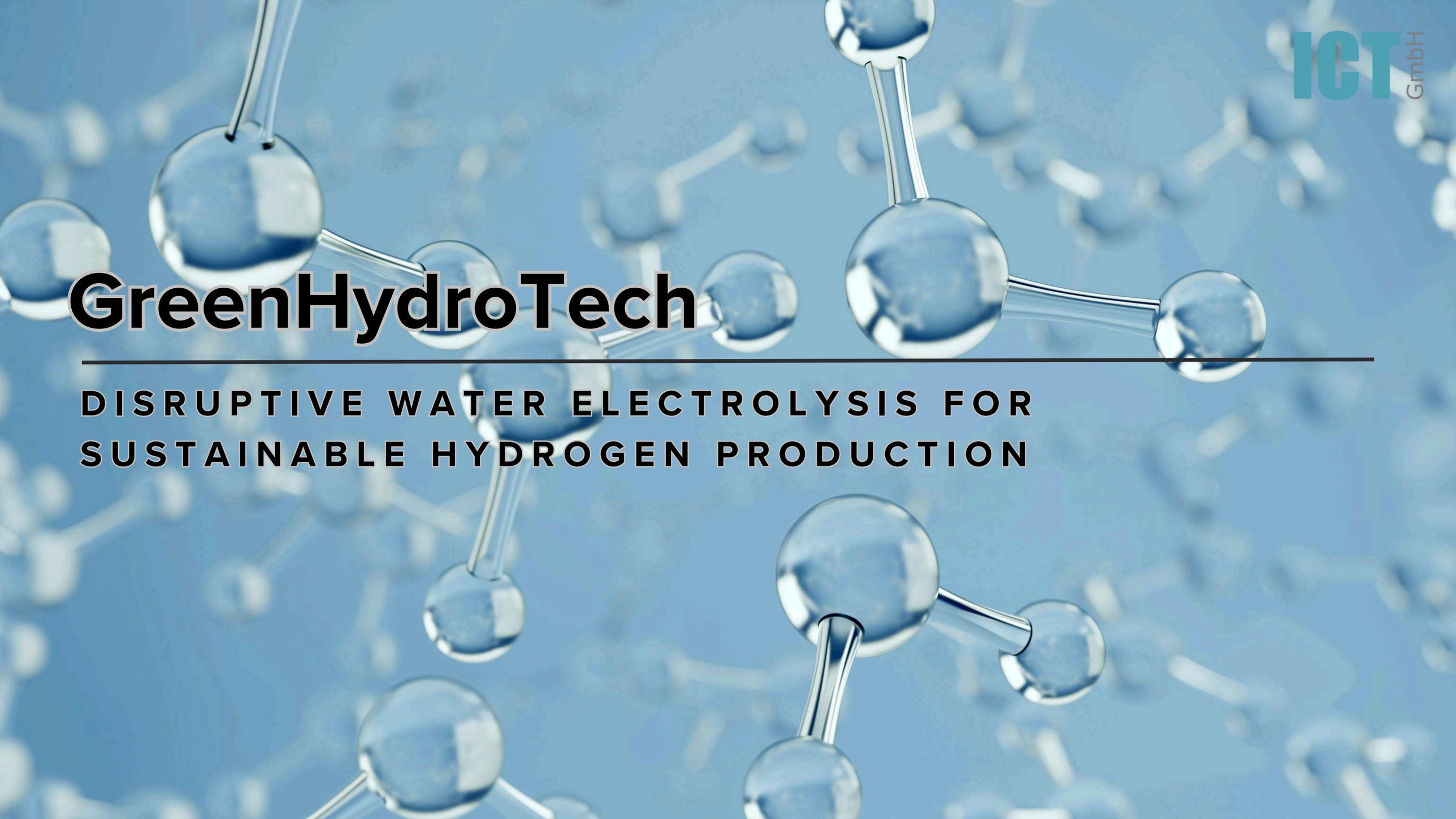


GreenHydroTech

DISRUPTIVE WATER ELECTROLYSIS FOR SUSTAINABLE HYDROGEN PRODUCTION

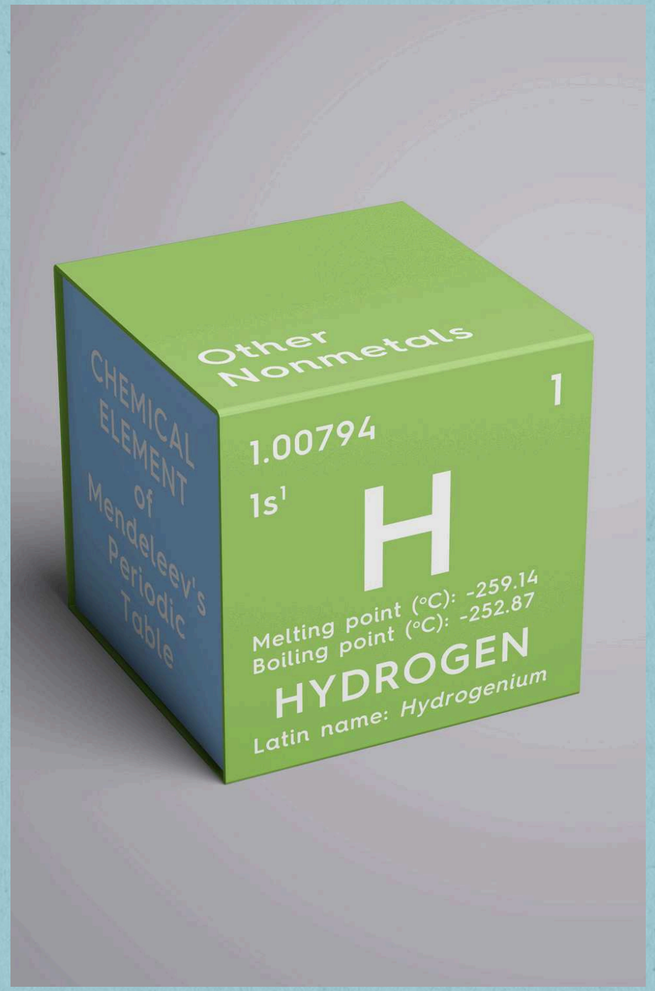
ABOUT US

ICT GmbH is a pioneering technology firm dedicated to advancing energy solutions through research, project planning, and consulting. Our multidisciplinary expertise spans a broad range of sectors, including construction, process engineering, chemistry, electronics, and software development. At the heart of our innovations is a groundbreaking electrolysis process for hydrogen production with acidic electrolytes, setting a new benchmark in efficiency and sustainability.

We invite visionary partners and investors to collaborate with us in scaling this transformative technology and accelerating the shift toward a sustainable energy future.

WATER ELECTROLYSIS FOR GREEN HYDROGEN PRODUCTION

As demand for climate-neutral energy rises, hydrogen is emerging as the energy carrier of the future, essential for developing resilient industries and societies. Water electrolysis is one of the most promising methods for generating green hydrogen by utilising renewable energy sources. This process relies on two key inputs: water as feedstock and renewable electricity from sources like wind and solar. By splitting water into hydrogen and oxygen, it produces a clean energy carrier. However, challenges such as high production costs and limited efficiency hinder widespread adoption, underscoring the need for innovations in electrolysis technology and reductions in system costs to improve scalability and economic viability.



CURRENT CHALLENGES

HIGH PRODUCTION COSTS

Electrolyser systems are expensive, limiting hydrogen production viability.

LOW EFFICIENCY

Existing technologies lack the efficiency needed for large-scale adoption.

