



AT THE
CEE

**OF UMICORE'S BATTERY
MATERIALS**

NOVEMBER 8TH AND 9TH

WROCLAW & NYSA

Disclaimer

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This presentation should be evaluated only in conjunction with them.

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At the CORE of Umicore's
Battery Materials

Future-proof operations set up



**Michiel
de Jonge**

COO Umicore
Battery Materials

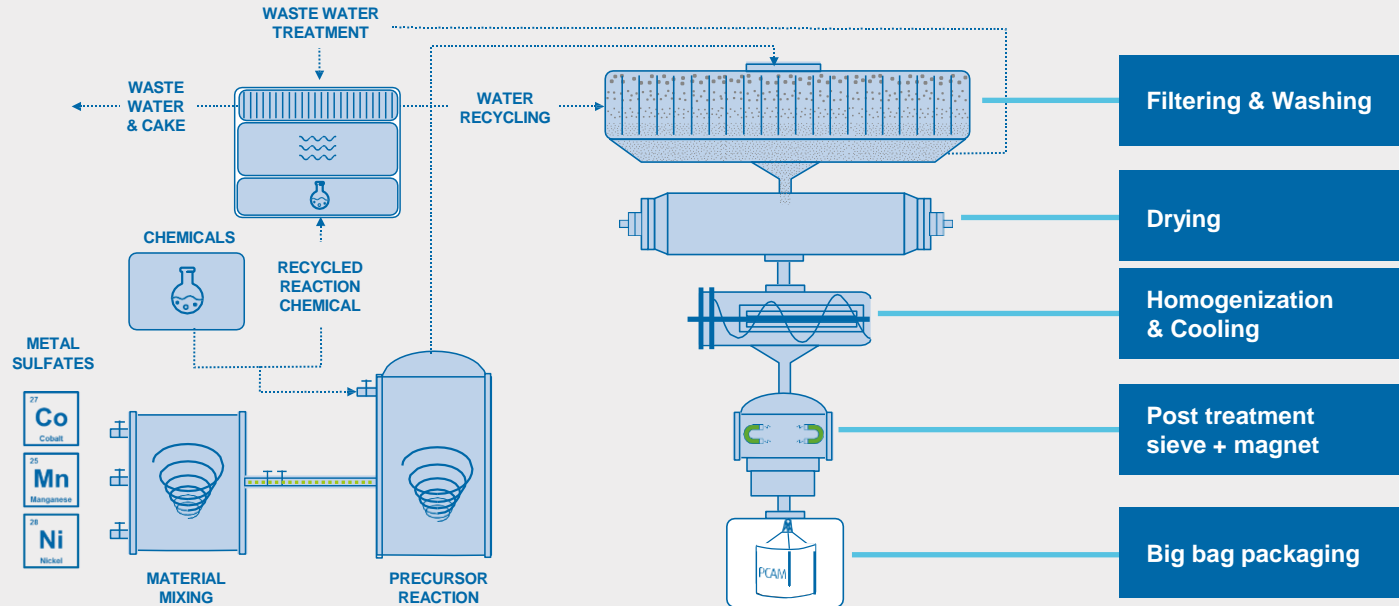
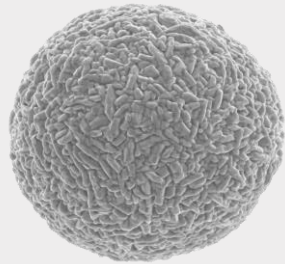


**Dariusz
Jurczak**

Managing Director
Umicore Battery
Materials, Poland

pCAM production closely linked to CAM performance...

