INCIDENTAL POWER GENERATION

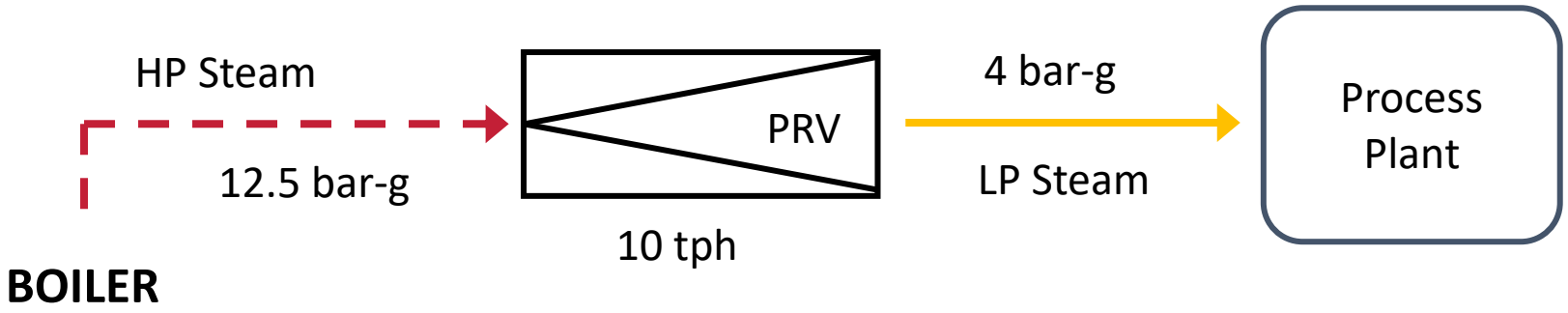
ROLLCE ENGINEERING

ROLLCE™ ENGINEERING PTE LTD
ROLLCE COMMITTED TO EXCELLENCE

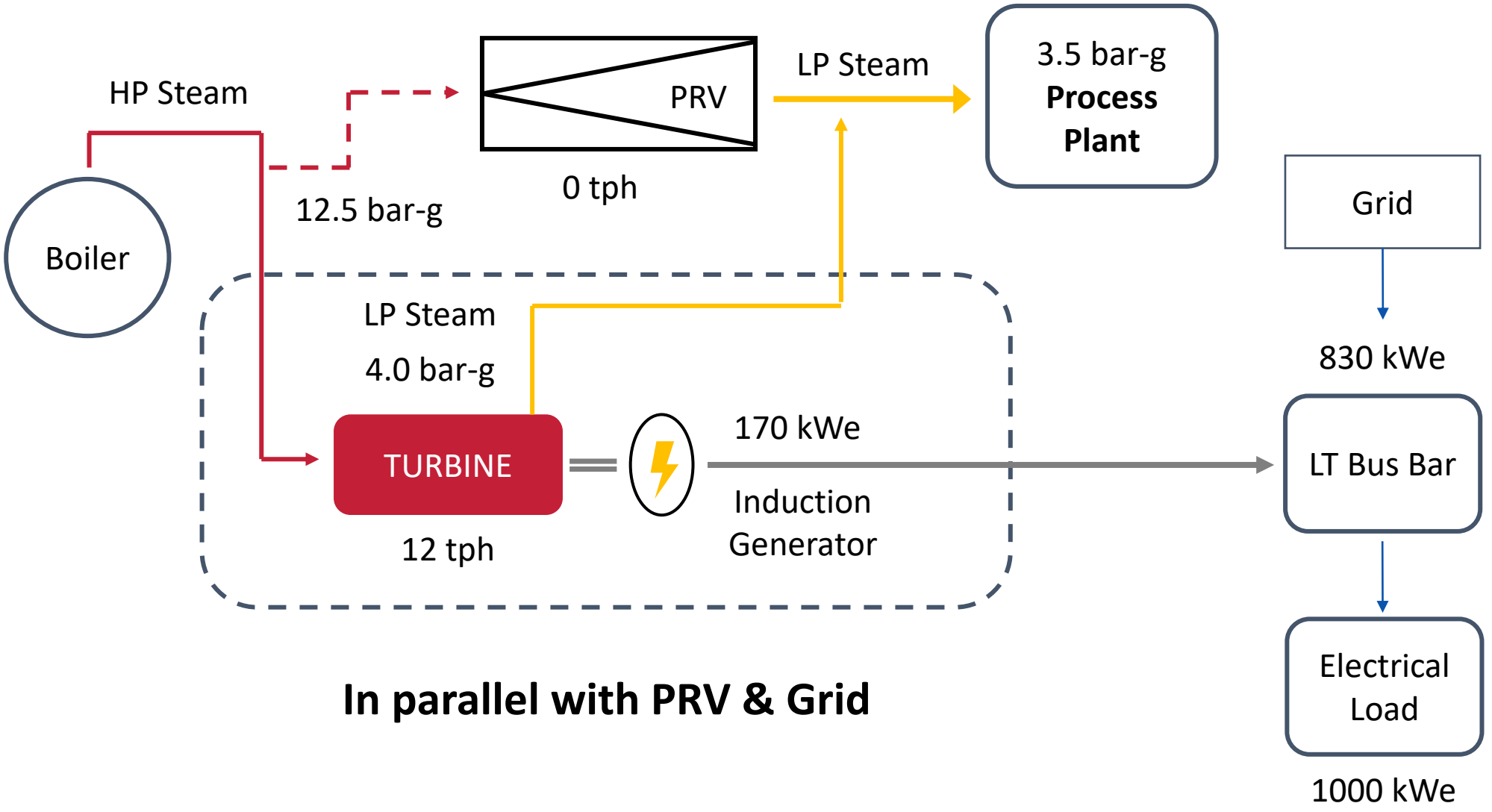
Who We Are ?

