Introduction to Umicore
We are a global materials technology and recycling group

One of three global leaders in emission control catalysts for light-duty and heavy-duty vehicles and for all fuel types

A leading supplier of key materials for rechargeable batteries used in electrified transportation and portable electronics

The world’s leading recycler of complex waste streams containing precious and other valuable metals
With a unique position in clean mobility materials and recycling

Internal Combustion Engine
Umicore provides:
Emission control catalysts

Full Electric Vehicle
Umicore provides:
Battery cathode materials

Plug-In Hybrid Electric Vehicle
Umicore provides:
Battery cathode materials and emission control catalysts

Fuel cells
Umicore provides:
Electro-catalyst and battery cathode materials

Present across all drive trains and offering sustainable closed-loop services
Built on sound foundations

We help improve air quality, make electrified transport possible and tackle resource scarcity
With a robust financial performance and a global presence

Key figures (H1 2019)

- Revenues: €1.6 bn
- Recurring EBITDA: €357 m
- Recurring EBIT: €240 m
- ROCE: 12.3%

Revenues* by geography

* 2018 data
We deliver on our Horizon 2020 strategy

- Clear leadership in clean mobility materials and recycling
- Doubled the size of the business in terms of earnings
- Rebalanced the portfolio & earnings contributions
- Turned sustainability into a greater competitive edge
With a focused & balanced Group structure

**CATALYSIS**
- Automotive Catalysts
- Precious Metals Chemistry

**ENERGY & SURFACE TECHNOLOGIES**
- Rechargeable Battery Materials
- Cobalt & Specialty Materials
- Electroplating
- Electro-Optic Materials

**RECYCLING**
- Precious Metals Refining
- Jewelry & Industrial Metals
- Precious Metals Management

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**Revenues**
- 19%
- 44%
- 37%

**Recurring EBIT**
- 29%
- 33%
- 38%

**Capital employed**
- 14%
- 35%
- 51%

* H1 2019 data; corporate not included
Unique position in Automotive Catalysts

Total LDV and HDD catalyst market value

- **Tightening emission norms** for LDV and HDD, in particular in China, Europe and India
- **Significant value uplift** especially in gasoline catalysts
- Increasing share of gasoline cars globally
- Umicore won largest share of cGPF platforms in China and Europe
- Increasing uptake of fuel cell drivetrains
- **Technology** and **innovation** play

We are well positioned to capture unprecedented value growth in automotive catalyst markets
Unique position in Rechargeable Battery Materials for xEV

**Electrification** confirmed as main avenue to drastically reduce vehicle emissions in mid- and long-term

Strongly supported by **legislation** and evidenced by massive roll-out of car OEM’s e-mobility strategies

Increasing electrification drives **strong market demand** in mid and long-term

Technology roadmap offers ample room for **innovation and differentiation**

- Product
- Process
- Closed loop offering

**Umicore uniquely positioned** to address long-term requirements of this industry, while managing short-term fluctuations with agility

- Full spectrum of highest quality cathode materials
- Process technology and ability to scale up fast
- Innovation pipeline spanning next 20 years
- Integrated supply chain and battery recycling
Unique position in Recycling

- Metallurgical leadership and proprietary technologies for treating complex residues and by-products
- Closing the loop in product businesses by offering recycling services
- Over 200 different input streams
- Recovery of more than 20 different metals

Increasing resource scarcity and need for closing the loop
Growing complexity of materials to recycle
Increased availability of complex materials, in particular end-of-life materials
Eco-efficient recycling processes are becoming the norm

Umicore uniquely positioned to capture growth as the world’s largest and most complex precious metal recycler with world class environmental and quality standards
We have a solid framework for value creation

• Multiple growth drivers
• Secular trends
• Supporting legislation
• Privilege organic growth
• Complementary M&A, with focus on value creation

• Earnings growth objective
• Group and segment returns > cost of capital
• 15%+ ROCE target
• Value creation precedes ROCE maximization

• Prioritize cash for strategic organic growth projects
• Currently in accelerated investment phase
• Strong self-funding capacity (normalized excl. current acceleration)
• Not overstretch balance sheet
• Cash return to shareholders

R&D 6% of revenues
Capex € 478 m*

* 2018 data

Strong growth
Focus on returns
Focus on cashflows and solid capital structure

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And maintain a strong capital structure

Net financial debt € 1,059 m

Modest impact from the adoption of IFRS 16 due to limited use of operating leases (€ 37 m)

Corresponds to:
1.35 x average net debt to recurring EBITDA ratio
29% net gearing ratio

Ample funding headroom to execute growth strategy, no need for additional capital injection
Business Group Overview

Catalysis
### Catalysis

#### Automotive Catalysts
A world leader in emission control catalysts for light-duty and heavy-duty vehicles and for all fuel types. Complemented by smaller stationary catalyst applications (marine, power generation, ...).

