



# **Energize the CEE Region Focusing Reliable Energy Security**

## **Workshop**

**16-17 November 2023, Visegrád**

**Society of Petroleum Engineers**

# Energy Storage Solutions for a Low Carbon Future

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Energy Storage Sales Mgr.  
November 2023



# Agenda

- SLB and New Energy
- Introducing Energy Storage
- Energy Storage Portfolio



Who we are

Global  
Technology  
Company

What we do

Driving  
Energy  
Innovation

Why

For a  
Balanced  
Planet



# Technology and Innovation

**Our Purpose:**  
Together we  
create amazing  
technology that  
unlocks access  
to energy, for  
the benefit of  
all.

History of  
Innovation

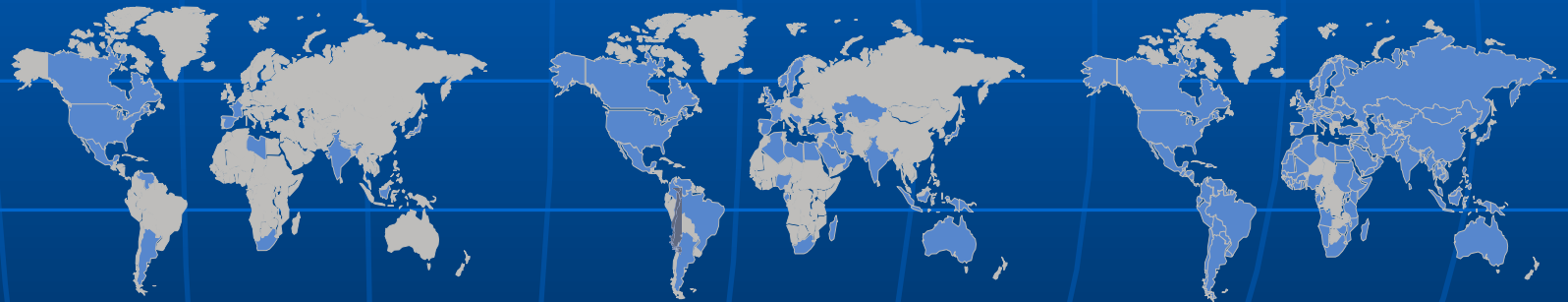


1920's

1960's

2020

Unmatched  
Global  
Footprint



**100,000**

Employees

**120**

Countries

**90+**

Technology Development  
and Manufacturing Centers

**28**

Revenue  
2022, B\$



# New Energy

Accelerating  
decarbonization  
through innovation  
and science  
on a global scale



