El Platanal Hydropower Plant
Rio Cañete - Yauyos — Lima
Peru, South America

- **Engineering Firm:**
  ARPL Technologia Industrial S.A.
  Lima, Perú

- **Mechanical Contractor:**
  SAEG PERU S.A.
  Lima, Perú

- **Greenheck Representative:**
  SAEG PERU S.A.
  Lima, Perú

Hydroelectric plant "El Platanal", located in the provinces of Cañete and Yauyos, on the Canete river in Perú, South America.

The Challenge

- **Provide fresh, comfortable air for workers in the plant's machinery and control room, cable room and escape tunnel.**
- **Exhaust a high volume of air while minimizing sound levels in the space.**
- **Provide industrial fans that are energy efficient and easy to install to save time.**

Construction of Peru's 230MVA hydroelectric plant, El Platanal, was completed in 2010. The plant can deliver up to 220 megawatts of clean energy, power to meet the needs of local industrial plants and the biggest cement industry in Peru.

The main ventilation challenge for this project was to supply 142,000 cfm of fresh filtered air to the machinery room interior through the 2,592 feet-long (790 m) access tunnel, ventilate and pressurize the emergency escape pedestrian tunnel, and use the return air to ventilate the cable room that runs parallel to the access tunnel. This tunnel is the only horizontal access to the hydroelectric plant's machinery room. In order to maintain a high airflow volume and minimize the sound levels to meet health and safety regulations, premium efficient motors, a mixed flow and airfoil fans were required. Due to the infrastructure of this project, the ventilation equipment had to be capable of withstanding industrial-level building vibrations.

The 2,592 foot access tunnel and ductwork system.

Greenheck's Solution

- **7 Industrial centrifugal fans, Model AFDW**
- **1 Mixed flow fan, Model QEI**
- **10 Industrial/commercial control dampers, Model HCD/VCD**

During the construction phase, a Greenheck Model QEI-44 mixed flow fan with a 60 hp motor was installed temporarily to supply air into the excavating area through a 2,592 feet-long (790 m) round cloth duct system. This mixed flow fan operated continuously for almost two years providing oxygen to the excavating workers.

For the permanent ventilation system, three (one for standby) Model AFDWs double-width heavy-duty industrial airfoil centrifugal fans (sizes 40 and 49) were installed to supply 123,000 cfm of filtered air to the machinery room via a 2,592-foot (790 m) galvanized ductwork system. Part of this supply air also ventilates the access tunnel for heavy duty vehicle traffic.

In order to exhaust the stuffy air another three Model AFDWs were installed. One additional Model AFDW-49 centrifugal fan delivering 71,000 cfm was installed, using the cable gallery as duct transportation for the air. Because of the safety and health requirements established by project administrators, adequate emergency escape tunnel ventilation was required. Greenheck's mixed flow fan Model QEI-30 was installed to satisfy the demand for a high efficiency fan at a low sound operating level. All Model AFDW centrifugal fans were specified with minimum bearing life of L_{10} 200,000 hrs., premium efficiency motors, gravity dampers installed on each fan outlet and structural bases featuring housed vibration isolators.

Series of three double width Greenheck industrial centrifugal fans with a 49" airfoil wheel, Model AFDW.

The Results

Actual performance levels achieved for the ventilation equipment met or exceeded the engineering specifications. During commissioning, all of the fans' airflow performances were verified. Reduced sound levels were well within required specifications. Fan vibration levels met the owner's requirement with assistance from a local company specializing in vibration analysis and the contractor's field adjustments. The flow of supply and exhaust fans were balanced and the motors were tested to ensure that they were electrical interlocked.

GREENHECK®
Building Value in Air.

P.O. Box 410 • Schofield, WI 54476-0410 • Phone (715) 359-6171 • greenheck.com