



International Resources Group

# Energy Efficiency Study at El Arenal Drinking Water Facility (Paita - Peru) July 2005

## Challenge:

Built as a modern, efficient concern in 1979, the El Arenal-Paita (EAP) drinking water and distribution system in northern Peru had significant performance deterioration by the 1990s. El Niño hit EAP twice; and recurrent financial, operational, and managerial problems plagued the system. In the early 1990's, operation and management of the broader regional system was transferred to EPS Grau, a publicly owned, commercially managed entity in hopes that the situation could be reversed. That did not happen. A culture where local government has routinely interfered in the company's operation and management only exacerbated the problem. Managerial and commercial difficulties also increased financial stress and led to an alarming level of debt, which caused an inability to finance service improvements.



## Initiative:

In 2004, a 30-year restructuring plan was approved under an agreement involving the shareholders and creditors of EPS Grau. InterAmerican Development Bank (IDB), the key creditor in the deal, asked the United States Agency for International Development (USAID) to fund a study that would identify opportunities for enhancing energy efficiency and that could be realized rapidly. Financing these very short-term efforts would enhance the concession's financial attractiveness. International Resources

Group (IRG), a company with relevant experience in Peru, was awarded the contract to carry out this assignment and accomplish the following:

- Review the preliminary investment plan of the service company in the energy-efficiency component of the IDB loan and assess feasibility.
- Assess the physical condition of the electrical installations and determine the energy consumption and power demand for each process of the drinking water component.
- Assess (1) the need to improve power factors and reduce distribution losses and (2) the benefits of automatic control of the water pumps.
- Prepare an action plan to improve plant efficiency in the short-, medium-, and long-term, including the introduction of new technologies.

Region: Latin America and the Caribbean  
Country: Peru  
Sector: Energy IQC II  
Duration: May - June 2005  
Client: USAID



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## Approach:

On site, field work consisted primarily of carrying out detailed measurements of equipment performance, collecting technical and cost information, and interviewing key personnel. The approach to the study was two-pronged: one part focused visual inspection of the overall facility under the guidance of knowledgeable EPS Grau senior technical staff. The second component used a checklist of applicable energy-saving measures in medium-sized water utilities.

## Key Results to Date:

The energy analysis of the El Arenal drinking water production system equipment and installations shows that the general conditions of these old installations range from average to poor. Through minor improvements, IRG has found a way to cut costs by almost 24 percent with only minimal investment and an average payback period of only seven months. A number of low-cost, short-term energy saving measures have been identified, and self-generation in peak hours has been proposed as a long-term measure.



## Next Steps:

Implementing the recommended program is the greatest assurance that the El Arenal Paita facility will be more attractive to future shareholders because the cost of water production would get closer to the regional average. In addition, the facility has the potential to bring energy performance in line with the best performance in the region. IRG recommends the next steps include:

- Implementing a small maintenance program for pumps throughout the system, with an emphasis on the largest ones.
- Gaining operational control of the pumping equipment.
- Installing capacitors at all major pumping stations.
- Replacing the motors with others having the same capacity but higher efficiency.

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