

## Power Boiler/Electrical Power Generation Projects

### Summary

Evergreen has completed thousands of projects, ranging from numerous custom retrofits in existing industrial facilities to complete greenfield manufacturing plants. Of these projects many have included boiler systems and related thermal and piping systems. In several instances, the boiler burners had to have the flexibility to operate with alternative fuels, e.g., natural gas, propane, oil, wood, etc. A few projects that illustrate our relevant experience are summarized below.

### Thompson River Co-Gen, LLC – Thompson Falls, Montana

For this 17 MW coal fired cogeneration project, Evergreen provided the design for the turbine island piping including extraction steam, hot well, feedwater heaters, cooling tower, condensate, lube oil, and other systems. We also provided civil structural design of the cooling tower basin, utility tunnels, and various service platforms. In addition, we provided all the power distribution including the primary substation and over land transmission line to tie-in to the utility grid.

### Wah Chang – Albany, Oregon

At a rare metals production facility, Evergreen provided electrical engineering and design for six 2.8 MW gas reciprocating engine generators with heat recovery steam generators (HRSG). Evergreen provided engineering and design of the HRSG and steam system.

### Weyerhaeuser – Springfield, Oregon

250,000 pph package boiler, 650 psig/700°F, natural gas, with all auxiliary systems. New installation of power boiler at existing paper mill, tied-in to existing steam systems to provide supplementary steam power. Evergreen provided all engineering design and documentation, including design, drawings, specifications, bid packages, etc., as well as field technical supervision during construction.

Evergreen also provided engineering design and documentation for burner conversion on a power boiler and prepared P&IDs for steam and condensate systems including four steam turbine generators.

### Georgia-Pacific – Monticello, Georgia

Greenfield medium density fiberboard plant. Evergreen provided all engineering, including specification, selection, and design for installation of a 50,000 pph/300 psig package boiler to provide process steam and thermal energy for the plant.

Evergreen provided all engineering design and documentation, including design, drawings, specifications, bid packages, etc., as well as field technical supervision during construction.

### Murphy Plywood – Sutherlin, Oregon

Major retrofit projects for a 35,000 pph/250 psig boiler and ancillary systems. Projects included steam and condensate system modifications, burner replacement (gas and sander dust), piping, etc.

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### EVERGREEN ENGINEERING

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## Power Boiler/Generation (continued)

### **Morgan Products – Springfield, Oregon**

Provided all engineering, including design, equipment selection, and site installation support for temporary package boiler installation at an existing door manufacturing plant.

### **University of Oregon – Eugene, Oregon**

Provided civil/structural and piping design support to Systems West Engineers for multiple boiler and turbine installation at the University of Oregon in Eugene, Oregon. New 70,000 pph boiler installed in existing power plant and tied into power generation systems.

### **Trus Joist – Stayton, Eugene, and Junction City, Oregon**

Provided all engineering support for new thermal oil systems for process heat at three plants. Involved burner, piping, pumps, instrumentation, heat exchangers, etc.



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