

Capital Market Day 2018
Aurubis Bulgaria

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September 4, 2018
Sofia, Bulgaria



1. Aurubis Bulgaria

2. The plant
3. Production
4. Best practices
5. Investment
6. External relations



- » Pirdop plant established in 1958
- » Four main production units today:
Smelter, Tankhouse, Flotation,
Acid Plant



- » **Biggest copper producer** in
Southeastern Europe
- » Second largest company in Bulgaria



- » Leading producer of London Metal
Exchange-certified copper cathodes:
Class A, **Brand “Pirdop”**



- » Over **€600 M** investment since 1997
- » **860** direct employees
- » **2,500+** indirect jobs via subcontractors
- » Largest user of Bulgarian ports and rails



- » ISO 9001
Quality management system
- » ISO14001
Environmental management system



€ **2.4 billion** export sales for 2017

9 % of Bulgaria's total exports



€ **1.8 billion** import of concentrates for 2017

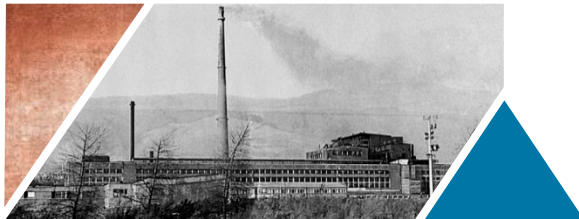
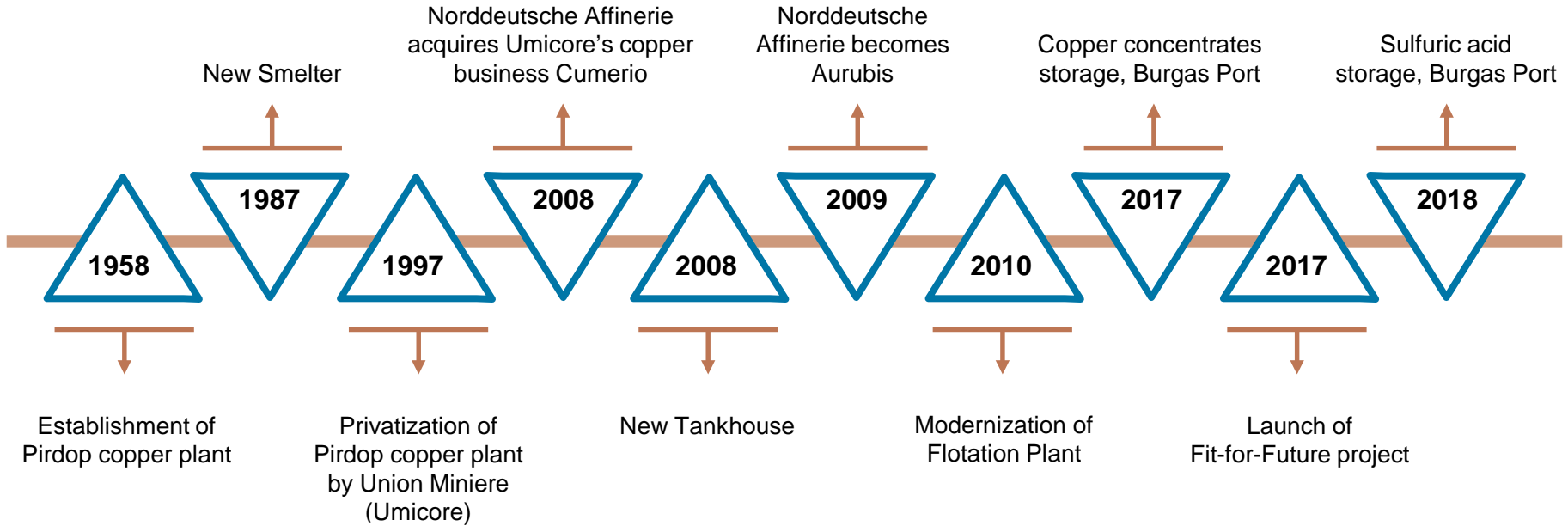
6 % of Bulgaria's total imports