## Five focus areas



Carbon  
Solutions



Geothermal  
& Geoenergy



Critical Minerals  
Lithium



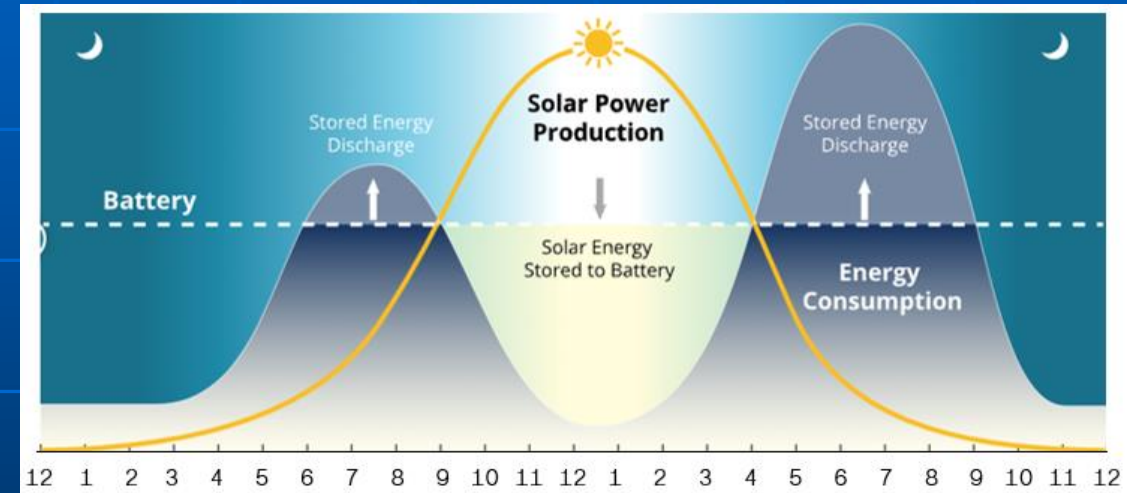
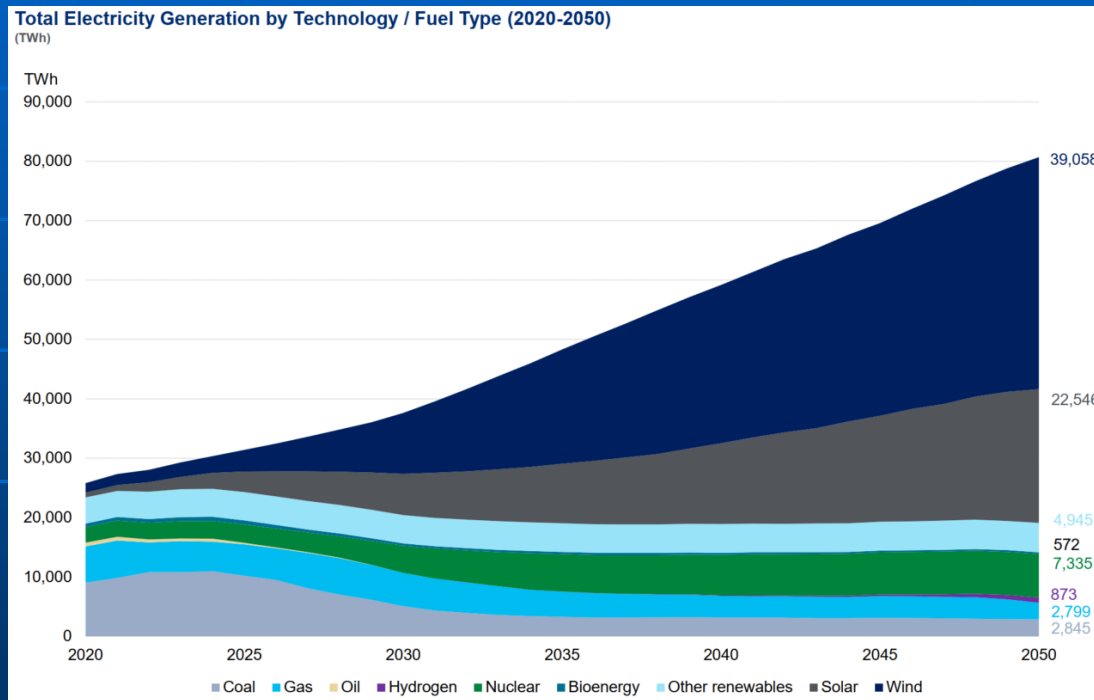
Stationary  
Energy Storage