As an agile-minded organisation, Rollce Engineering is always looking to improving our services and solutions as a multi-disciplinary engineering and construction company. With our integrated solutions on smart energy in the field of Energy & Environment Conservation, Rollce is creating a new statement on sustainability and conservation practices. Our innovative solutions and cutting-edge products help to create a New Tomorrow with our technology and partners.

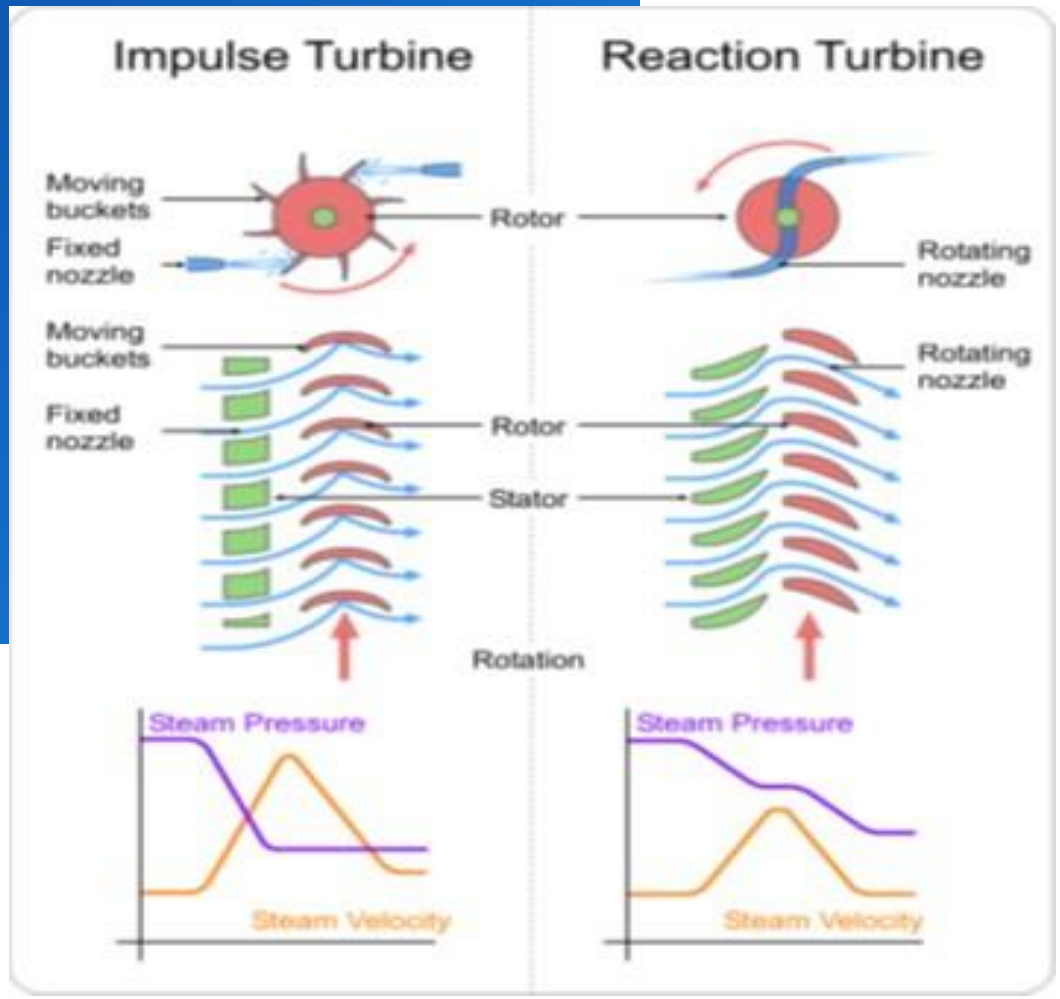
Present Way – Steam Throttling



- Steam pressure/throttling reduction through a Valve
- Steam potential in pressure reduction not utilised effectively



In parallel with PRV & Grid

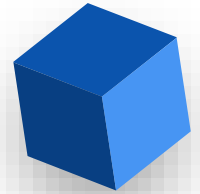


Steam Turbines

Incidental Power Generation

Back pressure turbines developed for saturated steam harnesses the potential of the pressure difference between boiler pressure and process pressure to generate incidental electricity and operate in parallel to PRV.

Turbines Operating Zones



➢ Boiler Operating pressure range	7 – 32 bar-g
➢ Process pressure range	up to 3 bar-g
➢ Steam flow range	3 - 30 TPH
➢ Steam condition	saturated at inlet
➢ Incidental Power range	50 to 1500 kW
➢ Turbine operating speed	3000 – 8300 rpm

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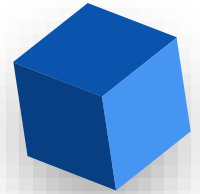
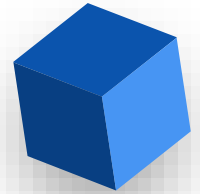
Turbine Advantages



- Completely automated unit – with PLC & HMI
  - Ease of operation and troubleshooting
  - No manual intervention even during start/stop
  - Minimal operator interface
