

Successful Upgrade at the Glennallen Diesel Plant



The EMD engine being offloaded and moved into its new home at the Glennallen Diesel Plant.

On November 11, 2010, CVEA completed the Glennallen Diesel Plant Upgrade Project, a project critical for improving the reliability and capability of the system as well as supporting increased system loads.

The upgrade involved the installation of a new Electro-Motive Diesel (EMD) engine that provides an additional 2.865 megawatts to the CVEA generation portfolio, which will decrease reliance on the older engines, particularly during times of cold weather and when the Transmission Line is down.

The new EMD already meets the Environmental Protection Agency (EPA) emission standards which will require conversion of all diesel units to Ultra Low Sulfur Diesel fuel (ULSD) in early 2013.

The project also involved moving Unit 8, one of the older engines, to the other end of the plant to make room for the EMD.

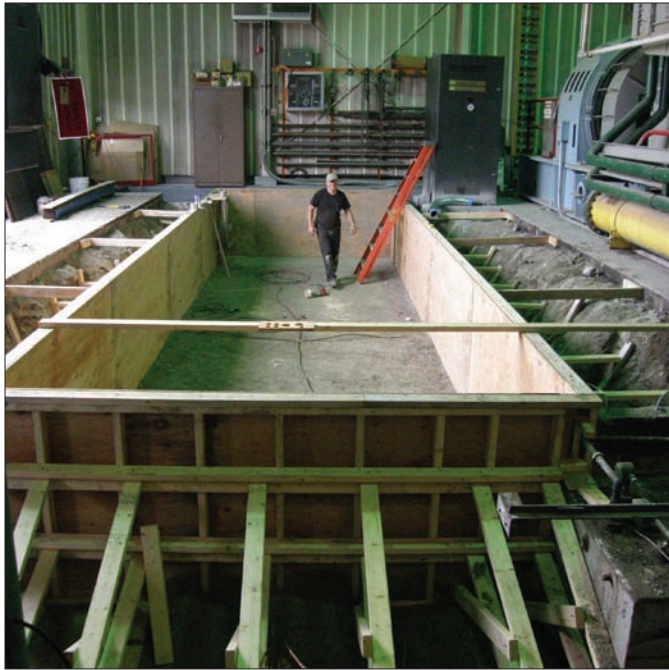
Both of these major changes required significant modifications to the plant. The nature of this work included concrete foundation work, mechanical/structural projects, and electrical/controls work. A significant concrete pad, four feet deep and heavily reinforced by rebar, was required to support the EMD. Before the pad could be installed, the old pad had to be removed. Modifications to existing foundations were needed to accommodate Unit 8, which moved to the opposite end of

the building and new foundations for the EMD radiators were required. Structural work, including construction of platforms to support various components of Unit 8 and the EMD, and significant piping modifications were also completed.

The electrical/controls portion of the project consisted of installation and wiring of new electrical components and controls to support the generation and export of power. In addition, new control systems were installed and programmed enabling the EMD to be controlled from the Solomon Gulch Hydroelectric Plant, CVEA's main dispatch center, in Valdez.

Installation of the new unit began September 15, 2009, when the Unit was transported from Anchorage to the plant in Glennallen. The EMD, a massive piece of equipment, 8 feet wide by 40 feet long and weighing 95,000 pounds, was unloaded at the plant using a 100 ton crane, set down on a steel skid, and moved on rollers into position and placed on the new foundation.

The engine was then lifted by hydraulic jacks for the installation of vibration damping pads and adjusted to meet level and acceptable vibration tolerances. This is important as higher than acceptable vibrations in rotating machinery will ultimately lead to equipment damage and loss of equipment life. Once both units were installed and systems in place, many hours of testing was performed on both engines to verify all protective, control,



and mechanical functions operated as expected. Fuel and lube oil testing was performed to verify that performance guarantees included in the contract were met; the tests confirmed the EMD exceeded efficiencies for fuel and lube oil consumption.

Based on performance testing, the EMD produces, on average, 15.25KW/gallon running on ULSD which is more efficient than the existing diesel engines at the Glennallen and the Valdez Plants.

At times, the project team faced many challenges with design and installation running parallel. As with any large project in rural Alaska, weather constraints and equipment/material delays sometimes confounded the mission.

All of these factors could have significantly impacted the schedule. However, through focus, organization, and team work, the project is now complete and the units are fully functional. The overall cost of the plant upgrade was approximately \$4.5 million and was financed with a federal grant of \$1.9 million and a state grant of \$2.0 million. The balance of project funding was provided by CVEA.

The project was installed almost entirely by the extraordinary effort of the CVEA Plant Operators. The Operators worked extended shifts and took personal ownership and responsibility to meet the demands of the schedule to have the EMD fully functional before the 2010 winter generating season.

This upgrade is a success for the Cooperative. It will save the members money over time and will increase the reliability and capability of the CVEA system.

According to Aaron Remer, CVEA Manager of Power Generation and Project Manager for the upgrade, "The Glennallen Diesel Plant Upgrade was a very extensive and difficult project, but one that will provide substantial benefit to the membership of CVEA in the future. I am very pleased to

have the more energy efficient EMD online and operational, and am thankful for the hard work of the CVEA team who made it happen."

For more information on this project, contact Sharon Crisp at 822-5006, 835-7005, or email crisp@cvea.org. ■