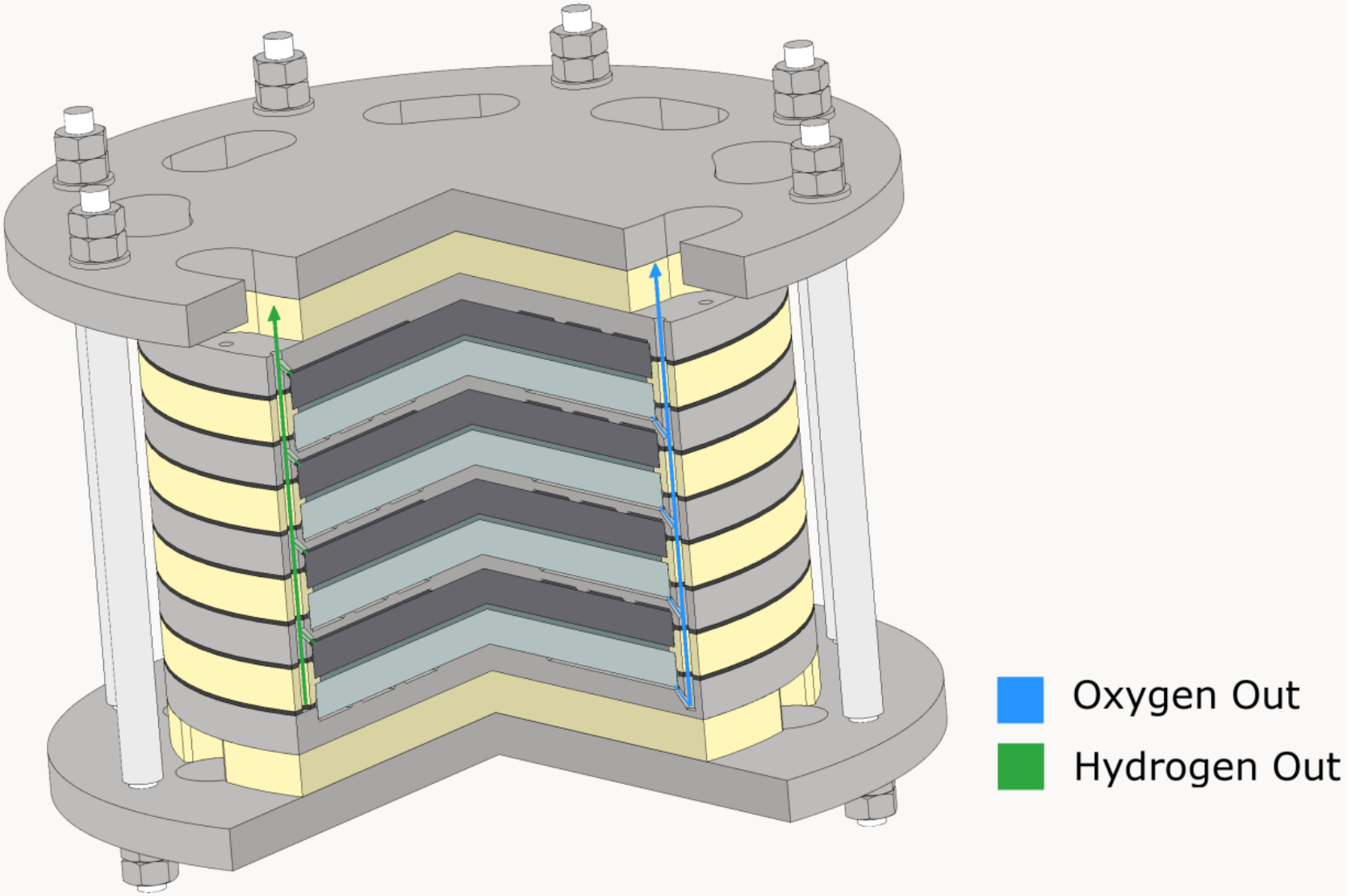
Titanium + Nickel

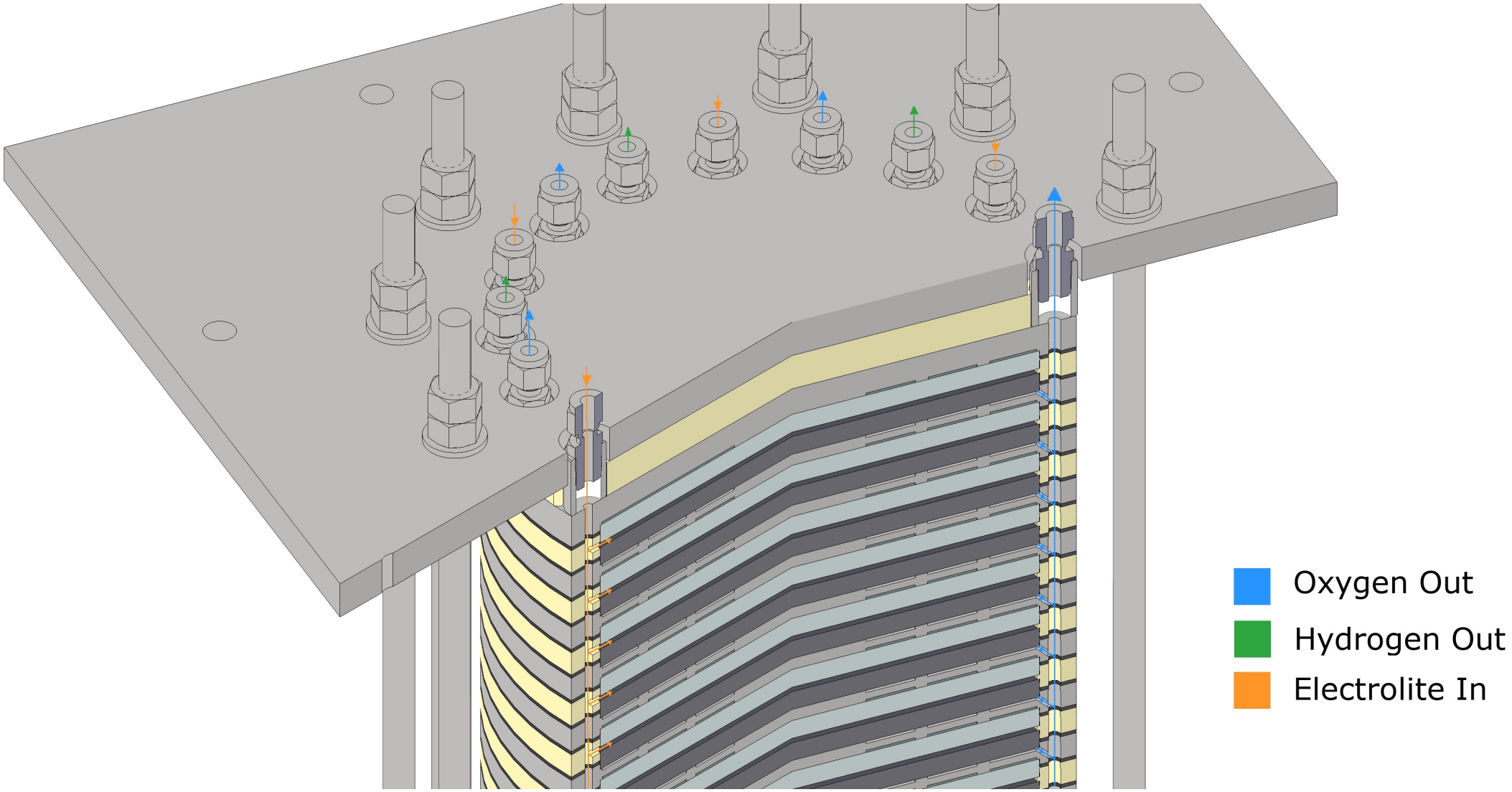



Electrolyte in
Hydrogen +Electrolyte out
Oxygen + Electrolyte out
1 Cell
Impervious Divider
Cell Gap
Porous Electrode Surface
Unipolar Anode
Bipolar Electrodes
Unipolar Cathode

Flow Through Electrodes - Electrolyte pumped in to cell gap = pressure drop across the electrode