  - Improves reliability
  - Control logic takes care of the process variations
- Induction generator (IG) based system
  - No separate grid synchronization required
  - Simple system and ease of operation
  - Can operate even with DG sets
  - No speed governor required

Turbine Advantages



- Traditional turbines had limitations on steam turn-down (~50%) and poor efficiency at part load operations
- Next Gen Turbine with Multiple inlet control valves overcomes both issues
  - Improves turndown up to 20% of the rated flow
  - Gives higher output at part loads – more annual yield
  - Completely done automatically based on flow fluctuations without
  - operator intervention
  - Nozzle banks designed according to flow variations and controlled through individual control valves

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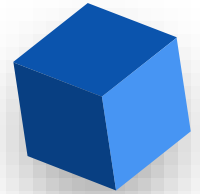
Turbine Advantages



- Fully packaged unit
  - Skid mounted unit requires minimum site work
  - Requires less space for installation
  - Plug-and-play system
- Improved design
  - Minimal maintenance
  - Seals protected from moisture/condensation
  - Less number of components – higher reliability
  - Only annual servicing required

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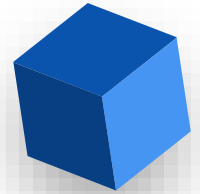
Electrical Integration



- Induction generator – frequency & voltage controlled by grid
- No external grid synchronization is required
- Induction motor – operating at speeds higher than synchronous
- To be connected to the LT bus bar (440 V) line

