WEBINAR

CLEAN ENERGY SECTOR SKILLS ANALYSIS

Understanding skills challenges and opportunities in the Clean Energy sector across European regions

22 May 2026
11 to 12h30

25 YEARS OF LIFELONG LEARNING TOGETHER

Webinar promoted by EARLALL's Working Group on Skills and Labour Market

| www.earlall.eu

Marta Estrada

Vocational Education and Training (VET) Teacher at Escola del Treball Institute

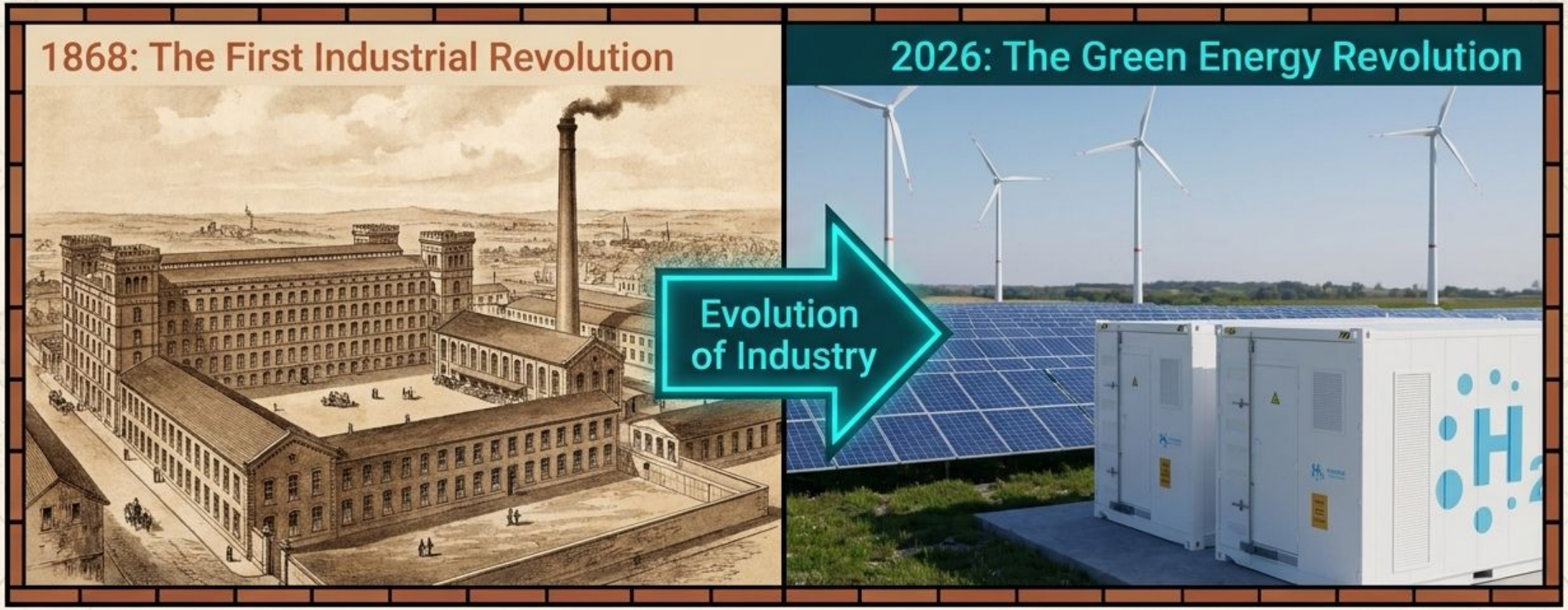
I am Marta Estrada, a teacher at Escola del Treball, and I would like to explain the role of hydrogen in vocational education and training (VET).

https://escoladeltreball.org/ca/centre/ubicacio/

Escola del Treball
de Barcelona

Empowering the next industrial revolution

The institution that trained mechanics and carpenters for Catalonia's First Industrial Revolution is now uniquely positioned to train the workforce for Europe's Green Energy Revolution.



A legacy of continuous adaptation

1868
Foundation in the Can Batlló textile factory.

1914
Inauguration by Enric Prat de la Riba.

1923-1929
Albert Einstein's visit and the opening of the new Noucentista building.

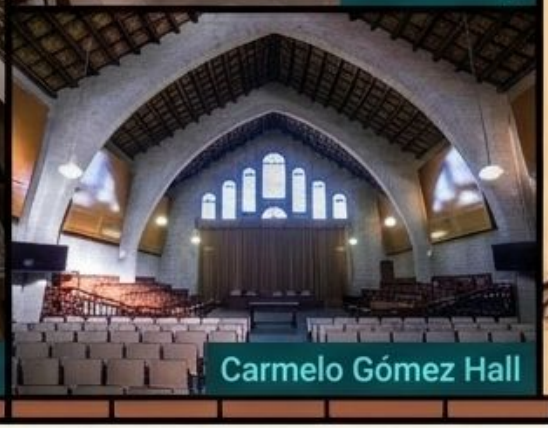
1931-1939
Operated as the People's University under the Generalitat.

