Outotec in brief

Outotec
More out of ore
Outotec in brief

- Develops and supplies technologies for mining, metals and related processing industries
- Market leadership in several markets and segments
- Expertise covers the whole process chain from mine to metal
- More than 2000 employees in 20 countries
- Comprehensive R&D resources
- Flexible and cost-efficient use of resources and subcontractors
- Global operations and presence in all the key markets

Three business divisions:
- Minerals Processing
- Base Metals
- Metals Processing

Sales and operating profit development
History

1950s – 1960s
- Development of the flash smelting technology for copper
- Diversification and development of new technologies to assist expansion of Outokumpu’s own base metals and mining operations
- Development of own R&D centre and metallurgical design office
- Development of external customer base

1970s – 2001
- Strong expansion and internationalisation on the back of technological breakthroughs (flash smelting, flotation, automation, Cu, Zn, Ni, Co refining)
- Development of international sites network, offices in North and South America
- Acquisition driven consolidation
  - AISCO (Aluminium technology)
  - Supafo (thickeners)
  - Carpc0/Inprosys (Physical Separation)
  - KHD Aluminium
  - Lurgi Metallurgie (Ferrous, Alumina, Sulfuric Acid / Off-gas / Roasting / Non-ferrous technologies)

2002 – 2004
- Challenging market conditions
- Integration and restructuring of the businesses
- Focus on turnaround and fixed cost reduction programmes
- Sale of filters to Larox

2005
- Focus on products with increasing proprietary technology content
- Improved cost and pricing discipline
- Improved coordination and leveraging of know how
- Increased focus on services
- Independent status within Outokumpu Group

2006 >
- Development of the organization and own corporate functions
- Listing on the Helsinki Stock Exchange in October 2006
- Continuous profitable growth as strategy
- Renaming to Outotec on April 24, 2007
Management

Executive Committee

Tapani Järvinen
President & CEO

Seppo Rantakari
Deputy CEO

Vesa-Pekka Takala
CFO

Minerals Processing

Jari Rosendal
President

Base Metals

Markku Jortikka
President

Metals Processing

Peter Weber
President

Marketing development
Martti Haario
Senior Vice President

Research & Technology development
Kari Knuttila
Chief Technology Officer

Human resources
Ari Jokilaakso
Senior Vice President

Corporate control
Outi Lampela
Senior Vice President
Sustained profitable growth

Strategy

Customers

Seek sustainable growth

Maintain and improve profitability

New technology
- Flash
- Converting
- HydroCopper®, Circoheat™, Circored®, Circofer®, Lurec™, OKTOP™, Outotec™ Zinc

Cross-selling
- Oil sands (Flotation technology)
- Fertilizers (Sulfuric acid technology)

Geographical expansion
- BRICS (Brazil, Russia, India, China, Southern Africa)
- Other emerging markets

Increase services and after-sales services
- Automation, upgrades and debottlenecks
- Spare parts
- Operator training

Selected acquisitions
- Continuously screening the market for potential candidates

Procurement and outsourcing
- Increasing sourcing e.g. from China and India as well as optimizing local supply (e.g. Brazil)

Optimise cost efficiency
- Efficient use of state of the art engineering tools
- Local task force approach with OT supervision (e.g. Brazil)

Increase value-added component
- R&D efforts, testing facilities to guarantee customer ROI
- Zinc and nickel leaching technologies; Circoheat™

Personnel

Owners
Divisions and value chain

Technology deliveries from single equipment to turnkey plants

ORE

Minerals Processing
- Grinding
- Flotation
- Thickening
- Physical separation
- Analyzers & automation

Concentrate

Base Metals
- Copper
- Nickel
- Zinc
- Precious metals
- Ferroalloys

Metals Processing
- Ferrous metals
- Ilmenite
- Alumina and aluminum
- Sulfuric acid & off-gas
- Roasting (sulfidic ores)

PURE METAL

The entire process chain from mine to metal
Minerals Processing division

- Minerals Processing offers a complete portfolio of technologies for metals concentrators

- The technologies and capabilities of Minerals Processing can also be used in areas outside the mining and metals industries
Base Metals division

- Base Metals offers industry-leading technologies for the processing of non-ferrous metals and ferroalloys
Metals Processing division

- Metals Processing offers industry-leading technologies for the processing of aluminum and ferrous metals as well as for the production of sulfuric acid.

