ThermalBattery™ integrated into CST field for Avery Dennison in Belgium

Alberto Crespo Iniesta, October 2023

ENERGYNEST: Award-winning scale-up company based on a strong thermal storage technology development

- Founded in 2011
- Offices in Norway, Spain, Germany and the Netherlands
- 40 employees
- Infracapital (M&G) as majority shareholder after its EUR 110m investment in 2021

Infracapital M&G

- ThermalBattery™ module fabrication hub in Rotterdam
- First commercial order in 2019
- 3 commercial projects up-to-date

AVERY DENNISON YARA eni

The core of our technology: ThermalBattery™ module – a solid-state high temperature heat storage

Source: ENERGYNEST

Material
Solid-state termal concrete Heatcrete®
+ Steel piping
+ Frame

Integration
Plug & play standard shipping containers

Process
Temperature up to
400 °C
Pressure up to
100+ bar

Maintenance
No moving parts
Maintenance free
Lifetime
30 years+

Capacity
Up to
2 MWh_{th} (20ft)

Technology
Piloted in Masdar
Review by DNV and Fichtner

Flexibility
Thermal oil or steam as heat transfer fluid

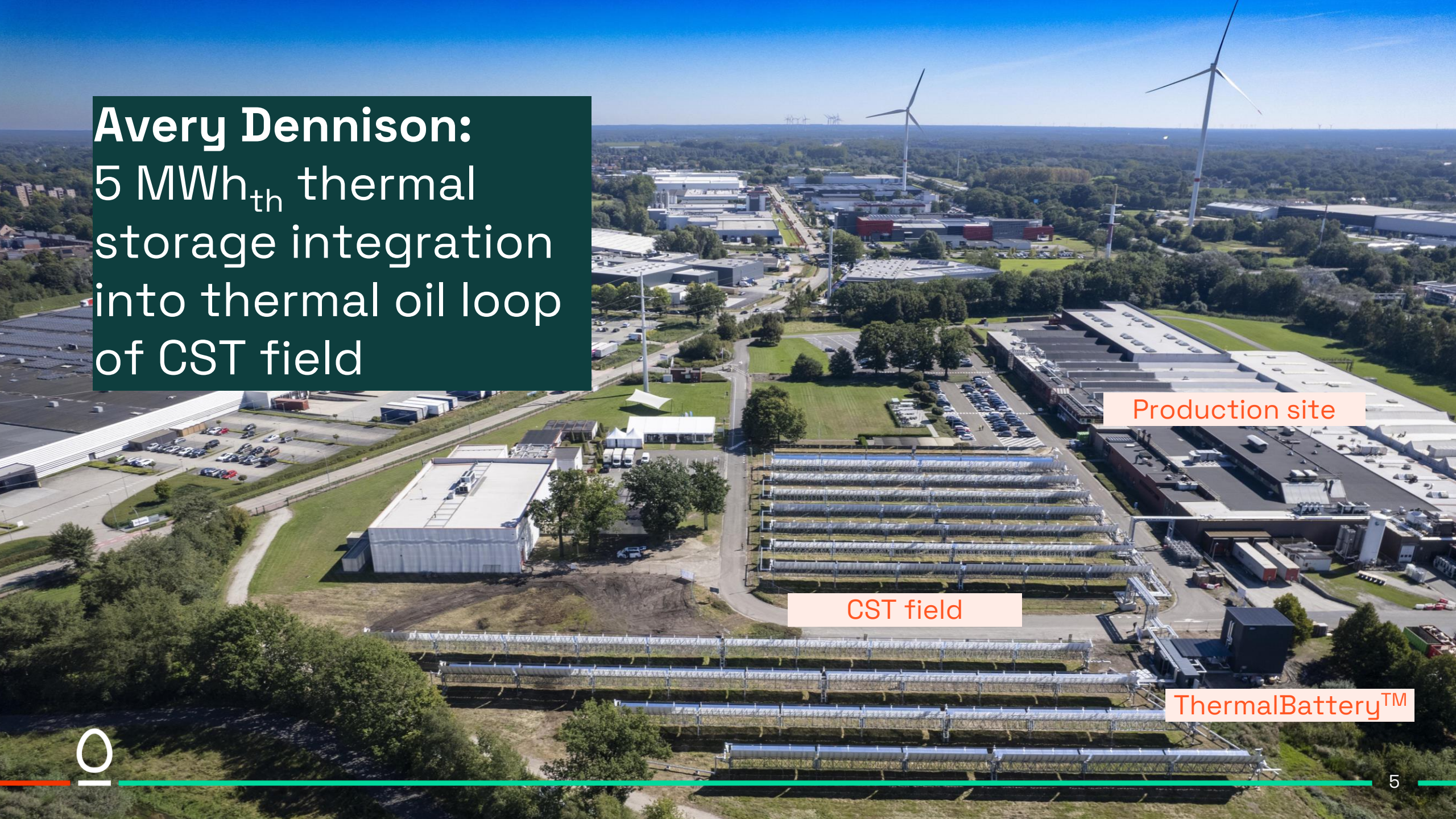
Efficiency
Thermal efficiency
> 95 %
Carbon payback in 2 months

