CAPITAL MARKETS DAY

2 September 2015

Andaz London Liverpool Street

Recycling

Speaker

Stephan Csoma

Executive Vice-President, Recycling

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Agenda

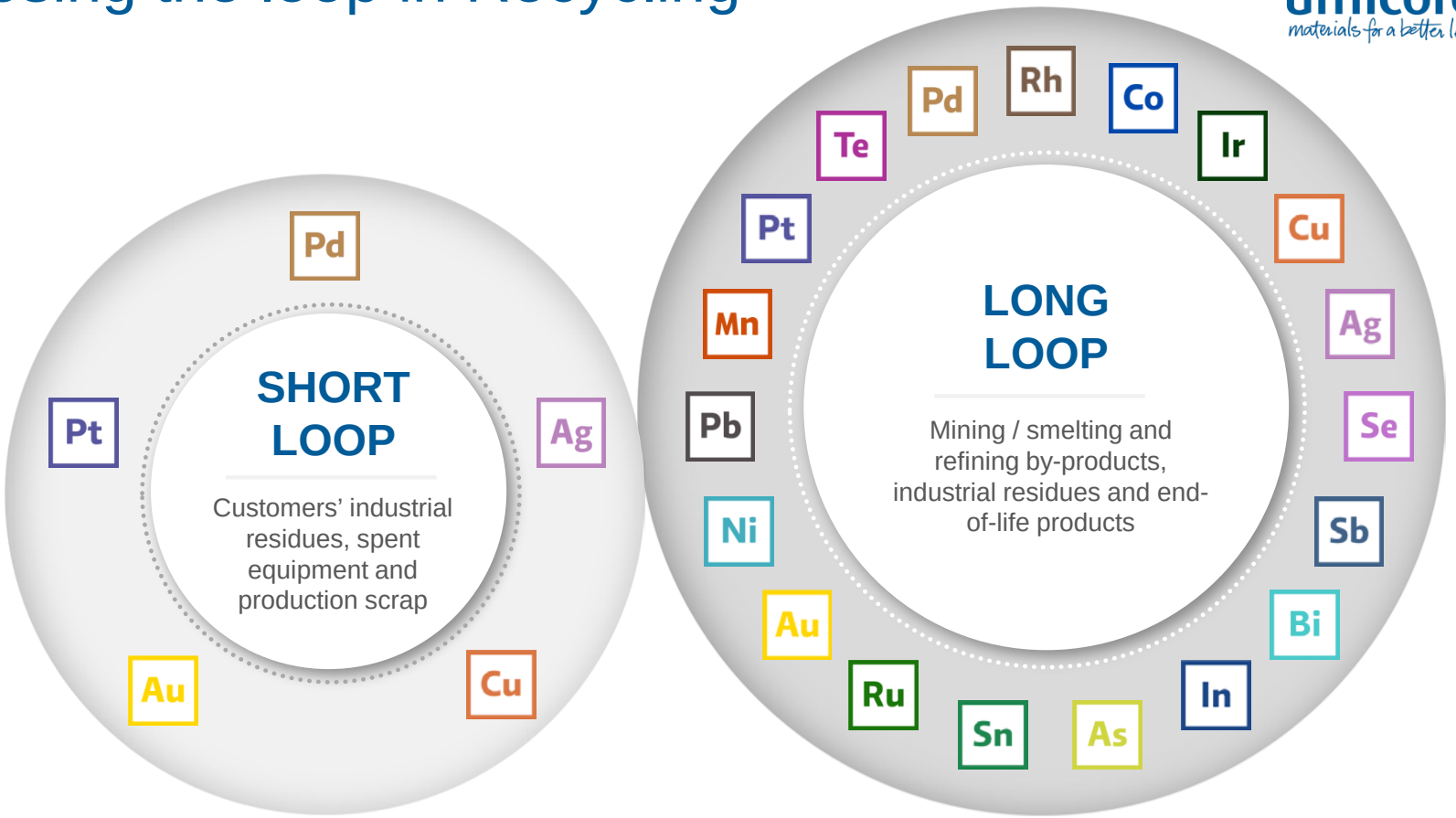
1. Business group profile
2. Short loop and long loop recycling
3. Asian presence
4. Growth and profitability drivers
5. Key takeaways

