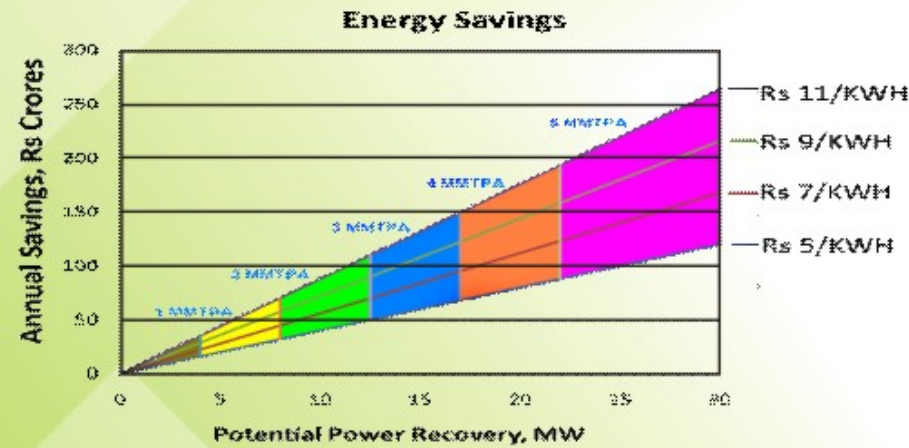


**Why should we go for PRT?**

- It recovers energy from the flue gas and produces power. Typically installed in parallel to Orifice Chamber.
- It does not require any additional fuel for generating power
- No additional emissions to environment
- Clean Energy
- Typical power produced is enough to meet the Main Air Blower power requirement

**When to go for PRT?**

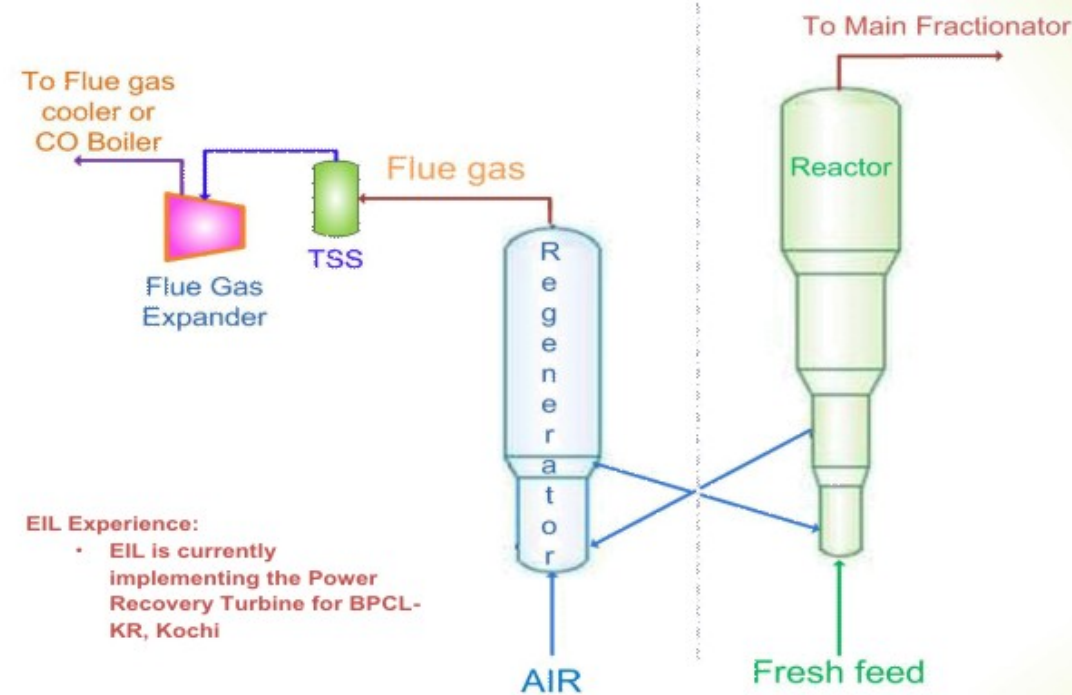
- From environment considerations:  
Today, Tomorrow will be too late
- From economic considerations:  
If power cost is more than Rs 6.5