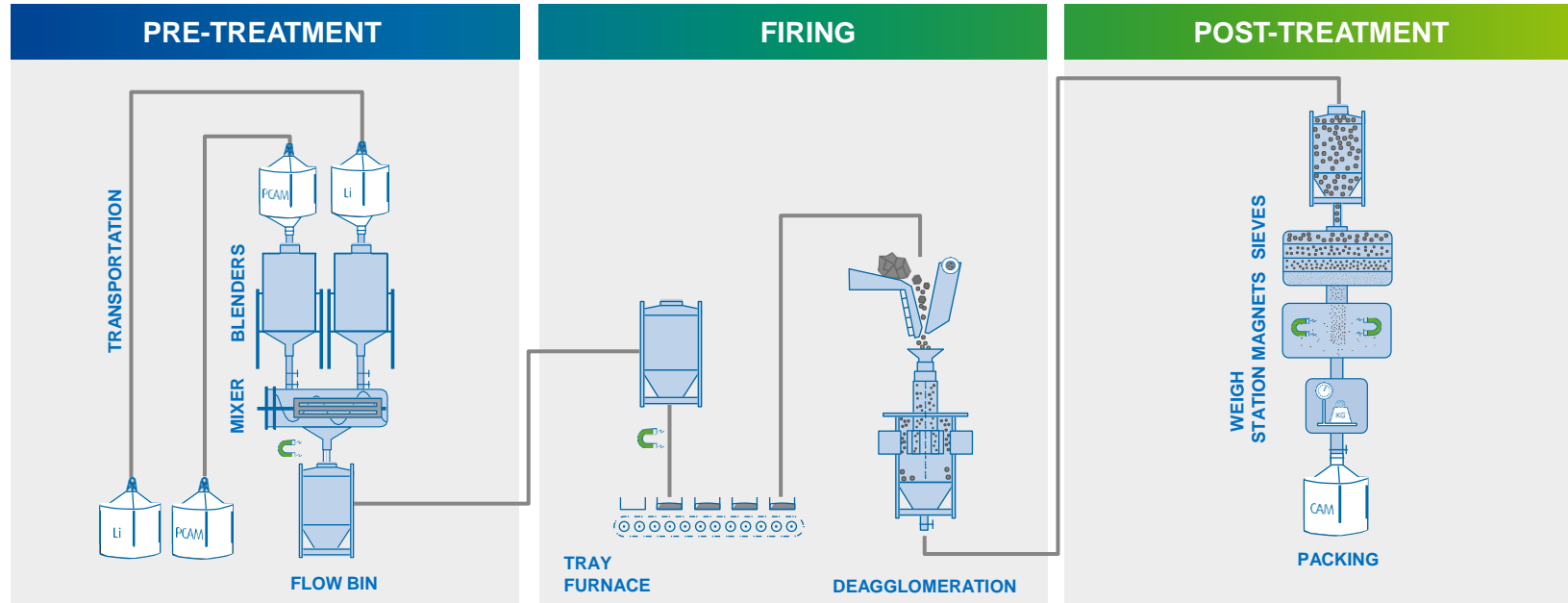
Simplified overview of the pCAM production process in Kokkola (Finland)





...and both production processes
are highly complex

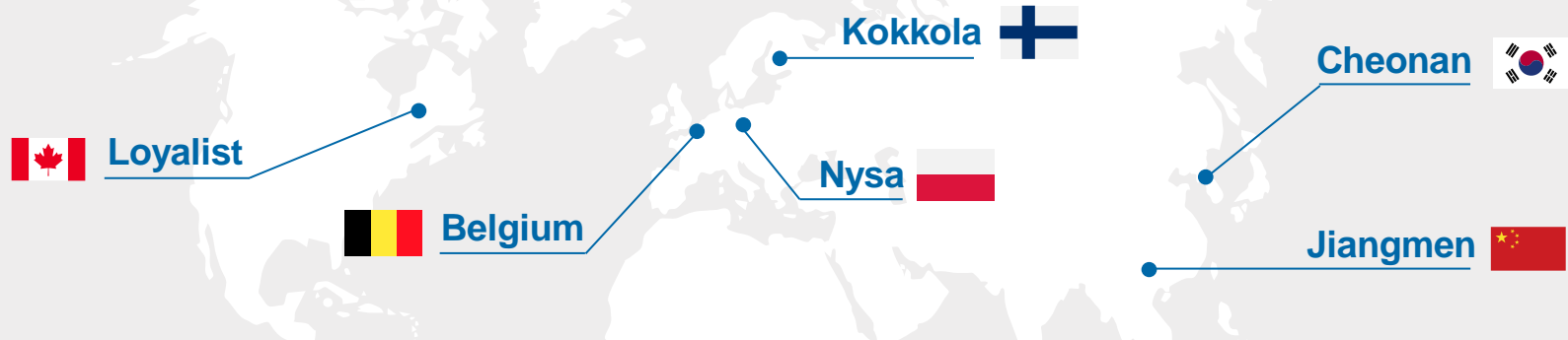
Simplified overview of the CAM production process in Nysa (Poland)