1939-1975
Survived the dictatorship; acted as a secret hub for student and worker resistance.

1977-Present
Recovery of democracy and autonomy; ruled by the Autonomous Government of Catalonia.

Architecture built to inspire innovation

Commissioned in 1928, Josep Goday's Noucentista palace features elaborate materials—plaster, sgraffito, bricks, stained glass, iron, and mosaic—creating a premium environment for technical mastery.



Decoding the anatomy of our ethos

The Light of Wisdom
Academic and scientific pursuit.

The Anvil & Industrial Tools
The foundation of technical skill.

The Bees
Industriousness and collective effort.

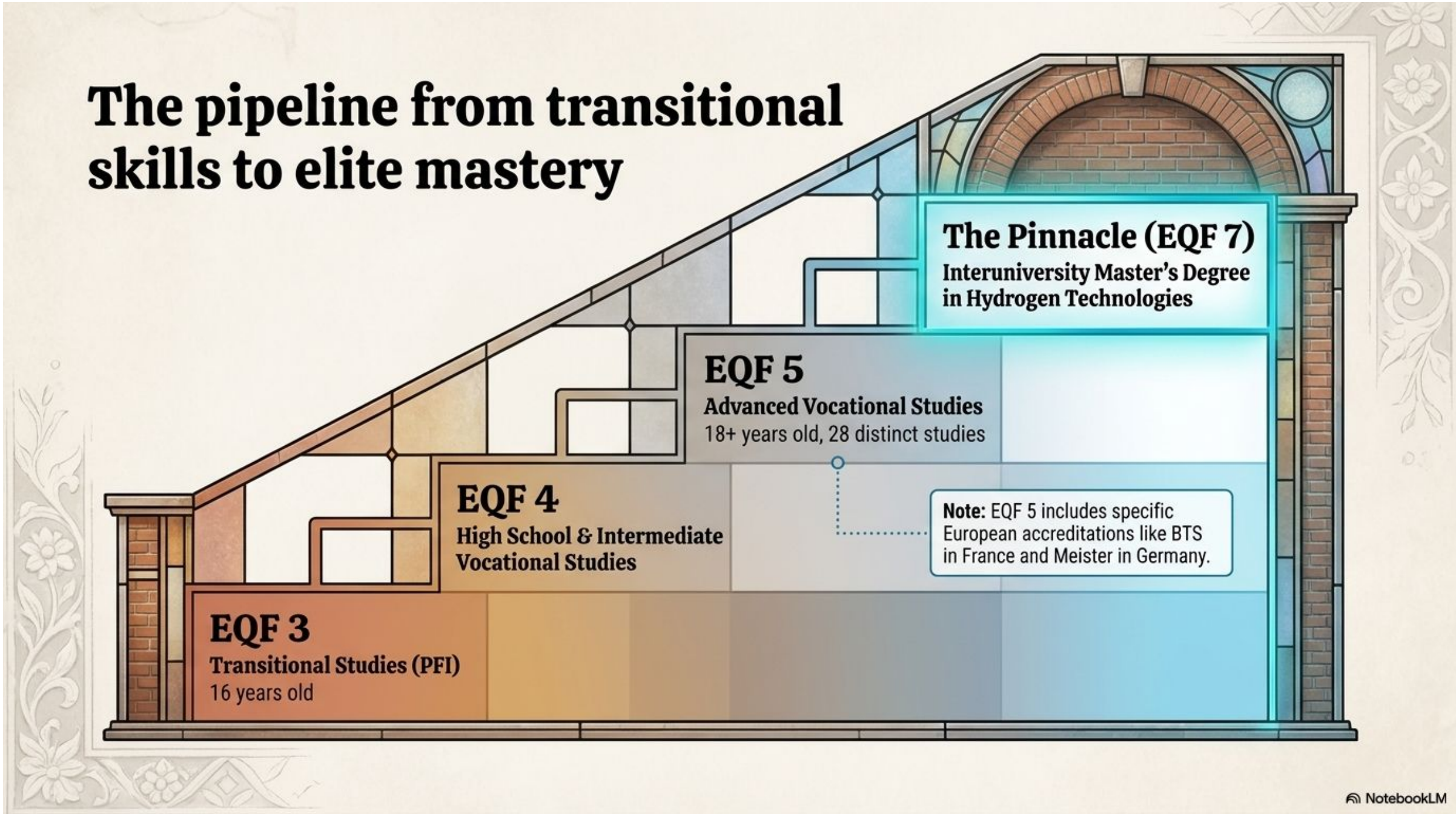
Catalonia & Barcelona
Deep regional roots.

