

Alternative Energy Innovations, S.L.

Industrial Waste Heat revalorization:

A new thermoelectrical concept towards a
cleaner and a most efficient industry 4.0

Dr. Raúl Aragonés
Chairman and CBDO



Problem I

Waste heat in Europe:

- ▶ Up to 65% energy lost in industry
- ▶ 700 TWh → 63.000M€
- ▶ 21% Europe energy needs

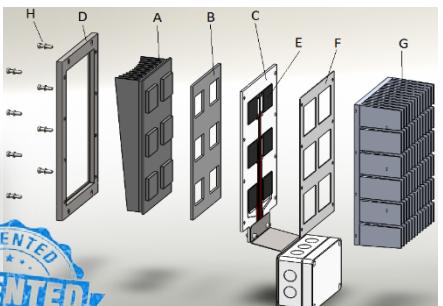




Jet Propulsion Laboratory
California Institute of Technology



Solution: WHRU



20 year without
maintenance

Up to 30Wh per module
100 Kg CO₂ per year

Problem II

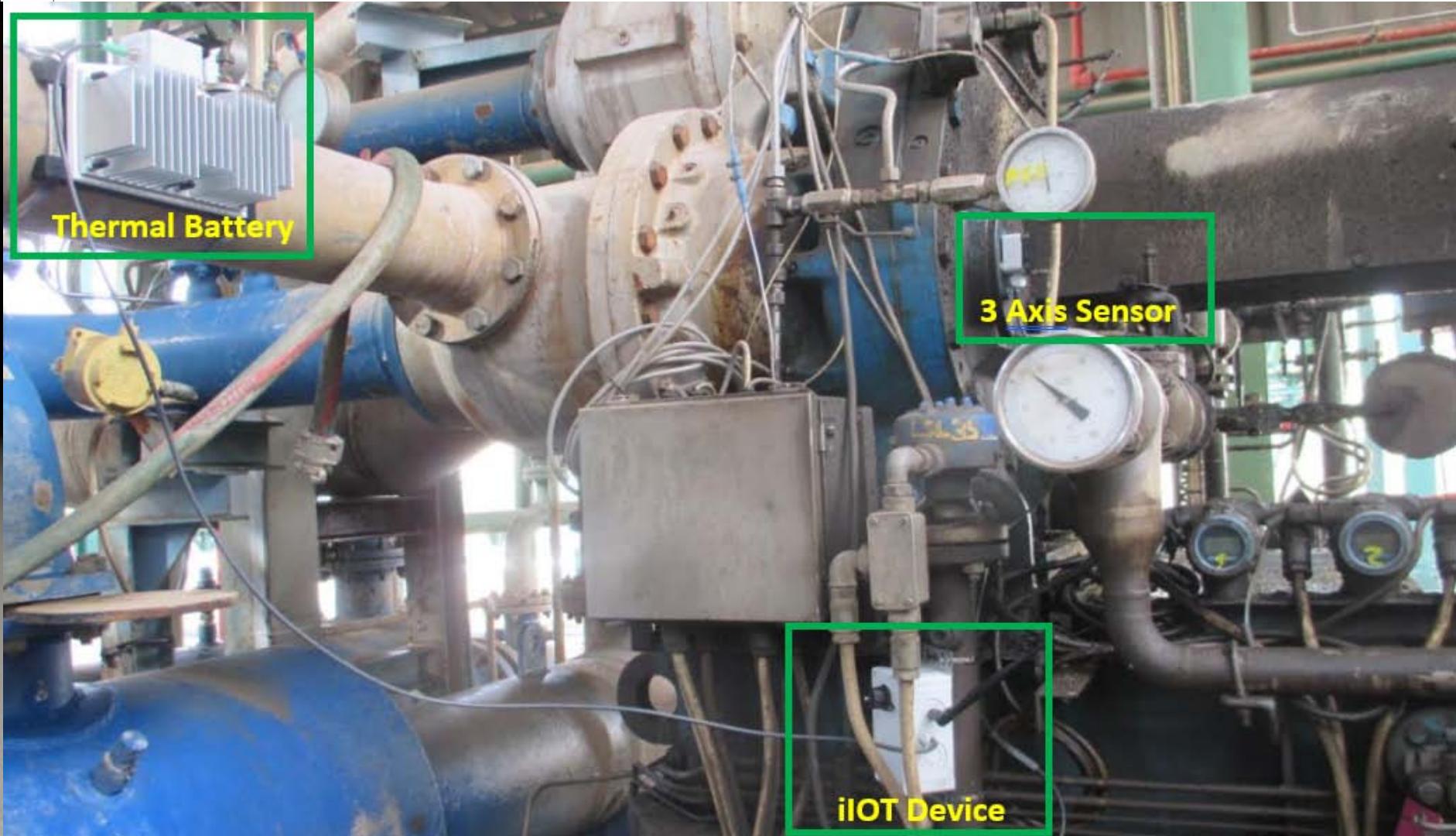
Industry sensing costs → Powering IIoT devices :

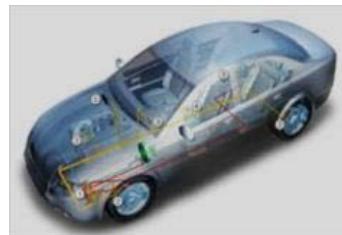
- ▶ Wired solutions: Up to 70€/m wire
- ▶ Wireless solution: Up to 500€ battery change & no ATEX



Solution INDU-EYE

Powering wireless IIoT devices :