Clean  
Hydrogen<sup>6</sup>

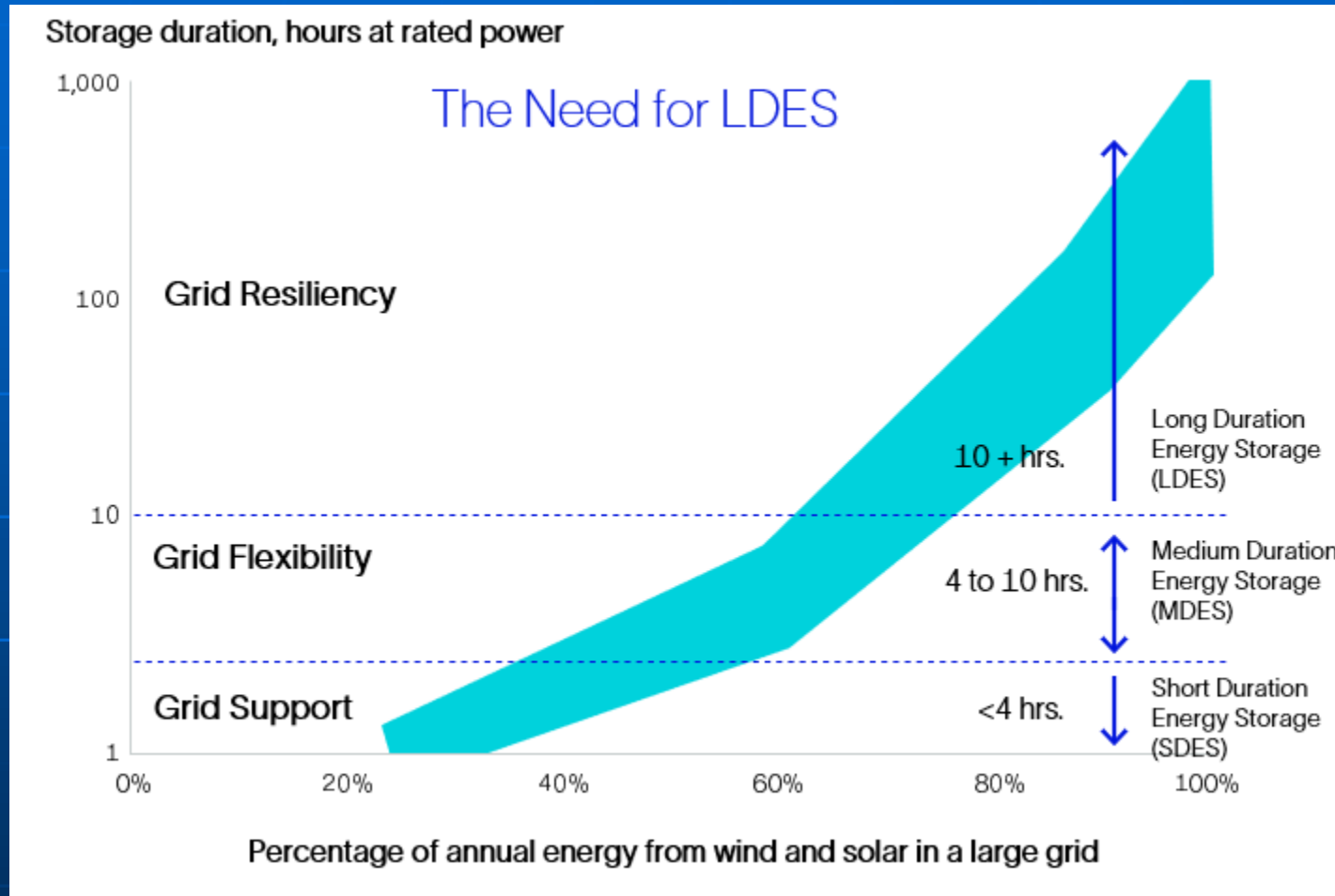
# Energy Storage, enabler for renewable energy growth

## Renewable energy increased penetration



- Balance supply and demand
- Secure reliable power
- Ease grid congestion
- Optimize consumption

