



# HYDROGEN AS LONG TERM STORAGE

## IMPLEMENTATION CONCEPT

2023.10.03  
Mitsubishi Power, Ltd.

## WHAT´S A “DUNKELFLAUTE”?

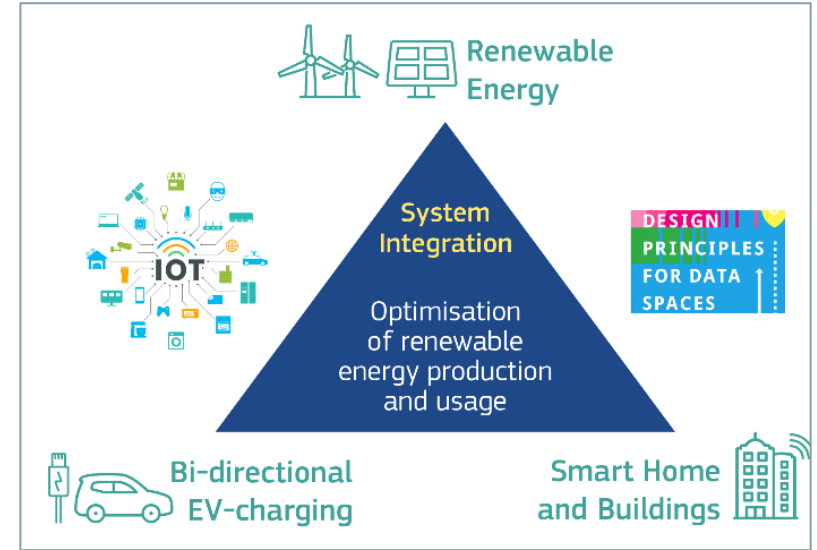
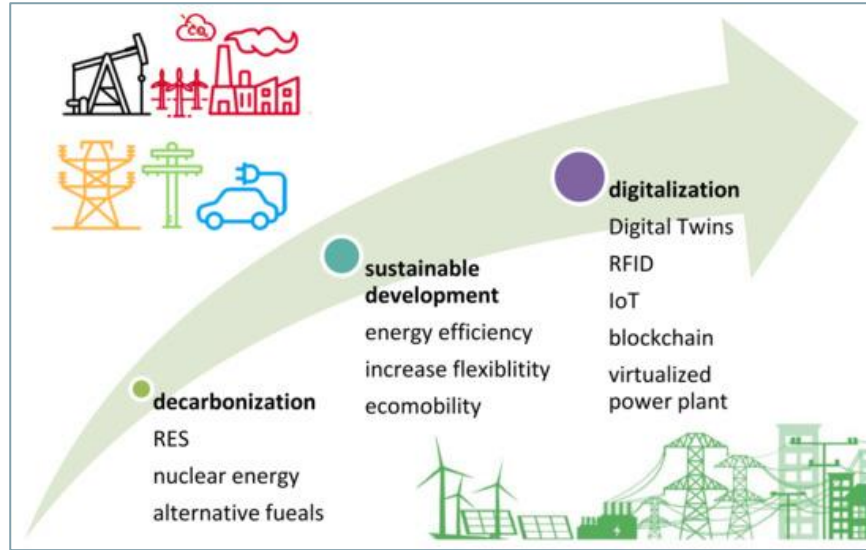
“It is a period of time in which little or no energy can be generated with wind and solar power, because there is neither wind nor sunlight.”