<table>
<thead>
<tr>
<th>Aluminum technologies</th>
<th>Ferrous metals technologies</th>
<th>Sulfuric acid / off-gas / roasting technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumina calciner</td>
<td>Iron ore pelletizing plant</td>
<td>Synthetic rutile plant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sulfuric acid plant</td>
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<td></td>
<td></td>
<td>Roasting plant</td>
</tr>
</tbody>
</table>
Extensive R&D and testing resources

- Two in-house research centers in Pori, Finland, and in Frankfurt, Germany, with some 200 employees
- Research facilities:
  - 8 laboratories, 2 bench scale pilots
  - Pyro and hydrometallurgical pilot plants
  - Hydrometallurgical demonstration plant
  - Fluidized bed pilot plants (Circo-technologies)
  - Agglomeration facilities
  - Fluid dynamic testing facilities
- Core competencies in minerals technology, pyro and hydrometallurgy and ferrous technologies
- Awards in 2007:
  - Cleantech Finland® (ferrochrome process)
  - Quality Innovation of the Year (copper process)
Personnel

- Over 2,000 employees
- Increase due to business growth and active recruitment
- Temporary employees accounted for 14% of the total
- Additionally some 490 full-time equivalent contracted people for engineering, construction and project management

* includes the personnel (175) of the filter business sold to Larox
Wide range of technologies

<table>
<thead>
<tr>
<th>Minerals Processing</th>
<th>Base Metals</th>
<th>Metals Processing</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Comminution</td>
<td>▪ Flash smelting &amp; flash converting</td>
<td>▪ Direct reduction and direct smelting of iron ore fines</td>
</tr>
<tr>
<td>▪ Flotation</td>
<td>▪ Anode casting</td>
<td>▪ Alumina refining and aluminum smelter equipment</td>
</tr>
<tr>
<td>▪ Physical separation</td>
<td>▪ Leaching, bioleaching</td>
<td>▪ Sulfuric acid plants and off-gas treatment</td>
</tr>
<tr>
<td>▪ Thickening</td>
<td>▪ Precipitation</td>
<td>▪ Roasting of sulfidic ores</td>
</tr>
<tr>
<td>▪ Analyzers</td>
<td>▪ Hydrometallurgical process equipment</td>
<td>▪ Ilmenite processing</td>
</tr>
<tr>
<td>▪ Automation</td>
<td>▪ Solvent extraction</td>
<td></td>
</tr>
<tr>
<td>▪ Water projects</td>
<td>▪ Electrowinning</td>
<td></td>
</tr>
<tr>
<td>▪ Process plant solutions</td>
<td>▪ Ferroalloy sintering and smelting</td>
<td></td>
</tr>
</tbody>
</table>

Related project implementation, after-sales and other services

All business divisions cover a wide range of industry-leading technologies
Technology leader

Portfolio of industry benchmark technologies

- Nearly half of the world's copper produced with Flash Smelting
- Majority of the world's iron ore pellets produced by Outotec's processes
- Market leader in flotation technology, thickeners, on-line analyzers
- Market leader in alumina calcination and roasting (sulfidic ores)
- Market leader in solvent extraction technology
- Forerunner in sulfuric acid plants over decades

Extensive R&D and testing resources

- Two own research centres with comprehensive R&D and testing facilities
- Technology development and piloting with industry leading customers

Patented technologies

- Extensive IPR portfolio of 480 patent families and 2322 patents
## Strong market position

<table>
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<tr>
<th>Minerals Processing</th>
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<th>Metals Processing</th>
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</thead>
<tbody>
<tr>
<td><strong>Market Leader</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Flotation technology</td>
<td>▪ Copper smelting</td>
<td>▪ Pelletizing and sintering technologies for iron ore</td>
</tr>
<tr>
<td>▪ Analyzers*</td>
<td>▪ Copper anode casting</td>
<td>▪ Alumina calcination technologies</td>
</tr>
<tr>
<td></td>
<td>▪ Copper solvent extraction</td>
<td>▪ Synthetic rutile production</td>
</tr>
<tr>
<td></td>
<td>▪ Ferrochrome technologies</td>
<td>▪ Zinc and pyrite roasting technologies</td>
</tr>
<tr>
<td></td>
<td>▪ Precious metals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪ Zinc refining</td>
<td></td>
</tr>
<tr>
<td><strong>Top-3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Grinding technology</td>
<td>▪ Copper permanent cathodes</td>
<td>▪ Sulfuric acid technologies</td>
</tr>
<tr>
<td>▪ Thickener technology*</td>
<td>▪ Stripping machines and anode preparation machines for copper tankhouses</td>
<td>▪ Carbon anode paste plants and rodding shops for aluminum smelters</td>
</tr>
<tr>
<td>▪ Physical separation</td>
<td></td>
<td></td>
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<tr>
<td><strong>Niche Player</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Automation*</td>
<td>▪ Hydrometallurgical process solutions</td>
<td></td>
</tr>
<tr>
<td>▪ Process solutions</td>
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<td></td>
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<tr>
<td>▪ Water technology</td>
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</tbody>
</table>