#### Precious Metals Chemistry
Develops and produces metal-based catalysts used in chemistry, life sciences and pharmaceutical applications. Also has a complete portfolio of catalyst technologies for fuel cells.
Automotive Catalysts: business model

We develop technologies which allow our customers to meet automotive emission legislation at the lowest Total Cost of Ownership.

- Complete catalyst systems to reduce exhaust gas emissions
- People engagement
- Global manufacturing & technical footprint
- Operational excellence
- Customer focus
Automotive Catalysts Production Footprint
19 plants in 14 countries, 10 R&D / tech. centers in 7 countries

- Burlington, Canada
- Auburn Hills, MI, USA
- Tulsa, OK, USA
- Houston, TX, USA
- Americana, Brazil
- Joinville, Brazil
- Port Elizabeth, South Africa
- Pune, India
- Rayong, Thailand
- Frederikssund, Denmark
- Karlskoga, Sweden
- Lyngby, Denmark
- Nowa Ruda, Poland
- Hanau, Germany
- Florange, France
- Rheinfelden/Bad Säckingen, Germany
- Onsan, Korea
- Himeji, Japan
- Tokoname, Japan
- Kobe, Japan
- Tianjin, China
- Suzhou, China (2)
- Auburn Hills, MI, USA
- Tulsa, OK, USA
- Houston, TX, USA
- Americana, Brazil
- Joinville, Brazil
- Port Elizabeth, South Africa
- Pune, India
- Rayong, Thailand
- Frederikssund, Denmark
- Karlskoga, Sweden
- Lyngby, Denmark
- Nowa Ruda, Poland
- Hanau, Germany
- Florange, France
- Rheinfelden/Bad Säckingen, Germany
- Onsan, Korea
- Himeji, Japan
- Tokoname, Japan
- Kobe, Japan
- Tianjin, China
- Suzhou, China (2)
Total LDV and HDD catalyst market set for unprecedented value growth

- Massive tightening of emission norms in China, Europe and India drive massive value uplift in both the LDV and HDD catalyst markets
- Value growth by far outpacing vehicle production
- Technology and Innovation play

MARKET VALUE EVOLUTION BY REGION
- Europe
- Greater China
- Japan / Korea
- Middle East / Africa
- North America
- South America
- South Asia (mainly India)

Source: IHS, KGP, Umicore estimates
Umicore well positioned to capture this growth

Next to **volume growth**, unprecedented future **system value step-up** due to tightening emission norms in Europe, China and India in particular.

**Light-Duty Vehicles**
- Gaining significant share in growing gasoline segment
- Disproportionate share of gasoline GPF platforms won in China and Europe

**Heavy-Duty Diesel**
- Growing from a distant #3 position
- Strong position in China, the largest HDD market
- Development partner of most major HDD OEMs

**Stationary**:
- Growing niche
- New legislation
- Leverage global presence

Through R&D, we continue to build a **competitive technology** portfolio and invest in **additional flexible capacity** using proprietary processes.
Automotive Catalysts (~90% Catalysis revenues)

Market share gains in light duty gasoline
Growing penetration of cGPFs
Good customer and platform mix esp. in China
Higher revenues in heavy-duty diesel

Precious Metals Chemistry

Strong demand from pharmaceutical and chemical industries
Higher revenues from fuel cell catalysts

Catalysis H1 2019 performance

Revenues +1% and stable REBIT; in strong contrast with declining auto market
Strong growth drivers in Catalysis

Tightening emission norms for LDV and HDD, in particular in China, Europe and India