MATERIAL SCARCITY

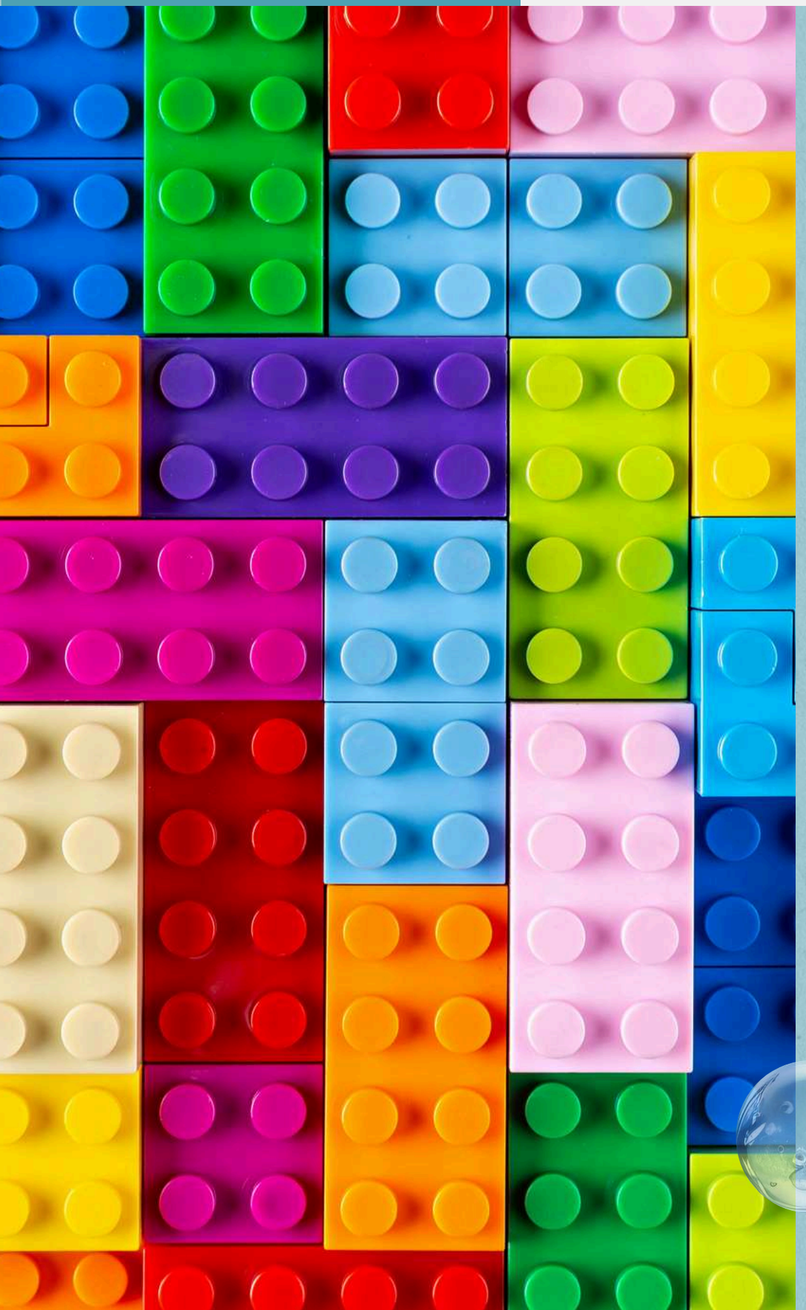
Dependence on costly, scarce materials increases production costs.

RAPID DEGRADATION

Electrolysers degrade quickly, affecting lifespan and performance.

ENVIRONMENTAL IMPACT

Current methods are energy-intensive and have significant negative environmental effects.



STRATEGIES TO OVERCOME ELECTROLYSIS CHALLENGES

01 **Improved Design and Construction**: Enhance electrolyser design to boost process efficiency and lower costs.

02 **Economies of Scale:** Our modular system allows for scalability, catering to any production size while reducing per-unit costs.

03 **Material Substitution:** We utilise readily available and cost-effective materials for our separator (membrane) and catalyst, minimising reliance on scarce resources.

04 **Operational Efficiency and Flexibility:** Our LEGO-like, stackable design allows for easy, flexible operation, optimising performance and adaptability.

05 **Environmental Alignment:** Our technology is clean and safe, aligning with climate goals and promoting sustainability.