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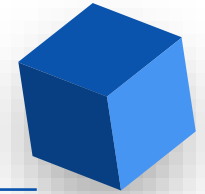
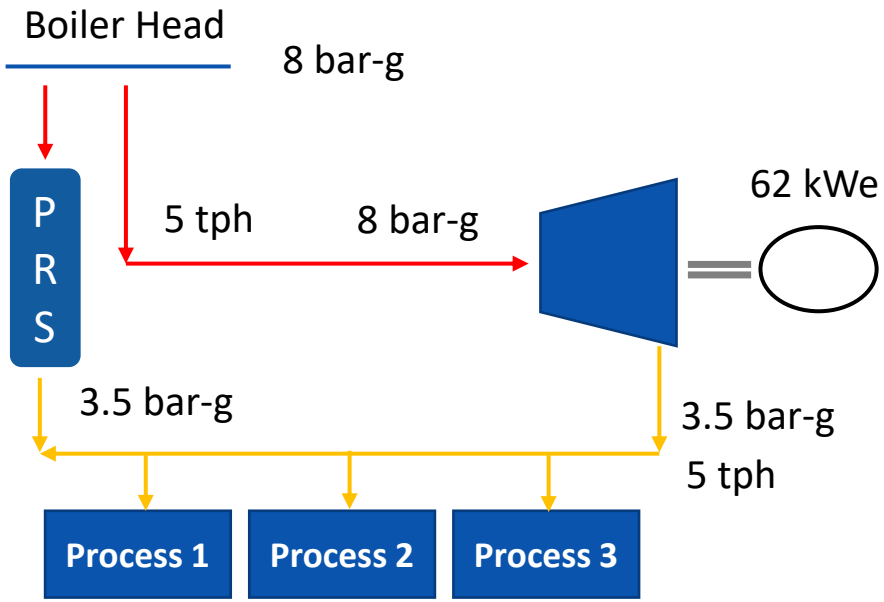
Utilities Required



Sr. No	Parameters	Description
1	Inlet Steam	At the inlet of flange of expander
2	Exhaust steam	At the outlet flange of expander
3	Condensate Drain	From the drain header
4	Instrument air	At expander
5	Electrical power supply	440 V AC supply at panel

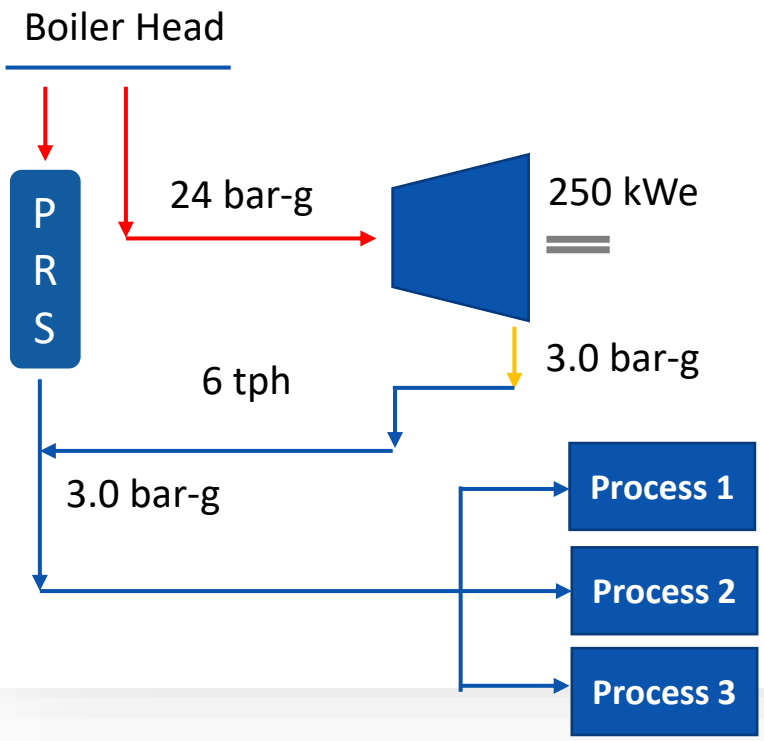
Case Studies

Paper Plant



SAVINGS CALCULATIONS		
Annual average steam flow rate	5.0	tph
Average electrical output	62.0	kWe
Operating hours	22	
No. of working days	330	
Operating hours	7260	hours
Daily electricity generation	1364	kWh
Annual electricity generation	450,120	kWh
Grid Electricity price	0.18	US$/kWh
Annual Savings	81,000	US$/Annum

