

Equinox Gold on reducing diesel combustion & increasing energy efficiency

Posted by Paul Moore on 7th February 2023

to

In its just released Climate Action Report 2022, Equinox Gold gives a good overview of a broad approach to addressing Scope 1 emissions from a mid-tier miner. The gold miner has one project in Ontario (Greenstone, 60%), two mines in California (Mesquite and Castle Mountain), one mine in Mexico (Los Filos) and four mines in Brazil (Aurizona, Santa Luz, Fazenda and RDM).

Collectively the company produced about 532,000 oz in 2022 but in the long term is aiming to become a 1 Moz/y miner. The Greenstone mine is currently under construction with production targeted for the first half of 2024. The Equinox is also planning expansion projects at its Castle Mountain, Aurizona and Los Filos mines.

MOST RECENT

Caterpillar gears up for SME and CONEXPO-CON/AGG shows

Técnicas Reunidas leading MINETHIC project aiming to recover critical minerals from mining by-products & urban waste

Sh

*compare

excavate

Howden to deploy Ventsim CONTROL solution at Gold Field's South Deep

NEWS ARCHIVE

- February 2023
- January 2023
- December 2022
- November 2022
- October 2022
- September 2022
- August 2022
- July 2022
- June 2022
- May 2022
- April 2022
- March 2022

In the report Greg Smith, President, CEO and Director states: "At our growth projects we are considering green power alternatives, such as solar and wind, will use energy efficient fleets and are reviewing options to use biodiesel and renewable diesel. At our operating mines, we used baseline data collected during 2021 to identify GHG reduction opportunities and have prioritised initiatives that should allow Equinox Gold to achieve our 25% by 2030 reduction target."

Maryse Bélanger, Director and Chair of the Environment, Social and Governance Committee, adds: "We have already implemented a number of initiatives to reduce GHG emissions and improve our energy efficiency. Upgrading the truck fleet in 2021 at Mesquite reduced emissions by 35% at the mine and we intend to upgrade the fleet at Los Filos to achieve similar reductions. In Brazil we negotiated green power contracts at three of our mines that are expected to reduce our total emissions by 7% in 2024, corresponding to 4% by 2030 against our business-as-usual forecast, while also resulting in more than \$70 million in savings over the contract terms. Responsible mining makes good business sense, and we will continue to look for opportunities to benefit all stakeholders with new environment, social and governance initiatives."

As an example, ENEL's 206 MW Cumaru wind farm is able to generate more than 966 GWh per year, avoiding the emission of approximately 544,000 t of CO2 annually. Equinox Gold has arranged for exclusive off-take of 23 MW for a 10-year period to supply clean power to Santa Luz and Fazenda starting on January 1, 2023.

But what strategies is it looking at to achieve the balance of its 2025 targets? Climate related metrics show that nearly all of the company's emissions (over 98%) come from diesel combustion onsite in mobile equipment and from electricity generation, either onsite or offsite, for fixed equipment. "Focusing the company's GHG emissions reduction strategies on these areas will have the most impact towards achieving Equinox Gold's GHG emissions reduction target."

Following preliminary scoping calculations, potential initiatives were prioritised based on cost, benefits and ease of implementation. First off, reduction efforts for diesel combustion result in an approximately 15% reduction in consolidated GHG emissions.

Equinox Gold says fleet management programs and diesel tracking will be implemented in operations that are not currently using this technology. Dispatch personnel will use the tools available in the fleet management software to track the operation efficiency in real time and continuously improve material handling processes. "Equipment efficiency will be monitored in real time and investigations will be performed and corrective action taken when efficiency falls below the expected range. Dispatch personnel will also monitor data to determine when efficiency improvements have been realised with the objective of continuously improving the company's material handling operations.

Fleet modernisation is also playing a part at Los Filos and Greenstone. The current shovel and truck fleet at Los Filos is planned to be replaced with larger, more fuel-efficient models to reduce the carbon intensity of the load/haul operation. At Greenstone, eight Caterpillar 793F trucks have been delivered to site. The remaining 23 trucks for the planned fleet will instead be the more fuelefficient Caterpillar 793-8 model, with no incremental cost increase. These initiatives are similar to the fleet modernisation at Mesquite, which resulted in a 35% reduction in haul truck emissions. "At Los Filos, a similar level of emissions reduction is anticipated while at Greenstone we anticipate a 5% reduction in haul truck emissions."

The use of electric drills and shovels is being evaluated for the Castle Mountain Phase 2 operation.

SEARCH NEWS

Search...