# The Evolving Role of Energy Storage



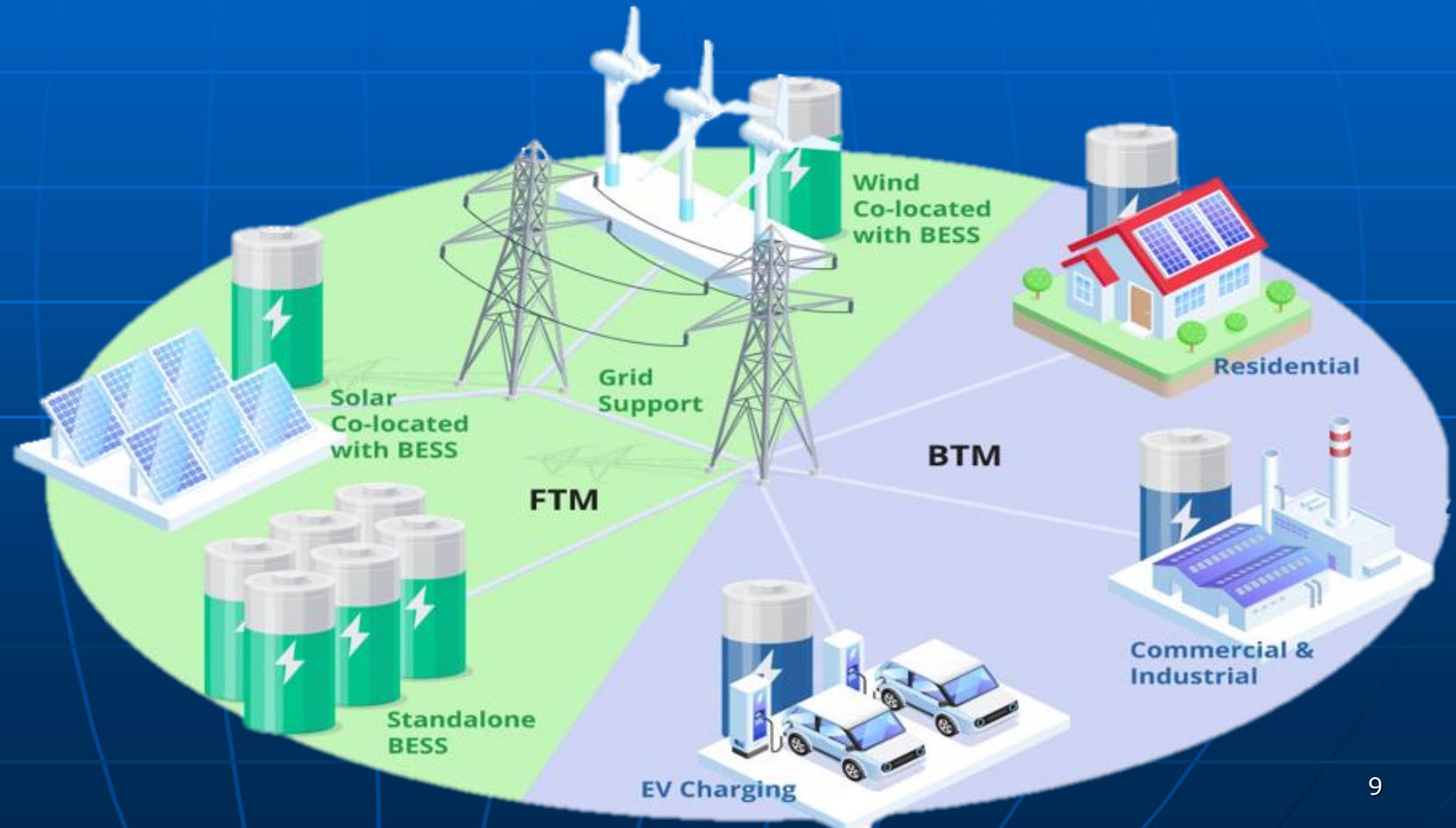


# Energy Storage Use Cases

Commercial and Industrial



Grid Scale