**Challenges while retrofitting in existing units:**

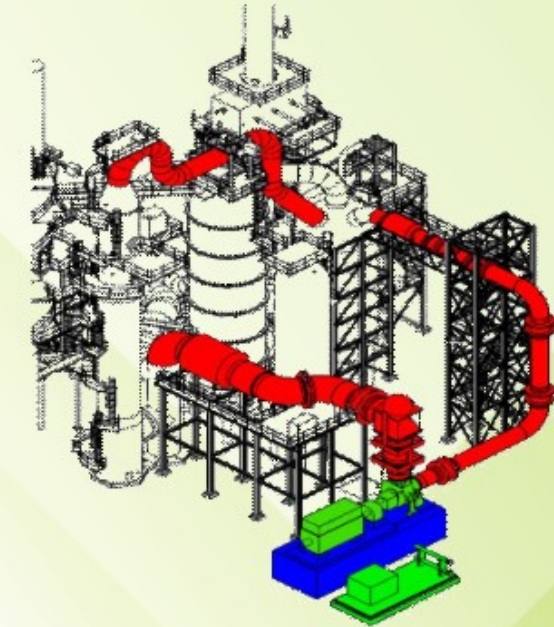
- Modifications in the flue gas line.
- Power Recovery Turbine inlet line needs to be hot wall design.
- Space requirement for PRT. Typically for 12.5 MW Power Recovery Turbine, space of 20m x 10m is required,
- Modifications in interlocks are required.

Parameter	Case study 1	Case Study 2	Case Study 3
FCC Plant Capacity	2.2 MMTPA	4.0 MMTPA	5.0 MMTPA
Flue Gas Flow rate	330 TPH	448 TPH	504 TPH
Flue Gas MW	29.45	29.1	28.84
Flue gas Pressure	1.07 Kg/cm <sup>2</sup> g	1.3 Kg/cm <sup>2</sup> g	1.68 Kg/cm <sup>2</sup> g
Flue gas Temperature	699 C	662 C	714 C
Expander O/L Pressure	0.09 Kg/cm <sup>2</sup> g	0.07 Kg/cm <sup>2</sup> g	0.14 Kg/cm <sup>2</sup> g
Expander O/L Temperature	593 C	538 C	542 C
Power Generated	11.9 MW	18.2 MW	29.5 MW
Typical Payback period considering Rs 5/KWH as power cost	4.0 yrs	2.9 yrs	2.3 yrs



**EIL Experience:**

- EIL is currently implementing the Power Recovery Turbine for BPCL-KR, Kochi



**References of Operating Plants**

- Reliance Industries Ltd, Jamnagar, India
- China Petroleum Corporation, Taiwan
- KNPC, Kuwait
- Takreer, Abudhabi
- Petrobras, Brazil

**Under design or implementation:**

- BPCL-KR, Kochi, India
- IOCL Paradip, India

**Known Suppliers**

- Dresser Rand
- Elliott Ebara
- GE Energy

	Case Study 1	Case Study 2	Case Study 3
MW of Electricity Produced	11.9	18.2	29.5
Sufficient for electricity use by no. of Indian residential houses (based on country average)	30,570	46,750	75,770
Greenhouse emissions savings equivalent in terms of CO <sub>2</sub> , MT	67.17	102.73	166.51
Which is equivalent to			
emissions from number of passenger vehicles	14,000	21,400	34,700
m <sup>3</sup> of gasoline consumed	28,500	43,600	70,650
barrels of oil consumed	1,56,205	2,38,900	3,87,230
No. of trees required to be grown for 10 years for Carbon sequestration	17,22,266	26,34,053	42,69,482
Acres of forests required for Carbon sequestration annually	55,056	84,203	1,36,483



**Vote for Clean Energy**

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