Significant value uplift especially in gasoline catalysts

Increasing share of gasoline platforms in the global mix

Increasing uptake of fuel cell drivetrains

Umicore best positioned to capture growth in growing gasoline segment

Largest share of cGPF platforms won in China and Europe

Umicore well positioned to capture growth in HDD segments

Umicore expanding capacity in fuel cells
Impressions

Catalyst elements

Test bench

Bad-Säckingen plant AC, Germany

Canned catalyst

Installation stationary DNox catalyst

Nowa Ruda plant AC, Poland
Business Group Overview

Energy & Surface Technologies
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<th>Energy &amp; Surface Technologies</th>
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<td><strong>Rechargeable Battery Materials</strong></td>
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<td><strong>Cobalt &amp; Specialty Materials</strong></td>
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<td><strong>Electroplating</strong></td>
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<td><strong>Electro-Optic Materials</strong></td>
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Rechargeable Battery Materials: business model

- **Product innovation** based on strong application know-how
- **Established industrial footprint** close to the customer
- **Strong industrialization capabilities** building on historical Umicore key competences
- **Process innovation** fuels productivity improvements while maintaining highest quality standards (stringent automotive standards)
- **Integrated process flows** with guaranteed access to critical raw materials allows an agile market approach
Battery market projections

Electrification triggered by legislation in Europe and China

- **Electrification**: Regulatory driver
- **Portables**: Societal driver
- **Energy Storage System**: Regulatory driver

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**Source:** Avicenne, Navigant, Roland Berger, AABC, IHS, Gartner, SNR, CRU, Roskill
It takes a lot to play in the automotive league

Car OEMs need:

- **High quality** cathode materials
  - [ ] custom made for different types of xEVs
  - [ ] in massive volumes
  - [ ] at the highest speed and flexibility
  - [ ] at a competitive price
  - [ ] without any sustainability image risk.

- excellent product quality on 20+ specs
- wide spectrum of cathode material technologies
- industrial capabilities
- ability to scale up fast
- cost-efficient processes
- ethically sourced materials

It takes product technology, process technology and supply
Product, process and supply
Key success factors

3 Supply

1 Product Technology

2 Process Technology

- Feed flexibility
- Battery recycling

Wide spectrum of cathode material technologies

- Ability to scale up fast
- Cost-efficient processes
- Industrial capabilities

Best in class product quality on 20+ specs: continuous fine-tuning at lab, pilot and industrial scale

Raw materials

Lab scale

Pilot scale

Industrial scale
Cathode material specs to fulfil cell performance specs

**Cathode material product specs**
- Particle size
- Morphology
- Composition
- Purity
- Packing density
- Porosity
- Consistency
- and more…

**Cathode material performance specs**
- Capacity
- Power (charge/discharge)
- Cycle life
- Safety
- Charge efficiency
- and more…

Tailoring cathode material characteristics to the cell specs requires:
- Fundamental chemistry knowledge to design the right product composition during lab phase
- Ability to further enhance the product designs during the qualification cycles in pilot phase
Rechargeable Battery Materials

Expansion projects timeline

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<td>EUR 160 million announced April 2016</td>
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<td>EUR 300 million announced May 2017</td>
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<td>EUR 660 million announced Feb 2018</td>
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Brownfield in China
Greenfield in Korea

Significant scale effects that benefitted 2018 margins

Completed on accelerated schedule

Greenfield in China and Poland
Competence Center in Belgium

Expected to result in significant upfront costs in 2019
Construction (China, Poland) on track, timeline for ramp up of new capacity adjusted to pace of demand
Access to raw materials
Unique integration in the value chain

Umicore
- Flexibility in supply feed, high speed to market and responsiveness to customer needs
Battery recycling as critical additional source of supply

- Umicore is fully aligned with OECD Due Diligence for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas
- Certified clean and ethical supply to our customers
- Urban mining indispensable for global electrification of transportation
- Proven industrial capabilities for all types and formats of Li-ion batteries
- Patented recycling technology
- High recovery rates for lithium, cobalt, nickel and copper
- Highest environmental standards

Umicore Flexibility in supply feed, high speed to market and responsiveness to customer needs
Expanding integrated and sustainable battery materials supply chain

