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Energy consumption standards and costs in South African gold and platinum mines

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UMECS – B3: Anglo plats

1 – What is the current mining depth level of the mine

Rustenburg; 1000 – 2000 m
<Amandelbult section (1010 – 1360) m
Union mine sect 1400 – 1700 m
Lebowa: 1200 m
BRPM
Krondal

2 - Which mining method is currently applied?

Border and pillars

3 – What is the degree of mechanization? (High, medium, Low)

High in new mines with borders and pillars mining methods, medium with semi – conventional mines

4 – Describe the operational chain of production? (Circuit and specific operation tasks)

Mining(drill, blast, load and hoist); concentration; Smelting (drying ad converting);Extraction and Refining (BMR & PMR**)**

5 – Average production per year?

Mine unit	Tons mined	Tons milled	Refined (oz)	Percent
Rustenburg			833,200	30
Amandelbult			595,200	21
Union sect			316,700	12
Lebowa			112.000	4
BRPM Sub total	44370000	33753000	217,800	8
Others(pprust, krond, Tail)	66136000	10039000	695,600	25
Total	110506000	43,792,000	2,816,500	100

6 – Average energy bought (paid) daily, monthly and annually?

- 26.01 million GJ in 2006

7 – Energy source type used by each mining operation activity if possible (Electricity, Diesel, Hydropower)?

- Electricity: 77%, Liquid fuel: 10%, Coal: 12%, Gas: 1%

8 – The peak (amount and period) achieved in energy consumption daily, and monthly per source type?

Not described in details.

9- Global annual 2006 figures showing the amount of energy consumed per mining operational unit including:

Process stage	Energy sources in pj	Total (pj)	(%)	Key user equipments
Mining	E: 7.89 ; L/F: 2.35	10.24	39.4	drills, compressors, winders, ventilation fans, refrigeration, pumps
concentrators	E: 5.78	5.78	22.2	Mills, flotation, tailing pumps, crushers
Smelting	E: 5.25; C:	7.33	28.2	Furnaces, flash dryers, ACP

	1.67; G: 0.29; L/F: 0.12			
Refining	E: 0.98; C: 1.55 L/F: 0.13	2.66	10.2	Leach& purification, tank house, compressors, boilers
Total		26.01	100	

10 – What is the energy intensive areas and activities?

Mining auxiliary services followed by smelting and concentrators

11 – What is the load (charge) allocated in auxiliary services?

- Charge allocated is ~39 % of energy used in all process

12 - What is the power factor used for electricity in the mine and average price per KWh of electricity?

-0.95

13 – Average material handled (ore, waste) per shift, day and month?

Section five

4 – Average ore grade per tonne produced?

3.6g/t

15 – Is processing undertaken on mine site or far away and at which distance?