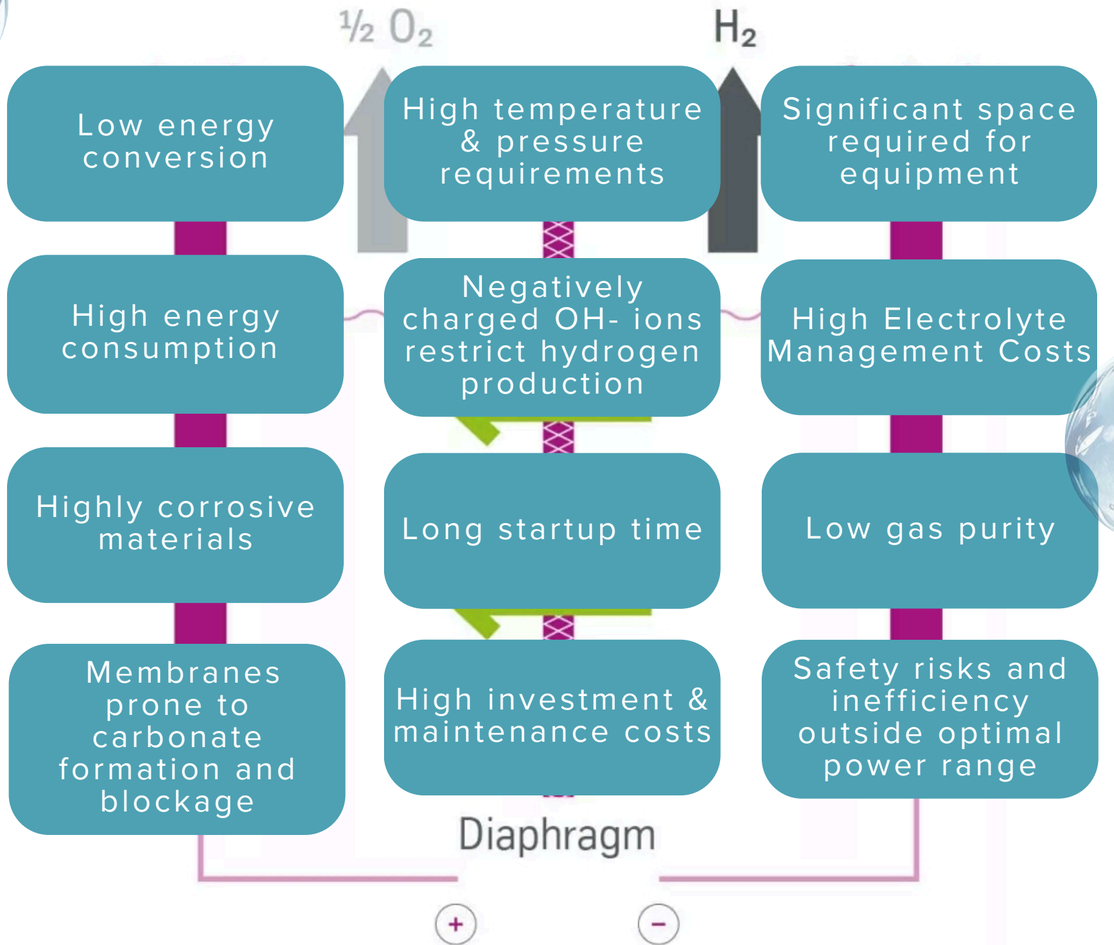
06 **Addressing Degradation:** We use durable materials that enhance the lifespan of electrolysers, ensuring sustainability and cost-effectiveness.

CURRENT ELECTROLYSIS TECHNOLOGIES

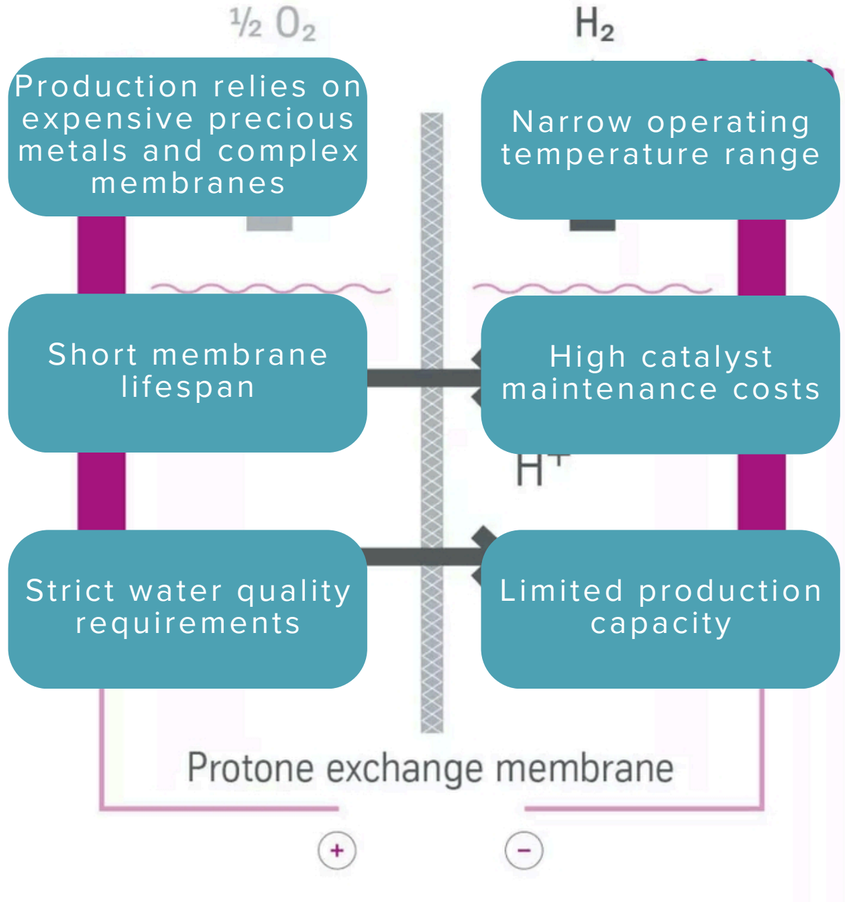
Currently, the predominant electrolytic systems for hydrogen production are alkaline electrolysers and proton exchange membrane (PEM) electrolysers. Alkaline electrolysers utilise a liquid alkaline electrolyte, while PEM electrolysers use a solid polymer electrolyte. Although both systems claim to be 'green' by harnessing renewable energy sources, they have specific drawbacks that impede the broader uptake of hydrogen as a viable clean energy solution.

