
INNOVATION
CONTINUOUS IMPROVEMENT
TRUST
TEAMWORK
Inycom
innovation technologies
EXPERIENCE AS SYSTEM INTEGRATORS
CUSTOMER EXPERIENCE
COMMITMENT
LIFE CARE INTEGRATION
DIGITAL TRANSFORMATION

# THE COMPANY

# INYCOM GLOBAL

Operating from Spain throughout the world

**CURRENT WORKFORCE**

**745** People

**BUSINESS VOLUME 16/17**

**73** M €

# INNOVATION & TECHNOLOGY

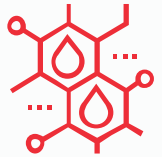
The mark of our identity

Information and Communication Technologies

Inycom

innovation technologies

Technological Solutions & Services

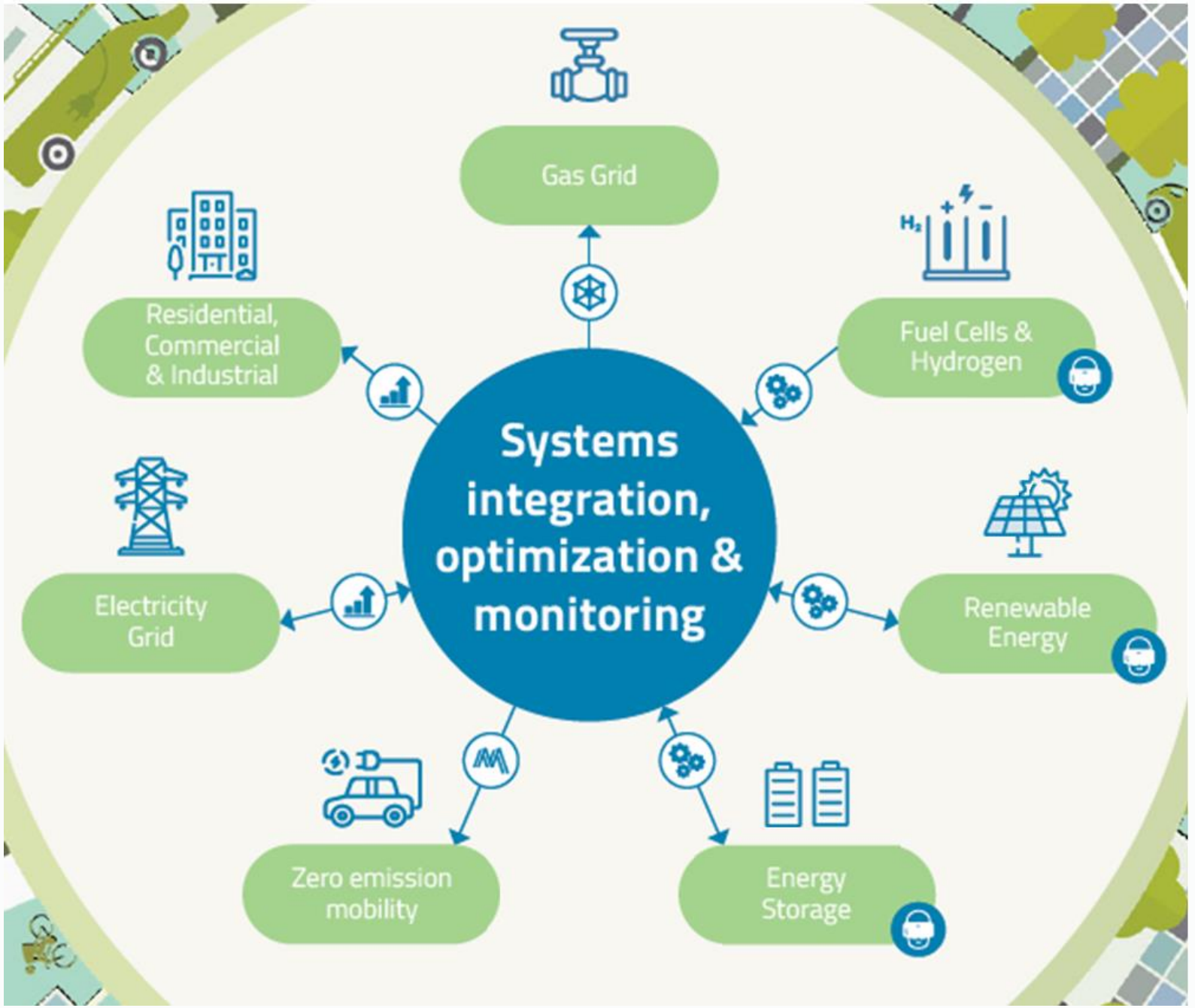


LifeCare Integration

Digital Business

Biotechnology

Engineering, Integration and Innovation


Gas Grid
Residential, Commercial & Industrial
Fuel Cells & Hydrogen
Systems integration, optimization & monitoring
Electricity Grid
Renewable Energy
Zero emission mobility
Energy Storage