The biggest corporate taxpayer
in Bulgaria



60 years of history





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Plant site



Remediated
sludge landfill

Sludge landfill

Fayalite landfill

Acid plant

Oxygen plant

R&D

Smelter

Slag cooling

Water
treatment plant

Tankhouse

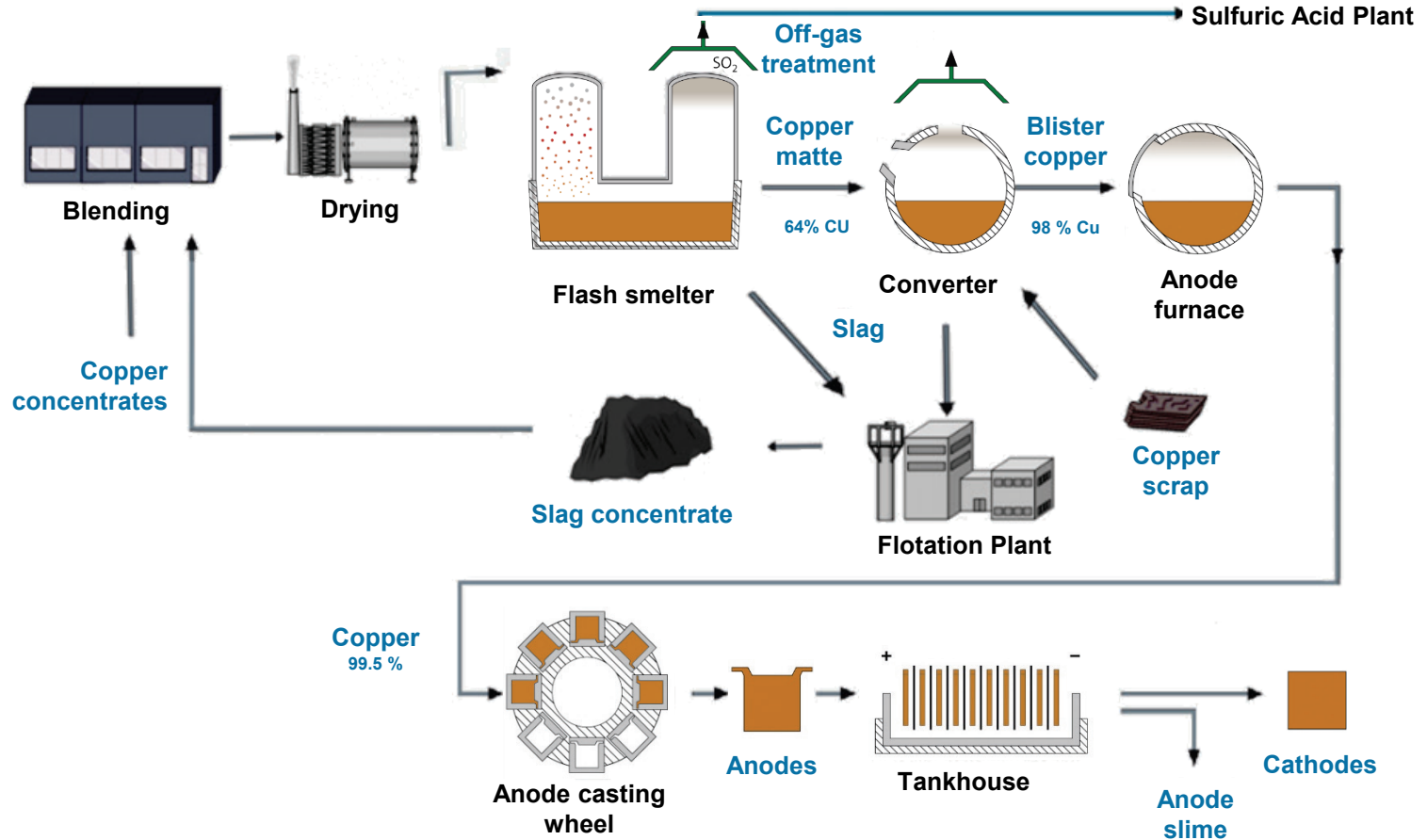
Flotation plant

Remediated land

Rainwater
treatment plant

Located 80 km east of Sofia
in the region of Srednogie
4.2 km² plant area next to
towns of Pirdop and Zlatitsa

