Harmony Tshepong Gold Mine
Free State

**Project Description:**
Pretoria-based engineering company ETA Operations compiled the Section 12L tax incentive application on behalf of Harmony, and the South African National Energy Development Institute approved the application with a value of R5.7-million. This amount is a deduction from taxable income, which means that the true benefit, therefore, is the tax that you would have paid on an income of R5.7-million.

**Challenges:**
Although there are stringent technical requirements that applications must adhere to, the mining industry needs to utilise the Section 12L tax incentive to add value to energy efficiency projects. This can be a key driver for further energy efficiency improvements.

**Steps taken to achieve the 12L Tax Incentive**
The approved application demonstrates the value of energy efficiency and the Section 12L tax incentive for the mining industry. It is generally difficult to quantify the operational cost savings associated with energy efficiency projects, as the normal day-to-day variance in mining operations tends to mask the effect of these projects. The 12L tax certificate presents a clear, undisputable quantification of the benefit in addition to the operational cost saving. The industry can certainly benefit further from increased operational efficiencies, reduced energy costs and incentives related thereto. The potential value of the tax incentive is an opportunity that should be considered. Although there are stringent technical requirements that applications must adhere to, the mining industry needs to utilise the Section 12L tax incentive to add value to energy efficiency projects. This can be a key driver for further energy efficiency improvements.

**Key Achievements**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Note: All figures quoted are based on a 12-month reporting period and exclude monetary savings from a reduced energy bill and/ or any potential Carbon Tax impacts.</th>
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<tbody>
<tr>
<td>Energy cost savings</td>
<td>R4.5 million</td>
<td></td>
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<tr>
<td>Energy saved</td>
<td>6 000 MWh</td>
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<td>Income Tax deduction</td>
<td>R5.7 million</td>
<td></td>
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<tr>
<td>GHG Mitigated</td>
<td>5 640 tCO₂e</td>
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**Project Scope:**
The energy savings achieved at Tshepong was the result of an innovative partnership between Harmony and ETA to improve the operational efficiency of Harmony’s deep-level gold mines in South Africa. The energy savings on Tshepong’s compressors were achieved through the implementation of an integrated optimisation strategy. This strategy involved the implementation of Industry 4.0 technologies such as the Internet of Things, Big Data analytics and advance simulation technologies to retrieve operational data (flows and pressures) of the compressed air system.

**Technology Deployed:**
Operational data were analysed, modelled and transformed into valuable information that was used to develop an updated control system for the compressors. This updated control system uses Robotic Process Automation technology to automatically control the operation of the compressors. The control system is closely monitored and maintained on a daily basis to ensure efficient operation. Air leaks were also repaired, and the importance of energy efficiency was promoted amongst personnel. A year-on-year comparison of the electricity consumption showed a reduction of about 6 000 MWh for 2016, compared with the 2015 baseline year. The energy savings were verified by a third-party M&V team. Harmony also benefited from the compressors using less electricity, which represents a yearly electricity cost saving of about R4.5-million, based on current State-owned power utility Eskom tariffs. This was achieved despite continuous production and development which requires mining at greater distances and depths.

**What is the Energy Efficiency (12L) tax incentive?**
The 12L Tax incentive, according to the Income Tax Act, 1962 (Act No. 58 of 1962), provides an allowance for businesses to implement energy efficiency savings. The savings allow for a tax deduction of 95c/kWh saved on energy consumption.

The incentive applies to all energy carriers (not just electricity), with the exception of renewable energy sources. For the eligibility to claim the deductions, measurements must be kWh equivalent. The verified and measured energy efficiency saving must be over a period of 12 months known as the implementation/assessment period, which is compared to the 12 months of baseline measurement. The baseline measurement and savings are measured and verified by a SANAS accredited Measurement and Verification (M&V) Body, which assigns an M&V professional to undertake the detailed analysis required.

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