**Agreement to acquire Freeport Cobalt’s refining and cathode precursor activities in Finland**

- Fully integrated and sustainable battery materials supply chain in Europe
- To support Umicore’s and its customers’ European growth plans
- Supply precursors for cathode materials production in Poland, due to start in H2 2020
- Complementary IP and know-how for refining and precursor production
- Team of experienced battery industry professionals
- Acquisition earnings accretive from 2020 and value accretive from 2021
- Closing subject to customary conditions and approvals

**Partnership with Glencore for sustainable cobalt supply**

- Long-term supply guarantee for substantial part of our cobalt needs
- Cobalt sourced from state-of-the-art industrial mining operations, then shipped to our refineries globally

**Umicore battery supply chain in Europe**
E&ST H1 19 performance
Revenues -7%; REBIT -16% reflecting slowdown in demand and lower metal prices

Rechargeable Battery Materials
Lower NMC for ESS and LCO sales
Flat demand for automotive applications
Recycling and refining activities hit by lower metal prices

Cobalt & Specialty Materials
Customer destocking of excess inventories
Activities impacted by low metal prices
Inflow of cheaper unethically sourced artisanal cobalt

Revenues for Electroplating slightly down; stable for Electro-Optic Materials
Battery materials value chain is ~70% E&ST revenues
Strong growth drivers for E&ST

Electrification and technology differentiation

Electrification confirmed as the main avenue to drastically reduce vehicle emissions in mid & long term

Strongly supported by legislation:
- Continued regulatory push in China despite earlier than anticipated subsidy cuts
- CO₂ legislation in Europe

and evidenced by the massive roll-out of car OEM’s e-mobility strategies

Technology roadmap offers ample room for innovation and differentiation:
- Product: range, charging times, durability
- Process: ability to scale up fast, cost efficient and flexible processes, quality consistency
- Closed loop offering

Umicore ideally positioned to address the long-term requirements of this industry, while managing short-term fluctuations with agility
Impressions

EV car battery pack

Packaging finished product

RBM Cheonan production sites, Korea
Precious Metals Refining

Operates the world’s most sophisticated precious metals recycling facility and recovers 17 precious and other valuable metals from complex waste streams.

Precious Metals Management

Services for hedging, leasing, purchasing and sale of precious and platinum group metals to internal and external customers.

Jewelry & Industrial Metals

Supplier of precious metals based products for jewelry and industrial applications, recycler of jewellery and production scrap and producer of platinum-based equipment for the glass and chemical industries.
Precious Metal Refining

Largest and most complex precious metals recycling operation in the world

Processes more than 200 different types of raw materials

Leading refiner of 17 different metals

World class environmental and quality standards
The value chain of metals

Mines

Ores & concentrates
Complex mining concentrates & residues

Smelters & refiners
Smelting & refining residues

Industry
Complex production scrap

Consumers
Complex end-of-life materials

Industrial by-products

End-of life materials
Revenue Drivers

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

Direct:
through metal yield

Indirect:
through raw material availability

Managing the effects of metal price movements on earnings

Systematic hedging of transactional exposure

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

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 technology guarantees **environmentally friendly** processing, a high yield and a more competitive cost
- Umicore introduced its unique Ultra High Temperature technology for Battery Recycling more than 5 years ago
Recycling H1 2019 performance

Revenues and REBIT -2%(*) due to extended maintenance shutdown

Precious Metals Recycling (~70% Recycling revenues)
- Better throughput rates following latest wave of investments in Hoboken
- Lower processed volumes due to extended scheduled shutdown
- Better supply mix and higher metal prices

Revenues for Jewelry & Industrial Metals slightly up; higher earnings contribution from Precious Metals Management

(*) excluding the impact of the divestment of the European activities of Technical Materials at the end of January 2018
Increasing resource scarcity and need for closing the loop

Growing complexity of materials to recycle

Eco-efficient recycling processes are becoming the norm

Umicore uniquely positioned to capture growth in this segment as the world’s largest and most complex precious metal recycler with world class environmental and quality standards
Impressions

PMR Hoboken recycling plant, Belgium
Robust performance in a challenging environment

Down compared to a record H1 18 and resilient sequential performance

- Revenues: -3% vs H1 18, +3% vs H2 18
- Recurring EBIT: -8% vs H1 18, -5% vs H2 18
- Recurring EBITDA: -2% vs H1 18

Robust margin performance despite higher costs (D&A and greenfield expansions):