# R&D DEPARTMENT

- Examples of EU projects in the field of systems integration

SEVENTH FRAMEWORK PROGRAMME

HORIZON 2020

***Electrolysis control & systems integration***

ELYGRID
Improvements to Integrate High Pressure Alkaline Electrolysers for Electricity/H2 production from Renewable Energies to Balance the Grid

elyntegration

ELY4OFF
PEM ELECTROLYSERS FOR OPERATION WITH OFFGRID RENEWABLE INSTALLATIONS

DEMO 4GRID

***Smart grids***

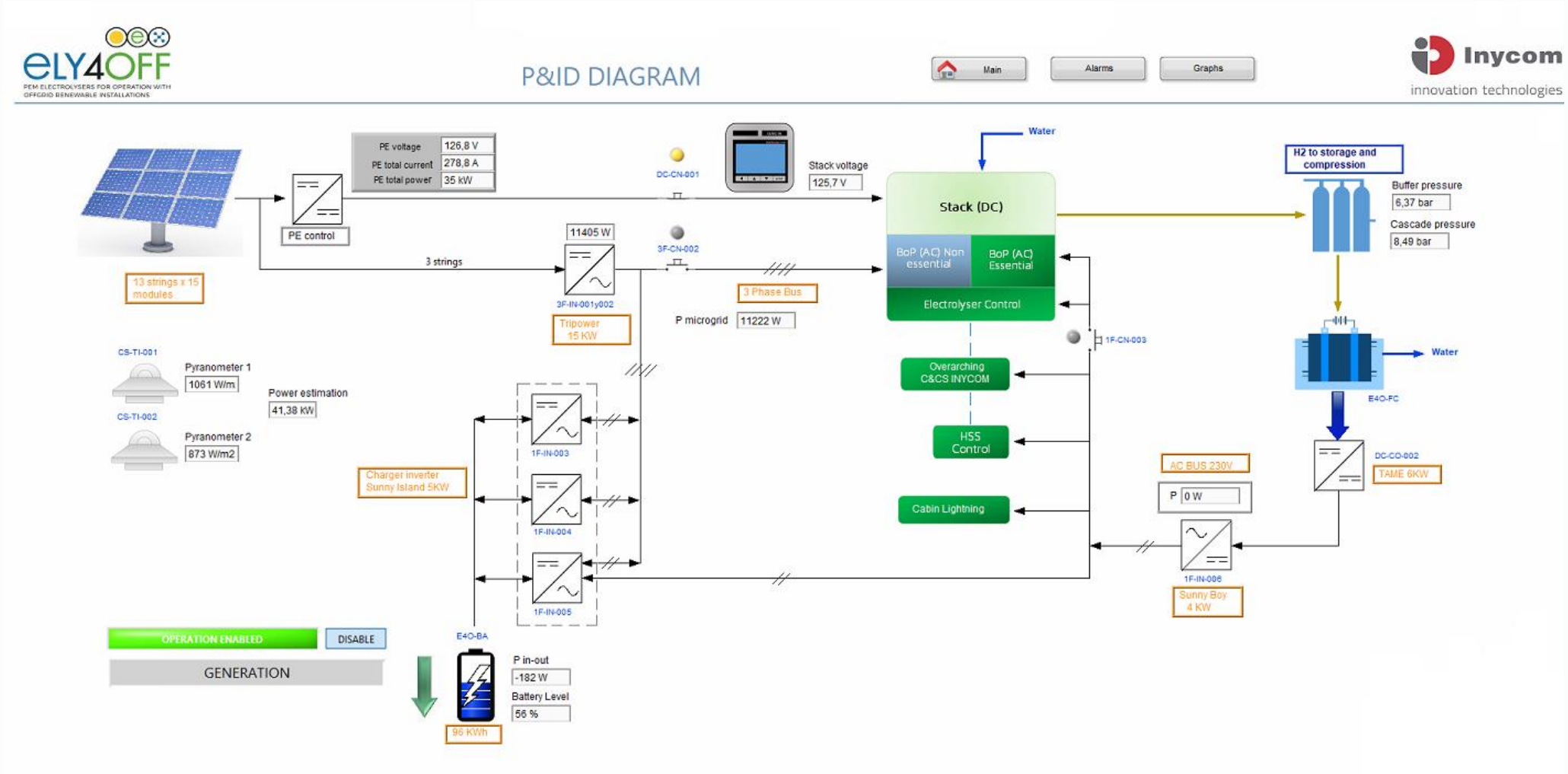
P2P - smarTest

E-LAND

# SYSTEMS INTEGRATION CASES

# ELY4OFF PROJECT

## *SCADA system*



# ELY4OFF PROJECT

## *Challenges:*

**Challenge:** to estimate available power when the PEMWE is not in generation (i.e. it is not possible to measure it via power meters) to decide to enter in production

Available radiation measured from pyranometers

**PROBLEM:** power from PV is estimated with radiation and surface temperatura on the panels (the latest is not measured in ELY4OFF because of practical reasons, such as cost)

**SOLUTION** developed by INYCOM based on **data analytics**:

- Creation of power-radiation estimation function based on:
    a. Historical data on radiation and ambient temperature
    b. Linear interpolation between hourly values of radiation
- Consideration of shadow coefficients from nearby buildings and sun position