Science & 1929
The year the new building opened to modernization.

Labor Prima Virtus
"Labor is the first virtue"

The scale of our modern capability

Today, we operate as the largest post-obligatory education school in Catalonia.


The pipeline from transitional skills to elite mastery
The Pinnacle (EQF 7)
Interuniversity Master's Degree in Hydrogen Technologies
EQF 5
Advanced Vocational Studies
18+ years old, 28 distinct studies
EQF 4
High School & Intermediate Vocational Studies
EQF 3
Transitional Studies (PFI)
16 years old
Note: EQF 5 includes specific European accreditations like BTS in France and Meister in Germany.
NotebookLM

The Strategic Foundation: Interuniversity Master in Hydrogen Technologies

Central Proposition

An educational program (EQF 7 level) driven by the Petronor-Repsol Group, designed to train professionals across the entire hydrogen value chain: generation, storage, transport, distribution, conversion, and applications.

Strategic Alignment

Directly aligned with European decarbonization strategies to meet the new needs of the energy labor market.

Already boasting 4 successful editions.

STUDIES

This Interuniversity Master's Degree in Vocational Education and Training in Hydrogen Technologies is an educational initiative promoted by the **Petronor-Repsol Group** and designed and endorsed by **five universities**:

MONDRAGON UNIBERTSITATEA

1474 Universidad Zaragoza

UNIVERSITAT ROVIRA i VIRGILI

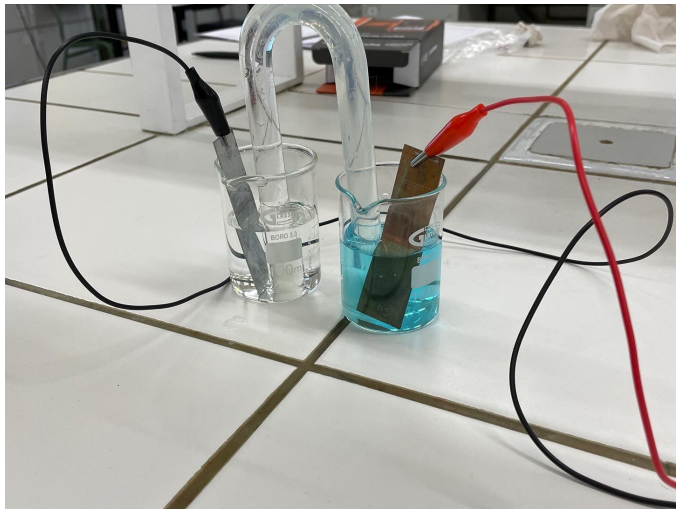
UPC UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH

EHU Euskal Herriko Unibertsitatea Universidad del País Vasco

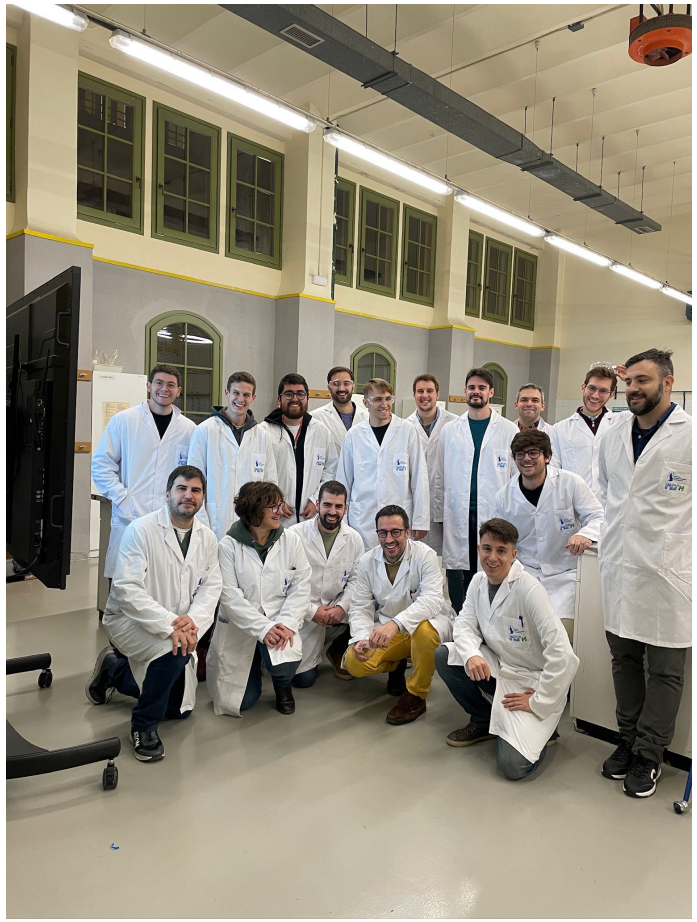
Several vocational education and training centres and research institutions are involved in the organisation of the **practical component**:

STUDIES

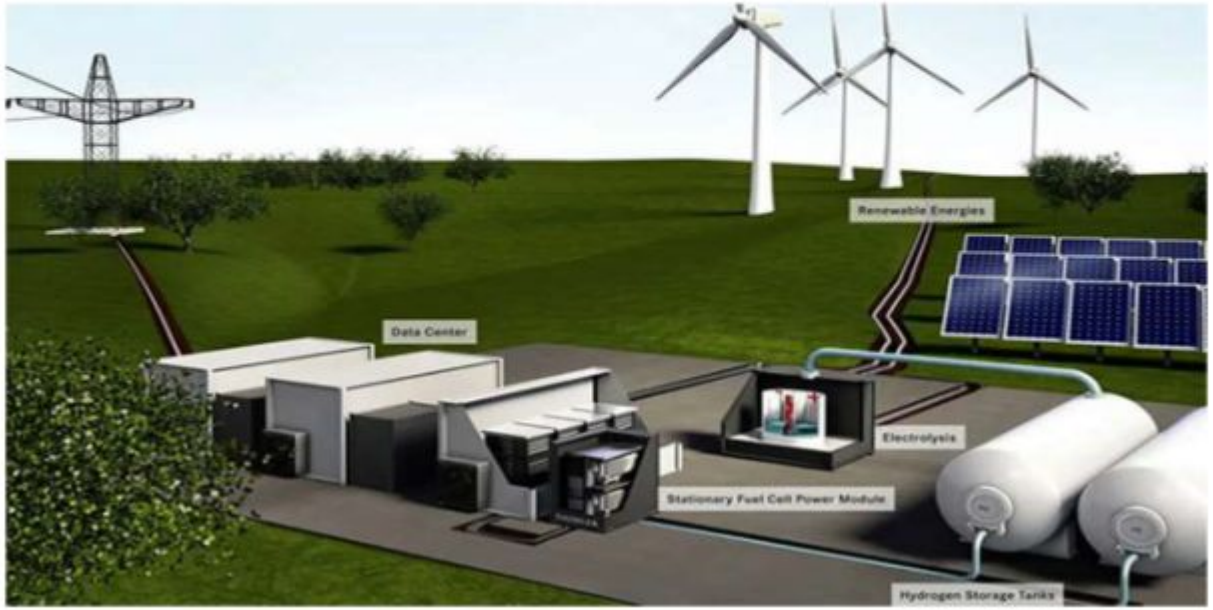
The **main objective of the master's programme** is to train professionals in the different technologies related to the entire hydrogen value chain: generation, storage, transport, distribution, conversion, and industrial and energy applications.



The Master's programme is aimed at professionals interested in training in hydrogen technologies and their applications, a specialization aligned with European decarbonisation strategies and the growth of the hydrogen industrial sector.



4 Editions of the Master’s Programme



HElec

GOBIERNO DE ESPAÑA
MINISTERIO DE EDUCACIÓN Y FORMACIÓN PROFESIONAL

Innovation and Applied Research Projects and Knowledge Transfer in Vocational Training (2021)

Mondragon Unibertsitatea
Goi Eskola Politeknikoa
Escuela Politécnica Superior

somorrostro
centro de formación / irakas-gunea

cpifp Pirámide

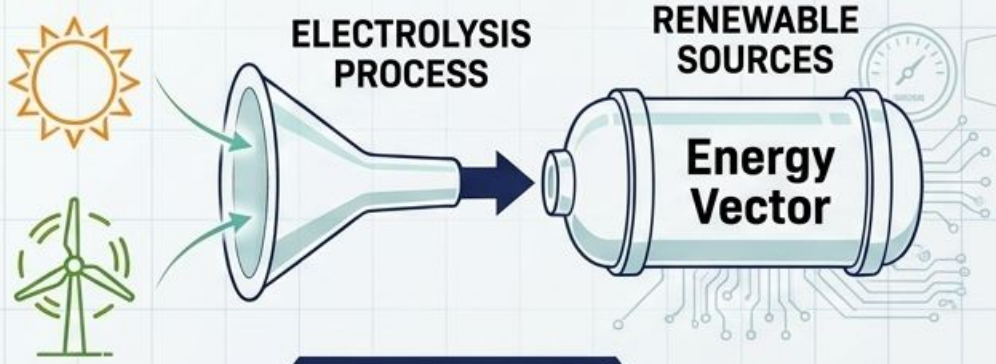
INSTITUT ESCOLA DEL TREBALL

COMTE DE RIUS INSTITUT

GREEN HYDROGEN PRODUCTION BY ELECTROLYSIS

Source: Jordi Llorca/UPC

Project HElec (2021): Mastering Electrolysis



Mission:

Applied research and knowledge transfer in green H2 production via electrolysis for Vocational Training.