LIMITATIONS OF CURRENT ELECTROLYSIS SYSTEMS

Drawbacks of Alkaline Water Electrolysis



Drawbacks of PEM Electrolysis



OUR DISRUPTIVE HYDROGEN ELECTROLYSIS TECHNOLOGY

ICT's disruptive hydrogen electrolysis technology enables cost-effective, high-output, and sustainable hydrogen production with compact, modular, and eco-friendly plug-and-play devices. Key advantages include:

Acidic Electrolysis Technology: H^+ ions in the cathode chamber effortlessly produce hydrogen by being directly discharged as H_2 at the negative cathode, reducing power consumption and increasing efficiency.

Modular Plug-and-Play System: Enables immediate startup and seamless adaptation to energy fluctuations, ensuring continuous green hydrogen production.

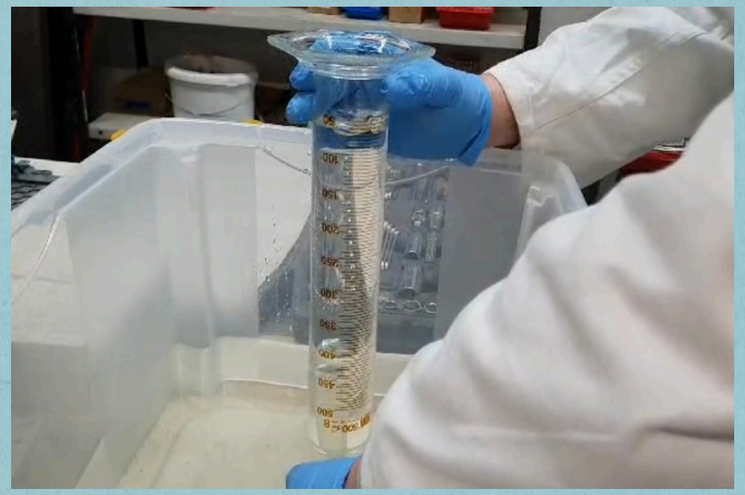
Maximising ROI: Low upfront costs, high output, easy maintanence

Scalable Design: Stackable reactors provide flexible capacity adjustments by adding or removing modules, facilitating expansion or reduction of production capacity without interrupting the system.

No Membrane Issues: Enhanced reliability and longevity due to the elimination of membrane-related problems.

Durable Electrode Materials: Uses affordable, corrosion-resistant steel anodes for long-term stability.

Bubble-Free Electrode Surface: Improves hydrogen output while lowering energy consumption.



Sulfuric Acid Electrolyte: Cost-effective and easy to manage.

Integrated Infrastructure: Features measurement and control systems supported by ICT's hardware and software solutions.

Eco-Friendly and Safe: Environmentally sustainable technology with secure operation.

WHAT IS A PLUG-AND-PLAY MODULAR SYSTEM?

Our electrolysis process features an agile plug-and-play modular system designed for adaptable production capacity as required.

MODULE COMPONENTS

Each electrolysis module is composed of essential components, including electrodes, a membrane, and a power supply unit equipped with a control system.

MODULAR DESIGN

Our modular design facilitates straightforward connection and disconnection from the main system, akin to plugging in or unplugging electronic devices.

EFFICIENT CAPACITY ADJUSTMENTS

The plug-and-play modular system offers adaptable production capacity, enabling rapid adjustments to scale output up or down as needed.