## HOW CAN WE PREVENT IT?

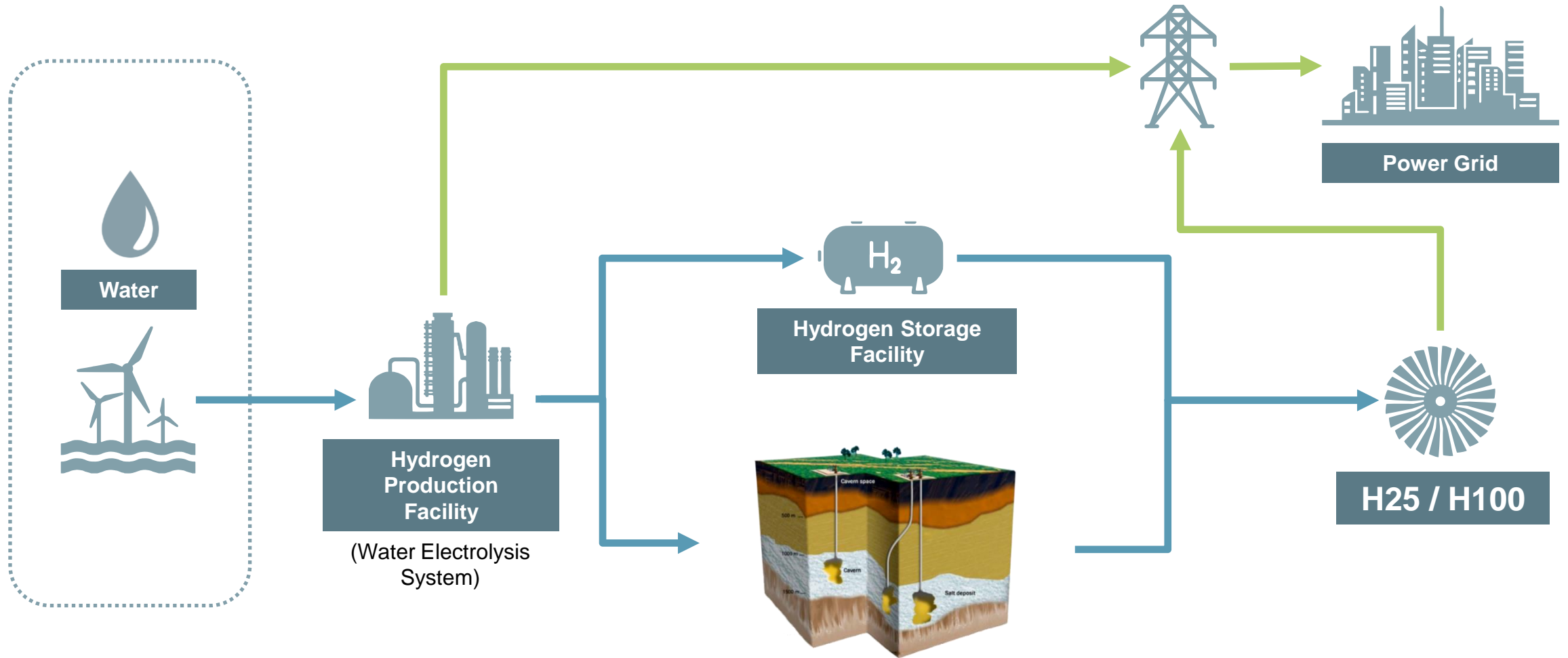
We can´t certainly prevent it but we can mitigate it.

## NET ZERO MITIGATION

- We need to start at scale with regards to storage
- Reducing the REN curtailments
- Supporting ancillary services
- Generating at the point of on-demand consumption



**ROI** **Grid** **Carbon** **Infrastructure** **Energy security**  
**neutrality** **Emissions** **Energy transition**  
**NOX** **Reducing** **Fuel flexibility** **Operability**  
**curtailments** **Fast response** **EV** **Interconnections** **REN** **curtailments**  
**penetration** **Public perception**

