



INDUSTRY Q&A: SOLARRESERVE

SOLARRESERVE[®]

SOLAR FOR MINES: PROVIDING BASELOAD SOLUTIONS

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Tom Georgis, Senior Vice President of Development, SolarReserve provides insight on SolarReserve's large-scale baseload solution for a Chilean mine and the scope for further collaboration between mining and solar in the Chilean market.

Q: Can you describe the potential for collaboration between Chilean mines and large-scale solar?

A: The Atacama Desert, with arguably the world's strongest solar resource, also happens to be home to the majority of the country's mining activities. Conversely, Chile does not enjoy an abundance of indigenous fossil resources and therefore imports most of the coal and natural gas used, which leads to uncertainty of electricity prices and contributes to price volatility. Combined with the fact that energy can be anywhere from 15-40 percent of the operating budget for a mine, many mines are starting to look closely at renewable energy solutions.



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However, most renewable solutions provide intermittent power – dependent on whether the sun is shining or the wind is blowing – while mines operate nonstop, requiring firm baseload power 24 hours a day, 7 days a week. Solar energy can reduce energy costs and price exposure by acting as a hedge against volatile fossil fuel prices, but the only cost-effective way to store sunlight for dependable 24-hour supply is molten salt.

There is great potential for SolarReserve to collaborate further with Chilean mines, offering the most reliable baseload solar generation, enabled by our industry-leading CSP and molten salt storage technology (with over 50 patents). This technology realistically has the potential to power the entire country of Chile – using two phenomenal Chilean resources, salt and sun.

Q: What is the latest update on your Copiapó Solar Energy Project in Chile?

A: The Copiapó Solar Energy Project, located in the Atacama Desert in northern Chile, is a hybrid configuration utilizing our proprietary CSP tower technology with molten salt thermal energy storage combined with PV. The concept of balancing CSP with PV “inside the fence” will ensure that the energy generation profile is smooth and reliable, similar to a conventional baseload power facility.

Copiapó will be the first facility of its kind in Chile and will be the largest solar power plant in the world. Several parties have shown strong interest contracting for the power from Copiapó, and we are in the process of negotiating a long term power off-take agreement for the project.



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Chilean mines are actively seeking new energy solutions to reduce and secure energy costs for grid-connected and off-grid operations. With energy accounting for 20-40% of operating costs, reducing electricity expenditure is now a major operational and strategic goal for Chile's mining leaders and renewables is set to play a significant role in meeting this aim for remote and grid-tied mines.

Following sell-out events in Toronto and Johannesburg, the 4th Renewables and Mining Summit & Exhibition will showcase the latest renewables-mining projects from Chile and address the key challenges for additional projects including innovative finance solutions.

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The Copiapó project will comprise two 120 MW solar thermal towers with energy storage, combined with approximately 150 MW of PV. This hybrid concept will maximize the output of the facility, delivering over 1,700 gigawatt hours (GWh) annually, while providing a highly competitive price of power. With 14 hours of full load storage, it will produce up to 260 MW of 24/7 firm baseload power which is critical to the mining sector; operating at a capacity factor and availability percentage equal to that of a coal fired power plant.

Q: Many mining executives are interested in energy storage in terms of opening up the economics and practicalities of renewables. Can you tell us about SolarReserve’s storage solution and its applications for mines?

A: Mines operate 24 hours a day, practically every day of the year. Mining operators expect full reliability and availability from their power systems, with very low tolerance for outages or shortfalls. Most mines operate at a 70% to 90% annual load factor relative to their peak load, but peak loads can occur at any time of day in any season. By using fully integrated molten salt storage, SolarReserve offers CSP solutions that are as reliable and available as conventional technologies, but fueled by the sun.

Some miners will start with solar by integrating PV into their diesel power systems for fuel abatement. It’s a good way to save some fuel and incrementally reduce costs. But the transformative change comes when you have a large amount of storage to provide solar energy around the clock. Ultimately the market leaders will move toward a more meaningful 24-hour solution like our solar thermal power plants with energy storage.

SolarReserve offers an end-to-end energy supply solution, which includes suitability assessment, technology configuration, permitting, finance and EPC management, and ongoing power plant operations or operational support. The energy supply agreement can be structured such that all technologies are integrated behind the fence at SolarReserve’s facility, or SolarReserve can transfer control of the assets to the mine operator. In either case, the mine will enjoy a guaranteed fixed price of energy for the life of the project.