Production process





Smelter

- » Throughput capacity 1,470,000 t concentrates annually
 - » Two steam dryers
 - » Flash smelting furnace and waste heat boiler
 - » Peirce-Smith converters
 - » Two anode furnaces
 - » Casting wheel with 24 molds

- » Anode production above 400,000 t annually





Tankhouse

- » New Refinery launched in 2008
 - » Design capacity of 180,000 t cathodes annually
 - » ISA 2000 technology, Australia
 - » Automated machinery (Outotec, Kuenz)
 - » Two circulations
 - » Three Bleed treatment installations
- » Current capacity 230,000 t cathodes annually





Flotation Plant

- » 900,000 t annual capacity reached after 2009-2010 expansion project fulfillment
- » Automated system
 - » Slag: reception, cooling, excavation
 - » Crushing, milling, and classification
 - » Flotation: main, cleaning, control
- » Production output
 - » Copper concentrate, 20-27 %
 - » Iron silicate fines





Acid Plant




- » Design capacity of 1,600,000 t sulfuric acid annually
- » Two production lines:
 - » Acid line 1: 60.71 t / hour, source SO₂: 12.5 %
 - » Acid line 2: 78.17 t / hour, source SO₂: 17.1 %
- » Processes
 - » Gas mixture cleaning, cooling, drying
 - » Catalyst oxidation: SO₂ > SO₃
 - » SO₃ absorption





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Production in last two years

	FY 2016/17	FY 2015/16*
 Concentrate processing	1,323,600 t	1,037,100 t
 Cathode output	229,700 t	214,300 t
 Sulfuric acid output	1,370,200 t	1,048,700 t

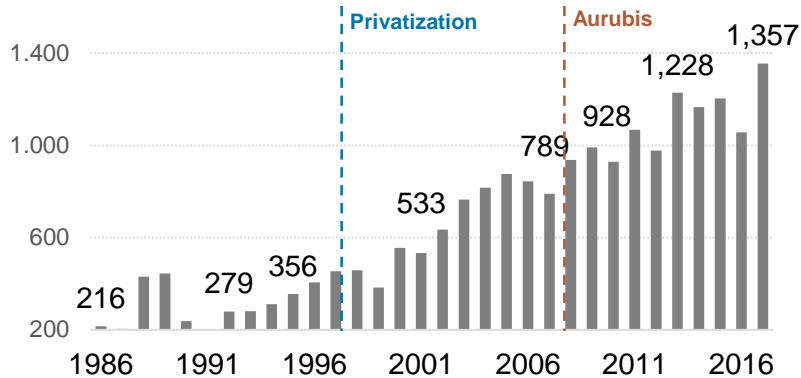
(*) Figures with 54-day shutdown



Copper concentrates

- » Processed concentrates, 2017:
 - » Import: 1,018,000 t, 75 %
 - » Local: 339,000 t, 25 % (Elatsite, Asarel)
- » Base load grade: Cu range 15-25 %

Processed concentrates, 1986-2017 trend (in 1,000 t)



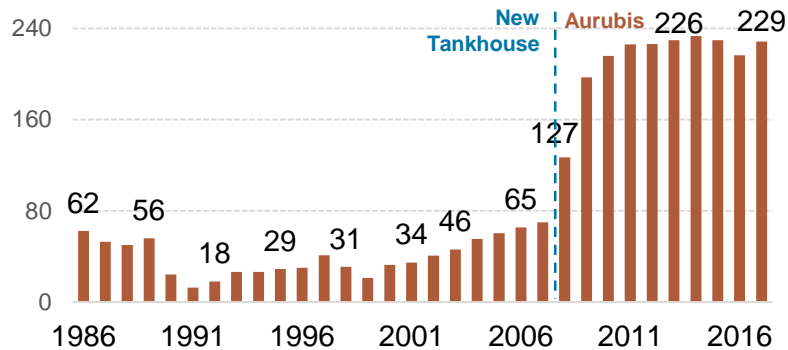


Cathode copper

» Markets, 2017:

- » Turkey: 25 %
- » Western Europe: 19 %
- » South Eastern Europe: 9 %
- » Rest of the World: 47 %

