Jornada sobre Energías Renovables y Eficiencia Energética

CAI – 09.11.2017

Panel de Investigación
Cómo nos preparamos para el futuro en EERR y EE

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ITBA

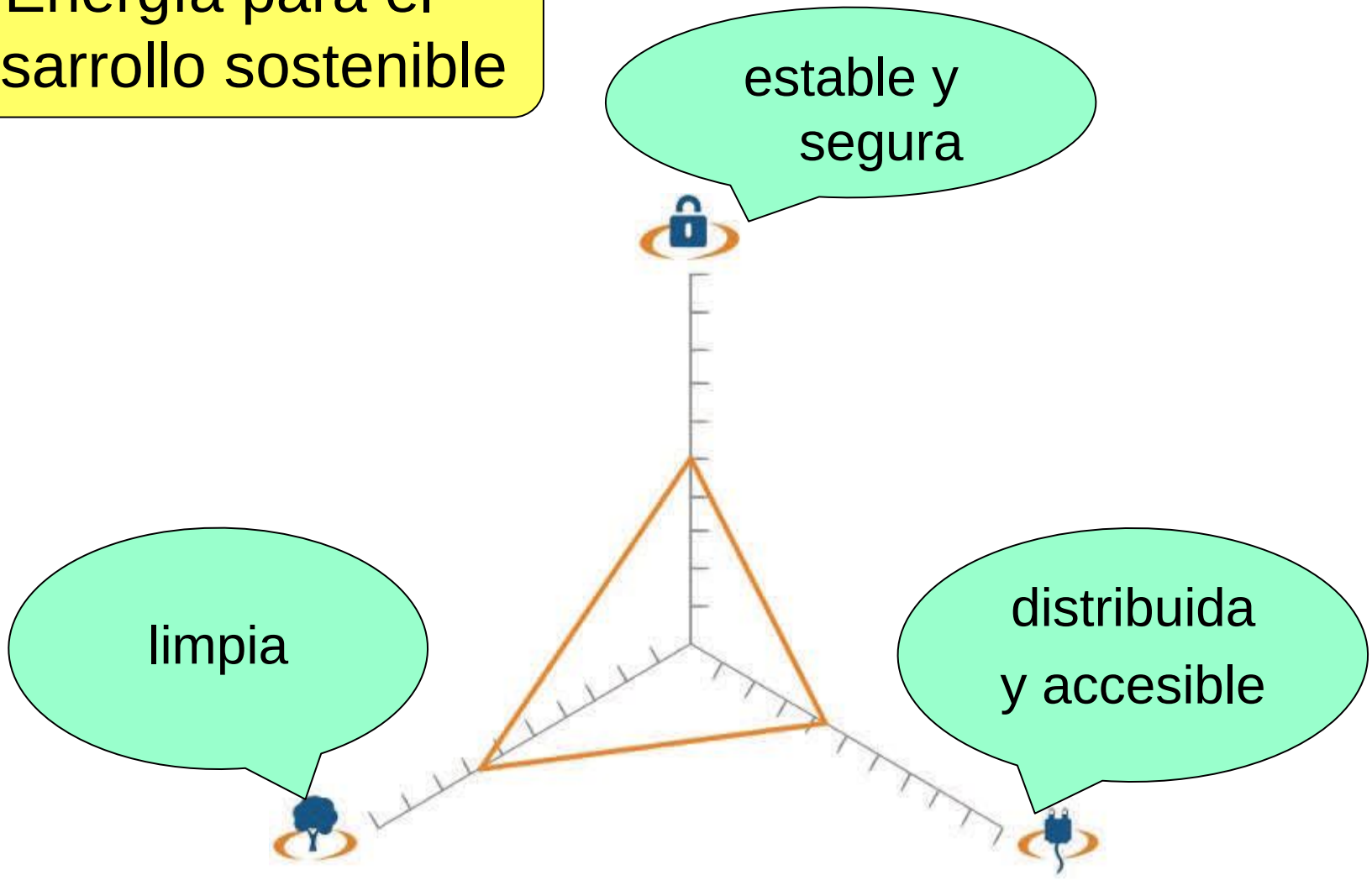
CONDICIONES PARA EL DESARROLLO SOSTENIBLE

no generar excluidos

preservar la calidad del ambiente

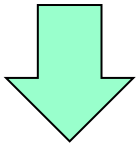
hacer uso equilibrado
de recursos no renovables

Energía para el desarrollo sostenible

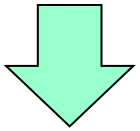


Source: World Energy Council

¿El hidrógeno como combustible?