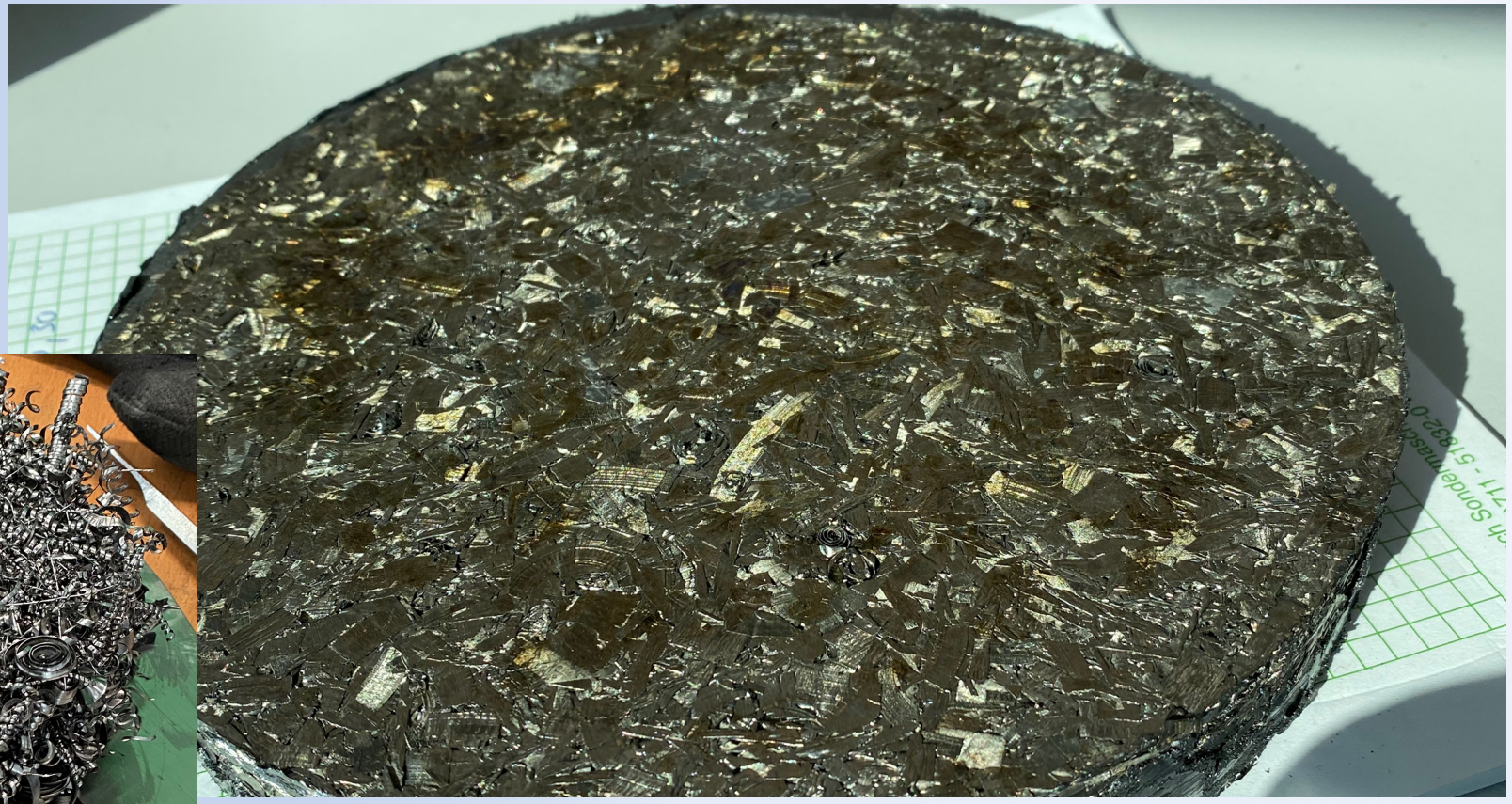



Oxygen Out
Hydrogen Out


Oxygen Out
Hydrogen Out
Electrolite In

Electrode Manufacturing

- **Low-cost**
- **Low carbon**
- **Abundant**
- **Reliable Suppliers**



Titanium Cathode

BiPolar Electrode Holder
Stainless Steel
Impervious Divider

Nickel Anode

Recording

Prioritised technologies for project scoping

CARBON TRUST

H

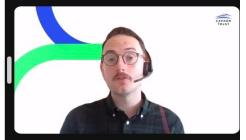
1. **Compressors**
2. **Existing pipeline infrastructure**
3. **Compressed storage tanks**
4. **Salt caverns**
5. **New pipeline infrastructure**
6. **Tube trailers**

