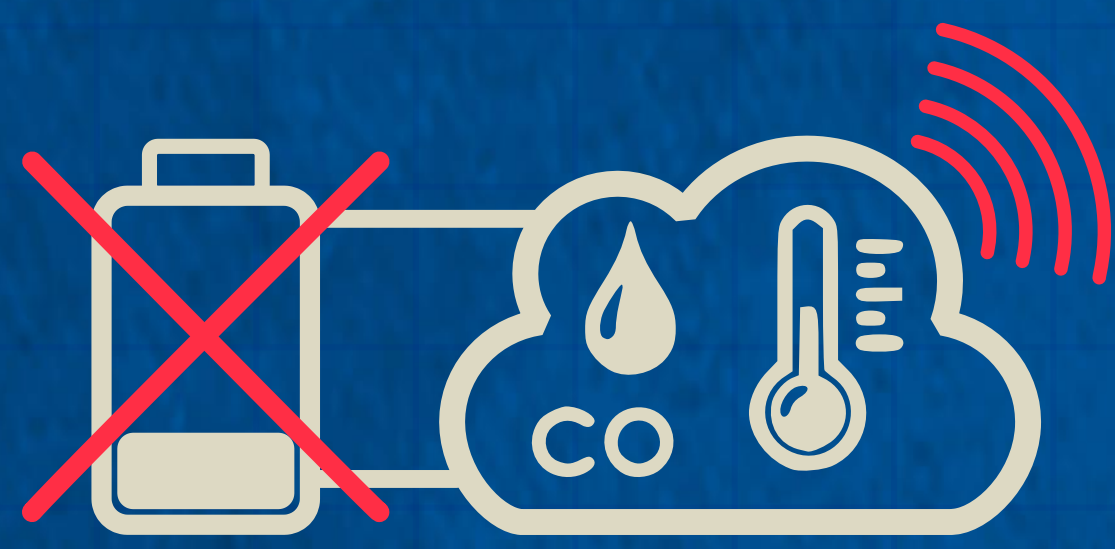


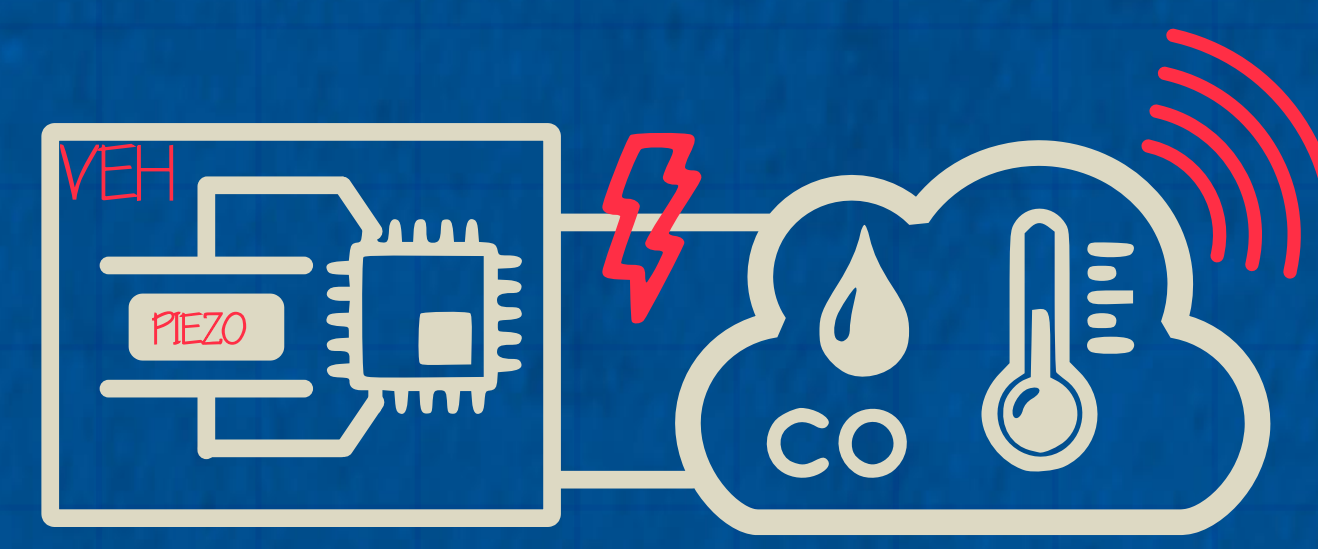
Problematic