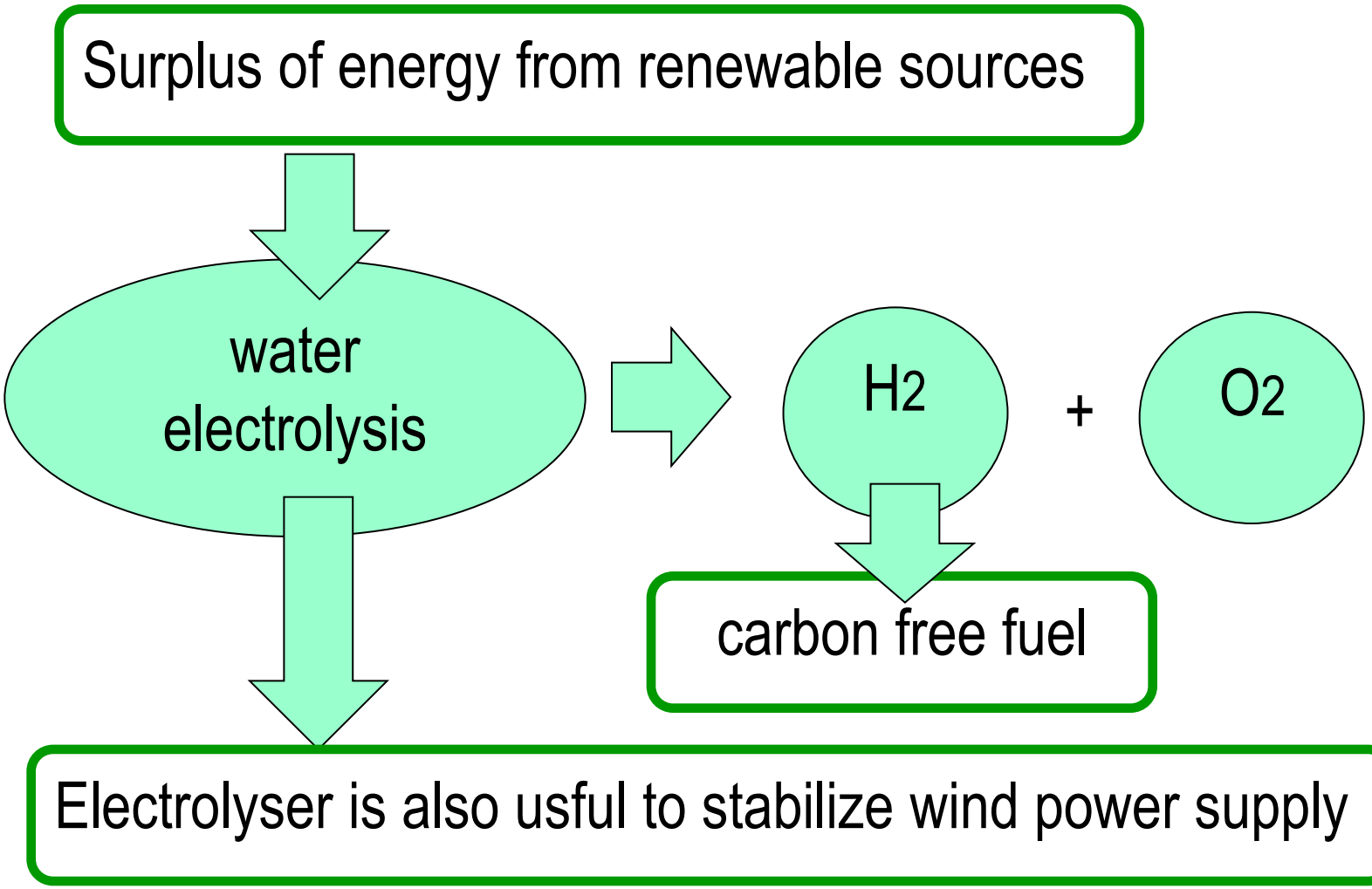


permite proveer energía
limpia, estable y distribuída



¿cómo producirlo y almacenarlo
para que resulte seguro y rentable?

Proposal


Surplus of energy from renewable sources
water electrolysis
H2
+
O2
carbon free fuel
Electrolyser is also usful to stabilize wind power supply

Challenges of efficiency in the hydrogen chain

- Hydrogen production at high pressure
- Hydrogen purity
- Hydrogen storage tanks at high pressure
- Hydrogen combustion in Otto engines