Key Concept:

Hydrogen is not an energy source, but an energy vector. It is the sustainable environmental alternative to avoid greenhouse gas emissions.

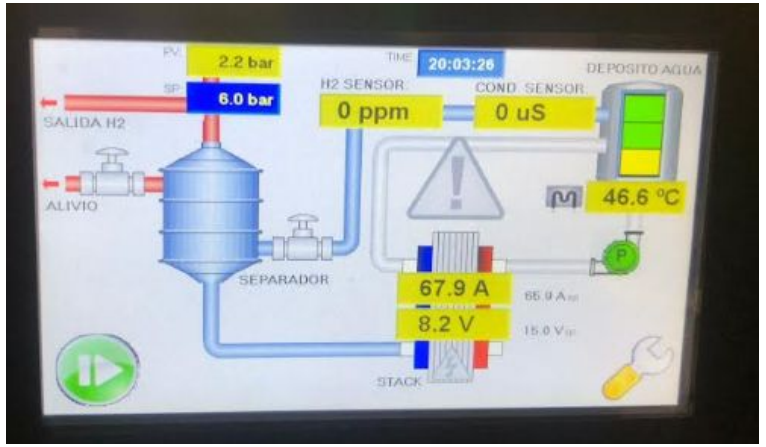
GREEN HYDROGEN PRODUCTION BY ELECTROLYSIS

Photovoltaic panels on the roof at edt

Electrolyzed 1KW, H_2 Green

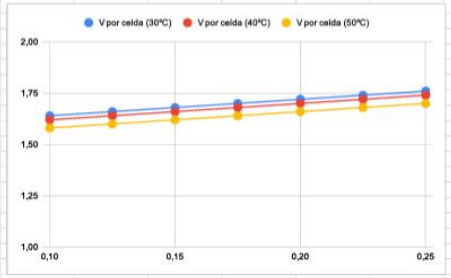
GREEN HYDROGEN PRODUCTION BY ELECTROLYSIS

Parameter control boards



SHARED INTER-CENTRE CHALLENGE: POLARIZATION CURVE DEVELOPMENT

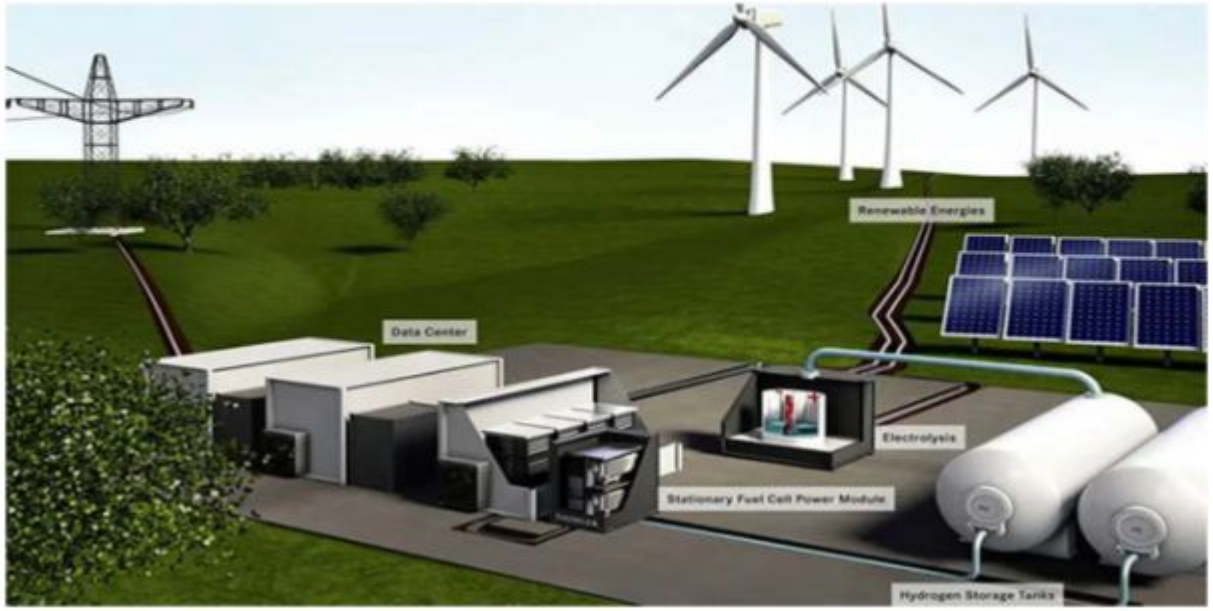
Densidad corriente	V por celda (30ºC)	V por celda (40ºC)	V por celda (50ºC)
0,1	1,64	1,62	1,58
0,125	1,66	1,64	1,6
0,15	1,68	1,66	1,62
0,175	1,7	1,68	1,64
0,2	1,72	1,7	1,66
0,225	1,74	1,72	1,68
0,25	1,76	1,74	1,7



