AngloAmerican

PLATINUM

FACT SHEET

Why Anglo American Platinum is implementing new SO_2 Abatement technology

Legislation changes:

DEA: National Environmental Management: Air Quality Act, 2004 (Act No. 39 Of 2004)

New Minimum Emissions Standards for SO_2

SO_2 stack emission limited to 3,500mg/Nm^3 by 2015 and 1,200mg/Nm^3 by 2020

- Proposed in 2010
- Revised in 2012
- Finalised in 2013

Capital Expenditure

Total Capital expenditure, R2.5 billion – equal to Anglo American Platinum's total profit for the 2017 financial year

Capital value of Polokwane smelter abatement project: R1.576bn

Emissions data

2020: Emission target of new SO_2 abatement projects: 1,200mg/Nm^3. In the past year, Anglo American Platinum has reduced:

- greenhouse gas emissions by a further **8%**
- energy intensity by **5%**
- waste to landfill from sites by **40%**
- **water usage by another percent**

Polokwane Smelters

Key dates:

2002: Waterval ACP SO_2 abatement project completed

2010: Anglo American Platinum started developing technical solutions for SO_2 abatement

2017-2018: Environmental authorisations received for construction of Polokwane smelter novel SO_2 abatement plant; Company proceeded with development and implementation of abatement solution

2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

2020: Polokwane SO_2 plant to be completed

Real Mining. Real People. Real Difference.

Completed projects

Waterval Smelter Abatement project:

Completed in 2002

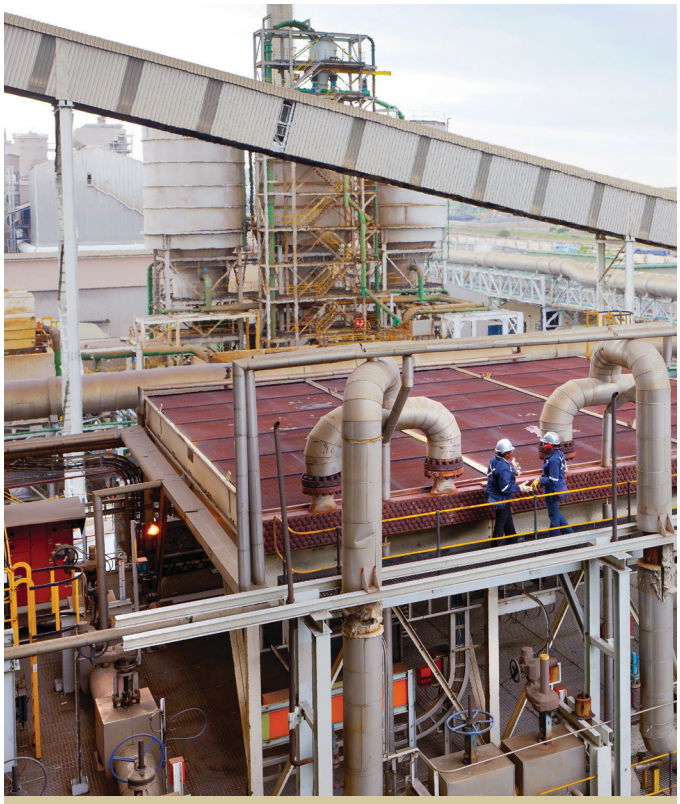
Technology: ACP technology incorporated one stationary, sealed converter to replace six Peirce-Smith converters, and two new acid plants: Tower Plant (low strength SO_2) coupled with Contact Plant (high strength SO_2).

ACP technology was novel, and reached stability after 3 years of commissioning and incorporating changes (from single absorption to double absorption).

Operates in line with 2015 emissions standards (3,500mg/Nm^3) due to an acid plant investment in 2000.

Set to meet 2020 emission standards – 1,200mg/Nm^3.

The combined Tower Plant and Contact Plant technologies as applied at Waterval Smelter, are unfortunately not applicable to SO_2 abatement of a single low strength SO_2 smelter gas stream, such as present at Polokwane Smelter and Mortimer Smelter. Alternative SO_2 abatement technology had to be identified for these latter two sites.



The existing high-pressure cooling system at Waterval Smelter from which hot water will be diverted for use in power generation. In the shot are Xolisile Mahlangu (Processor) and Mbanza Sichone (Metallurgical Technical Engineer)

"Our efforts to reduce our carbon emissions are not only important in a global environmental context, but they will also reduce our exposure to emerging carbon policies (such as carbon tax) and increases in energy costs, and create opportunities in the markets for our products."

"Preserving our environment for a better tomorrow"

"A key part of our FutureSmart MiningTM Sustainability Strategy is to maintain a healthy environment. It's one of the three global sustainability pillars of the strategy, alongside being a trusted corporate leader and to support thriving communities."

Simplified account of how WSA works to reduce emissions

The emissions reduction in the SO_2 Abatement plant can be seen as taking place in three core steps as illustrated in the above Block Flow Diagram (BFD). The steps are:

1. Gas Gleaning
2. SO_2 Conversion into SO_3 and subsequent acid production in the Acid Plant, and
3. Acid Storage and Loadout

The first step involves cleaning the furnace off gas removing dust and other impurities which can poison the catalyst used in the second step. In the second step, the SO_2 in the off gas is converted into SO_3 (sulphur trioxide) in a catalytic process. The produced SO_3 then reacts with water present in the gas to form gaseous sulphuric acid (H_2SO_4), hence the term Wet gas Sulphuric Acid (WSA). The gaseous H_2SO_4 is condensed to form liquid H_2SO_4 leaving behind a clean gas stream meeting the required emission standards. In the final step, the condensed sulphuric acid is cooled and sent to a storage tank from where it is shipped to the market, while the clean gas is discharged to the atmosphere.