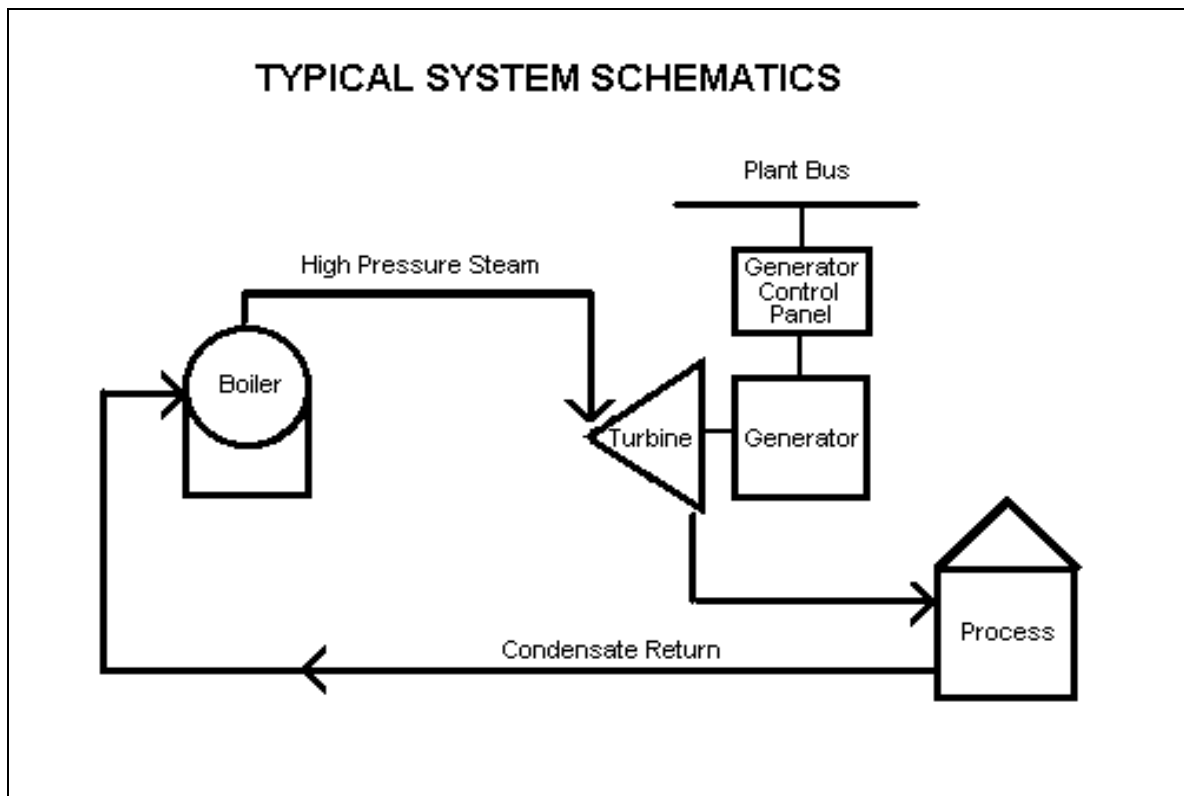


## STEAM TURBINE BASED COGENERATION

A boiler generates steam at a high pressure since it is cheaper to transport steam at higher pressure. Normally, steam is throttled through a Pressure Reducing Valve (PRV) to a lower pressure for use. Using a PRV “kills” the electricity generation potential of the high-pressure steam.



A Back-Pressure Steam Turbine System utilizes this high-pressure steam and gives out the same steam at the required lower pressure to fit for use in the process and simultaneously generates **electricity too.**

**The quantum of power generation is a function of two main factors: Steam Flow & Pressure Drop through the turbine. These two parameters determine how much power can be made. Each has to be large enough to make enough power to yield a reasonable payback.**