Cathode production, 1986-2017 trend (in 1,000 t)





Sulfuric acid

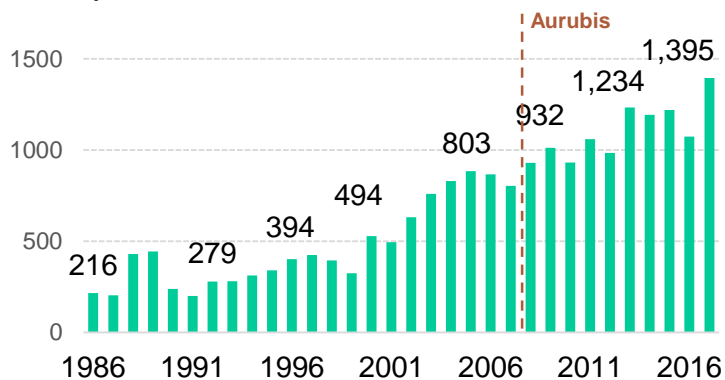
» Clients by branches, 2017:

- » Fertilizers: 62 %
- » Chemicals: 17 %
- » Metals: 21 %

» Markets, 2017:

- » Turkey: 35 %
- » Bulgaria: 30 %
- » Morocco: 16 %
- » Serbia: 14 %
- » Other: 5 %

Acid production, 1986-2017 trend (in 1,000 t)

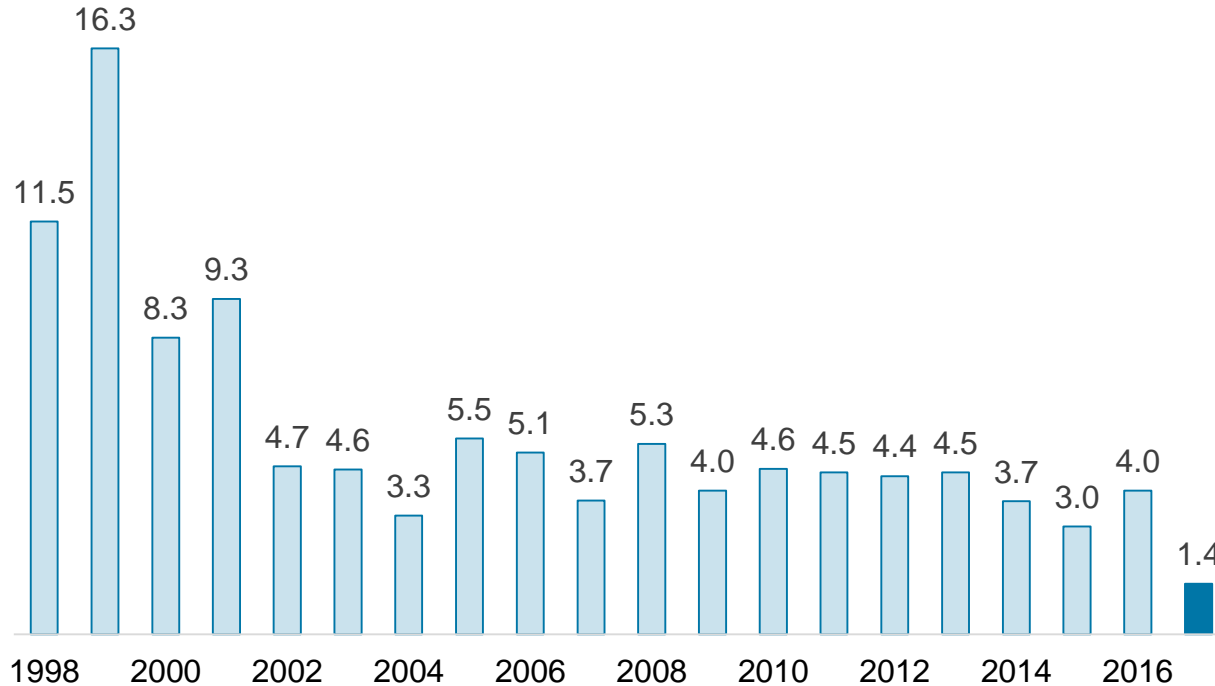




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Lost Time Injury Frequency Rate (LTIFR) for fiscal year



