Introduction to Umicore
Who 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
Our foundations

- Unique business model
- Supportive megatrends & legislation
- Industry leader in sustainability

- Metals
- Chemistry, material science, metallurgy
- Application know-how
- Recycling
- Material solutions

- Resource scarcity
- More stringent emission control
- Electrification of the automobile
Unique position in clean mobility materials and recycling

Present across all drive trains and offering sustainable closed-loop services

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
Unique position in clean mobility materials
Full service offering vs competitors

<table>
<thead>
<tr>
<th></th>
<th>Incumbent catalysts</th>
<th>Battery materials</th>
<th>Fuel cell catalysts</th>
<th>Refining &amp; recycling services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Umicore</td>
<td>✔️ ✔️ ✔️</td>
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<tr>
<td>Automotive catalyst competitors</td>
<td>✔️ ✔️ ✔️</td>
<td>✔️ ✔️ ✔️ ✔️</td>
<td>✔️</td>
<td>(incumbent in spent automotive catalysts)</td>
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<tr>
<td>Battery material competitors</td>
<td></td>
<td>✔️ ✔️ ✔️ ✔️</td>
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<tr>
<td>Fuel cell catalyst competitors</td>
<td>✔️ ✔️ ✔️</td>
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<td>✔️</td>
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</tbody>
</table>
Unique position in recycling
Metallurgical leadership and closed loop offering

- Unique technologies in Hoboken for treating complex residues and by-products
- Closing the loop in product businesses by offering recycling services
- Over 200 input streams
- Recovery of 20 metals

LONG LOOP
Unique technologies for treating complex residues & by-products

SHORT LOOP
Recycling services for customer production scrap & residues
Where we come from
Two centuries’ transformation away from mining & base metals

1800 - 1850
1805 - Vieille Montagne
1853 - Asturienne des Mines
1873-1887-1901 - Degussa - Usine de désargentation - ACEC
1900 - Union Minière du Haut Katanga
1906 - Métallurgique Hoboken & Société de Minerais
1950 - Union Minière Group
2000 - Umicore
2019

1805 - 1850

Where it all began
- Several mining and smelting companies coming together

Crossing borders
- Acquisition of Union Minière du Haut Katanga (UMHK), producer of copper and other metals

Pieces of the puzzle
- Merger in 1989 of UMHK with mining and smelting subsidiaries resulting in an integrated industrial group “Union Minière”
- Gradual sale of mining activities; focus on precious metals, zinc products and advanced materials illustrated by name change to Umicore in 2001

A defining decade
- Acquisition of PMG in 2003 adding presence in automotive catalyst sector
- In 2005, spin-off of copper business to Cumerio, later Aurubis
- In 2007, spin-off of zinc refining and alloy business, resulting in Nyrstar

Today
- Since 2015, increased focus on accelerating clean mobility and recycling (“Horizon 2020”)
- Divested four non-strategic units and acquired Haldor Topsoe’s heavy duty diesel and stationary catalyst business in 2017.
- Ongoing €1.1bn capacity expansion in battery materials in China, Korea and Poland
- Today Umicore is a global materials technology and recycling group, with more than 10,000 employees and revenues (excl. metals) of € 3.3 billion

Streamlined portfolio Focus on and acceleration in clean mobility and recycling growth drivers
Global presence

**COLLEAGUES**
- 10,419

**PRODUCTION SITES**
- 48

**R&D / TECHNOLOGY CENTERS**
- 14
Our Group structure: focused and balanced

**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 (excluding metal)**
- CA: 42%
- E&ST: 39%
- RE: 19%

**EBIT (recurring)**
- CA: 30%
- E&ST: 46%
- RE: 24%

**Capital employed (average)**
- CA: 38%
- E&ST: 47%
- RE: 15%

CA = Catalysis, E&ST = Energy & Surface Technologies, RE = Recycling; Corporate not included
Our Horizon 2020 strategy

- Clear leadership in clean mobility materials and recycling
- Rebalanced the portfolio & earnings contributions
- Doubled the size of the business in terms of earnings
- Turned sustainability into a greater competitive edge
In 2018, we made significant progress towards the 2020 ambitions

- **REVENUES**: €3.3bn (+17%*)
- **REBIT**: €514m (+29%*)
- **ROCE**: 15.4%
- **REC NET PROFIT**: €326m (+22%)
- **Capex**: €478m
- **R&D**: €196m

