

# ZERO\_TERRAIN

New business model that makes pumped-hydro widely feasible

ESP Stakeholder  
Forum June 7, 2022



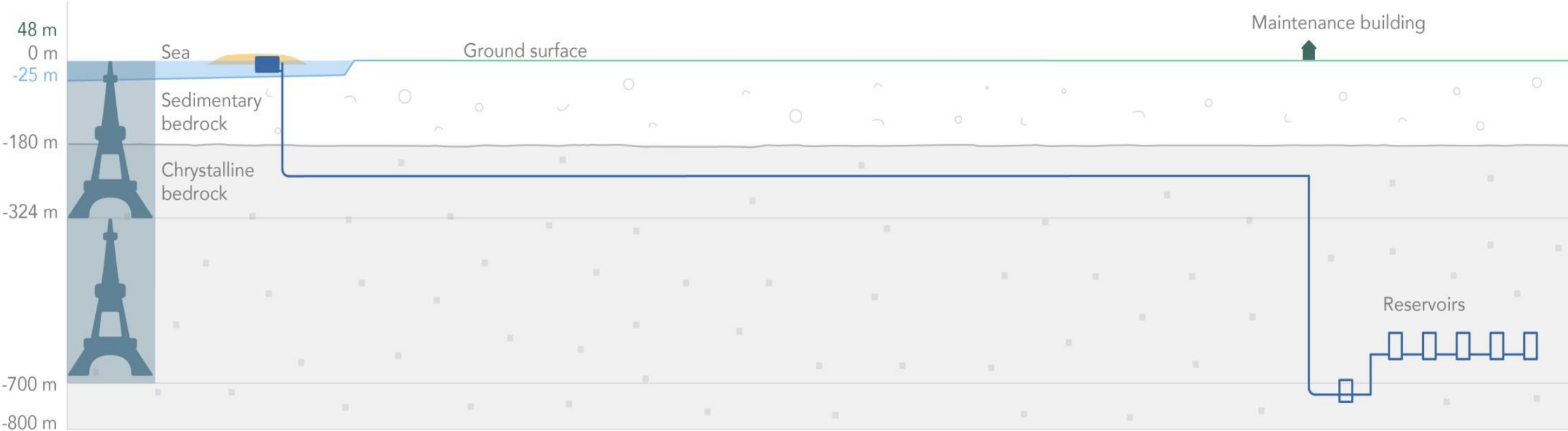
Co-financed by the Connecting Europe  
Facility of the European Union



Pumped-  
Hydro  
Storage Plant



# ZERO\_TERRAIN, Energiasalv @2029



Energiasalv's energy storage project uses Zero Terrain technology, which allows to use hydropower even on flat terrain.

# ZERO\_TERRAIN

## Underground Pumped Hydro Energy Storage

### *We do not compromise on the energy trilemma*

Keeping the power systems balanced, thus increasing energy security

Reducing the energy bills of our customers

Enabling the energy transition

Decarbonising the energy sector (very low LCA CO<sub>2</sub>)

### *Our solution*

Robust and mature technology with the Lowest Levelized Cost of Storage(LCOS)

Bringing world's most competitive storage technology to flat areas

High efficiency (80%), long useful life (100 years) and low reliance on rare materials

Sector coupling improves economic feasibility

### *Our strengths*

Eliminating the disadvantages of conventional pumped-hydro

Expanding storage capacity @very low cost, by modular design

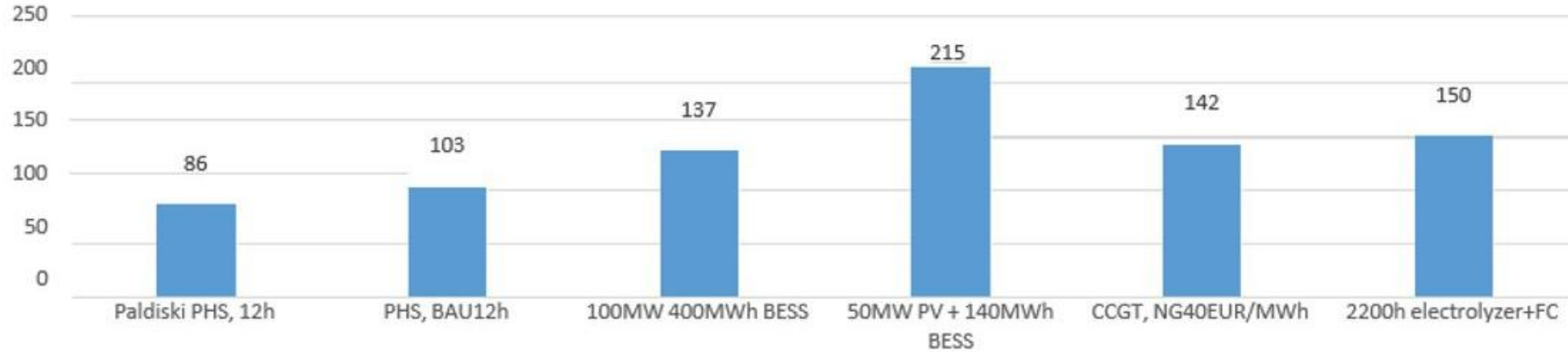
Very low LCA CO<sub>2</sub> – 0,035 t/MWh of stored energy (0,012 t/MWh, excl. consumed power)