Business group profile

Recycling

Technical Materials **(TM)**	Jewellery and Industrial Metals **(JIM)**	Precious Metals Refining **(PMR)**	Platinum Engineered Materials **(PEM)**	Precious Metals Management **(PMM)**
Ag, Mn, P, Sb, In, Zn, Cu, Sn	Ag, Au, Pt, Pd	Ag, Te, Sb, Ir, Pt, Bi, Pb, Au, Sn, In, Sn, In, Se, Ru, Pd, Rh, Cu	Pt, Pd, Rh	Ag, Pt, Au, Ir, Ru, Pd, Rh

Closing the loop in Recycling



JIM, TM and PEM

High precious metals concentrations, sampling easier, simpler technology, integrated with product offering

PMR

Complex (lower precious metals concentrations, numerous metals), sampling more complex, sophisticated technology

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Short closed loop in Recycling

Technical Materials

Ag

Ag

Jewellery and Industrial Metals

Ag Au Pt Pd Cu

Pt

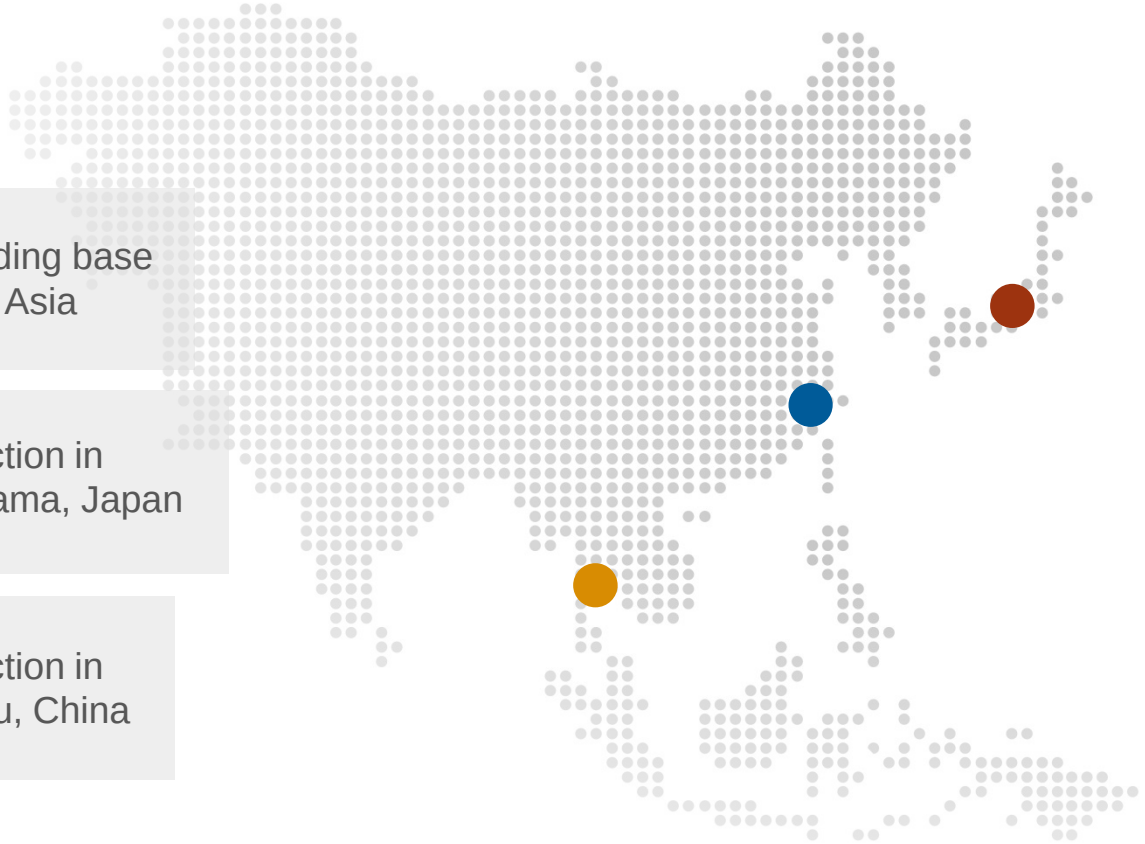
Platinum Engineered Materials

Pt Pd Rh

Precious Metals Management (PMM) sources precious metals for industrial business units

Asian presence becoming increasingly important

Jewellery and Industrial Metals	Expanding base in S.E. Asia
Platinum Engineered Materials	Production in Yokohama, Japan
Technical Materials	Production in Suzhou, China