*Excluding discontinued operations
Consistent execution of the strategy

Main investment projects

- Capacity expansion in Europe, China and India following major business wins
- Initial investment in fuel cell catalyst capacity expansion in Korea
- Completion of €460 million investment program in China and Korea on an accelerated schedule
- €660 million greenfield investments in China and Poland ongoing
- Completion of environmental investments in Hoboken resulting in significant reduction in emissions.
Consistent execution of the strategy
Technology innovation drives our business

**R&D**
- Up 12% to €196 million
- 6% of Umicore’s revenues

**CATALYSIS**
- New product developments for upcoming emission regulations in Europe and China; fuel cell technology
- State of the art process technologies

**ENERGY & SURFACE TECHNOLOGIES**
- Innovation roadmap spanning the next 20 years for rechargeable battery materials
- Developing new process technologies
- Battery recycling
Business Group Overview

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
- Customer focus
- Operational excellence
Total LDV and HDD catalyst market set for unprecedented value growth

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

➢ 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
Automotive Catalysts Production Footprint

19 plants in 14 countries, 10 R&D / tech. centers in 7 countries
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.
Catalysis financials

2018: Revenues +9%, REBIT +2%, REBITDA + 6%

Automotive Catalysts
- Increased contribution of HDD activity
- Growth driven by higher gasoline volumes, despite slowing market (incl. diesel)
- Significant gasoline platform wins
- Late 2017 acquisition synergies not yet included

Precious Metals Chemistry
- Higher sales of APIs and chemical metal deposition applications
- Increased revenues from fuel cell catalysts
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
### Energy & Surface Technologies

<table>
<thead>
<tr>
<th><strong>Rechargeable Battery Materials</strong></th>
<th>A leading cathode material supplier for lithium-ion rechargeable batteries used in electrified vehicles and portable electronics.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cobalt &amp; Specialty Materials</strong></td>
<td>Refines and recycles cobalt and nickel; produces cobalt and nickel specialty chemicals for a wide range of applications (incl. tires, catalysts, surface treatment). Also includes battery recycling.</td>
</tr>
<tr>
<td><strong>Electroplating</strong></td>
<td>Supplies precious metal electrolytes &amp; processes for technical, functional and decorative applications.</td>
</tr>
<tr>
<td><strong>Electro-Optic Materials</strong></td>
<td>Supplier of products for thermal imaging as well as wafers for space solar cells and high brightness LEDs, chemicals for fiber optics and thin film applications.</td>
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</tbody>
</table>
Rechargeable Battery Materials: 20+ years of innovation in li-ion battery materials

- **1995**: Initiate research into LCO for Portables
- **1998**: Research into high nickel cathode material
- **1999**: First LCO plant in Korea
- **2003**: First NMC cathode materials plant in Korea
- **2006**: First NMC cathode synthesized and tested for Portables
- **2007**: First large scale NMC sale to automotive market (EV)
- **2009**: High Energy LCO-IP acquisition from FMC
- **2011**: Mass market introduction NMC622
- **2012**: Acquiring NMC-IP from 3M
- **2014**: Install high throughput production technology
- **2015**: Focus on LCO/NMC
- **2016**: Expand IP-coverage for NMC (ANL, CSEM)
- **2017**: Mass market introduction NMC622

**Timeline:**
- **1995**: Initiate research into LCO for Portables
- **1998**: Research into high nickel cathode material
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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

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

1. **Product Technology**
   - Wide spectrum of cathode material technologies
   - Feed flexibility
   - Battery recycling

2. **Process Technology**
   - Ability to scale up fast
   - Cost-efficient processes
   - Industrial capabilities

3. **Supply**
   - Raw materials
   - Lab scale
   - Pilot scale
   - Industrial scale

Best in class product quality on 20+ specs:
continuous fine-tuning at lab, pilot and 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 know-how to design the right product composition during lab phase
- Ability to further enhance the product designs during the qualification cycles in pilot phase
Not one cathode chemistry can fit all

<table>
<thead>
<tr>
<th><strong>Transportation</strong></th>
<th><strong>Low nickel NMC</strong></th>
<th><strong>High Ni chemistries</strong></th>
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</thead>
<tbody>
<tr>
<td>BEV Long range</td>
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<td>BEV Mid range</td>
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<tr>
<td>pHEV</td>
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<td>E-Bus</td>
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<tr>
<td>Other (Indust.)</td>
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</table>