Scalability
Modular system from 3 MWh to
> 1000 MWh

Construction phases

Source: ENERGYNEST

Avery Dennison:
5 MWh_{th} thermal storage integration into thermal oil loop of CST field



CST field + thermal storage

Description: Integrated with concentrating solar thermal (CST) plant to supply green heat to Avery Dennison factory in Turnhout, Belgium. ThermalBattery™ will store solar energy during sunlight hours, dispatch heat after sunset, balance fluctuations from solar field.

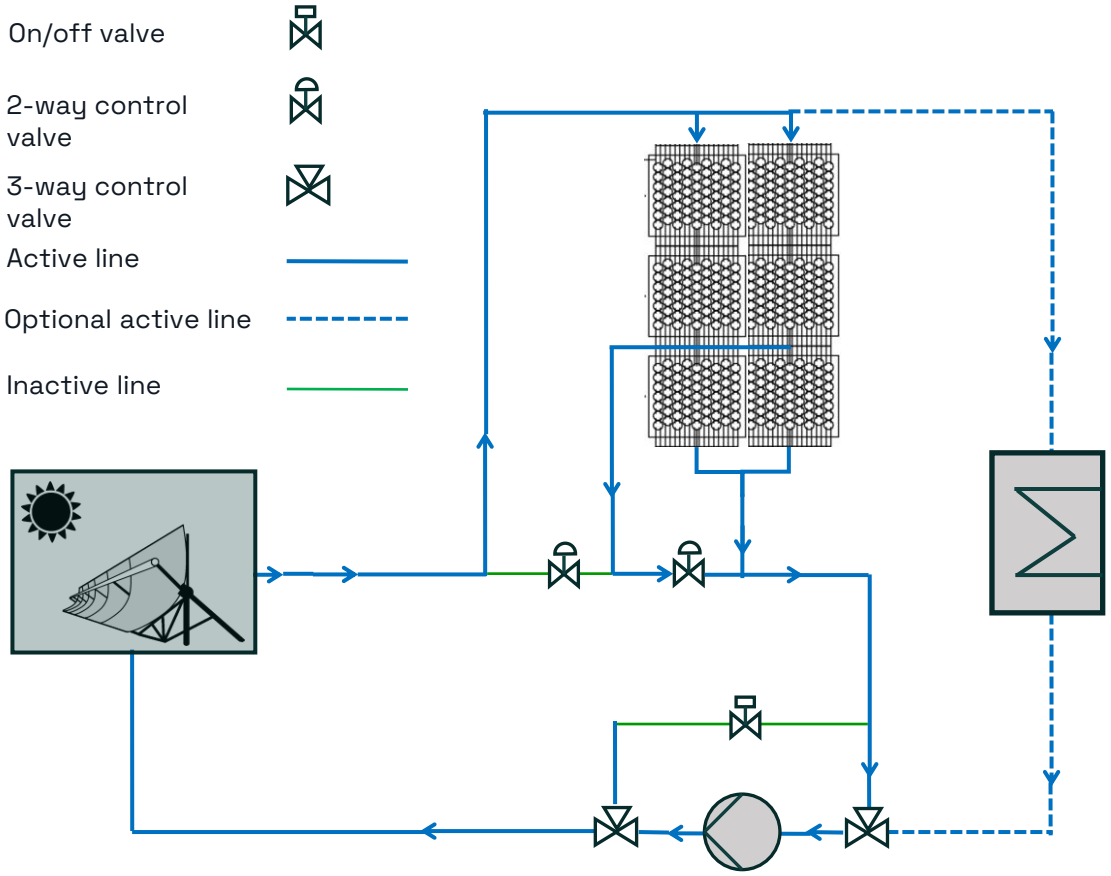
Key numbers:

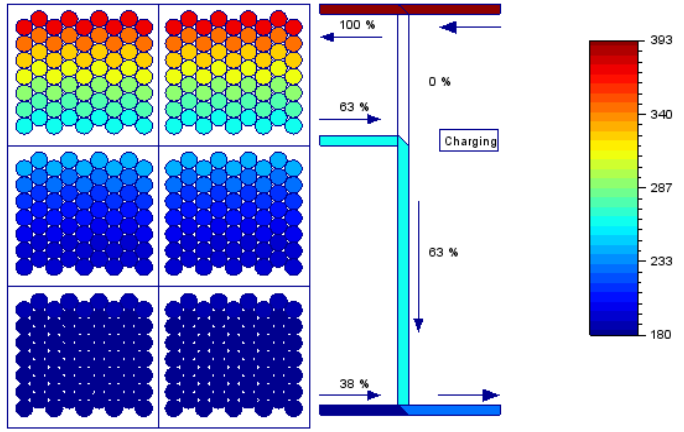
- **Charge/discharge:** 380/310 °C
- **Capacity:** 0 – 1.5 MW, 5 MWh
- **Design life:** 25 years. 18,250 cycles
- **Config.:** 6 modules, incl const. temp. control*

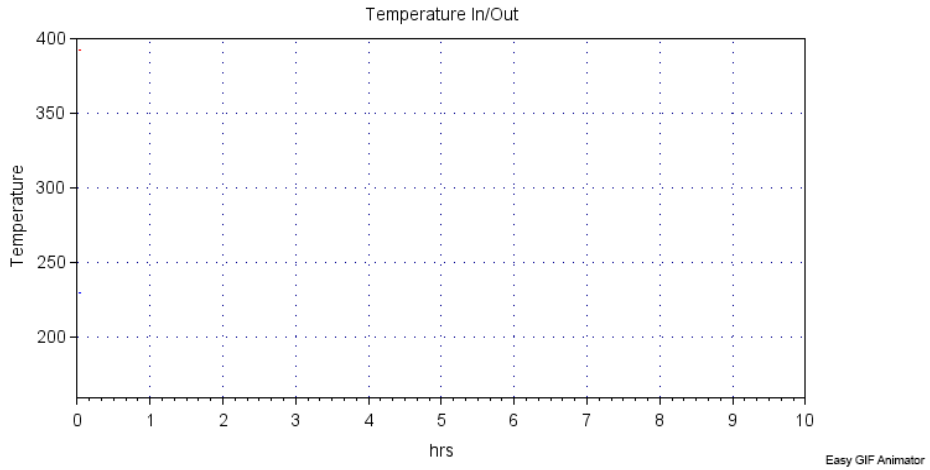
* By-pass within stacks of modules to enable constant outlet temperature