# Energy Storage Portfolio

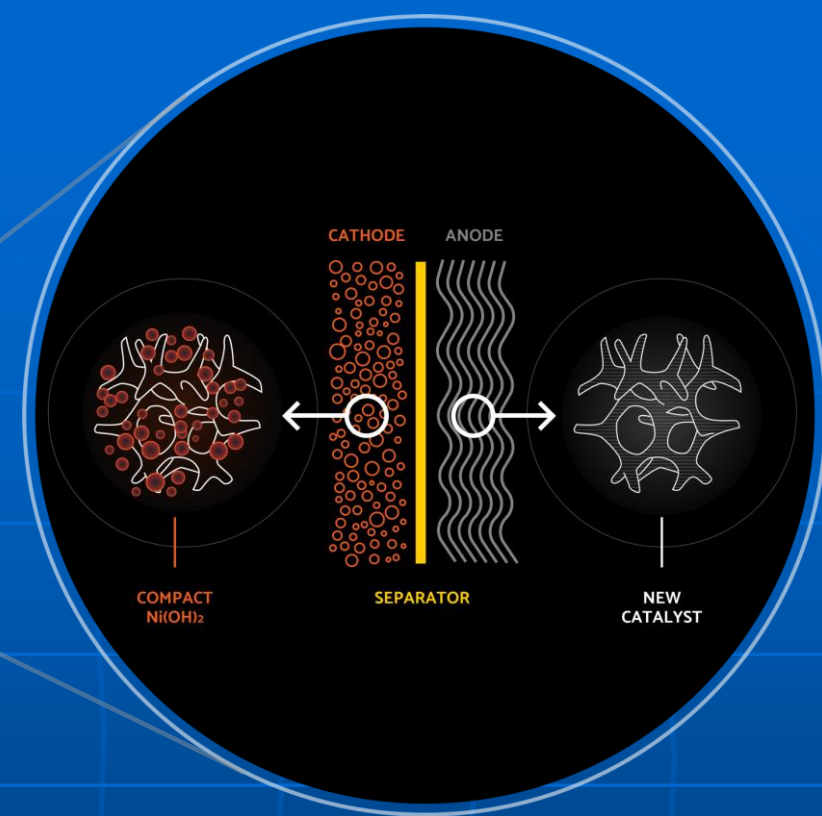
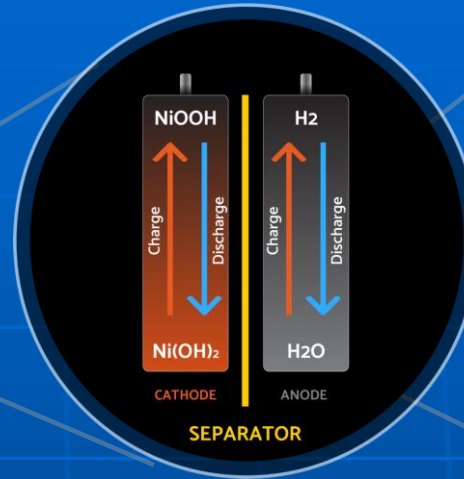
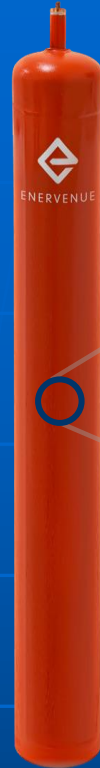
Nickel Hydrogen  
Battery Technology