Electric drills and shovels are grid connected instead of diesel powered and would result in a significant GHG emissions reduction benefit, since grid power at Castle Mountain is supplied by a mix of low-carbon sources including solar. The GHG emissions reduction benefit could be further increased if a power purchase agreement is used to supply zero carbon electricity for the site.

Then there is more use of conveying. "When Castle Mountain Phase 1 operations commenced, ore was hauled by truck from the pit rim to the heap leach pad. In 2022, ore was instead crushed and conveyed from near the pit rim to the heap leach pad. Although the 2021 feasibility study for Castle Mountain Phase 2 assumed ore would be hauled by truck from the pit rim to the heap leach pad, the company is studying crushing and conveying of ore for Phase 2 operations, which would reduce GHG emissions. Further emissions reduction could be realised by also conveying waste from the pit rim to the dumps."

And low emission diesel. California is a low-cost jurisdiction in North America for renewable diesel and biodiesel due to a combination of state and federal low carbon fuel incentives. "Equinox Gold plans to procure renewable diesel in the future at our California operations, where supply is currently available, and will look to increase the use of biodiesel or renewable diesel at our other operations when supply becomes available. Brazil already benefits from a government legislated ~10% biodiesel blend in its diesel, resulting in a 10% GHG emissions reduction from all diesel combustion. As this legislation is already in effect, however, and not within Equinox Gold's control, it is not included as a GHG emissions reduction initiative."

Additionally, Equinox Gold says it may invest in truck retrofits to use dual-fuel diesel and liquid natural gas (LNG) powered trucks at Los Filos whereby diesel is displaced by LNG, which has less GHG emissions per unit of energy.

Moving on from diesel combustion reduction efforts, reducing electricity generation emissions is expected to result in an approximately 10% reduction in consolidated GHG emissions. As an example, Mesquite has optimised its heap leach pumping systems by minimising solution inventory and reducing heap leach application rates, installing booster pumps directly in line instead of from a storage tank, re-routing/amalgamating piping where possible, eliminating redundant pumps and ensuring pumps are right sized for efficiency based on their required flow characteristics. Equinox Gold intends to also optimise the heap leach pumping systems at Los Filos and Castle Mountain.

For comminution, Equinox Gold evaluated the various grinding options for Greenstone and chose to proceed with HPGR rather than the industry standard SAG mill (semi-autogenous grinding) option. "HPGRs are increasingly being used in the industry and have been shown to provide significant energy efficiency benefits where ore characteristics allow for this technology."

Energy management programs will be implemented at all operations. KPIs will be developed and tracked by the mine site teams and Equinox Gold will support the development of energy management skills and awareness for the mine site workforce.

Procuring low emissions electricity wherever possible is key to Equinox Gold's GHG emissions reduction plans. Equinox Gold has signed two power purchase agreements to supply zero emissions electricity for 80% of the electrical requirements at three of its Brazil operations. "The 10-year contract to use wind power at Santa Luz and Fazenda commenced on January 1, 2023 and is expected to result in nearly \$42 million in savings over the contract life. Aurizona has signed a contract to use solar power commencing in 2024 with the expectation of saving \$30 million over the 11-year contract. Equinox Gold is also investigating options to purchase lower emissions power for our Castle Mountain operation and we are working with a local First Nations group to purchase solar power to supply a portion of Greenstone's electricity needs."

Los Filos is located in a region with high solar potential, making solar electricity an attractive option from both a cost reduction and a GHG emissions reduction perspective. Equinox Gold "is evaluating options to build a solar power project or purchase solar power from a provider, recognising that there are current regulatory hurdles in the jurisdiction that will need to be addressed."

NEWS



Caterpillar gears up for SME and **CONEXPO-CON/AGG** shows



Técnicas Reunidas leading MINETHIC project aiming to recover critical minerals from mining by-products & urban waste



Howden to deploy Ventsim CONTROL solution at Gold Field's South Deep



International Mining **Team Publishing Ltd** 2 Claridge Court, Lower Kings Road Berkhamsted, Hertfordshire England HP4 2AF, UK

Tel: +44 (0) 1442 870 829 Fax: +44 (0) 1442 870 617 Email: lynne@im-mining.com or emma@im-mining.com

© Copyright International Mining 2023 Privacy & cookies



>@CatMining has revealed some of the major product releases, service options and technologies to be highlighted at... https://t.co/XvYbSGAYfl, 6 hours ago

.@Tecnicas_reun is leading the #MINETHIC project consortium, aiming to recover #criticalminerals like #rareearths,... https://t.co/rIOTDRaG6W, 9 hours ago

Howden says it has secured a contract to deploy its Ventsim CONTROL system - the level 4, Ventilation on Demand sol... https://t.co/9jtqNEGi99, 9 hours ago