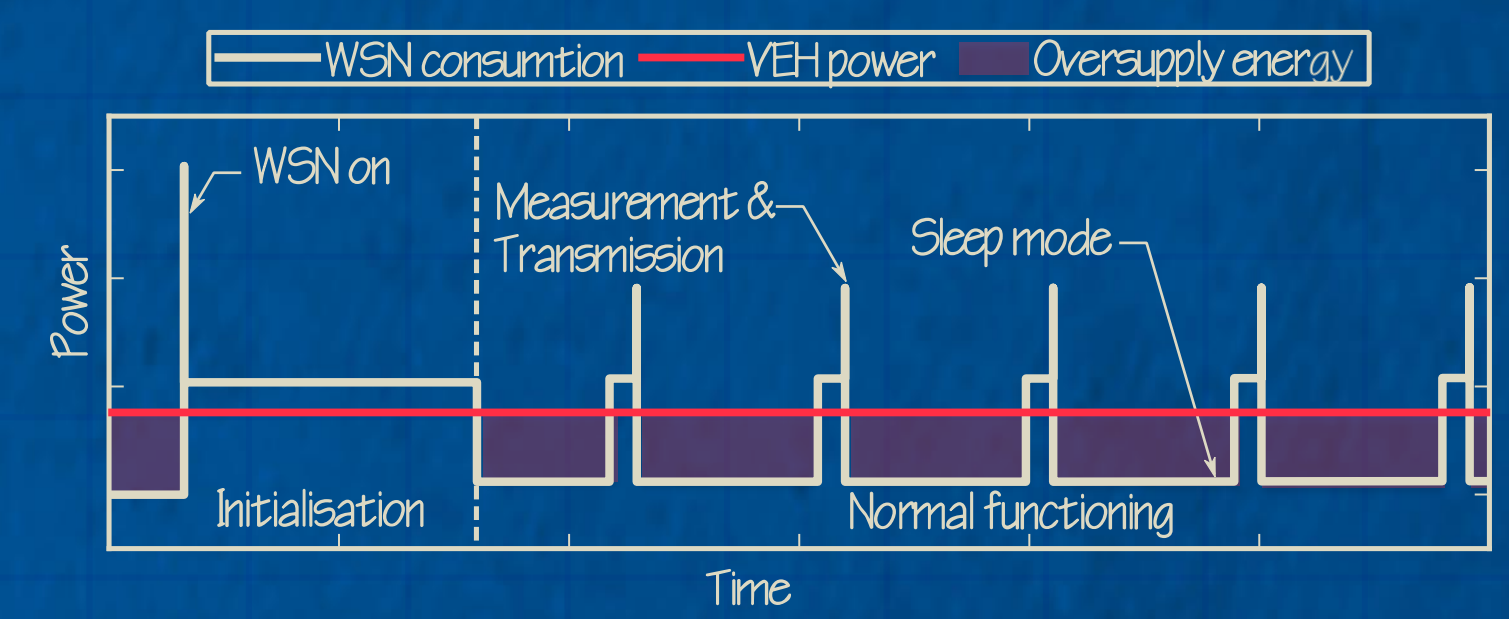
Remove WSN's
batteries



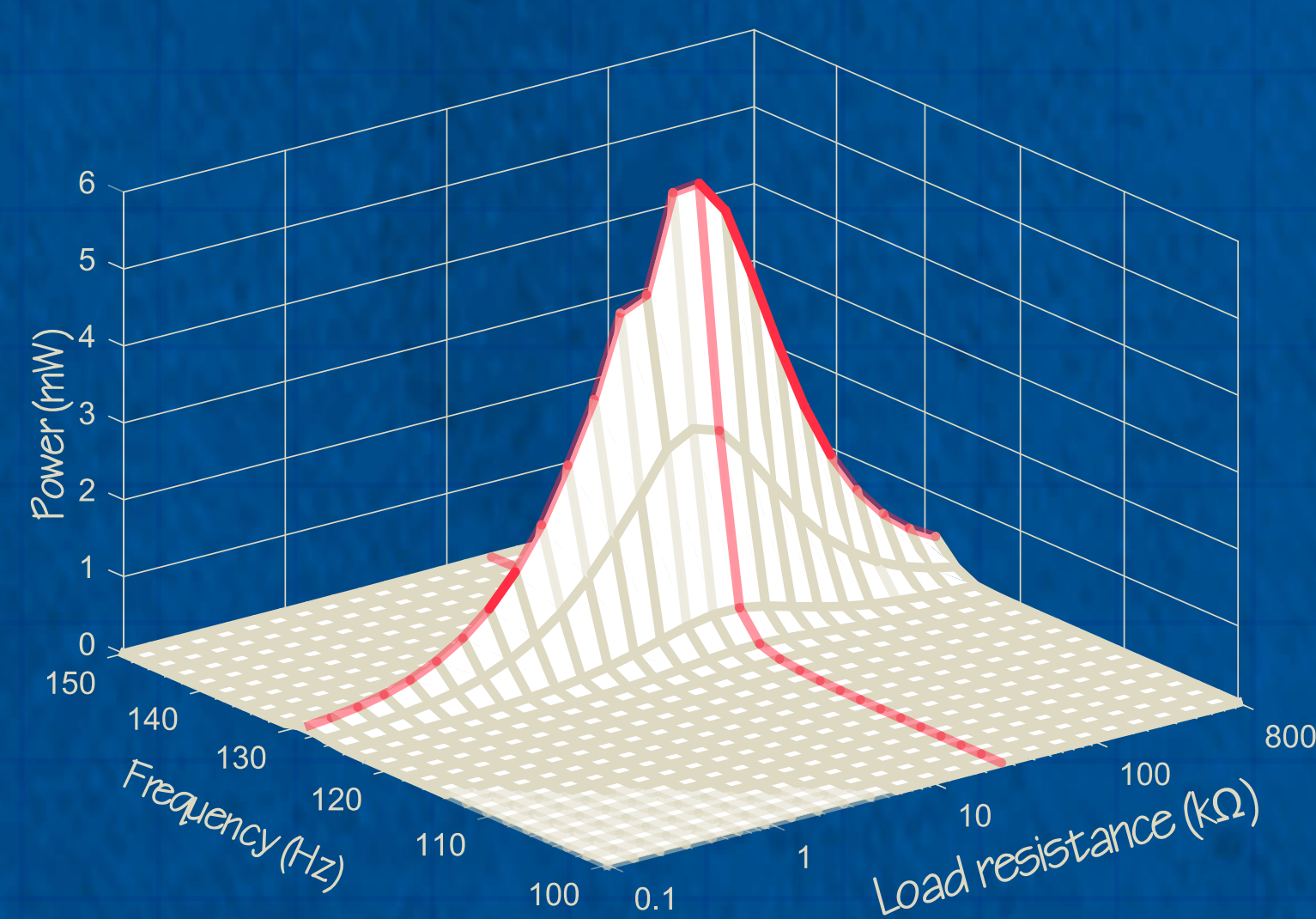
Harvest industrial