- » Lost Time Injury Frequency Rate
Annual target is part of managers' and employees' performance
- » Leading KPIs for the annual managers' targets
 - › % of closed corrective actions on time
 - › Number of health & safety workarounds by managers
- » Logout & Tagout System implemented on site from September 2017
 - › Reaching all areas in the plant
 - › Personal padlocks to everybody (Aurubis & contractors)
 - › Training program for Lo/To

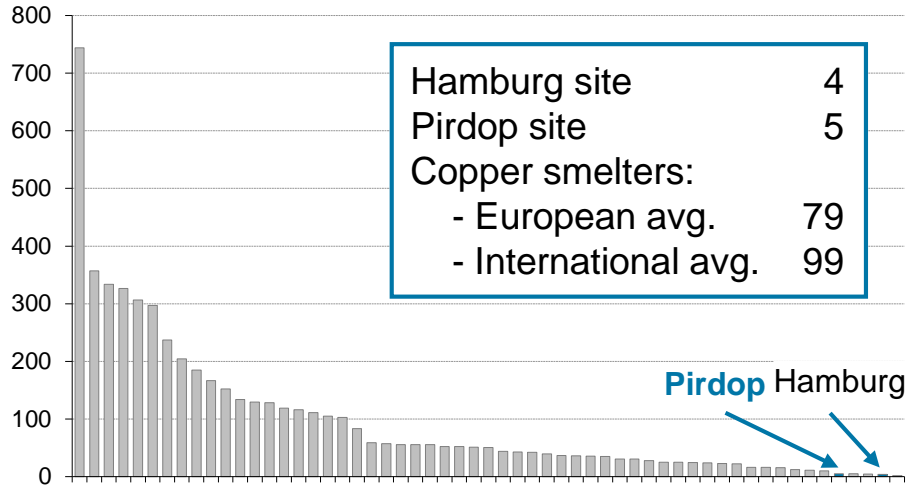
Health and Safety System – main pillars:

- » Monthly Executive Director's Safety Walk-Around
- » Aurubis Bulgaria Safety Council
- » PPE and Working Clothes Committee
- » Permit to work procedures
- » Qualitative accident investigation (root cause analysis)
- » Proactive health and safety inspection by H&S Team
- » Post-accident talk led by Executive Director

Third-party management

- » Aurubis Site Rules are included in every tender documentation
- » Monthly H&S meeting with the contractors
- » Meeting with potential contractors during tender phase
- » Method statement policy

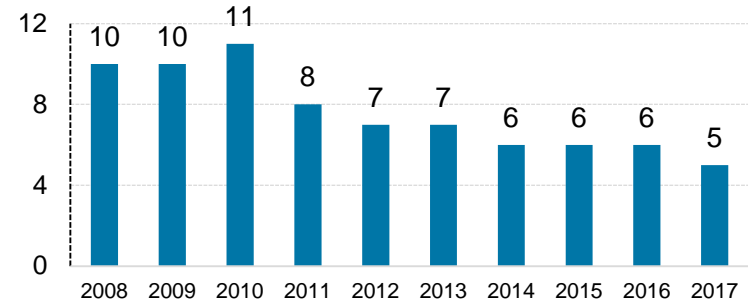
SO₂ emissions of copper plants (kg SO₂ / t of copper)



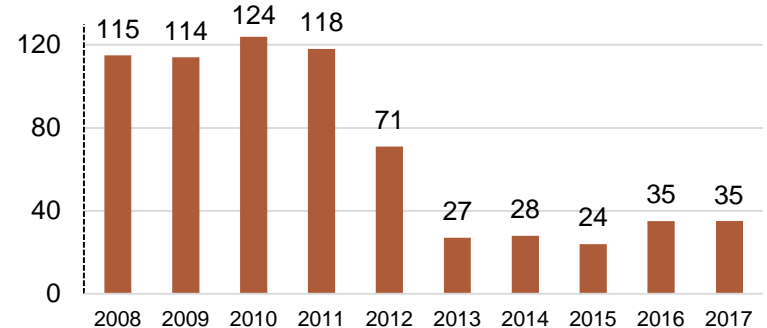
Source: Wood Mackenzie 2018/certified data, Aurubis

