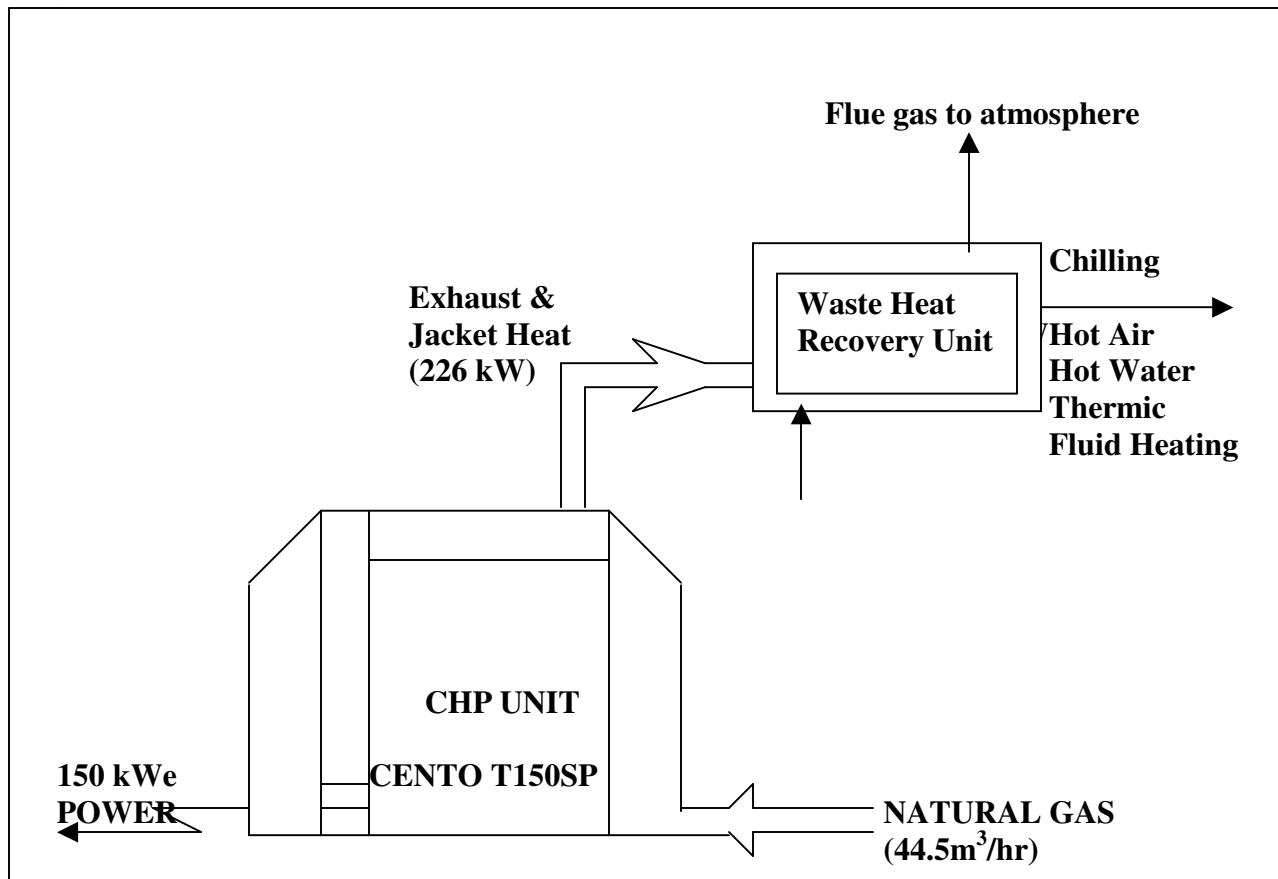


## NATURAL GAS (CHP) BASED CO-GENERATION SYSTEMS

The concept of co-generation means the combined production of electric energy and heat.

Unlike the classic power plant, where heat produced in the creation of electricity escapes into the environment, **C H P based co-generation unit uses the heat produced by the gas engine, to meet the heating or chilling load** (using Vapor Absorption Chillers) and thus saves both fuel and money needed for its purchase. The capacity of C H P unit ranges from 22 kW to 3.8 MW.

### Technical & Heat Utilization Details for a typical Natural gas fired C H P module



### **Natural Gas Engine Specification:**

- 1) Type of Gas Engine: **Cento T150 SP**
- 2) Electrical output: **150 kW**
- 3) Heat Output: **226 kW**
- 4) Gas consumption at 100% of output: **44.5 m<sup>3</sup>/hr**
- 5) Per unit Cost: **1.36 Rs/kW**

### **Utilities met:**

#### **1) Hot Water:**

It will provide 2200 kg/hr of hot water at 90 deg. C

#### **2) Hot Air:**

Inlet temperature: 30<sup>0</sup>C

Outlet temperature: 230<sup>0</sup>C

Quantity of hot air available from Cento T150 SP : **500 kg/hr**

#### **3) Thermic Fluid Heating:**

It will heat 4.6 m<sup>3</sup>/hr of Thermic fluid from 250<sup>0</sup>C to 270<sup>0</sup>C

It will heat 6.7 m<sup>3</sup>/hr of Thermic fluid from 180<sup>0</sup>C to 200<sup>0</sup>C

### Economic Analysis

<b>Power Generation</b>	=	<b>150KW</b>	
Fuel Consumption	=	44.5 NM <sup>3</sup> /hr	(Natural Gas)
Power savings	=	RS/- 60 Lacs.	
Gas Cost	=	RS/- 32 Lacs	

### **Heat Savings**

Hot water for boiler ( 95 KW primary heat )	=	RS 8.5 Lacs
Thermic Fluid heating on exhaust gas ( 35 KW )	=	RS 5 Lacs
Hot air generation from Exhaust gas ( 35 KW)	=	RS 5 Lacs
Net Savings	=	Rs/- 46.5 Lacs
Payback period	=	Less Than One year.