Solar Power  
and Thermal  
Storage Technology





# Ni-H<sub>2</sub> Chemistry



# Ni-H<sub>2</sub> Advantages

## Li-Ion Challenge

Limited Cycle Life

Fire and Explosion risk

Needs replacement or  
augmentation

Toxic and flammable  
materials

Supply chain risk

## Ni-H<sub>2</sub> Advantage

30 Year Lifetime  
(30,000 cycles @  
3 cycles per day)

No fire or explosion risk  
No fire suppression

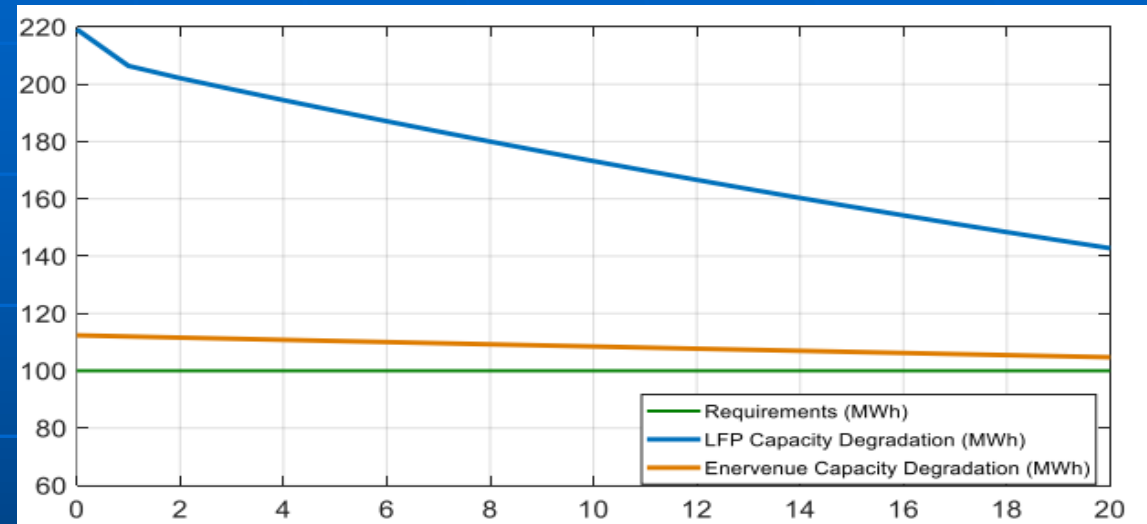
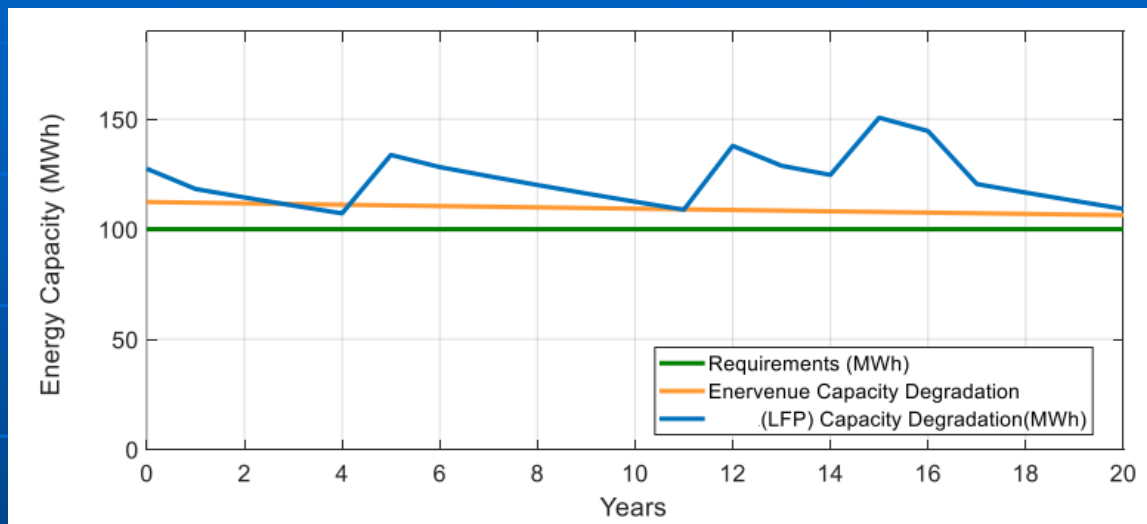
No augmentation  
No routine maintenance