30	40	50
8,7	8,7	8,6
8,9	8,9	8,8
9,2	9,1	9
9,4	9,3	9,2
9,6	9,5	9,4
9,8	9,7	9,6
10	9,9	9,8
TARRAGONA		

30	40	50
8,3	8,4	8,3
8,6	8,6	8,5
8,8	8,7	8,6
9	8,9	8,8
9,1	9,1	8,9
9,3	9,2	9,1
9,5	9,3	9,2
BILBAO		

30	40	50
8,8	8,9	8,8
9,2	9,2	9
9,6	9,5	9,3
9,9	9,7	9,5
10,3	10	9,8
10,6	10,3	10
10,9	10,6	10,3
HUESCA		



FC2TEACH2

GOBIERNO DE ESPAÑA
MINISTERIO DE EDUCACIÓN Y FORMACIÓN PROFESIONAL

Innovation and Applied Research Projects and Knowledge Transfer in Vocational Training (2023)

FUNDACIÓN HIDRÓGENO ARAGÓN

somorrostro centro de formación / irakas-gunea

cpifp Pirámide

INSTITUT ESCOLA DEL TREBALL

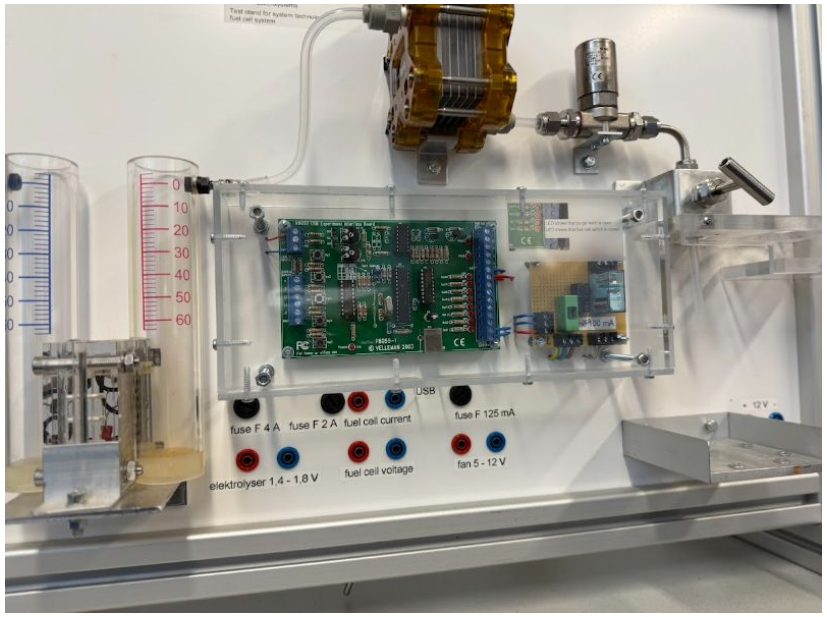
COMTE DE RIUS INSTITUT

Project FC2TEACH2 (2023): The Power of Fuel Cells

Development of educational material for students in H2 technologies.

"Bringing fuel cells to the VET classroom. This project closes the circle: how we extract the energy accumulated in hydrogen to generate kinetic or electrical work, with zero polluting emissions.