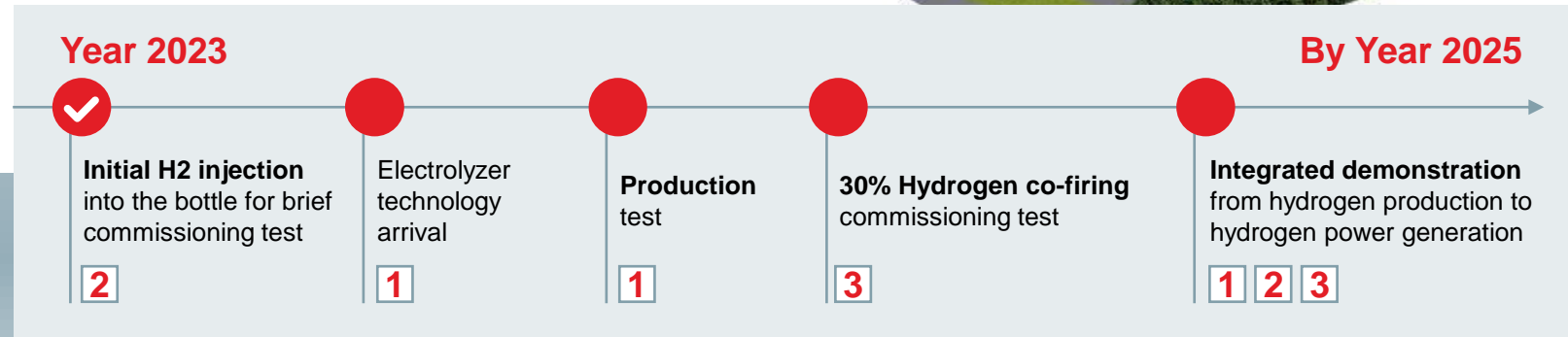
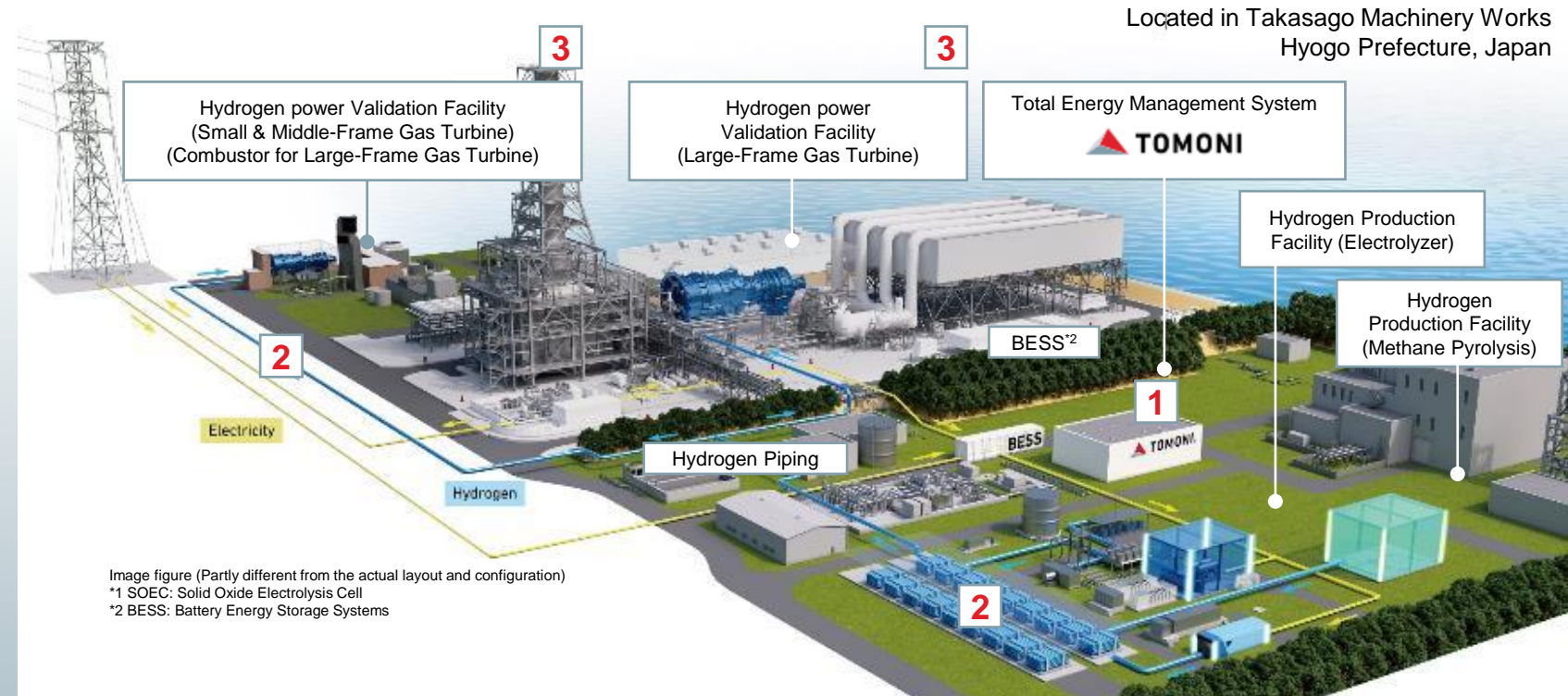


Distributed power generation with long term storage

## KEY HIGHLIGHTS

A comprehensive technical verification of hydrogen production, storage, and power generation.

- **World's first center** for the validation of hydrogen-related technologies
- **The H-25 gas turbine**, a 100% hydrogen-fired 30-40 MW class gas turbine, will undergo verification in the Takasago Hydrogen Park to reduce the risks associated with hydrogen combustion.
- The validation will also include the **intelligent solution suite TOMONI®**, which was developed based on Mitsubishi Power's long experience and expertise in the operation and maintenance (O&M) of power plants.
- The facility is **connected to the local grid, just like a real power plant**, allowing the identification of potential risks and addressing them in a timely manner



## WIND CURTAILMENTS

1xH25 GT would remove **855 GWh** curtailment per year  
= 16 offshore WTG (12 MW) operating for 1 full year

## PEAK POOL PRICES

H2 energy storage at scale would soften the daily peaks  
with zero CO2 footprint



230,000T of CO2 or 96k cars  
running for 1 year



171k EV charge for 1 year



**MITSUBISHI  
POWER**