



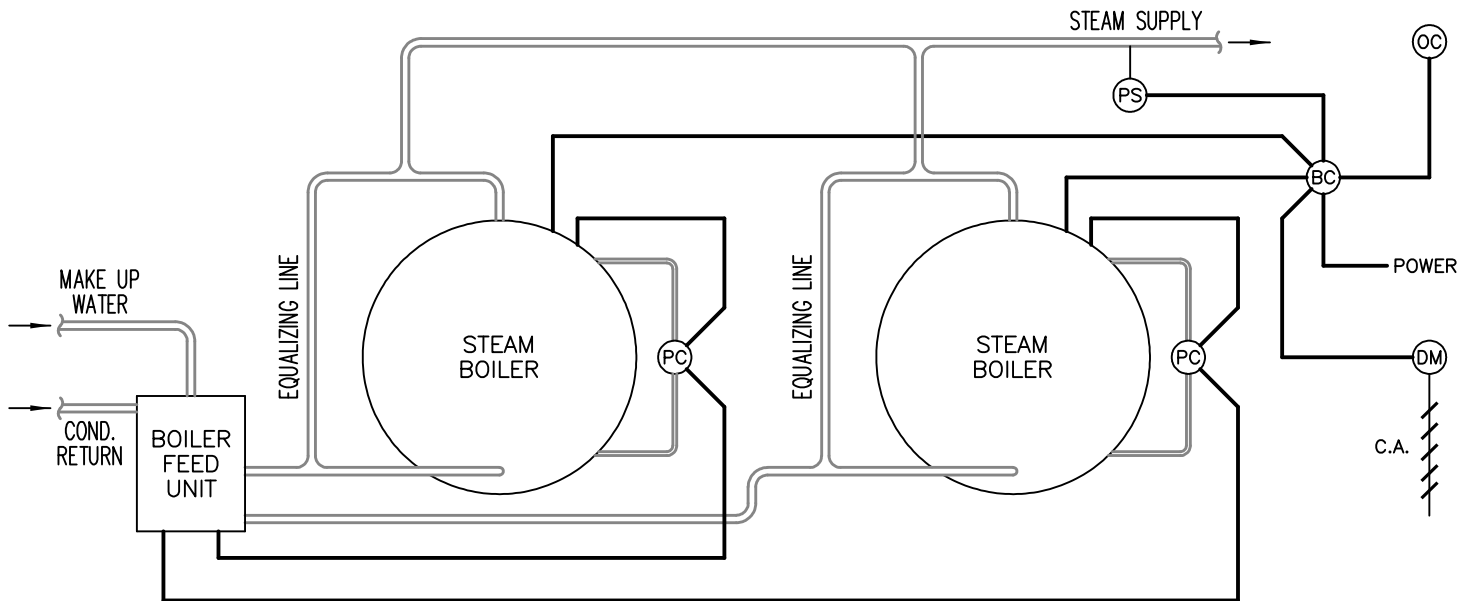
**CONTROLS
ESTIMATING
AND
DESIGN
GUIDELINE**

APPLICATION EXAMPLE #6

Two Steam Boilers

- Low pressure steam (10 #)
- Single steam system

STEAM BOILER – MULTIPLE (TWO) BOILERS



DESCRIPTION

Multiple low pressure steam boilers serving a common steam system. The steam pressure is controlled by firing the boilers. Firing rate is staged or modulated (via an outboard boiler controller). Additional components not shown or considered here, such as a remote condensate pump or water treatment equipment, may be required.

COMPONENTS

| | | NOTES | LABOR (hours) | MATERIAL (cost) |
|-----------------------------------|--|----------|---------------|-----------------|
| (BC) | BOILER CONTROLLER | 1 2 | 10.0 | ----- |
| (PS) | STEAM PRESSURE SENSOR | 3 | 2.0 | ----- |
| (PC) | COMBINATION PUMP CONTROLLER/LOW WATER CUTOFF | 4 | 2.0 | ----- |
| (OC) | OUTSIDE AIR TEMPERATURE CONTROLLER | 5 | 2.0 | 35.00 |
| (DM) | DAMPER MOTOR | 6 | 4.0 | 200.00 |
| STARTUP AND COMMISSIONING: | | 20 hours | TOTALS: | \$400.00 |
| ENGINEERING TIME: | | 4 hours | | |

NOTES

- 1 For multiple steam boiler applications, it is highly recommended that the boilers be controlled by an outboard boiler controller, and not the boilers' factory installed operating controls. The boiler supplier should include this item in his quote. This is an expensive item and must not be overlooked. Refer to boiler quote.
- 2 Boiler controller labor includes mounting and power, and wiring to the boilers. All other wiring associated with the boiler controller is included in the labor factors of the devices wired back to the controller.
- 3 Steam pressure sensor is provided with the boiler controller. Pressure sensor labor includes installation in the supply piping.
- 4 Pump controller is normally furnished with the boiler, and either factory or field installed. Labor factor includes wiring to the boiler feed unit and to the boiler's limit circuit. Labor factor does not include installation of the controller, nor does it include power to the boiler feed unit.
- 5 Outside air temperature controller is necessary if it is desired to enable and disable boiler operation based on outside air conditions. Delete if not needed.
- 6 Delete this item if a motorized combustion air damper is not needed to fulfill the combustion air requirements. Double the labor and material factors if a ventilation damper is required in addition to a combustion air damper.