Cost: A major drawback to recovery processes is relatively high cost. Complicated process flowsheets, absorbent losses, and high energy requirements all contribute to a high cost level.

One of the items contributing to high cost is the energy requirement. The following levels have been reported.

Process	Energy requirement, % of boiler energy input with no control
Wellman-Lord (sulphur as product)	12-25
Magnesia scrubbing	5-10
Limestone scrubbing	1.5-3

g) Coal Gasification (Combined Cycle)

Another approach is production of low Btu gas by coal gasification, removing ash and sulphur, and burning the clean gas in a combined-cycle operation (use of a gas turbine and boiler in series to improve energy utilization). In this case, the increase in energy efficiency is the major objective in addition to desulphurization, and thereby complicates estimation of the sulphur removal cost. Most estimates show a cost reduction of 15% or so by the combined cycle route (based on cost per kW-h), compared to a conventional boiler with FGD, but commercialization is probably 15 to 20 years away. Moreover, the cost of new processes tends to go up as development work progresses.

h) Fluidized-Bed Combustion

The most promising method in emerging technology is fluidized-bed combustion. In the fluid-bed process, air blown up through a bed of fine coal and limestone burns the coal in a suspended state and produces steam in water tubes submerged in the bed. The limestone absorbs the SO_2. Capital cost for SO_2 removal should be low because no separate reactor is needed. The main drawback is difficulty in reaching a high level of SO_2 removal without using an inordinate amount of limestone and hence much increased waste production. To get 90% removal, some two to four times as much limestone is required compared to limestone wet scrubbing.

Estimation of sulphur control cost for fluidized-bed combustion is complicated by the fact that reduced boiler cost is an objective as well as sulphur removal. Proponent estimates generally show a saving of 10 to 15% per kW-h as compared to a conventional power plant equipped with wet scrubbing; others show the two about even. Commercialization for use in power plants is probably 10 to 20 years away.