

Application Story

SoftPLC Produces a bio**MASS** of Power

In Northern California, SoftPLC controllers, Tealware I/O and Web Studio are used by Blue Lake Power in their biomass electric power plant. The plant was originally a coal-fired plant that has been converted to burn woody waste. It uses wood chips as its main fuel source for a conventional boiler which powers a steam-turbine generator.



Blue Lake Power Plant: fuel conveyors in front, boiler on left, emissions control in middle, cooling system to right



Fuel Pile

Four SoftPLC's are used for material handling, for both the input fuel and the ash by-product conveyors, and for all of the process control. Hardbook CPU's (model HB-MOLE) with remote Tealware I/O connected via Ethernet are used for all the systems. *(The turbine control, which is done by a previously installed Woodward generator controller, is the only non-SoftPLC part of the control system.)*

Web Studio is used for the plant SCADA system, which includes a redundant server, several desktop client stations and two large LCD wall-mounted displays in the control room. Web Studio is also used as the HMI running on portable tablet PC's by the maintenance crew.

The Blue Lake plant adds over 93,000 MWh of renewable power annually to California's grid and provides significant economic and environmental benefits for the city of Blue Lake and the state of California. The plant is rated at 12.5 MW and can generate enough electricity to power 25,000 homes. San Diego Gas and Electric will purchase all of the electricity generated by the plant.

The plant requires 95,000 BDT* of wood fuel. Sourcing includes chips (*mill residuals and forest chips*) and other material that can be chipped on site. A pre-dryer removes some moisture prior to combustion. They also have plans for a post and pole facility on an adjacent site which will complement the power plant by adding value to small logs, with the residuals providing up to 25% of the fuel needed for the power plant.

The plant's fuel procurement plan improves forest health, reduces hazardous fuels, and provides stability to the woods industry and local communities. Bill Rice, of the United States Forest Service's Lower Trinity District, said, "The Blue Lake facility establishes a market for non-merchantable material that in the past used to just pile and burn. By partnering with Blue Lake, we add jobs in our national forests and protect the community of Willow Creek."

*** BDT (Bone-Dry Ton)** A unit used in the forest products industry to measure bulk products such as wood chips. One bone-dry ton is a volume of wood chips (or whatever) that would weigh 2000 pounds (0.9072 metric ton) if all the moisture content were removed.