Umicore is one of the few companies with vast experience in (p)CAM



Proven ability to mass produce with >25 years experience



1995 – 2020

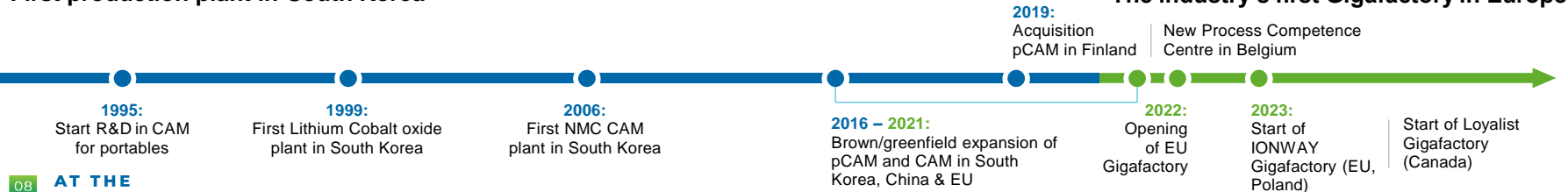
Pioneering Battery Materials:

First production plant in South Korea

2021 – 2023

Re-shaping operations:

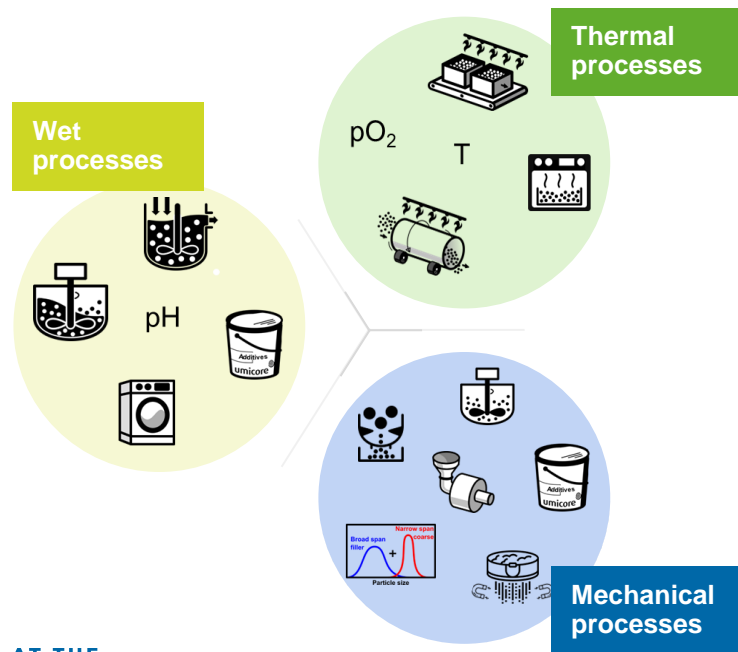
The industry's first Gigafactory in Europe