ambient energy



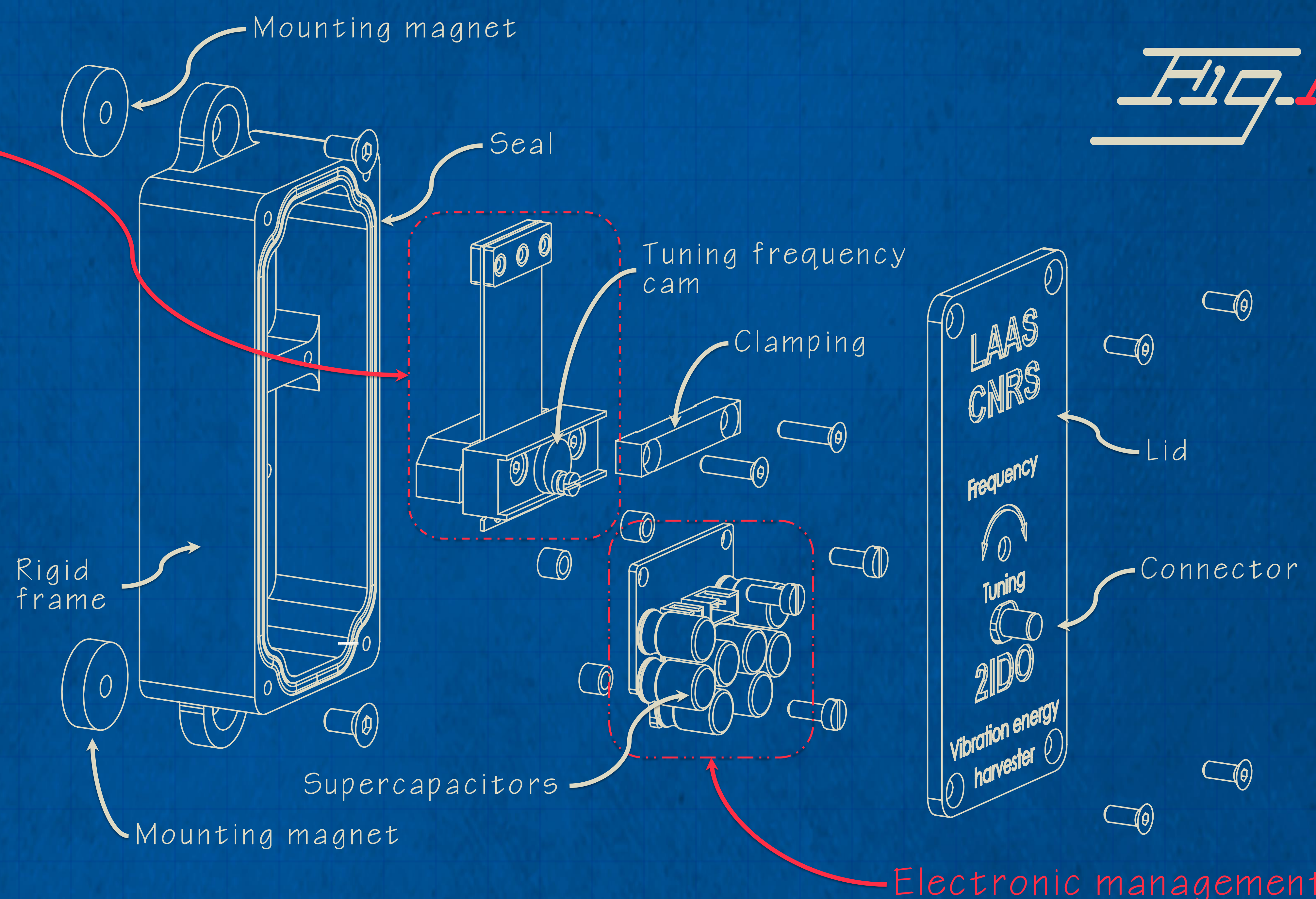
Supply WSN



Manage energy for
different phases