**Umicore**
- Wide spectrum of cathode materials to fit different transportation requirements
- Capability to deliver excellent product quality on the 20+ specs
Process technology as enabler for fast growth and cost efficiency

**FAST GROWTH**

- Efficient from pilot to industrial scale
- Excellent product quality at large industrial volumes
- Capability to respond to market swings
- Production lines forward and backward compatible

**COST EFFICIENT**

- Controlled capital intensity
- High throughput rate
- Maximize first pass yield
- Operational expenditures

**Umicore**

- Industrial capabilities
- Ability to scale up fast
- Cost-efficient and lean processes
- Excellent product quality on 20+ specs
Rechargeable Battery Materials

Expansion projects timeline

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<thead>
<tr>
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<tr>
<td>EUR 160 million announced April 2016</td>
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<tr>
<td>EUR 300 million announced May 2017</td>
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<tr>
<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
Access to raw materials
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
Energy & Surface Technologies financials
2018: Revenues +44%, REBIT +82%, REBITDA +63%

Rechargeable Battery Materials
• Strong demand for NMC cathode materials for transportation applications
• Fast ramp-up of new capacity in China and Korea
• Earnings benefited from scale effects from new capacity

Cobalt & Specialty Materials
• Strong volumes & supportive metal prices in H1 18
• Increased activity level in battery recycling

Slightly lower revenues for Electro-Optic Materials; stable revenues in Electroplating
Key takeaways

Increasing electrification drives strong market demand in the medium term.

Product customization trend

Umicore uniquely positioned to capture significant growth in this segment:

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

EV car battery pack

Packaging finished product

RBM Cheonan production sites, Korea
Business Group Overview

Recycling
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

New products

Refined metals

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 financials
2018: Revenues +6%, REBIT +12%, REBITDA +7% (*)

Precious Metals Refining
• Higher processed volumes despite fire incident
• Somewhat more supportive metal prices
• Commercial conditions in some segments impacted by competitive pressure
• Mix broadly unchanged

Stable revenues in Jewelry & Industrial Metals and higher revenues for Precious Metals Management

(*) excluding the impact of the divestment of European Technical Materials (Recycling) in January 2018
Key Takeaways

- Unique position in complex recycling
- Increasing availability of complex materials
- Medium-term growth driven by gradual expansion of Hoboken facility. Longer term opportunity in battery recycling.
Impressions

PMR Hoboken recycling plant, Belgium
Framework for value creation

- Multiple growth drivers
- Secular trends
- Supporting legislation
- Privilege organic growth
  - Capex and R&D
  - Complementary M&A
  - Value creation focus
- 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
Strong top and bottom line growth
Strategic choices and recent investments paying off

REBIT & REBIT margin

<table>
<thead>
<tr>
<th>Business Group</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalysis</td>
<td>255</td>
<td>299</td>
<td>320</td>
<td>398</td>
<td>514</td>
</tr>
<tr>
<td>Energy &amp; Surface Technologies</td>
<td>126</td>
<td>140</td>
<td>155</td>
<td>195</td>
<td>261</td>
</tr>
<tr>
<td>Recycling</td>
<td>128</td>
<td>160</td>
<td>165</td>
<td>203</td>
<td>253</td>
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</table>

REBITDA & REBITDA margin

<table>
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<tr>
<th>Business Group</th>
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<th>2015</th>
<th>2016</th>
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</thead>
<tbody>
<tr>
<td>Catalysis</td>
<td>405</td>
<td>465</td>
<td>496</td>
<td>587</td>
<td>720</td>
</tr>
<tr>
<td>Energy &amp; Surface Technologies</td>
<td>205</td>
<td>225</td>
<td>258</td>
<td>299</td>
<td>356</td>
</tr>
<tr>
<td>Recycling</td>
<td>200</td>
<td>240</td>
<td>238</td>
<td>288</td>
<td>364</td>
</tr>
</tbody>
</table>
15% ROCE target met in 2017 & 2018
All businesses creating value

Catalysis 2018 ROCE includes temporary dilution from recent acquisitions

Energy & Surface Technologies 2018 ROCE well up despite 50% increase in capital employed YoY

High recycling ROCE based on unique business model (in 2018 includes effect of divestment)