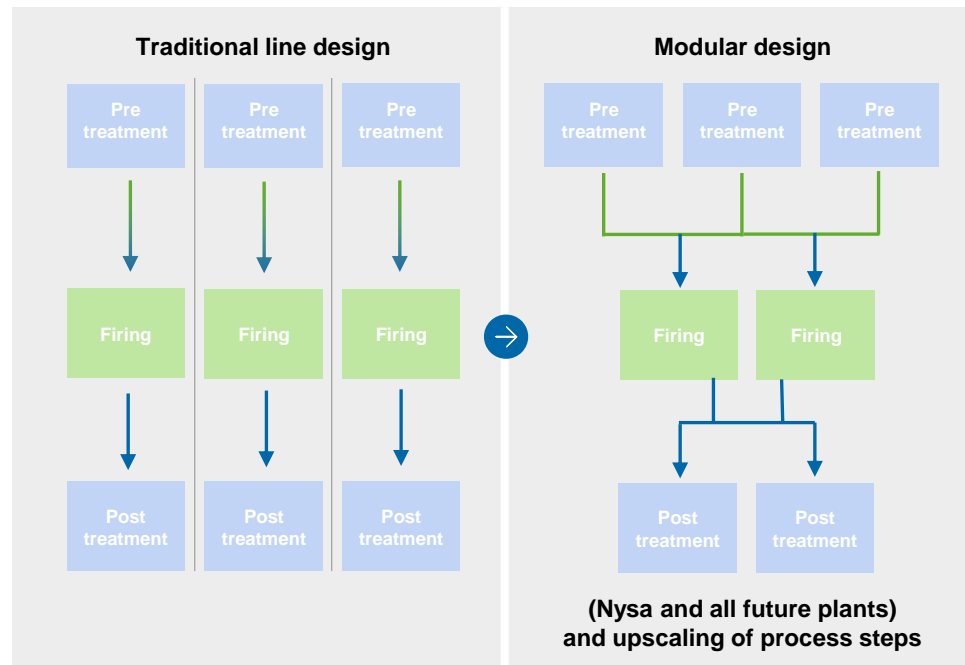
Umicore's future-proof design for CAM

Shift from traditional line design to modular set-up

CAM process technology



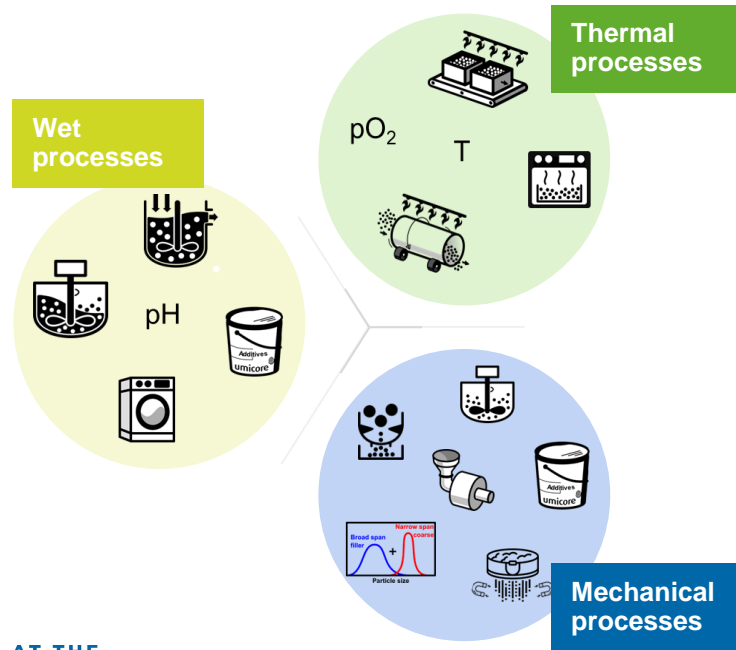
Implementing modular plant design



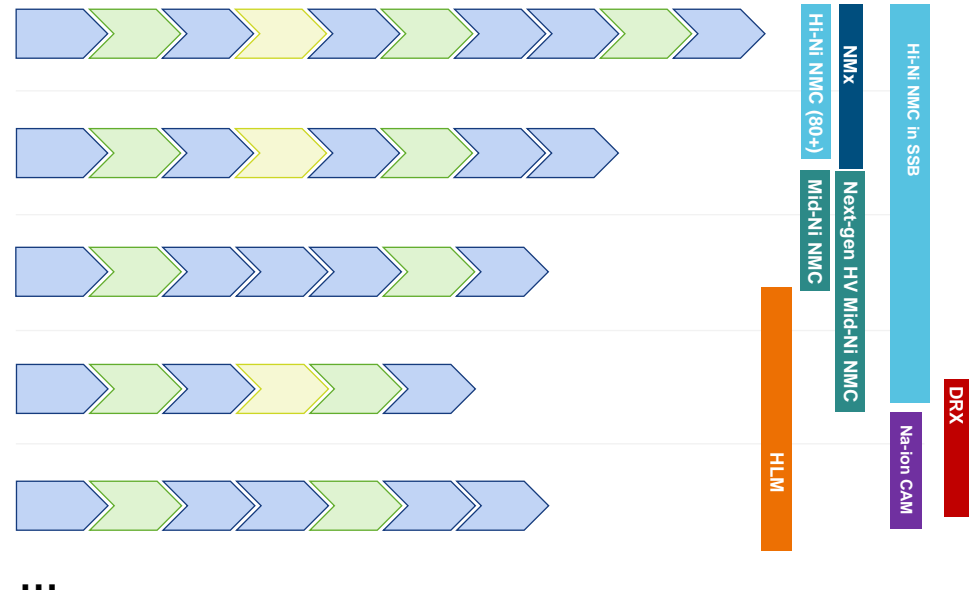
Umicore's future-proof design for CAM

Modular plant design drives flexibility

CAM process technology



Modular plant design per process group allows for flexible and optimized production flowsheet per product type:



Umicore's future-proof design for CAM

Modular plant design combines flexibility with efficiency

Key benefits of modular plant design in Nysa and future plants...