» One of the most environmentally friendly copper producers in the world today

SO₂ emissions of Pirdop plant (kg SO₂ / t of copper)



Dust emissions of Pirdop plant (g / t of copper)





Strategic Workforce Planning

- » Apprenticeship Program
- » Dual Education Program with a regional vocational school



Talent & Succession Management

- » Staffing/succession for key functions
- » Providing management with visibility on optimal resource allocation
- » Streamlined performance management process



Training & Development

- » Onboarding program
- » Building competency through qualification, soft skills development
- » Leadership development programs



Internal Mobility

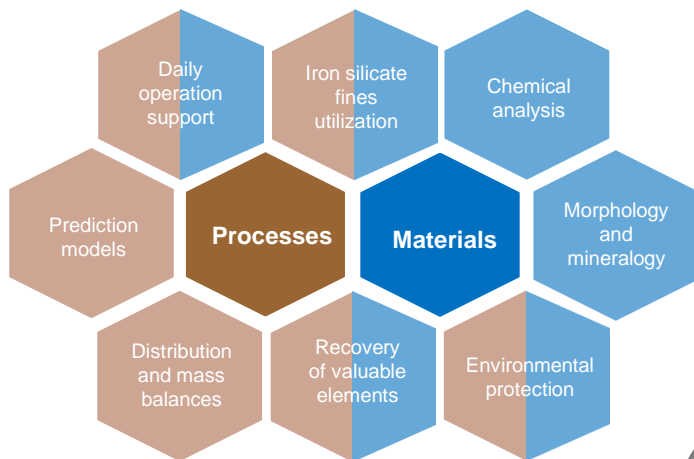
- » Removing geography as a barrier to growth
- » Dynamic process for moving talent from role to role





Aurubis Bulgaria R&D integrated within Aurubis Group R&D Two teams of highly qualified researchers

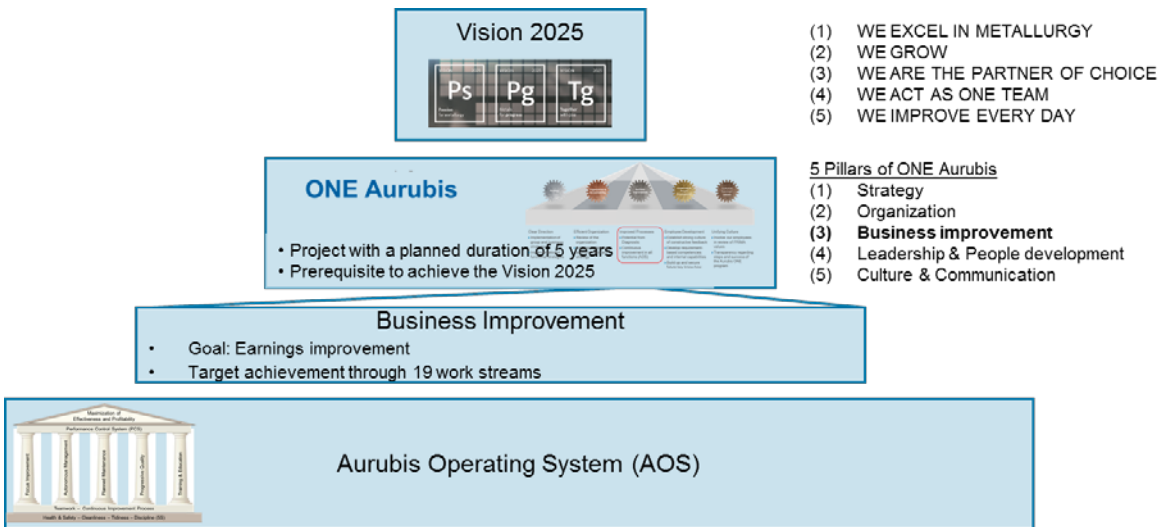
- » Development of new processes and products
- » Materials characterization
- » New methods development, prediction models
- » Technology testing
- » Improvement and optimization