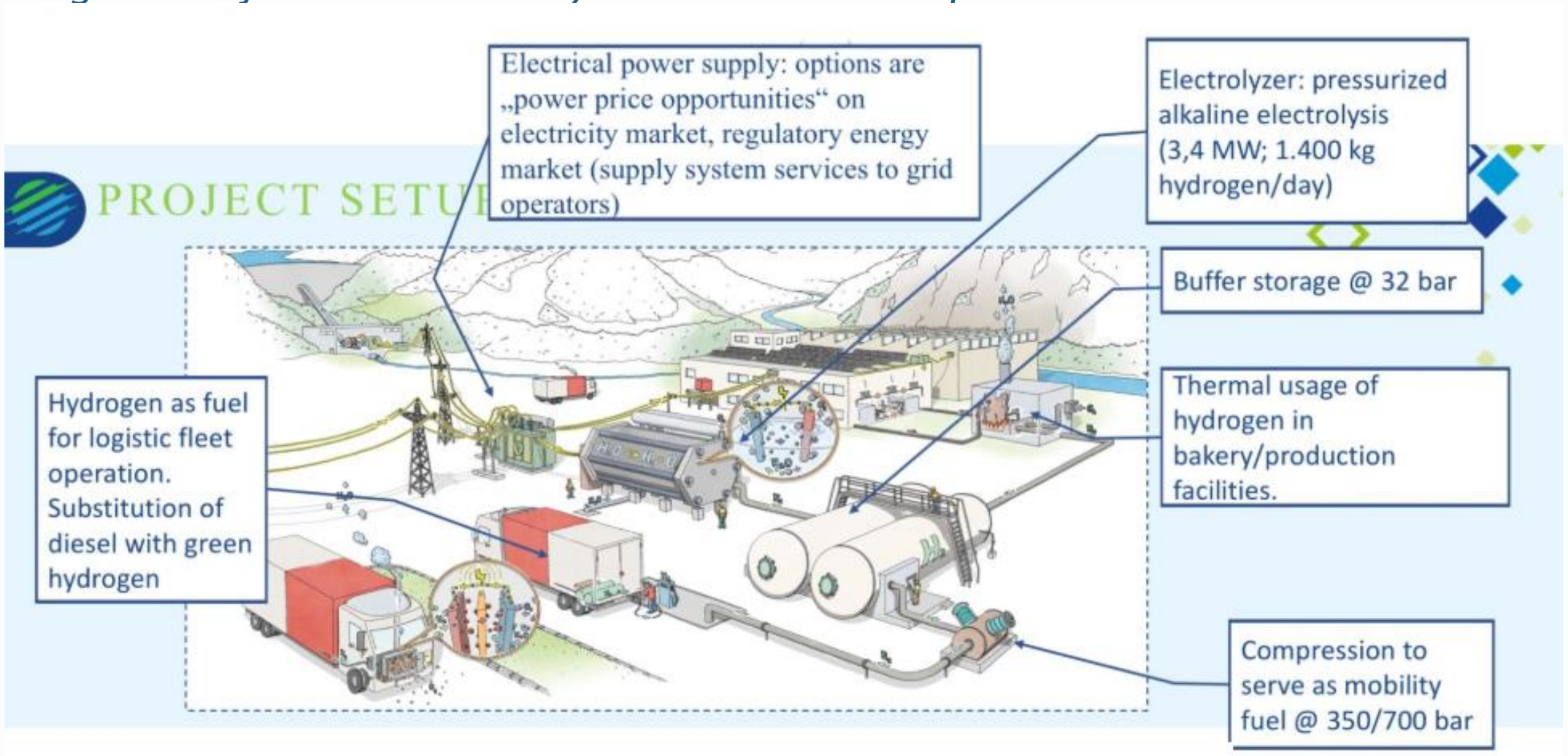
# ELY4OFF PROJECT

## *Next steps:*

1. Storage of information in a database to carry out **data analytics**
2. **Forecasting**
   - Currently the criteria is to maximize H2 production
   - In the future, FHA may present a certain weekly demand (e.g. to refuel FCEVs)
     - Forecasting of solar production and prediction of demand via self-learning will be useful to adequate production and avoid overutilization of the PEMWE (which accelerates degradation and may increase OPEX)
3. **Predictive maintenance**
   - The SCADA gathers information on each subsystem (e.g. PE, PEMWE, batteries…)
   - This information may be analysed to detect thresholds or values in parameters to be avoided in order to prevent operation in undesiderd states which lead to malfunction
4. **Optimization of energy flows** to increase overall efficiency (e.g. optimal usage of batteries avoiding very short isolated charging periods, etc.).
5. **Study on adaptations** for other configurations (e.g. microgrid connected to main electricity network, connection of mir wind turbines, etc.)

# DEMO4GRID PROJECT

*Integration of a 4 MW electrolyser in an industrial plant*



# THANK YOU FOR YOUR ATTENTION

Full Name
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