## CASE STUDY FOR BACK PRESSURE STEAM TURBINE

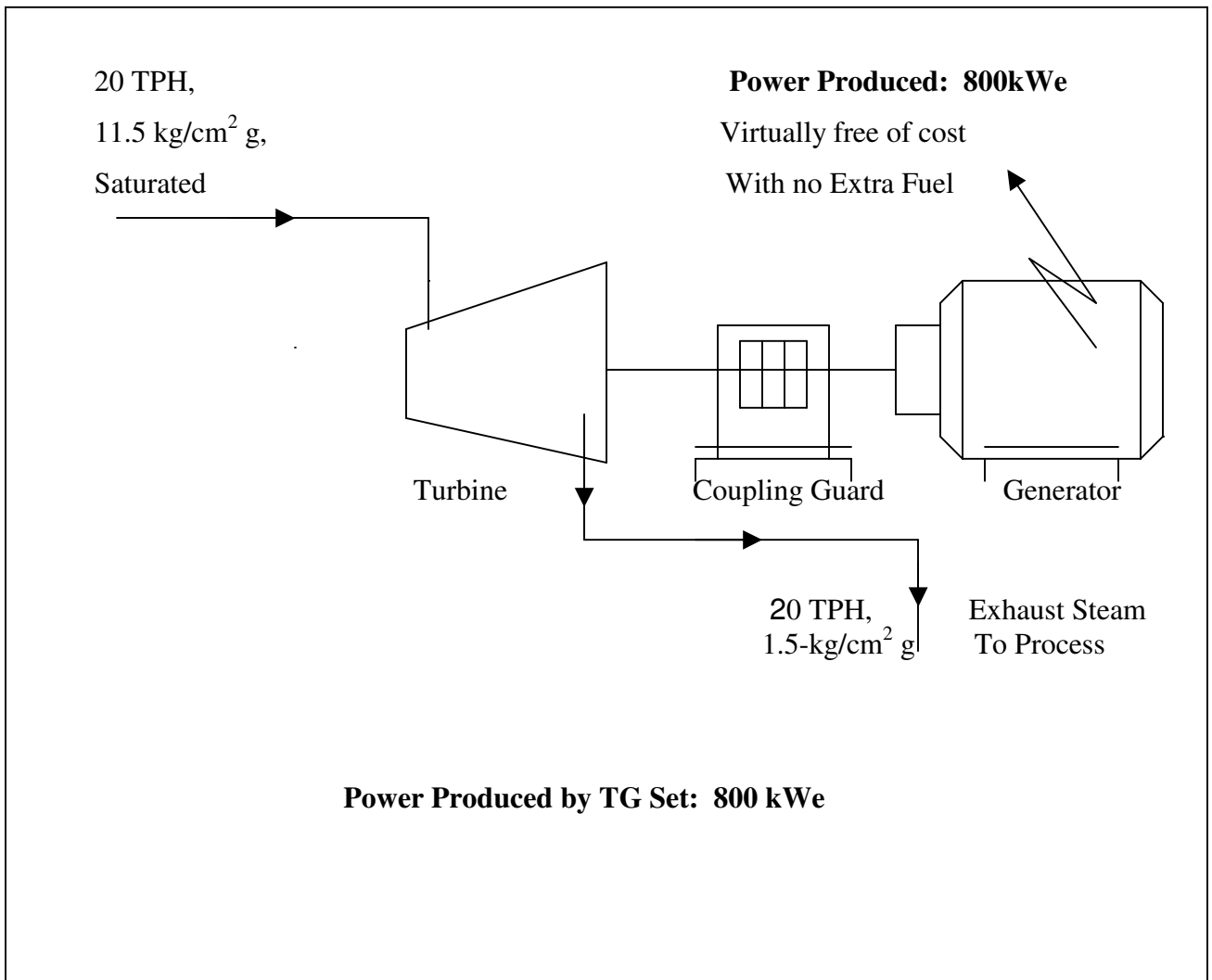
### Existing Steam Parameters:

Steam Flow: 20 TPH,

Inlet Pressure: 11.5 kg/cm<sup>2</sup> g,

Exhaust Pressure: 1.5 kg/cm<sup>2</sup>

The backpressure steam turbine will work same as your existing Pressure Reducing Valve (PRV) and will produce the electricity, at virtually free of cost & without any additional fuel. Back Pressure steam turbine is used, when the exhaust steam from the turbine, has to use in the process.



## ECONOMIC ANALYSIS

**Savings:**

**Power produced** : **800 kWe**

**Costs:**

**Steam Cost** : **Rs. 44.80 Lacs**

**Interest cost on net investment** : **Rs. 11.20 Lacs**

**Net Saving:**

**Simple payback** = **Net investment / Net savings**

= **7.2 Months**