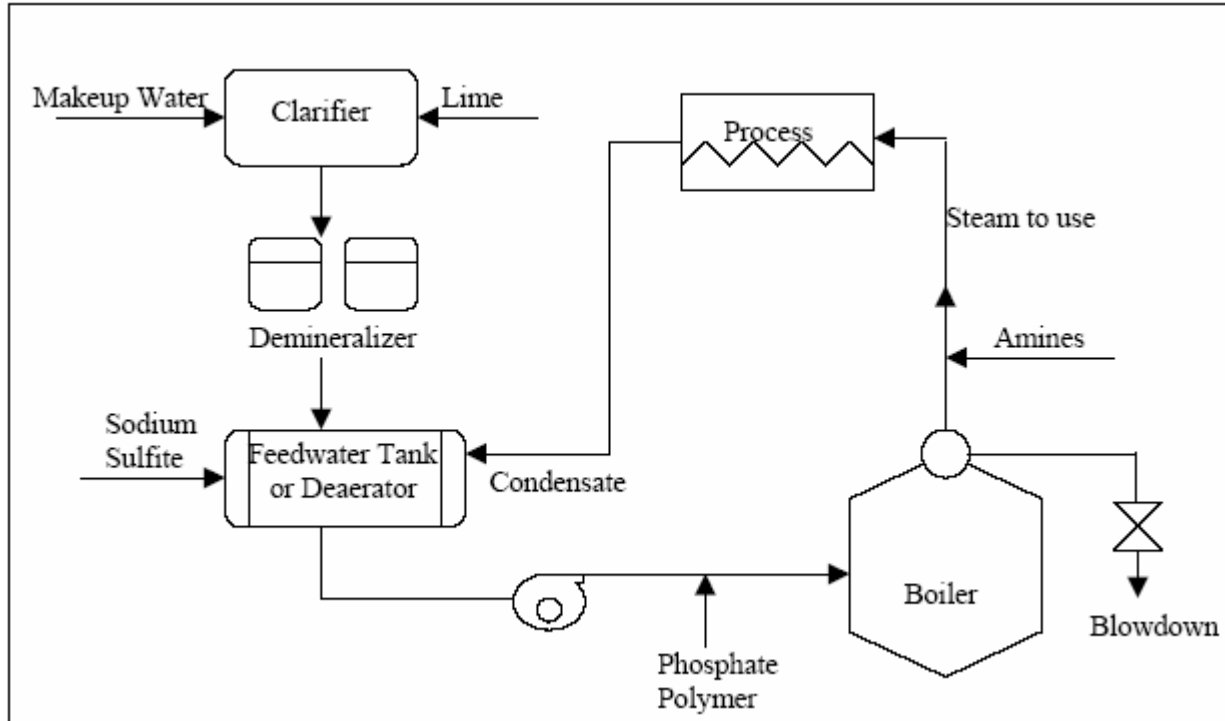


- **FOR BOILERS**
Basic Boiler System Schematic

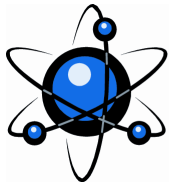


Boilers

The big picture of boiler water treatment chemicals is the control of scale, corrosion, and boiler carryover. Scale can lead to boiler inefficiency, plugged tubes, hot spots, under-deposit corrosion, and ultimately boiler damage. Corrosion can reduce the operating life of a boiler system and increase maintenance costs. Boiler carryover can lead to reduced steam quality and purity and cause turbine damage.

Typical boiler treatment chemicals are listed below.

- **Oxygen Scavengers:** chemically neutralize oxygen not removed by the deaerator. Oxygen can lead to pitting in a boiler system.
 - Sulfite/bisulfite
 - Hydrazine
 - DEHA (Diethylhydroxylamine)
 - Carbohydrazide
 - Erythorbate
- **Phosphates:** inhibits scale formation on heat transfer surfaces.
 - Orthophosphate
 - Sodium tripolyphosphate



atomes

- Sodium hexametaphosphate
- TKPP (tetrapotassium pyrophosphate)
- HEDP (an organic phosphate)
- **Chelants:** inhibits scale formation by complexing with the hardness ions.
 - EDTA
- **Antifoams:** surface-active chemicals that reduce foaming.
 - Polyalkalene glycol
- **Neutralizing & Filming Amines:** neutralizing amines protect condensate system by neutralizing effects of carbonic acid and filmers provide a protective coating.
 - Morpholine
 - Cyclohexylamine
 - DEAE (Diethylethanolamine)
 - Aminomethylpropanol
 - Aqua ammonia
 - ODA (Octadecylamine) – filming amine
- **Alkalinity Control:** maintaining proper boiler alkalinity or pH protects the boiler from corrosion and facilitates certain types of chemical treatment programs (e.g., phosphate precipitation programs).
 - Caustic (sodium hydroxide)
 - Mono-, di-, and trisodium phosphate (coordinated phosphate control)
- **Polymers:** disperse solids and inhibit scale.
 - Polyacrylates
 - Polymethacrylates
 - Polymaleic acid
 - Polyacrylate/acrylamide
 - Acrylate/AMPS/sulfonated styrene terpolymer
 - Acrylate/sulfonic acid/nonionic terpolymer