AOS targets

AOS relation to Aurubis Bulgaria vision



- » **Stabilize throughput and establish new standard in operation**
- » **Step by step:** introduction of common systematic approach on keeping track of events happening in operation/maintenance efficiency
- » Promote **team playing/ownership**, Production & Maintenance (**AM**)
- » **Keep track** even of the smallest/low-potential ideas
- » **Lessons learned & results/achievement-sharing** on different tasks/projects



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**€303 million direct investment
after the acquisition (2008 - mid-2018)**



Spectrum 2018 €180 million investment program

- » €75 million in sustainable operations and control
- » €55 million in ensuring competitiveness
- » €26 million in improvement of supply chain logistics
- » €20 million in improvement of the smelting process
- » €2.5 million in sustainable social projects



**€132 million investment
planned for 2019-2022**





2016 Shutdown

- » 11 production facilities completely changed
- » Fulfilled in 54 days, ahead of schedule
- » Zero incidents
- » The company kept leading market position despite the shutdown



Improvements after 2016 Shutdown

- » Smooth functioning of the main units for the following 10 years
- » Sustainable quality improvement of the production processes
- » Highest global standards in environmental protection





Copper concentrate storage facility at Burgas Port, 2017

- » Ship discharge, storage, and transport to the plant
- » € 13 million indirect investment
- » 65,000 t design capacity
- » Covered area minimizing losses and environmental impact



Acid storage facility at Burgas Port, 2018

- » Temporary storage of acid for export
- » € 10 million investment
- » 5 acid tanks
- » 50,000 t design capacity



Additional investments at the Pirdop site in the course of a legally mandated planned shutdown in May/June 2019




Financial impact:

- » Capex: approx. € 19 million (FY 17/18: approx. € 11 million, FY 18/19: approx. € 8 million)
- » EBT effect: approx. € 11-12 million
- » Concentrate throughput effect: approx. 76,000 t

Key data for the measure

- » Description: Boiler repair/replacement of the catalyst mass in the contact plant boiler
- » Time period: May/June 2019; ca. 18 days
- » Supply reliability: Scheduling takes place group-wide in close cooperation, in order guarantee optimal anode supply within the Group
- » Additional benefit: Measure is associated with forward-looking investments at the site: e.g., backup rectifier in the tankhouse and regulatory inspections

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- A photograph of a man in a dark suit, white shirt, and pink tie, holding a blue presentation box containing a medal. He is standing in front of a German flag. The image is partially obscured by a large blue triangle on the right side of the slide.
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Key political visits to Aurubis Bulgaria plant

- 2008 President Georgi Parvanov: new Refinery
- 2010 PM Boyko Borissov: Slag Flotation Plant extension
- 2011 PM Boyko Borissov, Deputy PM Simeon Djankov:
Aurubis Bulgaria 2014 investment program
- 2014 Economy Minister Bozhidar Lukarski: Rainwater Treatment Plant
- 2016 Presidents of Germany and Bulgaria Gauck and Plevneliev



Support of the Bulgarian Presidency of the Council of the EU, 2018

- » Memorandum of Cooperation with the Government
- » Keynote speeches and presentations at COMPET, ENVI,
TTE-related European forums in Sofia
- » Plant visit of EU 28 Environment Attachés during ENVI
- » Support of Presidency-related cultural events





**€5 million +
invested in social projects
in Srednogorie region**



**National level focus on
education, knowledge,
and innovation projects**



**Partnership with
national cultural
institutions**

- » Support of schools and kindergartens
- » Development of young talents
- » Renovation of community centers
- » Green sports and healthy lifestyle
- » Hospitals and healthcare projects
- » Support of disadvantaged social groups
- » Educational platforms



Thank you!



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Financial calendar



- » Annual Report 2017/18 12/11/2018
- » Quarterly Report First 3 Months 2018/19 2/13/2019
- » Annual General Meeting 2/28/2019
- » Interim Report First 6 Months 2018/19 5/15/2019
- » Quarterly Report First 9 Months 2018/19 8/8/2019
- » Annual Report 2018/19 12/11/2019

Forward-looking statements

This document contains forward-looking statements that involve risks and uncertainties, including statements about Aurubis' 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 Aurubis. 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.