ITBA Electrolyser Prototypes

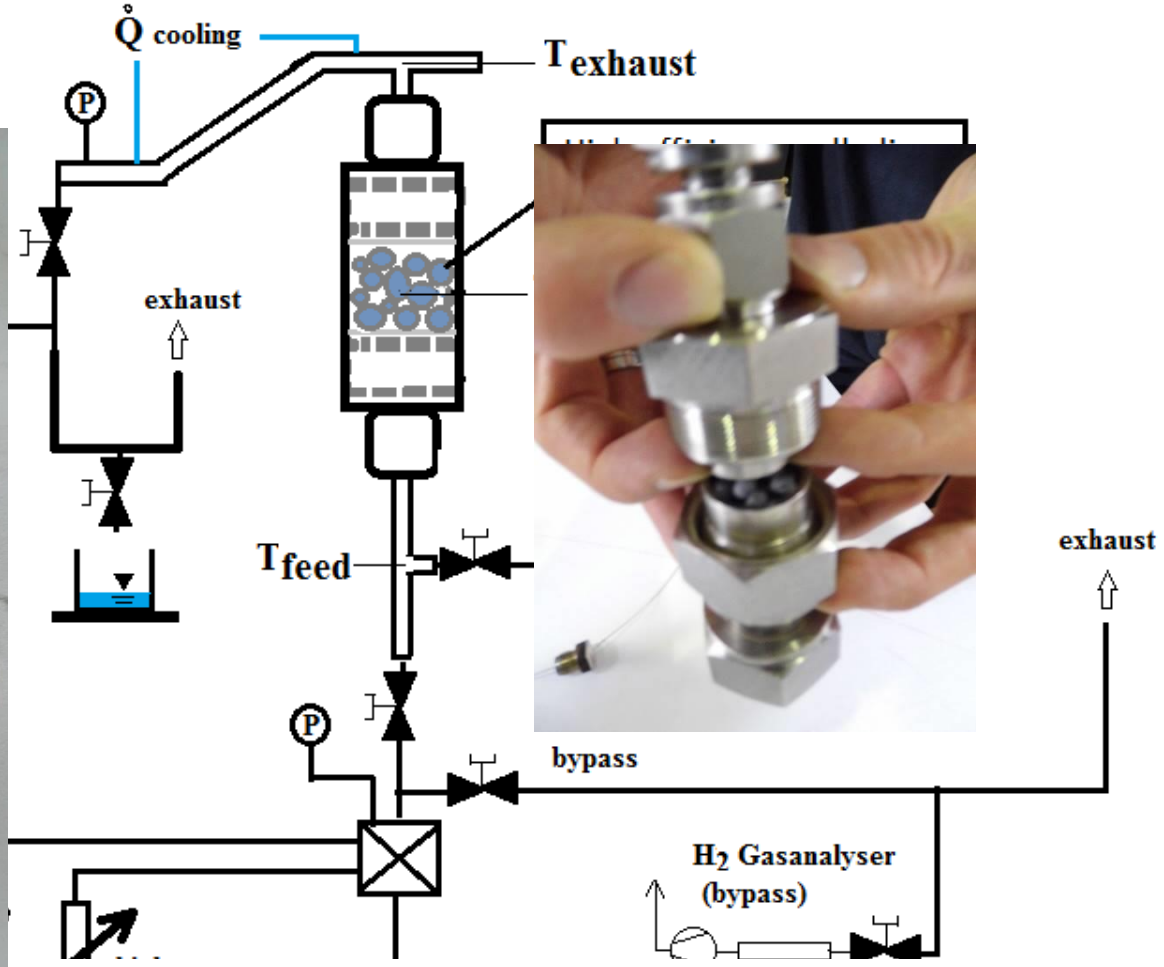
Hydrogen purity

Comparison of results

Company	Casale Chemicals	ErreDue	Hydrogen Systems	Norsk Hydro	Teledyne	ITBA
Max pressure [bar]	10	6	10	30	7	200
H_2 production [Nm^3/hr]	10	20	10	10	11	1-5
Electric power [KW/Nm^3H_2]	N/A	6	4,2	4.8	6,1	5