<table>
<thead>
<tr>
<th>Group ROCE (excl. discontinued)</th>
<th>2014</th>
<th>2018</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>12.8%</td>
<td>15.4%</td>
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</table>
Accelerating organic growth investments

Sizeable growth capex with over 2/3rd in strategic clean mobility

Complemented by R&D (€ 196 million in 2018), including applied technology

Proven implementation track record for large projects (budget & timing)

Capex increase in 2019 expected from E&ST greenfields and Catalysis expansion

Capex incl. capitalized development expenses excl. Discontinued Operations

<table>
<thead>
<tr>
<th>Year</th>
<th>Catalysis</th>
<th>Energy &amp; Surface Technologies</th>
<th>Recycling</th>
<th>Corporate &amp; investments</th>
<th>% of revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>194</td>
<td>14</td>
<td>6</td>
<td>36</td>
<td>2%</td>
</tr>
<tr>
<td>2015</td>
<td>226</td>
<td>104</td>
<td>7</td>
<td>43</td>
<td>3%</td>
</tr>
<tr>
<td>2016</td>
<td>288</td>
<td>136</td>
<td>6</td>
<td>45</td>
<td>4%</td>
</tr>
<tr>
<td>2017</td>
<td>377</td>
<td>162</td>
<td>15</td>
<td>45</td>
<td>6%</td>
</tr>
<tr>
<td>2018</td>
<td>497</td>
<td>194</td>
<td>17</td>
<td>44</td>
<td>8%</td>
</tr>
</tbody>
</table>
Solid capital structure

Underleveraged until 2017 when growth investments started to accelerate

10% equity raise in February 2018 (€ 892 million proceeds)

End of 2018 corresponds to:
1.2 x net debt to recurring EBITDA ratio
24% gearing ratio

€ 690 million fixed-rate medium- and long-term notes
Ample funding headroom to execute growth strategy
Outlook: near term delay vs stepped-up targets

Umicore currently expects recurring EBIT for the full year 2019 to be in a range of € 475 million to € 525 million.

Developments in Catalysis and Recycling are positive and both business groups are expected to grow earnings vs 2018.

The Energy & Surface Technologies business group is facing challenging market conditions, resulting in delays of 12 to 18 months in the development of its cathode material sales compared to the stepped-up expectations communicated in 2018. E&ST earnings in 2019 are expected to be below the record levels of 2018.

In 2020 Umicore currently expects significant growth in revenues and earnings but below the stepped-up expectations communicated in 2018\(^1\).

\(^1\)Umicore indicated in Feb 2018 that it had identified a potential to exceed its original 2020 earnings ambition of appr. € 500 million for the year 2020 by some 35% to 45%.
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**
Record results in 2018
And all three business groups contributing to growth*

REVENUES
+17%** to € 3.3 billion
44% revenue growth in Energy & Surface Technologies

REBIT
+29%** to € 514 million
Energy & Surface Technologies already accounting for half of the Group REBIT
REBIT margin up to 15.5%

RECURRING NET PROFIT
+22% to € 326 million
Recurring EPS of € 1.36 (+12%)
Proposed 2018 dividend of € 0.75 per share (up from € 0.70 in 2017)

REBITDA
+23%** to € 720 million
REBITDA margin up to 21.9%

ROCE
up to 15.4%, in a period of intense investments

(*) excluding the impact of the divestment of European Technical Materials (Recycling) in January 2018
(***) excluding Discontinued Operations
Record investment in growth in 2018

**Group capex of € 478 million:**
- Energy & Surface Technologies: capacity expansions in Korea and China
- Catalysis: capacity expansions in Poland, China and India
- Recycling: environmental investments in Hoboken

**Increase in NWC of € 707 million driven by expansion in cathode materials:**
- Base inventory for newly commissioned lines
- Substantial production growth
- Continuity of supply amidst a tight supply chain
- Substantial yoy increase in average cobalt price
- Impact of a fire at the Hoboken plant
- Initiatives underway to optimise NWC
## Financial KPIs