More cost efficient, faster scaling and ramp-up ✓

Throughput improvements and avoidance of bottlenecks ✓

Reduced maintenance, overhaul time and switch - over period, as well as less scrap generation ✓

More efficient management of product purity and volume liability ✓

Flexibility to produce current and future product chemistries ✓

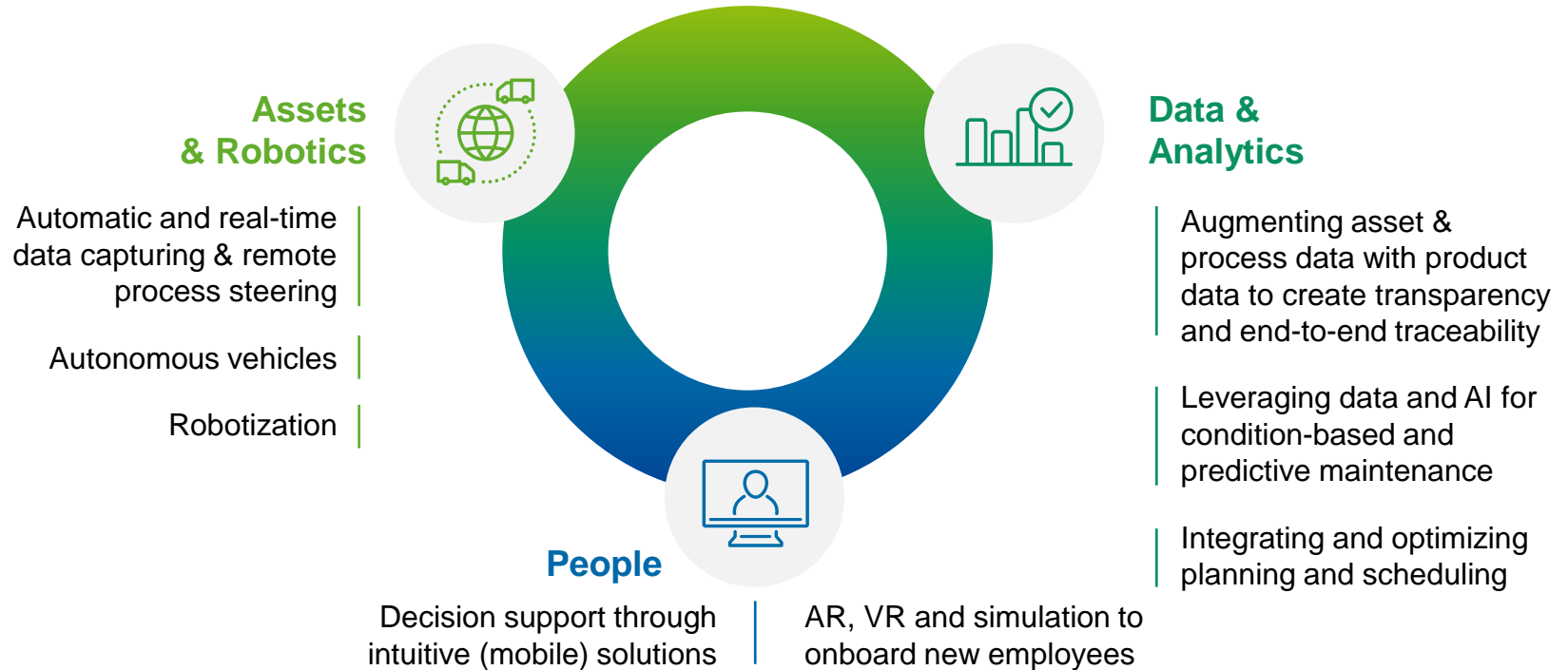
Extra capacity built by increments (~20GWh) based on contracted volumes