Growth and profitability drivers

Business unit	Main growth drivers	Profitability drivers
Jewellery and Industrial Metals	Global demand for jewellery and industries eg. mint or decorative	Integration of products and recycling services
Platinum Engineered Materials	Evolution in the high-purity glass market and fertilizer industry	Product design / innovation and applied technology and closed loop offering
Technical Materials	Demand in electrical, automotive and HVAC industry	Product innovation, operational excellence and closed loop offering
Precious Metals Management	Demand in Umicore business units and demand for physical delivery of metals	Metal services and trading

Key takeaways

Integration of short loop offering enhances competitiveness of product activities

Umicore to grow in line with the market and maintain strong performance

Continue the focus on cost competitiveness and regional positioning

Precious Metals Refining

Speaker

Luc Gellens

Senior Vice-President,
Umicore Precious Metals Refining

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Precious Metals Refining today

Largest and most complex precious metals recycling operation in the world

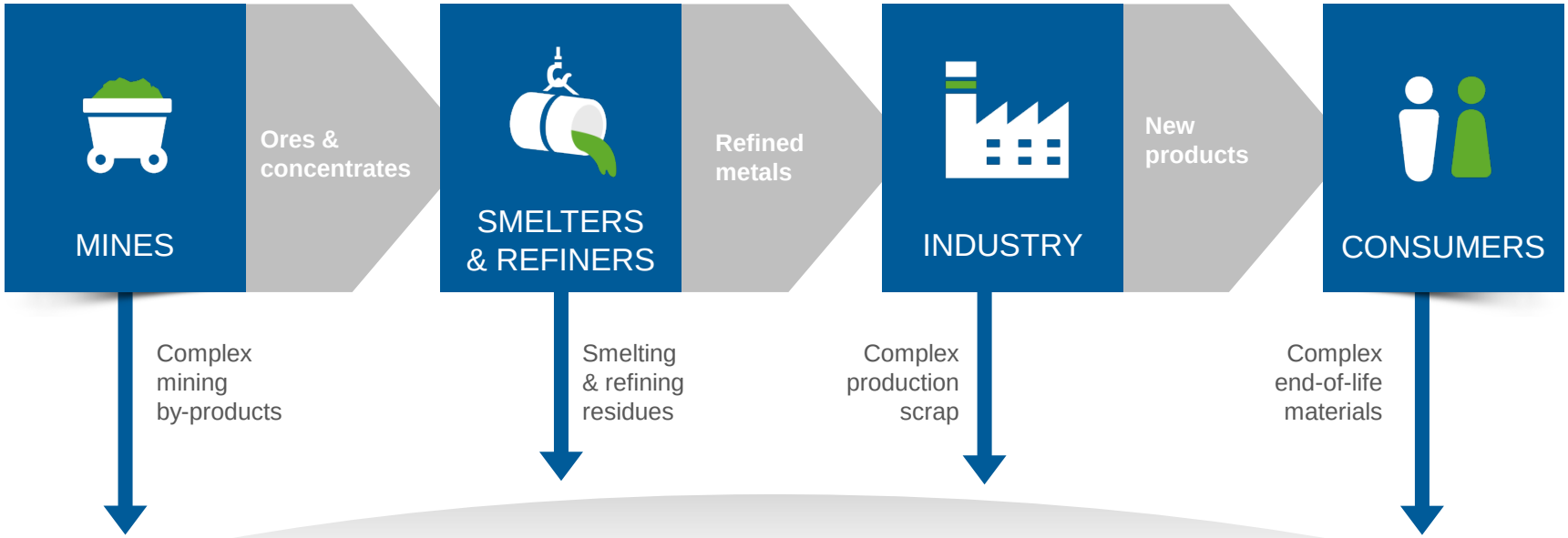
Processes more than 200 different types of raw materials

World leading refiner of 20 different metals

World class environmental and quality standards

The value chain of metals

200+ materials to close the loop



Industrial by-products

86% volume

75% revenues

umicore Precious Metals Refining

Recyclables

14% volume

25% revenues

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Precious Metals Refining today

6,400 lots

>500 customers

How PMR generates revenues

Main revenue drivers

Treatment & refining charges

Treatment charges are determined, among other criteria, by the complexity of the materials.