- Recurring EBIT margin of 14.3%
- Recurring EBITDA margin of 21.4%
- Adoption of IFRS 16 lease standard increasing D&A and recurring EBITDA by €7.3 million
- ROCE of 12.3% reflecting impact of recent investments
Stronger free operating cash flows

Cashflow generated from operations tripled compared to H1 18 and highest in recent years
Stable net working capital in 1H19 versus last year’s strong increase

Higher capex (€ 241 m) of which two thirds in E&ST
Complemented by increased capitalized development expenses (€ 17 m) also mostly in E&ST
Substantial improvement in free operating cashflow year on year (€ 50 m in H1 19)
Full year projected capex of appr. € 600 m and targeting stable working capital

* Free operating cashflow = cashflow generated from operations – capex & capitalized development expenses
Net cash flow profile

Free operating cashflow of € 50 m
(-€ 104 m in H1 18)

Tax and net interest cash out of € 86 m
(€ 88 m in H1 18)

Higher dividend pay-out to Umicore shareholders
(€ 96m vs € 91m in H1 18)

Non-cash increase in net financial debt of € 37 m from IFRS 16 adoption

* Cashflow generated from operations includes net working capital cash flows
** Free operating cashflow = cashflow generated from operations – capex & capitalized development expenses
Maintaining a strong capital structure

Net financial debt € 1,059 m
Modest impact from the adoption of IFRS 16 due to limited use of operating leases (€ 37 m)

Corresponds to:
1.35 x average net debt to recurring EBITDA ratio
29% net gearing ratio

Ample funding headroom to execute growth strategy, no need for additional capital injection
Further extended funding base

Issuance of €390 m US private placement notes, complementing existing committed credit facilities:
- Historically low, fixed interest rates
- Maturities of 7, 10 and 12 years
- Expected drawdown in September

Total of committed medium and long term debt facilities amounting to €1,875 million.
No major maturities before 2029

### Debt maturity profile

![Graph showing debt maturity profile with bars for 2017 Schuldschein, 2017 US Private Placement, 2019 US Private Placement, Syndicated bank facilities (largely undrawn) for years 2023 to 2031.]
2019 Outlook
Outlook 2019

As announced in April, Umicore expects its recurring EBIT for the full year to be in a range of € 475 million to € 525 million, assuming no material further deterioration of the macroeconomic environment.

In Catalysis, Umicore expects to continue outperforming the automotive market and grow the business group’s recurring EBIT for the full year from last year’s level.

The Energy & Surface Technologies business group continues to face challenging market conditions in its key end-markets which, combined with the effect of low cobalt prices and unethical supply as well as costs related to new investments, means that the business group’s recurring EBIT for the full year is expected to be well below the level of last year.

In Recycling, Umicore expects to benefit from the throughput improvement in Hoboken which, combined with a favorable supply mix and higher prices for certain metals, means that the business group’s recurring EBIT for the full year should grow from the level of 2018, despite the impact of the July fire incident in Hoboken.
Key Investment Considerations
Key investment considerations

• **Well positioned to take advantage of accelerating global megatrends**: more stringent emission control, electrification of the automobile and resource scarcity
  - Global presence and unique competences acquired over many years;
  - A market leader in most key product markets and particularly in automotive catalysts, cathode materials and complex polymetallic recycling;
  - Strong organic growth prospects supported by legislation

• **Well-diversified business profile** with broad product, end-market and customer base driven by a common theme of sustainability

• **Strong track record of and commitment to innovation to maintain competitive lead** (R&D spending of close to 6% of revenues in 2018)

• **Robust financial performance** across cycles and margin focus with recent investments yielding returns

• **Strong balance sheet** with recent substantial growth investments

• **Experienced board, management team, and clear governance principles**
Forward-looking statements

This presentation contains forward-looking information that involves risks and uncertainties, including statements about Umicore’s plans, objectives, expectations and intentions.

Readers are cautioned that forward-looking statements include known and unknown risks and are subject to significant business, economic and competitive uncertainties and contingencies, many of which are beyond the control of Umicore.

Should one or more of these risks, uncertainties or contingencies materialize, or should any underlying assumptions prove incorrect, actual results could vary materially from those anticipated, expected, estimated or projected.

As a result, neither Umicore nor any other person assumes any responsibility for the accuracy of these forward-looking statements.
materials for a better life