Purity [%vol]	99,8	99,7	99,999(*)	99,8	99,999(*)	99.7
Origen						

(*) By using postproduction purity enhancers.

High pressure catalytic cleaning

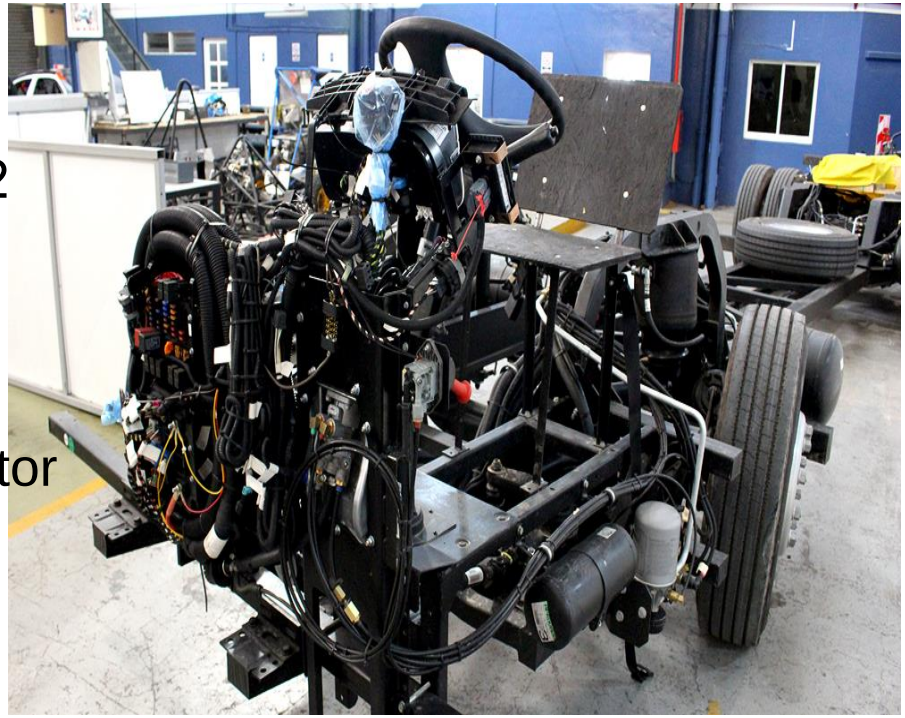


KIT/ IKET develops a catalytic converter to be tested in ITBA electrolyser at 200 bar