Higher utilization, efficiency and scalability

Enabling a de-risked and phased CAPEX approach (waves) ✓

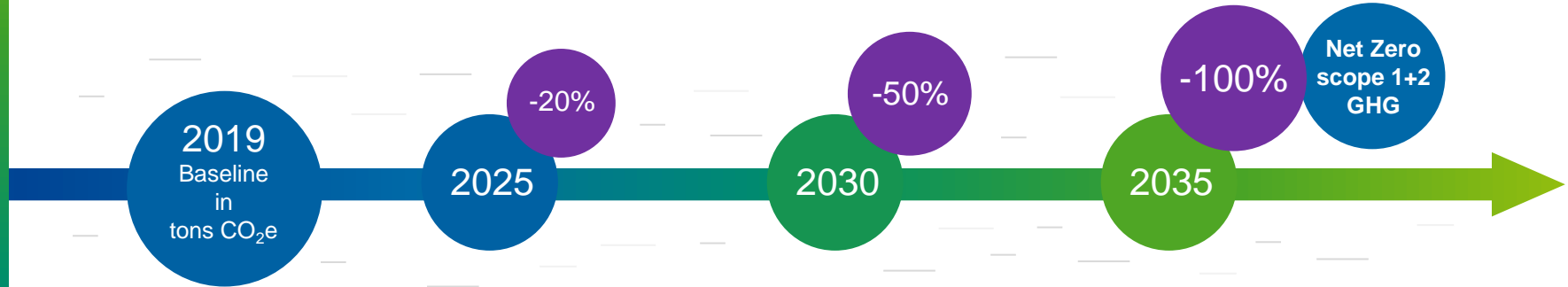
Digitalization is key in process efficiency

Building a digital light house



Manufacturing CAM with the lowest carbon footprint

Boosted by Umicore's ambitious decarbonization commitments



Energy efficiency

- ✓ Energy efficiency program to reduce energy intensity operations
- ✓ Heat recovery for energy intensive processing
- ✓ Heat pumps for low temperature waste heat

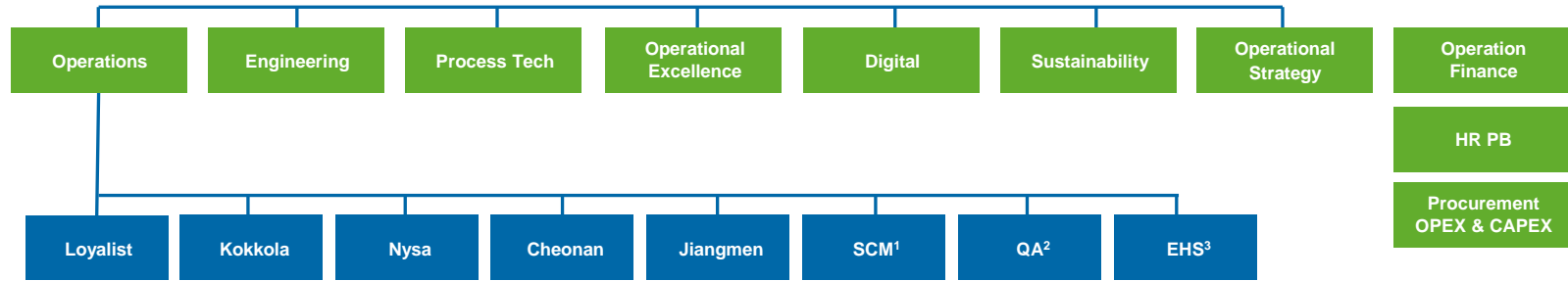
Energy decarbonisation

- ✓ Energy decarbonization roadmaps in line with country-specific context
- ✓ 100% green electricity in Nysa and Kokkola through 4 PPAs
- ✓ Partially realized green steam in Kokkola
- ✓ Green energy in Canada from start of production

Dedicated team drives operational excellence

Strong overlay with operations, process technology, R&D and commercial teams

COO ORGANIZATION



LONGSTANDING EXPERIENCE AND STRUCTURED PROCESS FOR PLANT CONSTRUCTION

Fully digital enabled





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Key take-aways

Key take-aways

More than
>25 years
experience in
building and
running large-scale
CAM factories

Mastering complexity
of pCAM and CAM
production process
with continued focus
on operational
excellence

