

4.13. The air flow system in many fossil-fuel power plants consist of (i) a forced-draft fan, (ii) a furnace/boiler volume, (iii) an induced-draft fan, and (iv) an exhaust stack, connected by long ducts as shown in Fig. 4.33. In initial plant qualification tests the system is tested without firing the boiler, so that air at normal temperature is the system fluid.

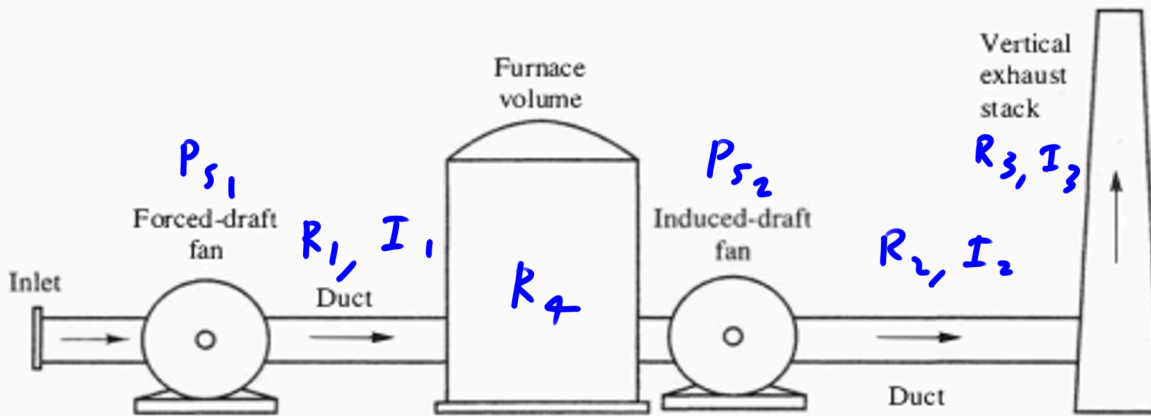


Figure 4.33: The air and exhaust-gas system in a power plant.

- (a) We wish to form a simplified model of the fluid system. Consider each fan as a prescribed pressure rise, and the ducts and stack as having fluid inertia and resistance. What elements might be used to model the fans, ducts and stack, and the unfired furnace?
- (b) Construct a linear graph of the system.

