

Selection guide - rental or permanent mine cooling plants.

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ABSTRACT

Australian mines are increasingly getting deeper and these operations are encountering heat issues. At critical depth the heat cannot be managed by ventilation alone and refrigerated air cooling becomes necessary as part of the primary ventilation system.

Historically, the first Australian refrigeration systems were generally based on fixed permanent plant typically using ammonia refrigerant. Examples include Mt Isa, CSA, Argyle, Tanami and Telfer amongst others. In the last decade or so, mine refrigeration using R134a refrigerant in both rental and fixed permanent plant have become more prevalent. Implementation of rental R134a units has become an attractive option especially for operations with small refrigerated air cooling requirements.

When evaluating refrigeration strategies for an underground mine, project teams often need to trade-off the pros/cons of fixed plant and rental units. The paper describes a typical evaluation strategy with key considerations in these trade-off studies. The main advantages, disadvantages and pitfalls of both approaches is discussed. The main differences including design, technical performance, economics, HSE, system expandability, implementation and contracting approach is explored. The paper provides guidance to select between either strategy or in some cases a combined hybrid strategy. The factors and parameters to determine the most feasible option including Life of Mine and deployment period are also investigated.

With the increasing depth of the Australian underground mines fit for purpose refrigeration strategies will become more important and a selection guideline will assist with determining a 'best value' solution for the asset.

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