Metal yield

Umicore assumes the risk of recovery above or under the contractually agreed recovery rate.

Metal price exposure

Metal price exposure

Direct:

through metal yield

Indirect:

through raw material availability

Au
Ag

Ru Rh Ir
Pd Pt

In Te Sb
Bi Pb Cu
Ni Se As
Sn

Managing the effects of metal price movements on earnings

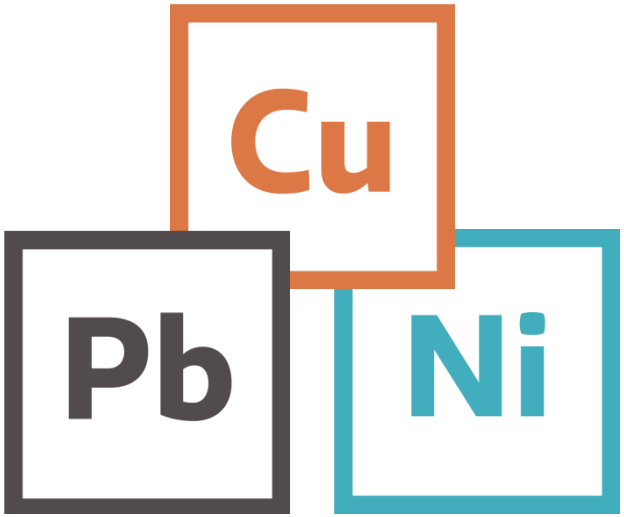
Systematic hedging of transactional exposure (pass through metal)

Depending on market conditions hedging of (part of) structural metal price exposure through contractual arrangement

Impact on working capital is mitigated by toll-refining – metals remain property of the supplier during treatment

Umicore has unique technology

Umicore is unique
due to its proprietary complex flowsheet that combines three metallurgical streams



This enables

- Flexibility to treat a broad range of input materials
- Recovery & valorization of the most metals
- Ability to optimize feed and therefore profitability
- Scope to broaden to new types of materials in future

Umicore has unique technology

- Umicore technology guarantees **environmentally friendly** processing, a high yield and a more competitive cost
- PMR has invested heavily in **new and advanced processes**
- PMR introduced its unique UHT technology for Battery Recycling four years ago

Competitive landscape

None can take in the wide span of materials and metals

Category	Examples	Products	Degree of overlap
Base metal Refiners	Stolberg, Penoles, Glencore, Tech Cominco, LS Nikko, Brixlegg	Cu, Pb, Zn by-products containing precious metals (PM)	
		Some e-scrap	
Primary PGM Refiners	Stillwater, Amplats	Recyclables: automotive catalysts	
Specialty PM/PGM Refiners	Vale, Impala, Norilsk	By-products rich in PM	
	JMI, BASF, Heraeus, Chimet, Tanaka, Nippon PGM, Sabin, Gemini	Recyclables: industrial or automotive catalysts	
Specialized Refining Companies	Dowa, Boliden, Aurubis, Korea Zinc	Cu, Pb, Zn, Ni by-products containing PM	
		Recyclables: electronic scrap and industrial catalysts	

- **Most competitors are customers**
- They usually focus on niches
- No other company can process as wide a scope of materials as Umicore

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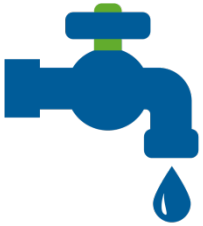
Long-term business drivers



Resource scarcity

Increased complexity of materials

Eco-efficiency

Capture more value through capacity expansion, unique technologies and new streams of recycling