Industry

Oil refinery

Chemical

Iron&Steel

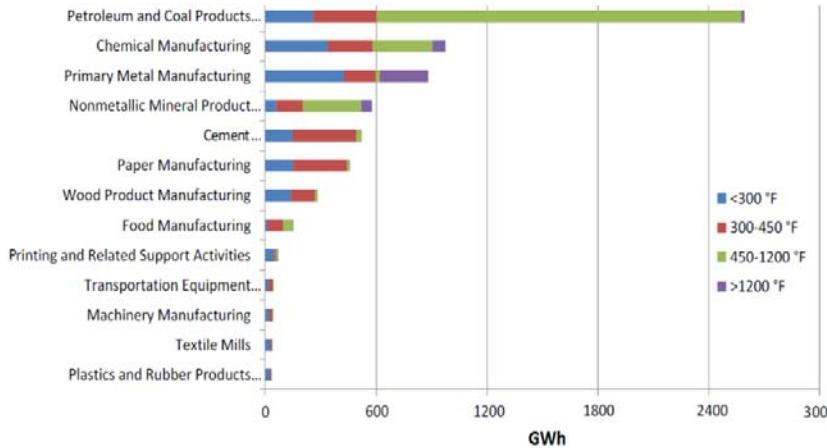
Mining

Cement

Paper

Building

Total remaining power in waste heat (GWh)



Source: US Department of Energy

2020 - EH: 4B\$

2020 - iIOT: 3.7B\$

2030 - iIOT: 60T\$

Source: GE & McKenzie



Use case I

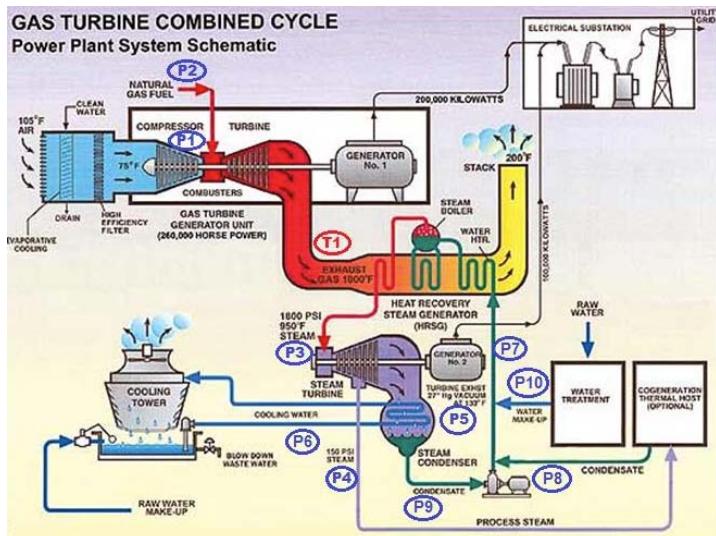
Oil&gas pipeline monitor:

- ▶ Leaks
- ▶ Theft.
- ▶ Others (temps, pressure...).

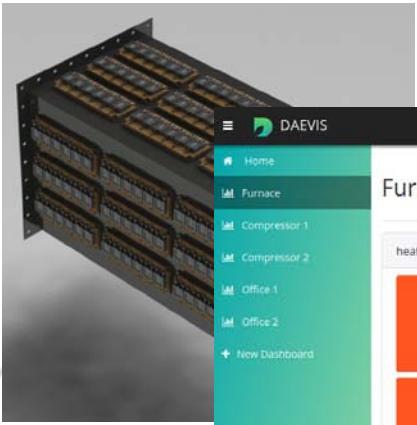


Gas Turbine combined cycle monitor:

- ▶ Pressure switch.
- ▶ Temperature switch.
- ▶ Vacuum switch.
- ▶ Steam purgators.
- ▶ Exhaust monitor.

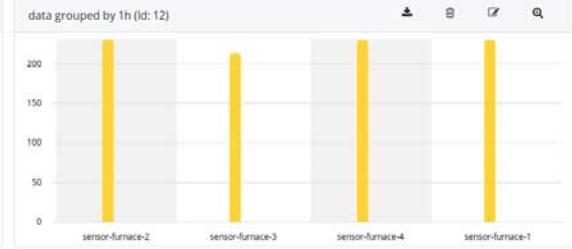
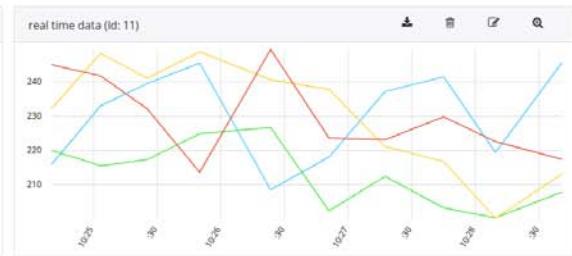


Use case II Wine cellar



1Kwh (steam boiler)
14.4 TM CO₂ / Per segment

Packaging Industry transformation



0.2Kwh (steam boiler)
3.4 TM CO₂ / Per segment

0.2Kwh (steam boiler)
3.4 TM CO₂ / Per segment

Business model

Cooperative engineering projects for waste heat revalorization:

- ▶ IIoT devices
- ▶ Powering EV, PLC, etc.
- ▶ Energy efficiency



Team



Partners & Management

3 Ph.D. & 1 full professor
6 engineers
3 Finance, business & sales

Background expertise

29 years of research,
industry, sales & finance

Thank you for attention

Dr. Raúl Aragonés
Chairman and CBDO

raul.aragones@aeinnova.com

www.aeinnova.com