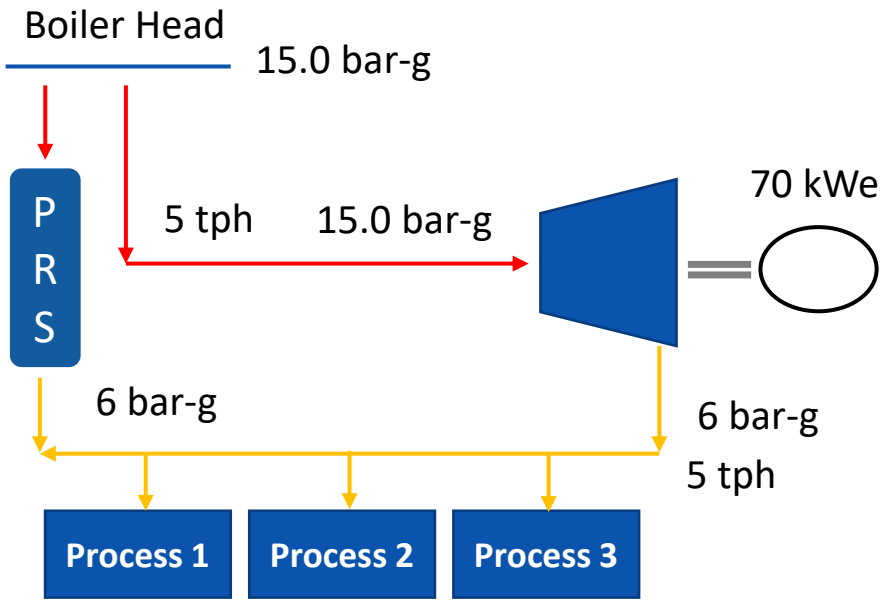
Case Studies
Pharma Plant



SAVINGS CALCULATIONS		
Annual average steam flow rate	6.0	tph
Average electrical output	250.0	kWe
Operating hours	24	
No. of working days	300	
Operating hours	7200	hours
Daily electricity generation	6000	kWh
Annual electricity generation	1,800,000	kWh
Grid Electricity price	0.18	US$/kWh
Annual Savings	324,000	US$/Annum

Case Studies

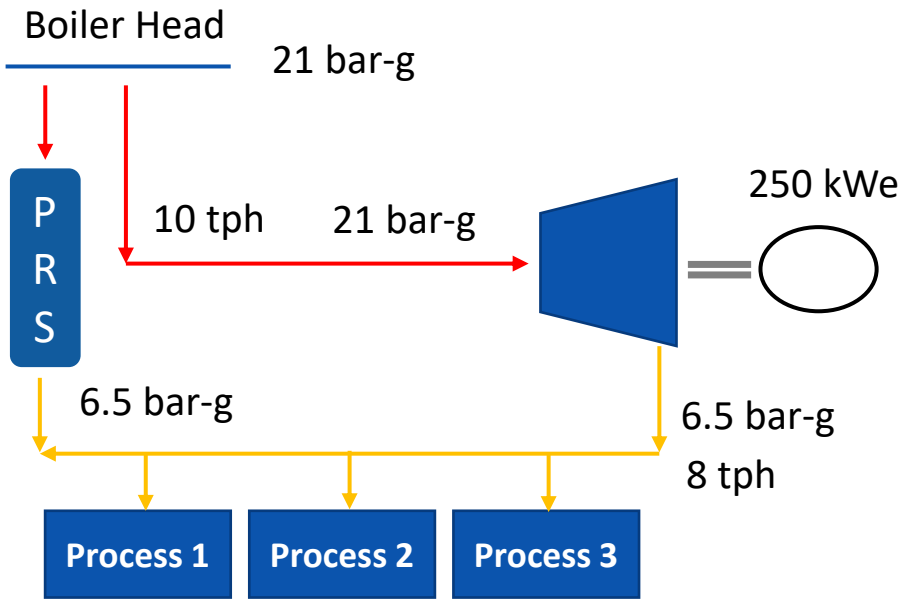
Rice Mill



SAVINGS CALCULATIONS		
Annual average steam flow rate	5.0	tph
Average electrical output	70.0	kWe
Operating hours	24	
No. of working days	330	
Operating hours	7920	hours
Daily electricity generation	1680	kWh
Annual electricity generation	554,400	kWh
Grid Electricity price	0.18	US$/kWh
Annual Savings	99,792	US$/Annum

Case Studies

Oil Mill/Refinery



SAVINGS CALCULATIONS		
Annual average steam flow rate	10.0	tph
Average electrical output	250.0	kWe
Operating hours	24	
No. of working days	330	
Operating hours	7920	hours
Daily electricity generation	6000	kWh
Annual electricity generation	1,980,000	kWh
Grid Electricity price	0.18	US$/kWh
Annual Savings	356,400	US$/Annum

Get In Touch

We would love to hear from you, Drop a message and let our experts walk through any queries you have on our products and services.

LET'S CHAT

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Thank you