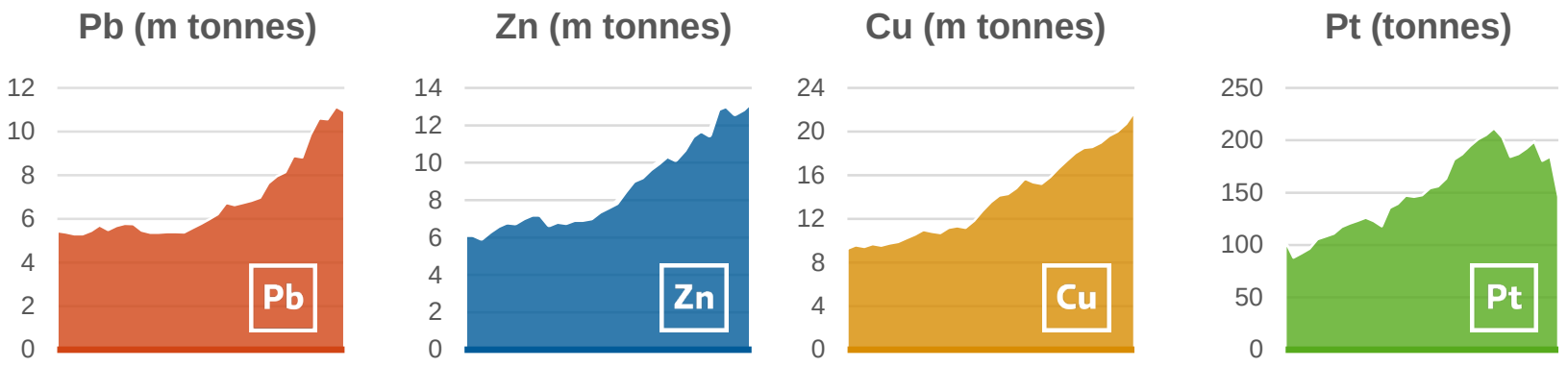
Resource scarcity

Opportunity for PMR to process more materials

Increase of production of metals leads to more by-products from the base metals and PGM industry

Processing end of life products is necessary for a sustainable supply of metals

Evolution of global production level 1980-2014



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Increased complexity of materials

Availability to increase for Umicore

- Availability of complex concentrates on the rise which means **higher complexity of by-products from primary refiners**
- Diversity and complexity in the recyclables market **limits processing of these materials** by base metals smelters
- Increased pressure on non-ferrous smelters to comply with **stricter EHS guidelines**

Trading companies like Trafigura, Ocean Partners and others have made significant investments in storage and blending capacity in recent years as the volume of complex concentrates in the market have increased.

Metal Bulletin
Oct 2014

Many of the new mines currently coming on stream are producing concentrates with high levels of impurities.

South American mining company, Reuters
Dec 2014

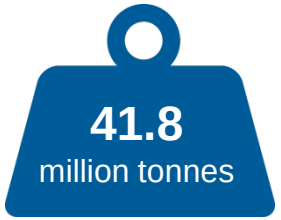
So we are actively looking at process changes and new technologies in order to cope with the complexity in a suitable manner.

Copper refiner, Metal Bulletin
Apr 2015

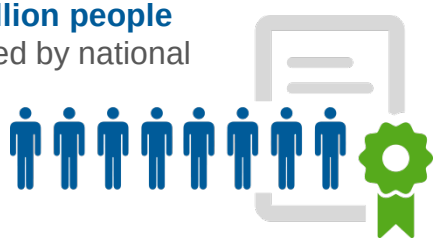
Eco-efficiency
Trend towards higher recycling rates

- Base metal smelters are increasingly obliged to find an outlet for their by-products
- **Recycling markets of end-of-life products to increase**
- Processing complex materials in an environmentally friendly way **will become the norm**

E-waste generated in 2014



Only 4 billion people are covered by national legislation



That's approximately 4 out of every 7 people

Umicore Precious Metals Refining's outstanding environmental performance and ethical sourcing practices provide an additional competitive edge

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From The Global e-waste monitor 2014, United Nations University, 2015