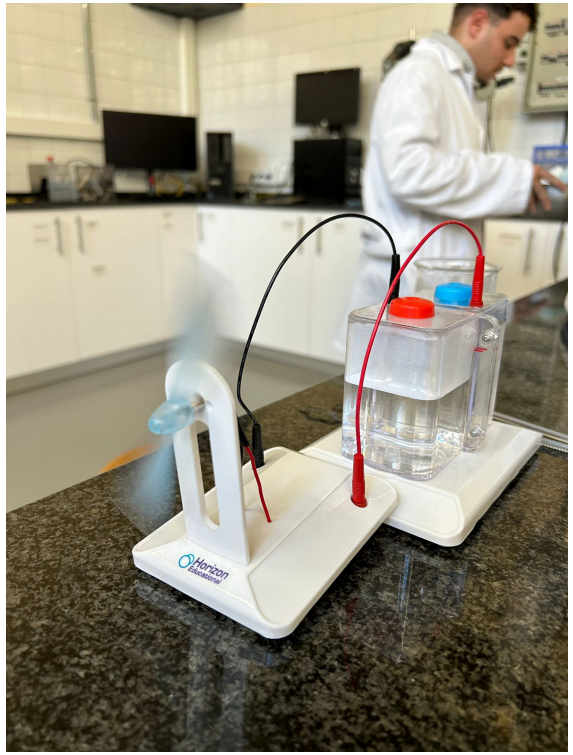
FC2TEACH2

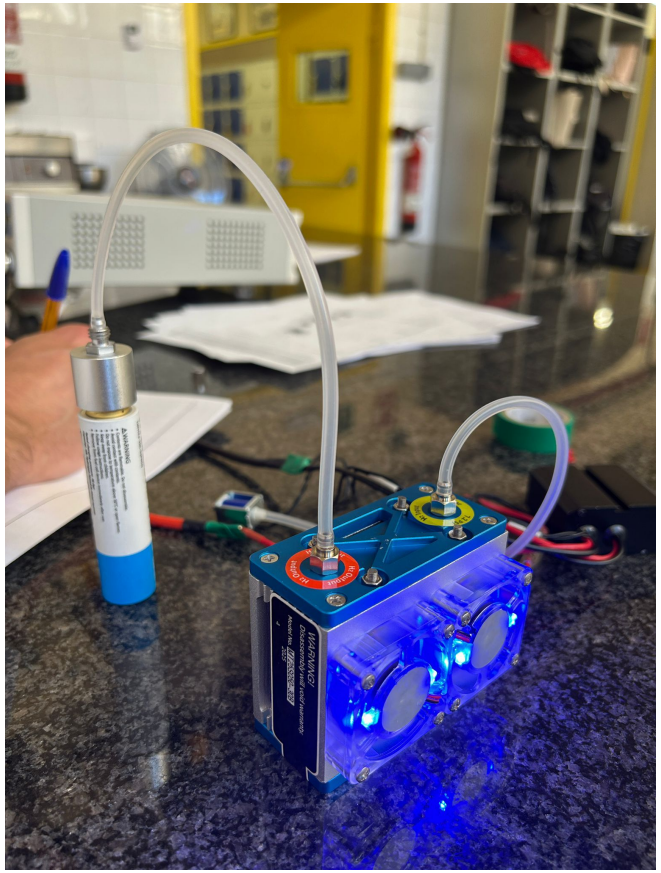


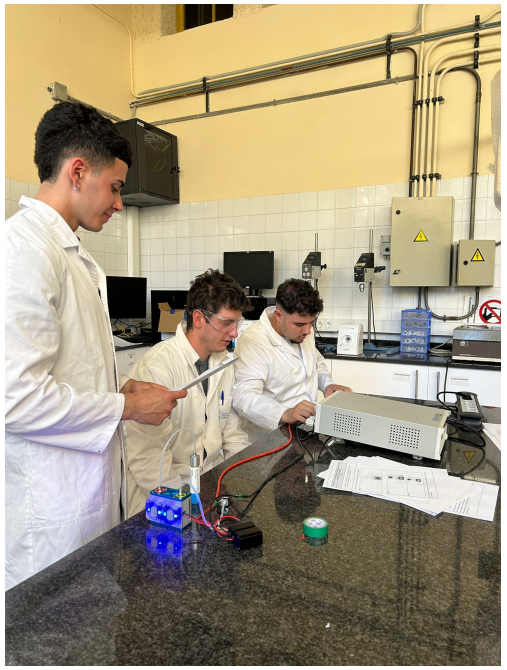
DEVELOPMENT OF EDUCATIONAL PROTOTYPES TO EXPLAIN THE OPERATION AND COMPONENTS OF FUEL CELLS