Non-toxic,  
no lithium, no cobalt,  
99% recyclable

Made of easily sourced  
commonly available  
materials

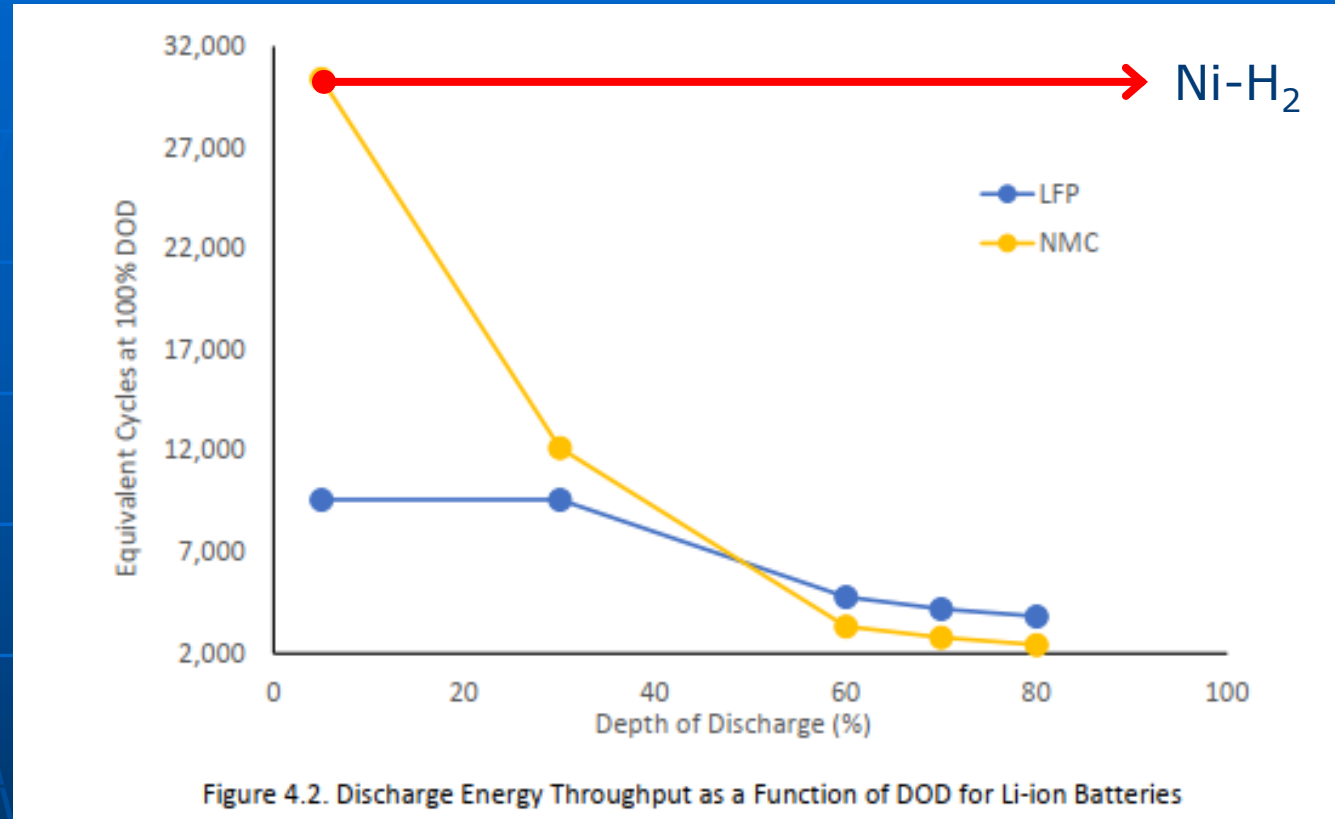


# Ni-H<sub>2</sub> Degradation profile & augmentation



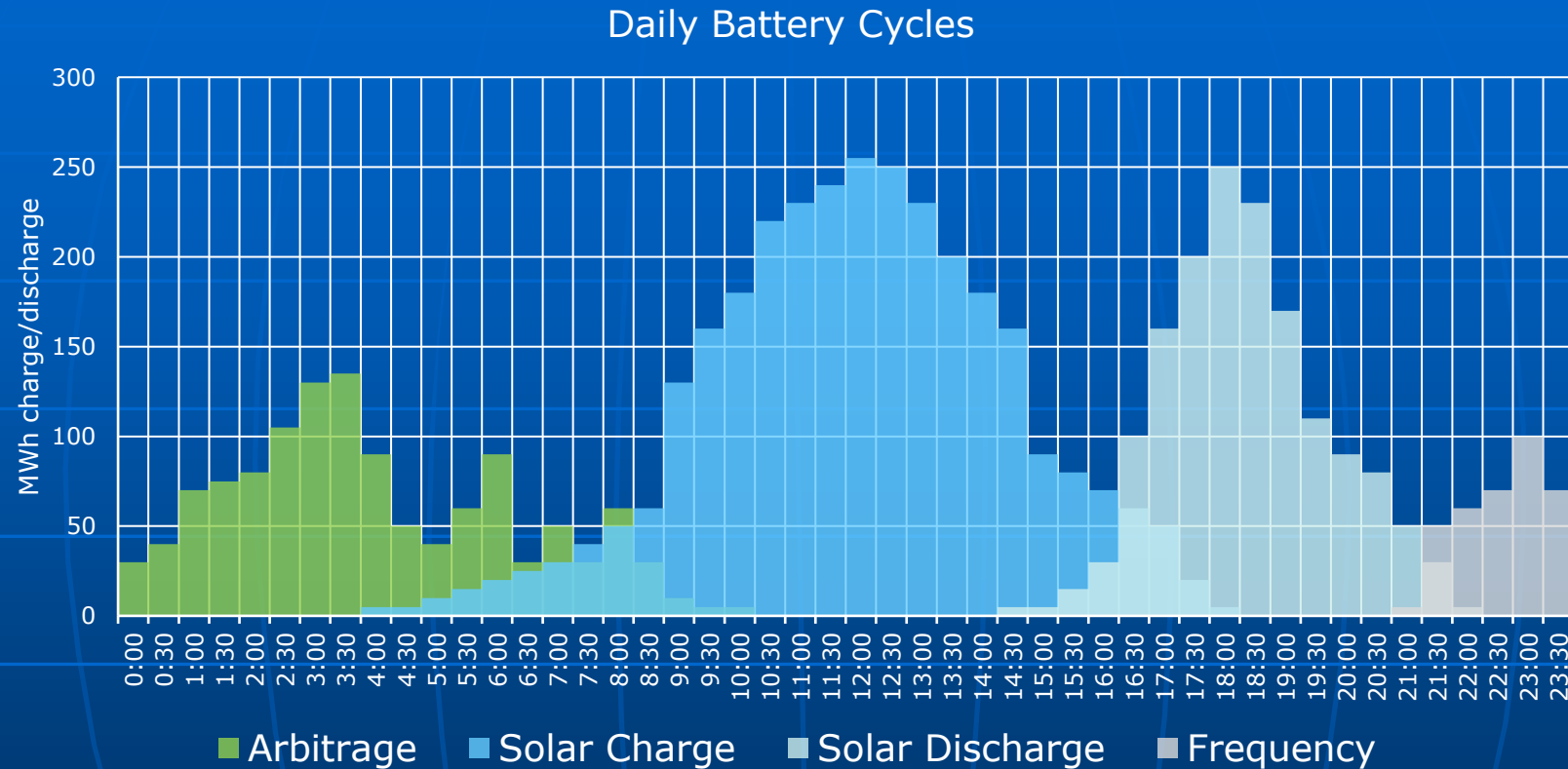
- Degradation only dependent on through-put
- Depth of discharge has no impact on degradation
- Removes need for mid-life augmentation

# Ni-H<sub>2</sub> Depth of discharge vs cell life



- Degradation only dependent on through-put
- Depth of discharge has no impact on degradation
- Removes need for mid-life augmentation

# Ni-H<sub>2</sub> Value stacking



Maximize investment returns by stacking value and taking advantage of **multiple cycles** without fear of degradation

# Ni-H<sub>2</sub> Pilots

## Operational Pilots

→ SLB Katy

## Confirmed Pilots – to be deployed in 2023 and 2024

→ SLB Celle, Germany

→ SLB CRE, Saudi Arabia

→ C&I, UK

→ C&I, Netherlands

→ C&I, Saudi Arabia

→ Utility-scale, Italy

→ Utility-scale, Germany

→ Utility-scale, Austria

→ Utility-scale, Australia

→ Utility-scale, Saudi Arabia





# Ni-H<sub>2</sub> Benefits



**DURABLE**

30,000 cycles, 30 years, 3 cycles/day

**FLEXIBLE**

Multiple use cases per day

**SIMPLE**

Minimal OPEX with no augmentation

**SAFE**

No fire or thermal runaway risk

**SUSTAINABLE**

99% recyclable





# SLB

Energy Storage



For a Balanced Planet