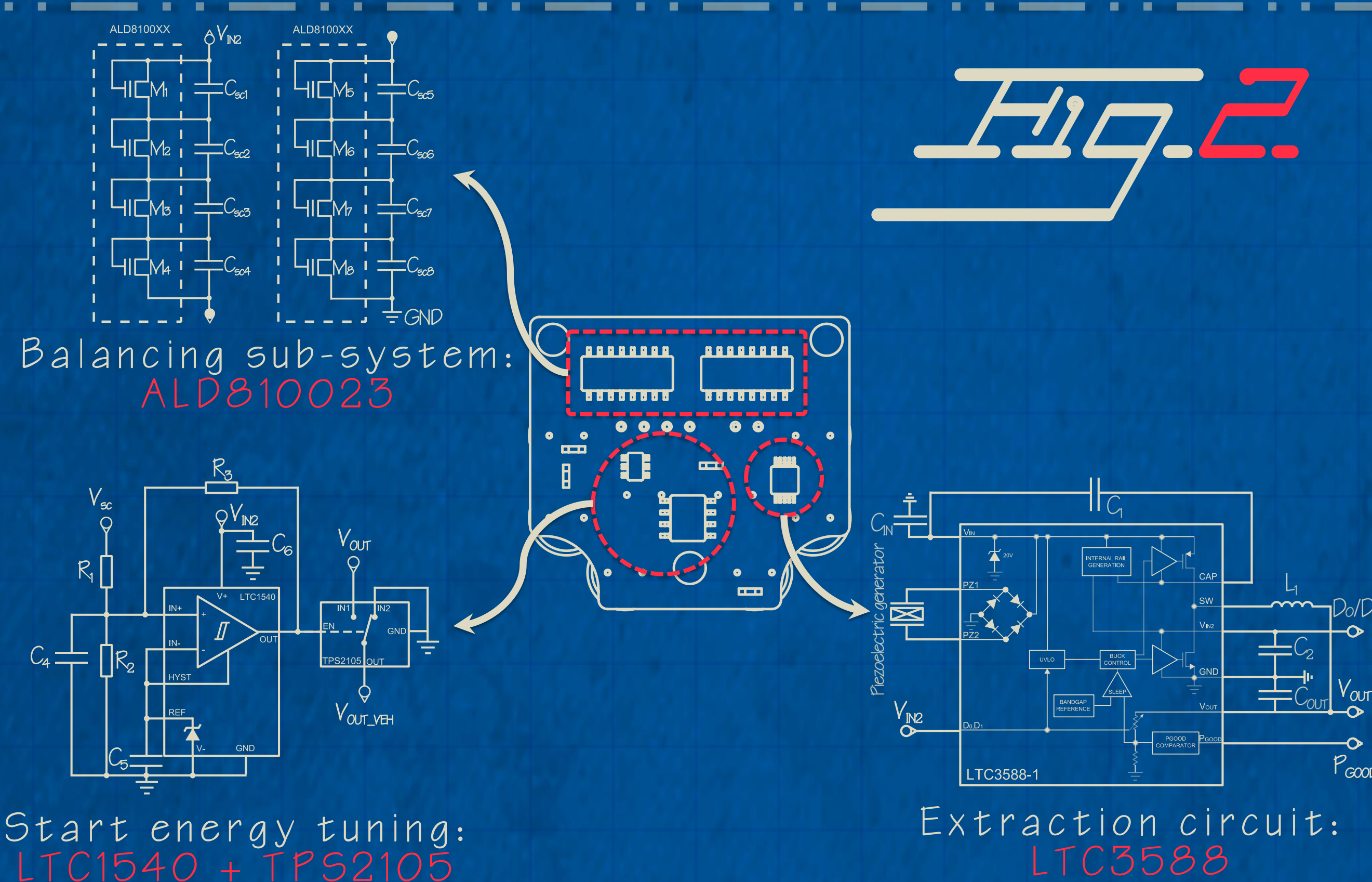
Adjustable piezoelectric
generator

- Acceleration: 1.4g
- Resonance frequency: 128.8 Hz
- Optimal load resistance: 27.5 kΩ
- Maximum power: 5.8 mW
- Voltage: 18.81 V @ Pmax