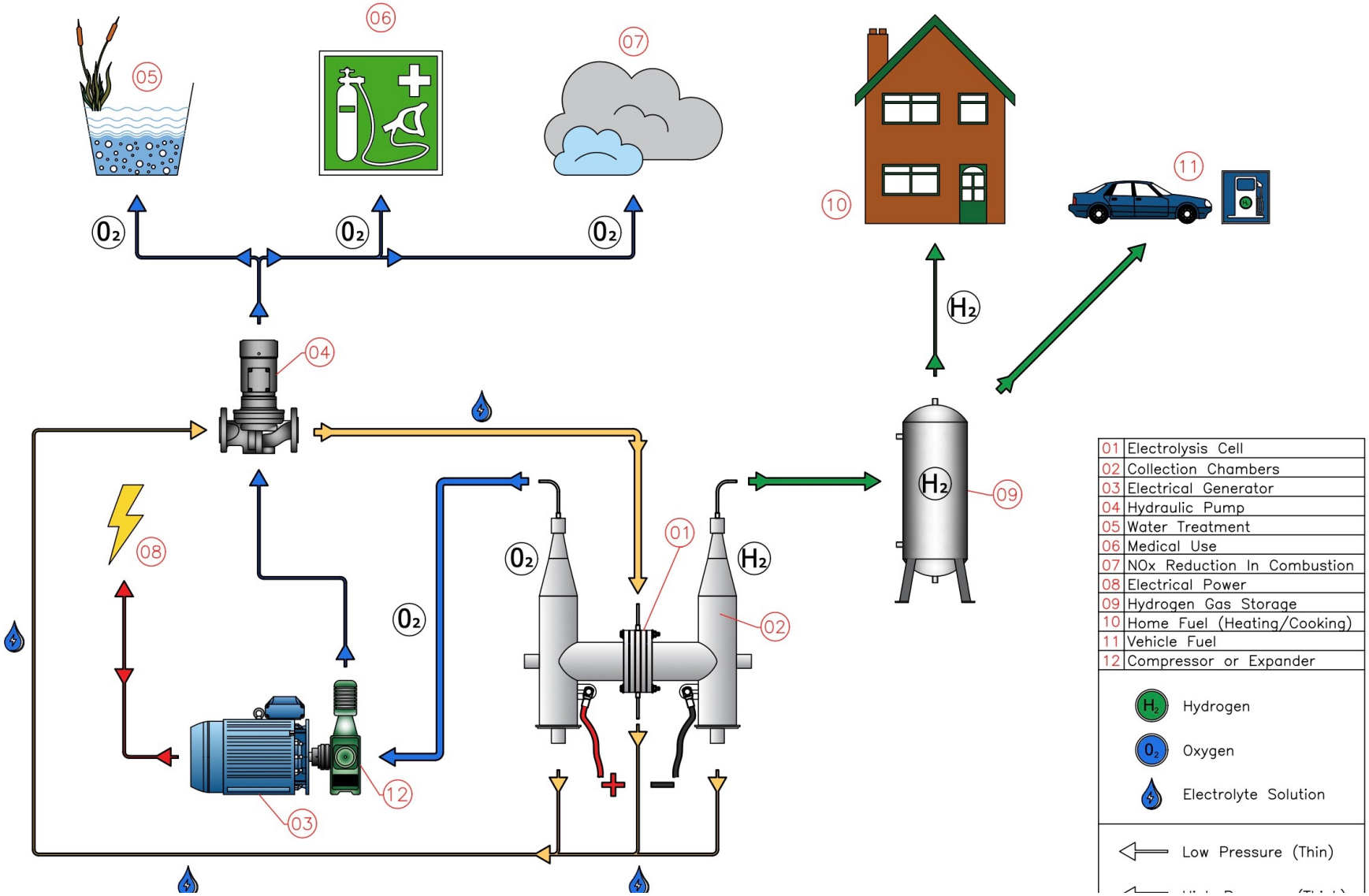
M

1. Balance of Plant
2. Autothermal Reformer (ATR)
3. Plant management software
4. PGM catalysts
5. Subsurface small-scale storage
6. Hydrogen refuelling stations
7. Valves (Transmission)
8. Meters (Transmission and distribution)
9. Sensors

L

1. Ammonia conversion
2. Liquid hydrogen conversion, storage tanks, pumps and tankers
3. Hydrogen purification
4. Aquifers, hard rock lined caverns, and depleted gas fields
5. Wastewater treatment
6. Solid state storage
7. Liquid organic hydrogen carriers
8. Seawater desalination and direct electrolysis





01	Electrolysis Cell
02	Collection Chambers
03	Electrical Generator
04	Hydraulic Pump
05	Water Treatment
06	Medical Use
07	NOx Reduction In Combustion
08	Electrical Power
09	Hydrogen Gas Storage
10	Home Fuel (Heating/Cooking)
11	Vehicle Fuel
12	Compressor or Expander

H_2 Hydrogen

O_2 Oxygen

Electrolyte Solution

Low Pressure (Thin)