Source: ENERGYNEST

Charge – operation philosophy

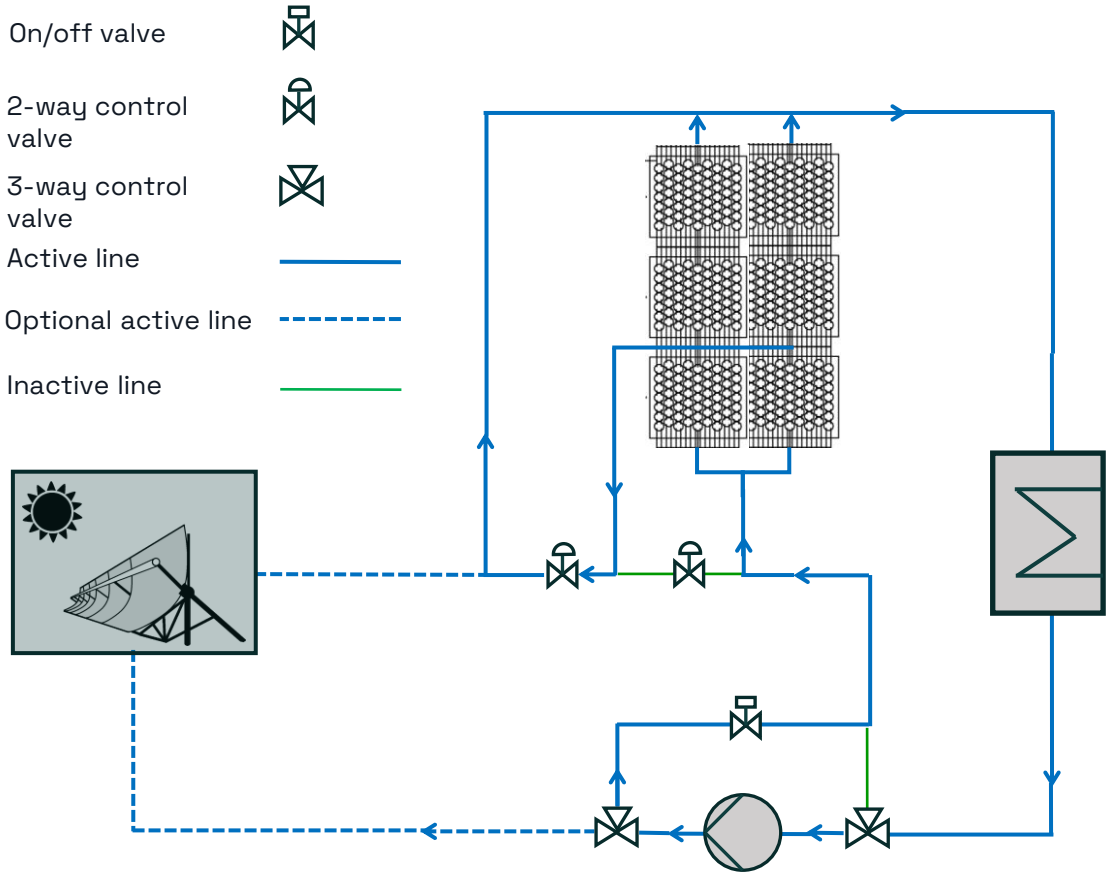


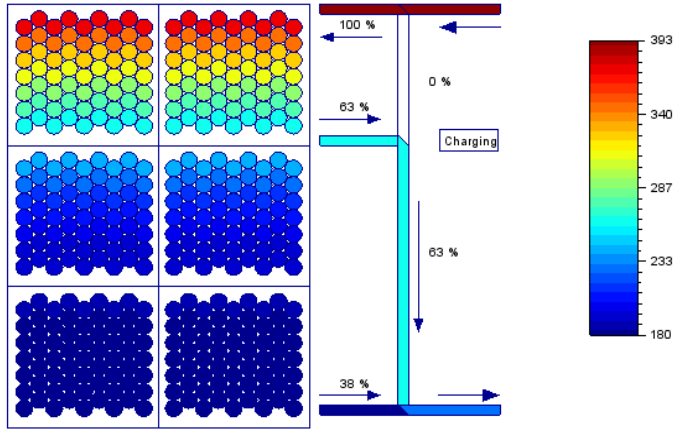


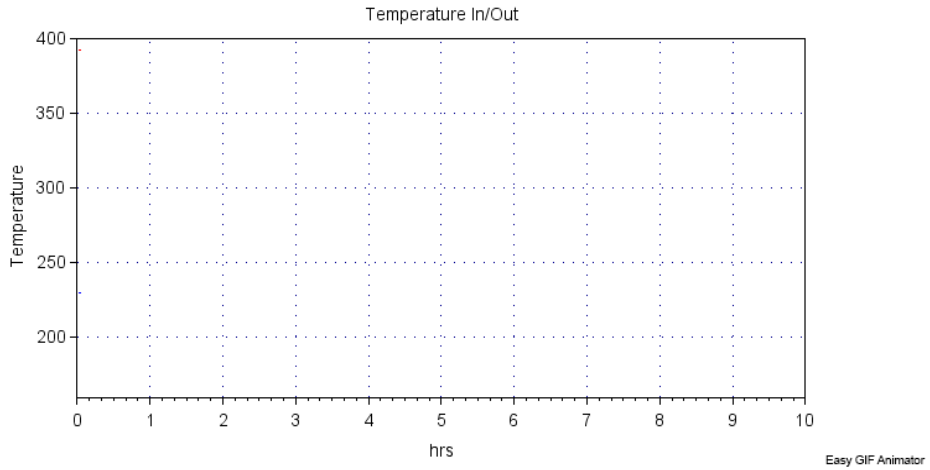


Source: ENERGYNEST

Discharge – operation philosophy







Source: ENERGYNEST

Assembly of Modules

Source: ENERGYNEST


Megamax
MX


Production site
Energy storage
(TB modules)
CST field

Get in touch

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