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Growth strategy 2015-2020

Increase
in capacity

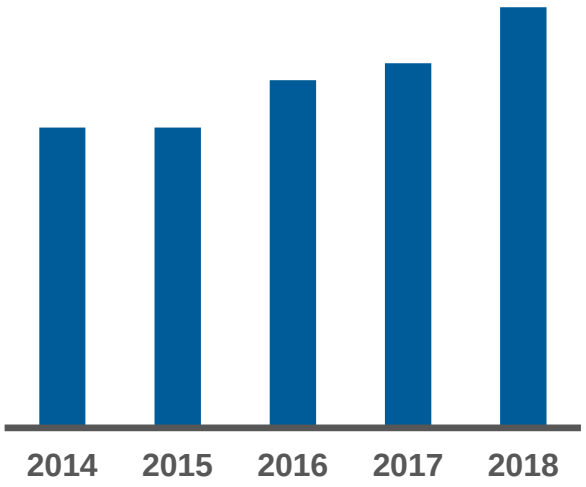
Continuous
upgrade of fixed
assets base

R&D to maintain
technology
leadership

Recycling
development

Capacity increase is key to growth

Projected volume evolution



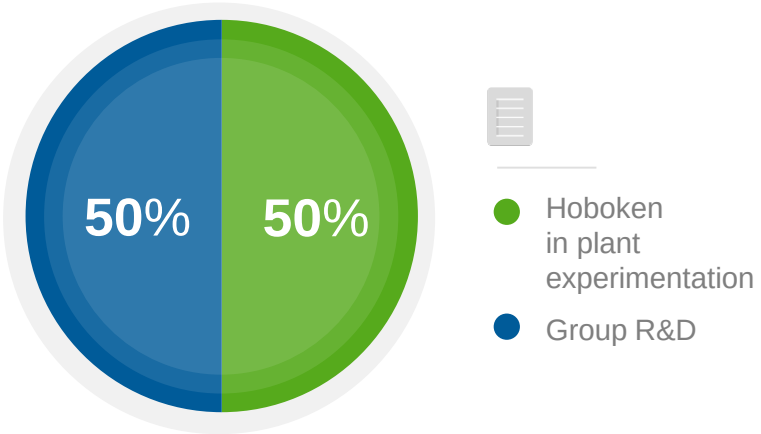
- Investment to increase capacity at Hoboken by 40%
- Execution 2014-2015; ramp-up 2016-2017
- Further improvement of competitiveness through **economy of scale**
- Refining charges will initially not follow the same pace as volume growth due to material mix

Continuous upgrade of fixed asset base

- **Continuous improvement** through investments in fixed assets will continue
- **Innovation remains critical** in guaranteeing strong performance (environment, metal yield, cost)
- Debottlenecking **never stops**

R&D to maintain technology leadership

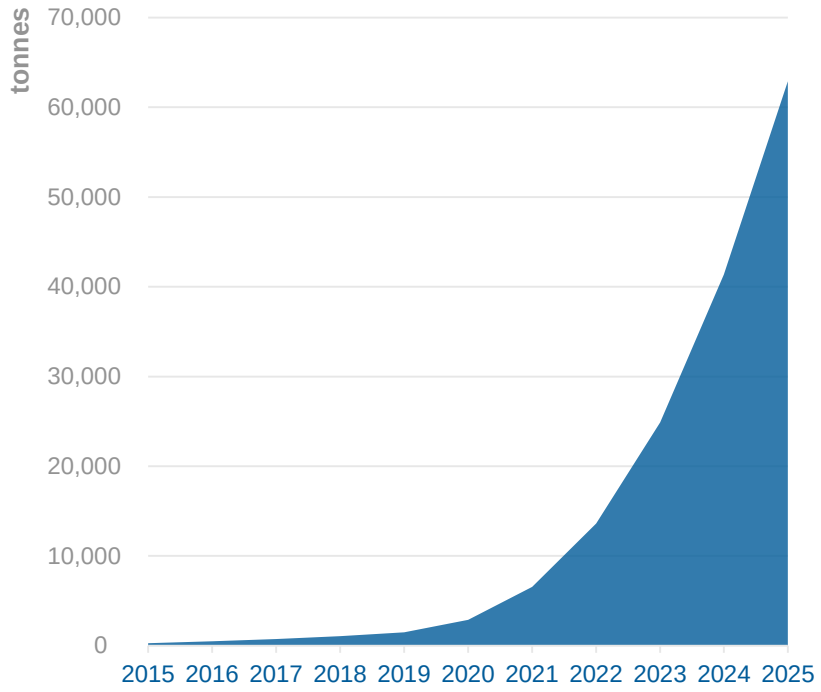
- PMR continues to **invest heavily in R&D**
- Innovative process technology ensures PMR remains the **leader in complex metallurgy**
- Battery recycling technology, introduced in 2011, is offering **options for future process improvements**



Recycling development
Battery recycling

- The demo plant is operational since 2011. Processing of spent rechargeable batteries optimized and validated
- The market is set to develop strongly in the coming years
- By 2020, Umicore will be ready for scaling-up to a real industrial footprint

End-of-life
Li-ion battery market



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Key takeaways

Unique position in complex recycling

Increasing availability of complex materials

Near-term growth driven by 40% expansion of Hoboken facility. Full benefits from 2018.

Active pursuit of growth avenues post 2020, including battery recycling