AUTOMATIC ADJUSTMENT

The control system automatically optimises module operation for peak performance and efficiency.

ADAPTATION TO ENERGY FLUCTUATIONS

Our system quickly adjusts to changing production needs and energy source fluctuations, ensuring continuous and stable hydrogen production for enhanced reliability and sustainability.

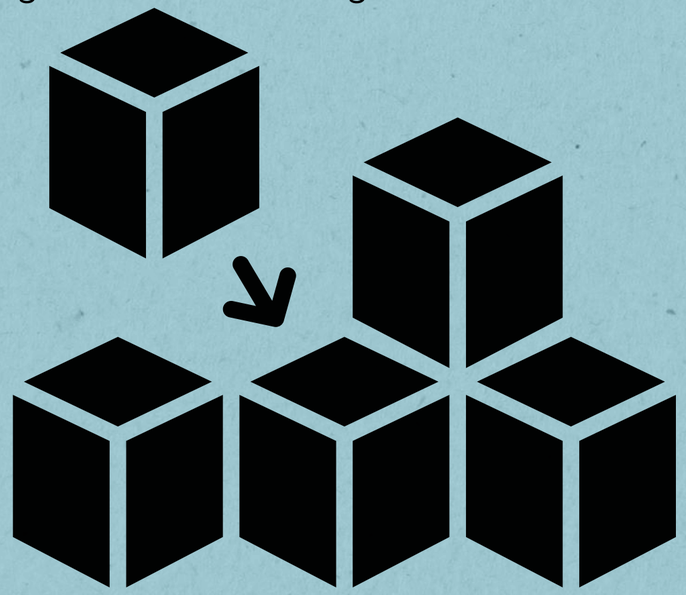
ESTIMATION OF HYDROGEN PRODUCTION CAPACITY

Dimensions of each module: 1.3 m x 0.9 m x 0.3 m, containing 2 reactors

Electrode area of each reactor: 122.1 cm x 82 cm, totaling 10,000 cm^2

Total electrode area per module: 20,000 cm^2

Hydrogen production per module: Each module produces 1,000 g (1 kg) of hydrogen per hour, equivalent to 11,240 liters of hydrogen with a heating value of 39.6 kW/h.



1 MW/h System

- Power output: 1,000 kW/h
- Hydrogen production: 25.5 kg H_2
- Modules required: 26
- Hydrogen output: 286.6 m^3 per hour
- Daily production capacity: 1.03 MW/h x 24 hours = 24.7 MW

4 MW/h System

- Power output: 4,000 kW/h
- Hydrogen production: 102 kg H_2
- Modules required: 104
- Hydrogen output: 1,146.5 m^3 per hour
- Daily production capacity: 4.12 MW/h x 24 hours = 98.8 MW

OUR TEAM

Our team is a powerhouse of expertise, combining strong academic foundations with extensive industry experience. With over 30 years of hands-on knowledge in electrochemistry, materials science, chemical plant design, and project management, our core researchers have a proven track record in driving success. They have led and contributed to critical projects spanning research and development to technical planning and implementation. This unique blend of deep knowledge and practical experience empowers us to ensure seamless project execution, positioning us at the forefront of the hydrogen production industry.

RECAP OF TECHNOLOGICAL SUPERIORITY AND INVESTMENT POTENTIAL

Technological Advantages:

- **Acidic Electrolysis Technology**: Reduces energy consumption, enhancing electrolysis efficiency.
- **Innovative Membrane Technology**: Extends equipment lifespan and improves electrolyte efficiency and stability.
- **Bubble-Free Electrolysis**: Eliminates bubble formation, increasing hydrogen production and energy efficiency.
- **Modular Design**: Plug-and-play system allows for flexible capacity adjustments without downtime, improving usability.
- **Environmental Sustainability**: Utilizes sulfuric acid as the electrolyte, producing no harmful byproducts and ensuring eco-friendliness.

Investment Potential:

- **Market Demand:** Rising global demand for green energy positions hydrogen technology as a promising clean energy source with substantial market potential.
- **Cost Advantages**: Significant reductions in operational and maintenance costs lead to higher profitability compared to conventional methods.
- **Rapid Deployment:** Quick installation through modular design accelerates return on investment.
- **Scalability:** Gradual capacity expansion in line with market demand reduces initial investment risk.
- **Strong Research Support:** Experienced research team effectively tackles technological challenges, ensuring project success.

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