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total turnover</strong></td>
<td>12,277.2</td>
<td>13,716.7</td>
</tr>
<tr>
<td><strong>Total revenues (excl. metals)</strong></td>
<td>2,915.6</td>
<td>3,271.1</td>
</tr>
<tr>
<td><strong>Recurring EBITDA</strong></td>
<td>599.3</td>
<td>720.1</td>
</tr>
<tr>
<td><strong>REBITDA Margin</strong></td>
<td>19.5%</td>
<td>21.9%</td>
</tr>
<tr>
<td><strong>Recurring EBIT</strong></td>
<td>410.3</td>
<td>513.6</td>
</tr>
<tr>
<td><strong>REBIT Margin</strong></td>
<td>13.1%</td>
<td>15.5%</td>
</tr>
<tr>
<td><strong>Capital expenditures</strong></td>
<td>365.3</td>
<td>477.6</td>
</tr>
<tr>
<td><strong>R&amp;D expenditures</strong></td>
<td>175.2</td>
<td>196.4</td>
</tr>
<tr>
<td><strong>Net financial debt</strong></td>
<td>839.9</td>
<td>861.0</td>
</tr>
<tr>
<td><strong>Average capital employed</strong></td>
<td>2,710.0</td>
<td>3,344.2</td>
</tr>
<tr>
<td><strong>ROCE</strong></td>
<td>15.1%</td>
<td>15.4%</td>
</tr>
<tr>
<td><strong>Gearing ratio</strong></td>
<td>31.1%</td>
<td>24.4%</td>
</tr>
<tr>
<td><strong>Net debt / REBITDA</strong></td>
<td>140.0%</td>
<td>119.0%</td>
</tr>
<tr>
<td><strong>Equity / Total Assets</strong></td>
<td>35.2%</td>
<td>43.1%</td>
</tr>
</tbody>
</table>

Incl. discontinued operations in 2017
## Business Group Key Figures

### CATALYSIS

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>1,253.1</td>
<td>1,360.4</td>
</tr>
<tr>
<td>Recurring EBITDA</td>
<td>224.4</td>
<td>237.2</td>
</tr>
<tr>
<td>Recurring EBIT</td>
<td>165.5</td>
<td>168.2</td>
</tr>
<tr>
<td>EBIT</td>
<td>161.2</td>
<td>162.3</td>
</tr>
<tr>
<td>R&amp;D expenditure</td>
<td>119.8</td>
<td>135.5</td>
</tr>
<tr>
<td>Capital expenditure</td>
<td>45.0</td>
<td>78.8</td>
</tr>
<tr>
<td>Recurring EBIT margin</td>
<td>13.2%</td>
<td>12.4%</td>
</tr>
<tr>
<td>ROCE</td>
<td>16.3%</td>
<td>14.0%</td>
</tr>
</tbody>
</table>

### ENERGY & SURFACE TECHNOLOGIES

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>893.6</td>
<td>1,289.3</td>
</tr>
<tr>
<td>Recurring EBITDA</td>
<td>197.7</td>
<td>322.9</td>
</tr>
<tr>
<td>Recurring EBIT</td>
<td>140.7</td>
<td>256.6</td>
</tr>
<tr>
<td>EBIT</td>
<td>109.7</td>
<td>251.3</td>
</tr>
<tr>
<td>R&amp;D expenditure</td>
<td>30.4</td>
<td>38.8</td>
</tr>
<tr>
<td>Capital expenditure</td>
<td>225.5</td>
<td>316.1</td>
</tr>
<tr>
<td>Recurring EBIT margin</td>
<td>14.6%</td>
<td>19.8%</td>
</tr>
<tr>
<td>ROCE</td>
<td>14.4%</td>
<td>17.5%</td>
</tr>
</tbody>
</table>

### RECYCLING

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>650.3</td>
<td>626.2</td>
</tr>
<tr>
<td>Recurring EBITDA</td>
<td>188.9</td>
<td>194.7</td>
</tr>
<tr>
<td>Recurring EBIT</td>
<td>127.9</td>
<td>134.8</td>
</tr>
<tr>
<td>EBIT</td>
<td>121.3</td>
<td>125.8</td>
</tr>
<tr>
<td>R&amp;D expenditure</td>
<td>18.6</td>
<td>15.2</td>
</tr>
<tr>
<td>Capital expenditure</td>
<td>79.5</td>
<td>68.4</td>
</tr>
<tr>
<td>Recurring EBIT margin</td>
<td>19.7%</td>
<td>21.5%</td>
</tr>
<tr>
<td>ROCE</td>
<td>25.8%</td>
<td>27.9%</td>
</tr>
</tbody>
</table>
Forward-looking statements

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

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