

Improving fresh water efficiency in Chile's Andean mountains



The Collahuasi mine, a joint venture between Xstrata, Anglo American and a consortium of Japanese companies, is a large copper open pit mine, located in the northern Chilean Andes. Water conservation is a crucial issue for Collahuasi, as water is a scarce resource for the area and large amounts of energy are required to pump it from deep wells. Reducing the water use per tonne of ore at Collahuasi enables more copper to be produced within the restrictions on fresh water extraction established by the technical and Chilean regulatory framework.

Collahuasi has developed a number of initiatives to optimise water usage at the concentrator. In the short and medium term these initiatives include, among others, the operation of a new 125 metre diameter high rate thickener. This will increase the tailings density and subsequently allow an estimated water use reduction of 0.04m³ per tonne. The new thickener is currently being fully tested and is expected to be operating by May 2008.

A detailed review of the water balance established a model for water consumption and this has been used to find further efficiencies and projects to save water through reuse and recycling. In addition, responsibilities for water reduction strategies have been included in employees' job descriptions to ensure reducing water consumption is an integral part of everyday work practices.

As a result of these initiatives, the average water consumption between April to December 2007 reduced by 7% to 0.605m³ per tonne compared to the same period during the previous year, exceeding Collahuasi's target for reducing water consumption to 0.62m³ per tonne. As a result of lowering unit consumption, the operations were able to process 2.2 million tonnes of additional ore with a copper grade of 1.15% and a recovery of 85.2%. This led to an estimated improved profit of \$96 million.

Collahuasi continues to focus on efficient water usage and has set a target of reducing water intensity further from 0.62m³ per tonne to 0.58m³ per tonne by the end of 2008.

A 20% increase in capacity is planned at Collahuasi over next three years with further future expansions to double production. Efficient water usage is critical to support those

expansions and is included as a key risk in the operation's risk register. The initiatives and projects already under way will continue to support water efficiency during the expansionary phase.

Additionally and aligned with its long-term growth strategy, Collahuasi is considering several new initiatives, including a paste tailings project which is expected to generate a step change in water efficiency. As fresh water conservation is a highly sensitive issue for the region, reducing water consumption is also important to maintain Collahuasi's reputation, both with the authorities and with the local community.