No environmental harm- we follow the Green Tiger Energy Roadmap

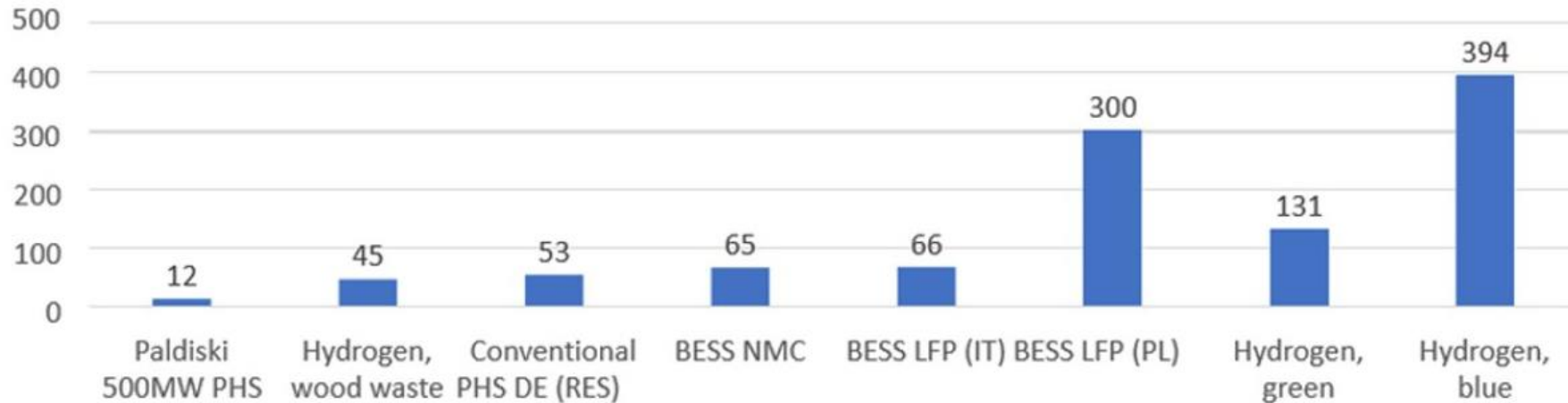
Implementing circular economy in real life



# Why >90% of World storage capacity is PHS?



LCOS\*, EUR/MWh, @30EUR/MWh purchase price @10.5% IRR



Carbon footprint LCA (kg CO2/MWh) of different energy storage technologies; source: Civitta, 2022

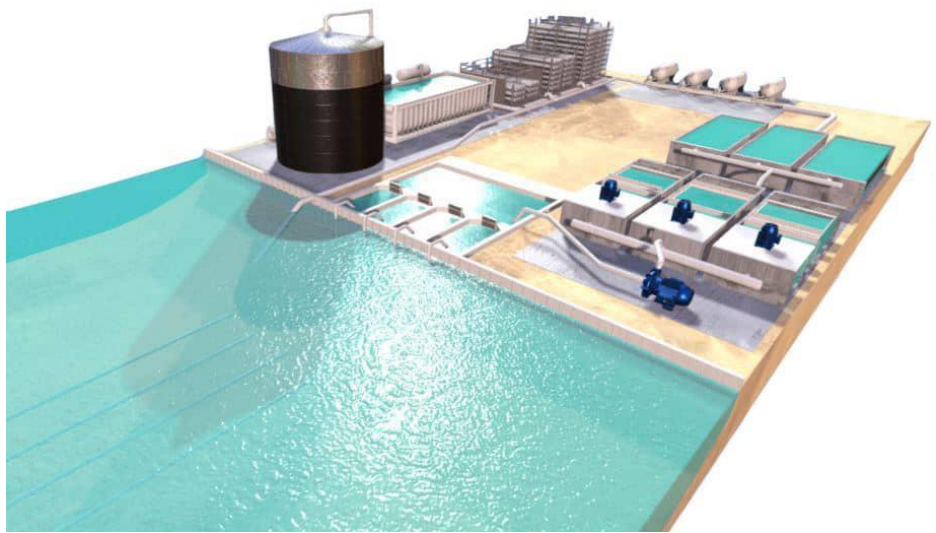
# No environmental harm!

- Location in the city
- Subject to numerous EIA's
- Subject to tens of peer-reviewed studies and investigations

Results:

No.	Topic	Comments
1.	Fish stocks & Sealife	No harm due to tailor-made solution, reduced velocity, changed depths
2.	Water quality	No effect
3.	Land use	No effect
4.	Groundwater	Do not harm the water resources
5.	GHG	Reducing GHG @450kg CO <sub>2</sub> /MWh
6.	Noise&Dust	Within the limits, set for the urban environment
7.	Seismics	Max 8mm/sec oscillation speed

# Considering new ZERO\_TERRAIN globally – meeting several challenges, from energy storage to food production





# Let's make energy transition feasible!

[www.energiasalv.ee](http://www.energiasalv.ee)

[www.zeroterrain.com](http://www.zeroterrain.com)

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