FC2TEACH2

FUEL CELLS







DEVELOPMENT OF EDUCATIONAL MATERIALS FOR STUDENTS IN GREEN HYDROGEN TECHNOLOGIES

From Concept to Reality: The H2 Bike

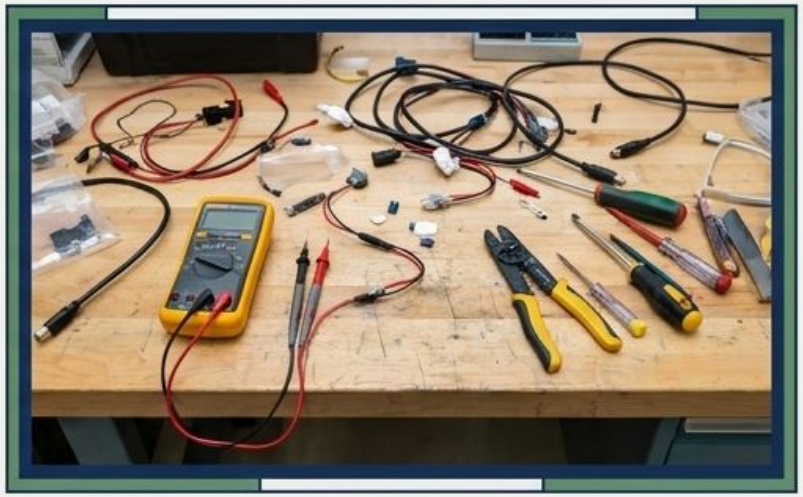
1. Storage: Low-pressure hydrogen input via a compact cylinder/capsule.

2. The Heart of the System: The Fuel Cell located inside the grey front carrier basket.

3. Thermal Management: Cooling fans to manage the temperature of the chemical reaction.

4. Translation to Movement: Conversion of electrical energy to power the bicycle's motor.

Inside the Workshop: Applied Engineering



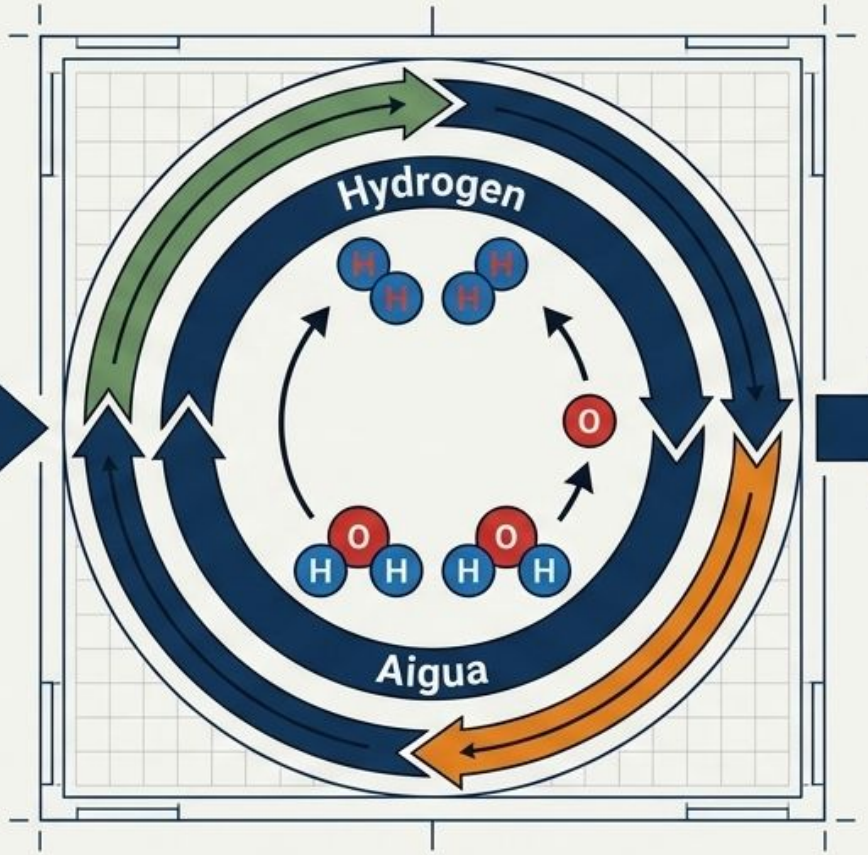
Systems Integration: Advanced electronics, thermodynamics, and mechanics—all executed by the students within the center's facilities.

Escola del Treball Institute

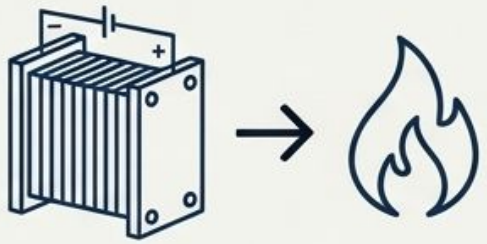
The Complete Hydrogen Cycle: A Sustainable Loop

HElec (2021) - Generation

Energy + Water → Hydrogen



FC2TEACH2 (2023) - Application



Hydrogen → Energy + Water

**At Escola del Treball we don't teach fragments;
we train our technicians in the entire life cycle of green energy.**

FC2TEACH2

MOLTES GRÀCIES!

HElec