*Minerals processing applications*
Sales by destination

December 31, 2007

- Australia: 11%
- Asia: 15%
- Africa: 11%
- South America: 32%
- Europe and CIS: 27%
- North America: 4%

Technology sales by metal

- Copper: 28%
- Iron and steel: 25%
- Aluminum: 10%
- Nickel: 5%
- Sulfuric acid: 9%
- Precious metals: 7%
- Ferroalloys: 2%
- Zinc: 6%
- Other sales: 8%

- Diversified technology portfolio, processes and products for several metals
## Offering for our customers

<table>
<thead>
<tr>
<th>Complete coverage</th>
<th>We offer industry benchmark technologies covering the entire process chain of multiple metals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technologies for today’s needs</td>
<td>Our technologies respond to the need for energy efficient and environmentally friendly operations</td>
</tr>
<tr>
<td>Experienced partner</td>
<td>As a market leader, we can offer our customers with a unique project execution track record and reputation</td>
</tr>
<tr>
<td>Proprietary technologies</td>
<td>We have several proprietary technologies and extensive R&amp;D and testing resources to support our customers</td>
</tr>
</tbody>
</table>
# Long-term customer relationships

## Selected reference customers of Outotec

<table>
<thead>
<tr>
<th>Large global mining companies (seniors)</th>
<th>Small and medium sized companies (juniors)</th>
<th>Local mining and metallurgical companies in emerging regions</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="bhpbilliton" /></td>
<td><img src="image2.png" alt="Oxiana" /></td>
<td><img src="image3.png" alt="vedanta" /></td>
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<tr>
<td><img src="image4.png" alt="ALCAN" /></td>
<td><img src="image5.png" alt="BOLIDEN" /></td>
<td><img src="image6.png" alt="ERDENET" /></td>
</tr>
<tr>
<td><img src="image7.png" alt="Companhia Vale do Rio Doce" /></td>
<td><img src="image8.png" alt="INMET" /></td>
<td><img src="image9.png" alt="Xiangguang Copper Co., Ltd." /></td>
</tr>
<tr>
<td><img src="image10.png" alt="Codelco" /></td>
<td><img src="image11.png" alt="RIO TINTO" /></td>
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</tr>
</tbody>
</table>

## Repeat business

- The life-cycle customer approach aims at servicing its customers over the full life of a mining site / metallurgical plant

## Multiple technologies for single companies

- Outotec has a strong track record for delivering multiple technologies to single companies
Main project types

- **EPC / Turnkey**
  - €15-300 million, 15-36 months
  - Basic and detail engineering
  - Full supply and erection
  - Training of customers’ personnel
  - Commissioning of the plant
  - Performance guarantees
  - Many subcontractors and suppliers
  - PRIMA risk assessments

- **Technology package**
  - €3-100 million, 10-36 months
  - Basic and detail engineering
  - Proprietary key hardware
  - Erection supervision
  - Training of customers’ personnel
  - Commissioning of the plant
  - Performance guarantees
  - PRIMA risk assessment

- **Equipment deliveries**
  - up to €15 million
  - Design and engineering
  - Procurement
  - Installation
  - Training of customers’ personnel
  - Commissioning
  - Performance guarantees

- **Services and after sales services**
  - Spare parts
  - Auditing
  - Process upgrades
  - Training of customers’ personnel
  - Debottlenecking
  - Plant automation improvements
Largest orders in 2007

- **Companhia Brasileira de Aluminio S.A.**
  - Alumina calcination plant
  - € 40 million
  - Brazil

- **Grinding technology**
  - to Canada, Brazil, Ireland and Kazakhstan
  - € 75 million

- **Talvivaara Mining Company**
  - Metals recovery technology
  - € 40 million
  - Finland

- **Kazchrome**
  - Chromite pellet plant
  - € 40 million
  - Kazakhstan

- **Hunan Zhuye Torch Metals**
  - Zinc plant expansion
  - € 30 million
  - China

- **Tata Steel Ltd.**
  - Iron ore sintering technology
  - € 35 million
  - India

- **Emirates Aluminium**
  - Two green anode plants
  - € 100 million
  - Abu Dhabi

- **The Saudi Arabian Mining Company**
  - Three sulfuric acid plants
  - € 270 million
  - Saudi Arabia

- **Government of Sri Lanka**
  - Drinking water treatment facility
  - US$ 100 million*
  - Sri Lanka

*) Not yet in the order backlog
More out of ore!

www.outotec.com