Cooperation Mercedes Benz - ITBA

Diesel Bus → Otto Hybrid Bus

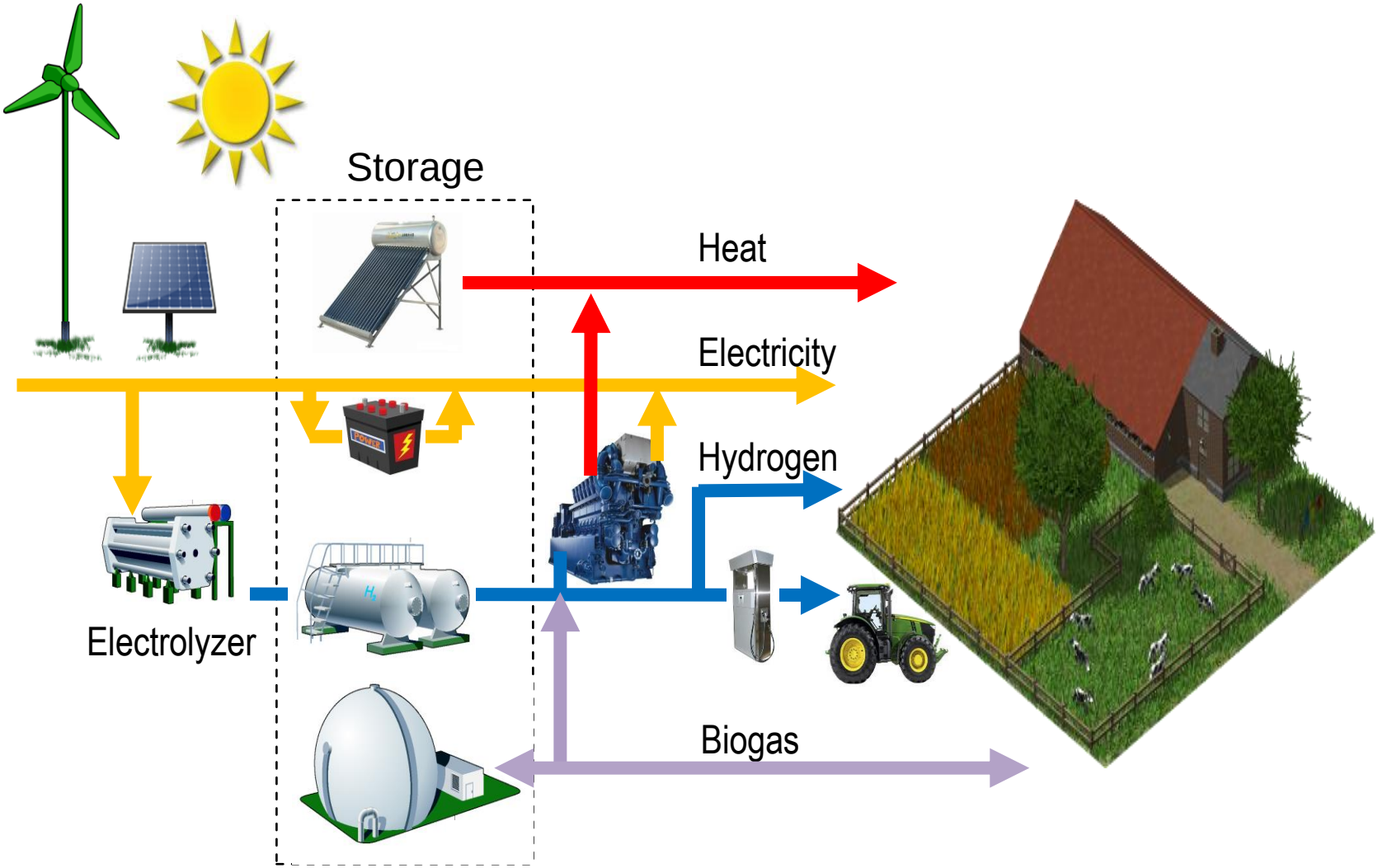
- Diesel engine → Otto fueled with H2
- Lean burn for zero NOx emission
- Innovative tank for H2 at 700 bar
- Engine coupled to electricity generator
- Bus powered electrically
- Regenerative brake system



Diesel engine, OM 904LA.III/22,130 kW

H2-electric bus without fuel cells: greener and cheaper

Stable, clean, distributed and affordable energy



Gracias por su atención y por debatir con el Panel