Electronic management

Fig. 2



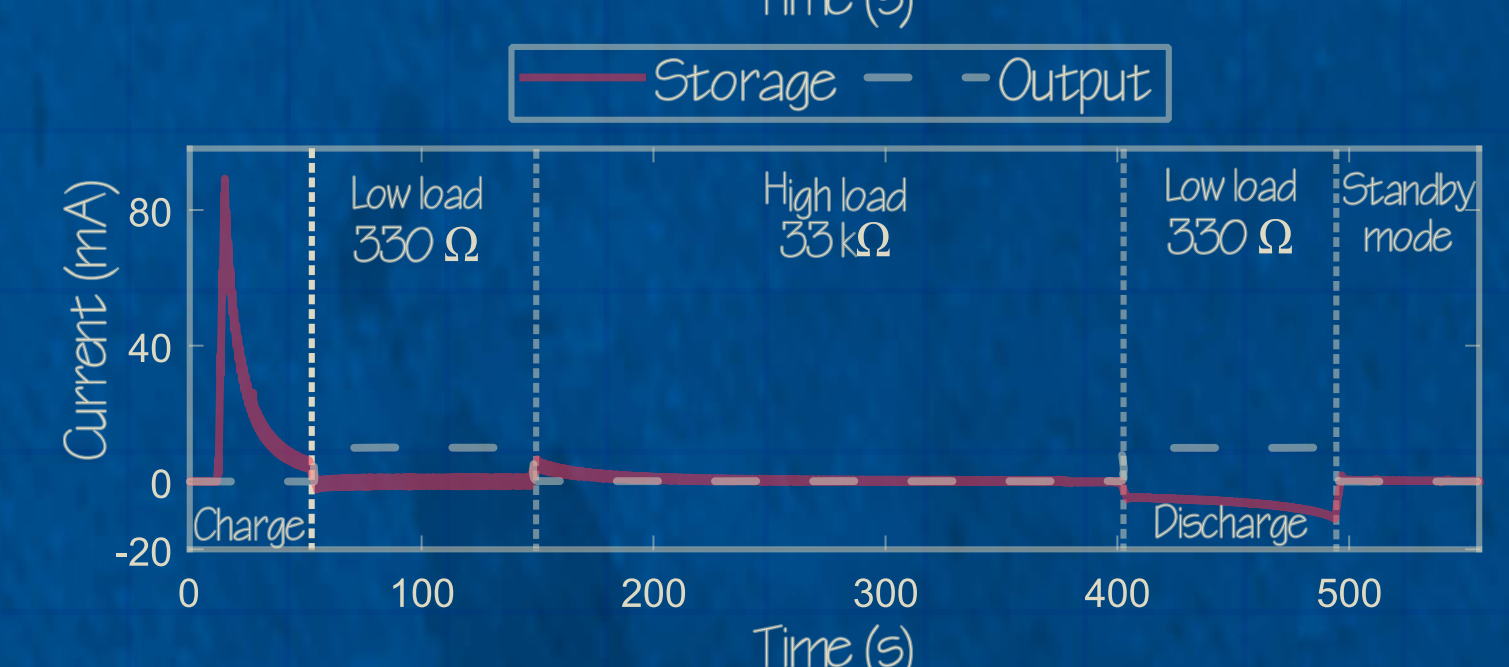
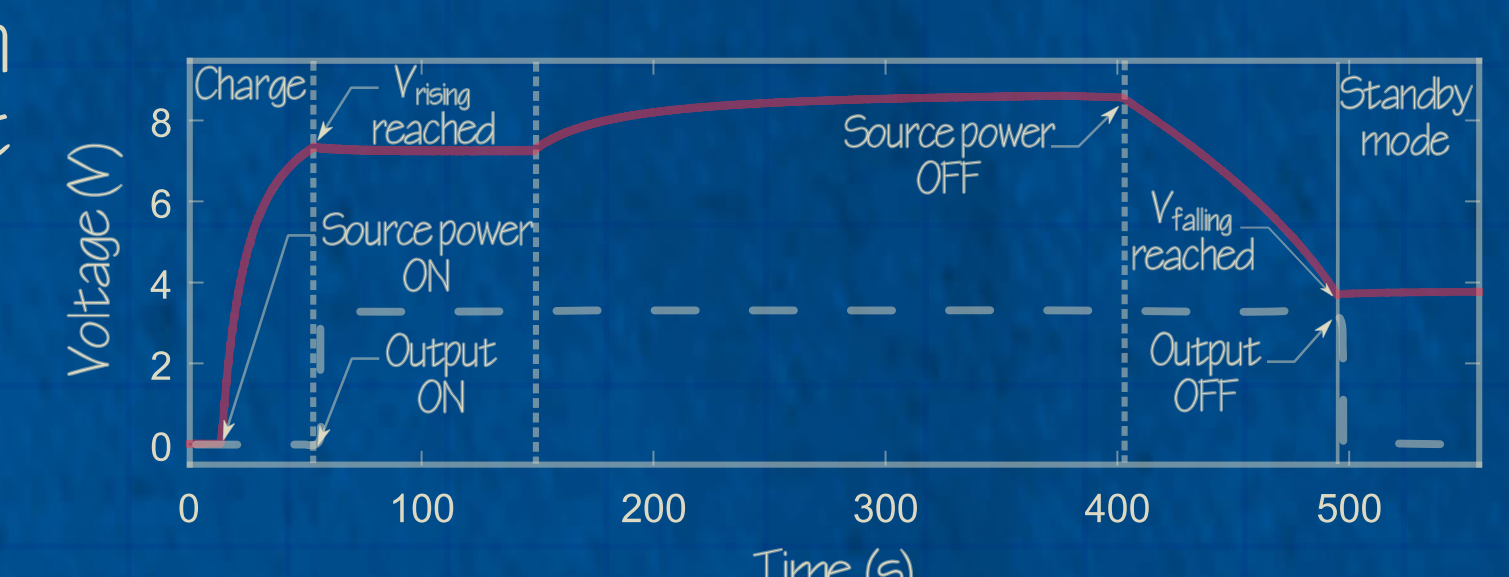
AC/DC buck converter with high
hysteresis output activation set
by resistors

- Voltage input: ± 20 V
- Current input: ± 50 mA
- Voltage output: 1.8 V to 3.6 V
- Current output: 160 mA max

