

# SUBSTATION DESIGNS

## (Project Examples)

**Evergreen Engineering, Inc.** has designed numerous substations and the power distribution systems for industrial manufacturing facilities.

Most of these designs started with receiving 15 to 115 kV from the local power utility and included power distribution to the plant loads.

Individual transformer sizes ranged from 1,000 kVA to 20,000 kVA and included both indoor and outdoor applications.

Substation design requires close coordination with the utility to provide for tie-ins and proper protection of personnel and equipment.

Primary voltage designs (layouts, specifications, and schematics) included switching, fusing, lightning protection, vacuum breakers, metering, grounding, selective coordination, aerial conductors and supports, as well as underground conductors with ducts and vaults.

Secondary voltage designs included solid and resistance neutral grounding, switchgear, feeders, SCADA monitoring, electro-mechanical relaying, solid state relaying, selective coordination, ground fault sensing, metering, bus ducts, and Overhead & Underground conductor systems.

### Substation Design Projects:

- ▶ **Thompson River Co-Gen**  
Thompson Falls, Montana
- ▶ **MAXIM**  
Beaverton, Oregon
- ▶ **Georgia-Pacific Corporation**  
Monticello, Georgia
- ▶ **Oregon Steel Mills**  
Portland, Oregon
- ▶ **Pope & Talbot, Inc.**  
Halsey, Oregon
- ▶ **Scott Paper Company**  
Mobile, Alabama
- ▶ **Trus Joist MacMillan**  
Three Plant Sites
- ▶ **Morgan Products**  
North Carolina
- ▶ **Mead Paper Company**  
Escanaba, Michigan
- ▶ **Weyerhaeuser Company**  
Springfield, Oregon



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