Umicore's global capability

- ✓ Flexible and future-proof modular plant design
- ✓ Continued process innovation and digitalization
- ✓ Standardized concept for multiple sites enhancing scalability
- ✓ Truly global local-for-local production footprint with net-zero carbon production
- ✓ Winning team of experts

Winning operations strategy

- ✓ Drive operational excellence
- ✓ Deliver expansions to customers
- ✓ Winning team and organization
- ✓ Digital transformation

**Unique visit to
Umicore's Gigafactory
in Nysa, Poland**

Greenfield CAM plant in Nysa

Europe's first CAM Gigafactory

Nysa
Poland





Construction of the Nysa plant

Nysa plant 2021 overview



Office
Reception

LAB

Operations

Post-treatment

Maintenance

Firing

Finished Goods

Pre-treatment

Raw Materials

Nysa plant 2023 overview



Start of the tour

Office Reception

LAB

Operations

Post-treatment

Firing

Maintenance

Finished Goods

WIP

Pre-treatment

Raw Materials

Umicore Poland a recognized team



Program Leaders of Social Responsibility



Business Award for the development of the Invest-Park



„Polonica Progressio” Minister of Development and Technology, Category: Leader of cooperation



Umicore Poland: a local team of experts



IONWAY's first production plant in Nysa, benefiting from Umicore's nearby CAM knowhow



Nysa is serving as a blueprint for Loyalist



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Battery Materials

Safety briefing



Umicore's operations and IP protected by strong security & access controls



Access control



Deposit

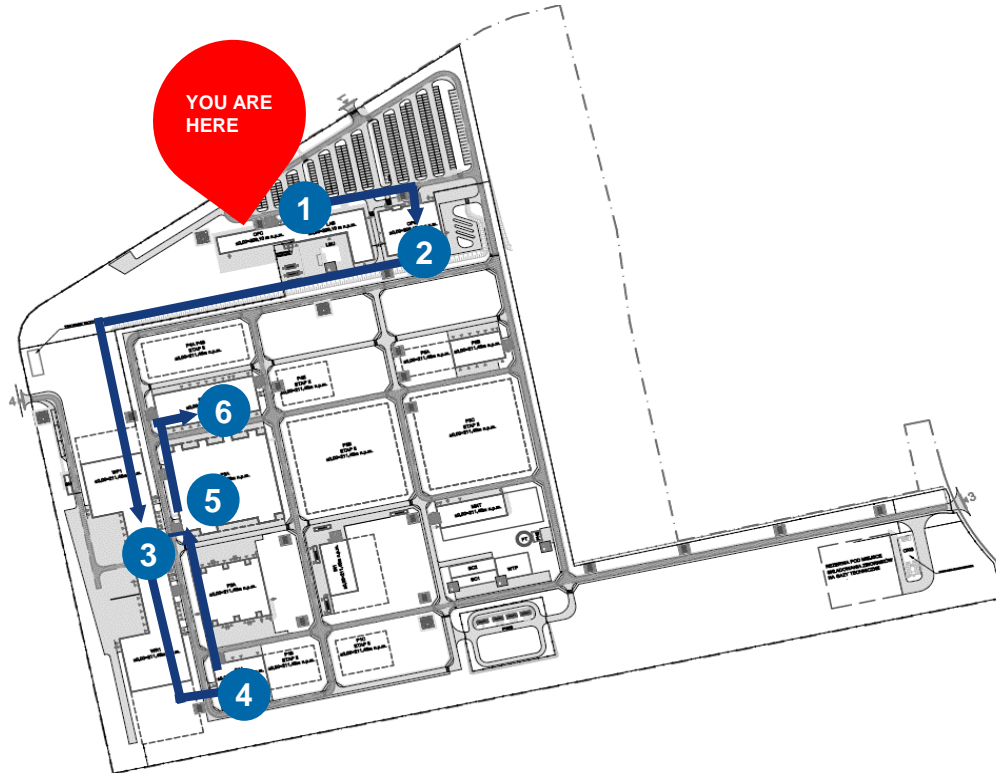


Monitoring



Detection

Program of site tour



- 1 LAB
- 2 Operation main entrance
- 3 Warehouse
- 4 Production
- 5 Production
- 6 Production

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Q&A



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