- Supercapacitors: 125 mF, 21.6 V
- Voltage equilibrium: 2.3 V

- V_{rising} : 7.36 V
- V_{falling} : 3.28 V
- Usable energy: 2.71 J

- Global efficiency: 80.2 %
- Maximum usable energy: 24.3 J



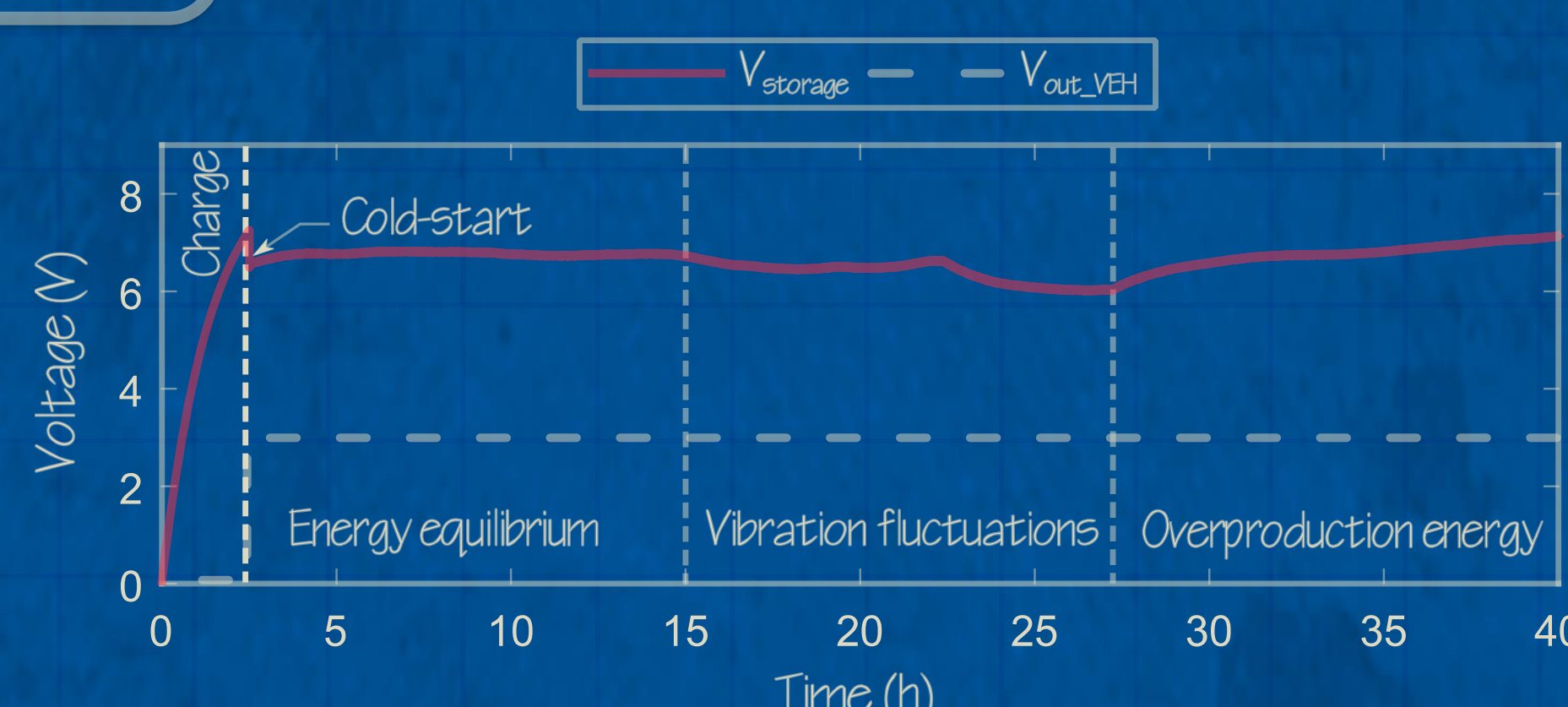
Overall operation: function generator
source and resistive charge

Results & Discussion

Phase	Energy	Duration	Peak power
Initialisation	389.4 mJ	311 s	180.8 mW
Meas. & Trans.	3.2 mJ	110 ms	231.2 mW
Sleep	3.8 mJ	46.9 s	87.45 mW

WSN's supply voltage: 3.3 V

WSN JN5148 Operation phases
characteristics



WSN JN5148 supply by VEH: long
duration test

With very simple **tunable linear piezoelectric generator** and reliable components from the **market**, we are able to harvest and store energy in an efficient way in order to **supply sensors**.

The **high amount** of **stored energy** can compensate vibration source fluctuations.