

# Minetek completes Agnew Gold Mine ventilation update to meet life of mine and net-zero emission targets.

*The new Primary and Booster Fan system enabled Agnew Gold Mine to unlock previously inaccessible resources, resulting in amplified capacity & efficiency.*

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/EINPresswire.com/ -- Gold Fields Australia's Agnew Gold Mine site is in the Northern Goldfields region, 30km from Leinster in Western Australia and houses the Waroonga and New Holland underground mines. The mines have been operational since the 1880s and have seen a resurgence in production over the past decade as Agnew evolves into Australia's first mining operation powered predominately by renewable energy.



“

It was completed with no incidents or injuries, with no delays and ahead of schedule. The plan was for ten shifts, and it was completed in just seven shifts.”

*Electrical Engineer - Gold Fields Agnew Mine*

According to Australian Renewable Energy Agency (ARENA) CEO Darren Miller, "the [project](#) Gold Fields is undertaking will provide a blueprint for other companies to deploy similar off-grid energy solutions and demonstrate a pathway for commercialisation, helping to decarbonise the mining and resources sector". Their renewable energy project was completed in May 2020 and can deliver up to 85% of the mine's power requirements with renewable energy (in favourable weather conditions) [1]. The on-site hybrid renewable microgrid assists with decarbonisation and net zero emission targets, saving Agnew up to 40,000

tonnes of CO<sub>2</sub>-e between May 2020 – April 2021 [2].

It's estimated that between 50 – 60% of the energy consumed daily by Agnew is explicitly

generated from renewable energy with a capacity of 56MW and 99.9% energy reliability [1]. Agnew has become a benchmark for environmentally friendly mines as the industry pivots towards a more sustainable future to meet net-zero emission targets. Minetek has helped enable Agnew's long-term vision with proactive measures to support their sustainable mining transition with low-energy ventilation solutions.

"Agnew is our flagship renewables mine, and one of the first gold mines in the world to generate over half of its electricity requirements from renewable sources, namely wind and solar. Agnew averaged 57% overall renewable electricity in 2022, with up to 85% in favourable weather conditions. We are exploring additional opportunities to increase this percentage by reducing gas engine constraints and introducing renewable energy storage."



Sustainable [underground ventilation](#).

Agnew required a complete ventilation upgrade to meet Life Of Mine (LOM) requirements for continued production, mine extensions and brownfield exploration in sections of the mine's tenements. This Western Australian gold mine was experiencing challenges with the volume flow rate of its existing primary ventilation circuit. Debottlenecking the ventilation shaft was required to achieve their goal of increased production and expanded exploration whilst meeting Gold Fields Global Environmental, Social and Governance (ESG) targets around carbon-neutrality.

Minetek was commissioned to assist Agnew Gold Mine in achieving its long-term vision and requirements by developing a turnkey underground ventilation solution. This included a [Primary Booster Fan](#) with the full scope, including removing redundant equipment and installing the new fans. Minetek's solution was an Australian first for a fan of this combined size and technology, all running off Agnew's renewable energy microgrid.

Carbon neutral ventilation solution.

Gold Field's Agnew mine site favoured a low energy, high volume solution with a required energy output of 1,100kW and a flow rate of 280 m<sup>3</sup>/sec at a pressure of 3,700 Pa; to meet current production needs [3]. To allow for ongoing and future development, Minetek's Primary Booster fan required a maximum airflow capability of 350 m<sup>3</sup>/sec at a pressure of 4,200 Pa. Our Performance On Demand (POD) technology enabled seamless operation with adaptable pressure and power consumption through our potentiometer, without Variable Speed Drive (VSD) controls. Our impulse-bladed impeller controls the POD system with anti-stall technology capturing turbulent airflow and unstable pre-swirls to ensure optimal fan performance and prevent critical fan stalls.

Due to the size, our fans had to be tested before shipping. This required approval from the NSW Power Supply Authorities, and all other facilities in the Minetek complex had to be shut down to provide enough power. The performance and criteria of Minetek's Primary Booster were evaluated via Minetek's fan testing chamber (built to conform with AMCA standards), which simulates the most challenging conditions and scenarios to suit any underground mining operation.

Minetek engineers and key personnel worked efficiently to achieve the set project goals within a tight timeframe. This involved removing the old equipment before commissioning and installing the primary ventilation system in just four days. We initially anticipated this project to be completed within 10 shifts; however, the turn-key installation was completed in only 7 shifts due to seamless and efficient project management.

Minetek Primary Fan features.

Minetek's Axial Fan range has been engineered with the mining industry at the forefront, offering a robust and reliable ventilation solution with a broad operating range. Our steel-fabricated impeller allows for operation at various pressures with prolonged life in even the harshest of underground mining environments.

- Power range: 1100 kW
- Volume flow rate: 280 m<sup>3</sup>/sec for current production needs with a maximum airflow capability of 350 m<sup>3</sup>/sec
- Pressure: 3,700 - 4,200 Pa
- Performance on Demand (POD) vane inlet controls to adjust vent flow and power usage.
- Impulse-bladed impeller equipment with an anti-stall chamber to ensure optimum fan performance.
- 1,100 kW / 1,000 V individual fan motors (run off the renewable power station).

Minetek's powerful single-speed primary and secondary fans have been proven to reduce power consumption costs by up to 50% by tailoring pressure and airflow via the integrated POD system. Compared to traditional larger fans, Minetek's compact units can outperform larger alternatives

and then be redeployed quickly as Booster or Secondary Fans and easily relocated as the mine workings evolve. Underground operations can reduce capital costs with fewer fans required to meet volume flow rates and pressure requirements. Achieve safe, reliable operations while delivering guaranteed reductions in power consumption and increased profitability with Minetek's ventilation solutions.

Minetek has expanded locations, with a new operations hub located in Perth, servicing the Western Australian (WA) mining regions. Our world-class service has expanded to meet the demand and responsiveness needed to support our clients, with dedicated field service technicians located in Western Australia to assist with after-sales support. Our dedicated team is nearby and readily available to help with your site.

Contact Minetek online by emailing [sales@minetek.com](mailto:sales@minetek.com) or via 1300 963 801 to learn more about our mining solutions & servicing capabilities.

#### References.

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3. <https://minetek.com/primary-ventilation-solution-agnew-mine/>
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Matthew Ryan

Minetek

+61 459 066 051

[sales@minetek.com](mailto:sales@minetek.com)

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