

**2ND NATIONAL WORKSHOP CUM TECHNOLOGY EXHIBITION  
FOR 'PROMOTING ENERGY EFFICIENT AND CLEANER  
PRODUCTION FOR SUSTAINABLE INDUSTRIAL GROWTH'**

**Raymond**

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**8-9 March 2018**

# RAYMOND GROUP

Largest integrated manufacturer of fabric in the world,  
produces finest fabric in the world

**60%** Market share  
in India

**4000** Multi brand  
outlets

**637** Exclusive Retail  
Shops

Distributed over

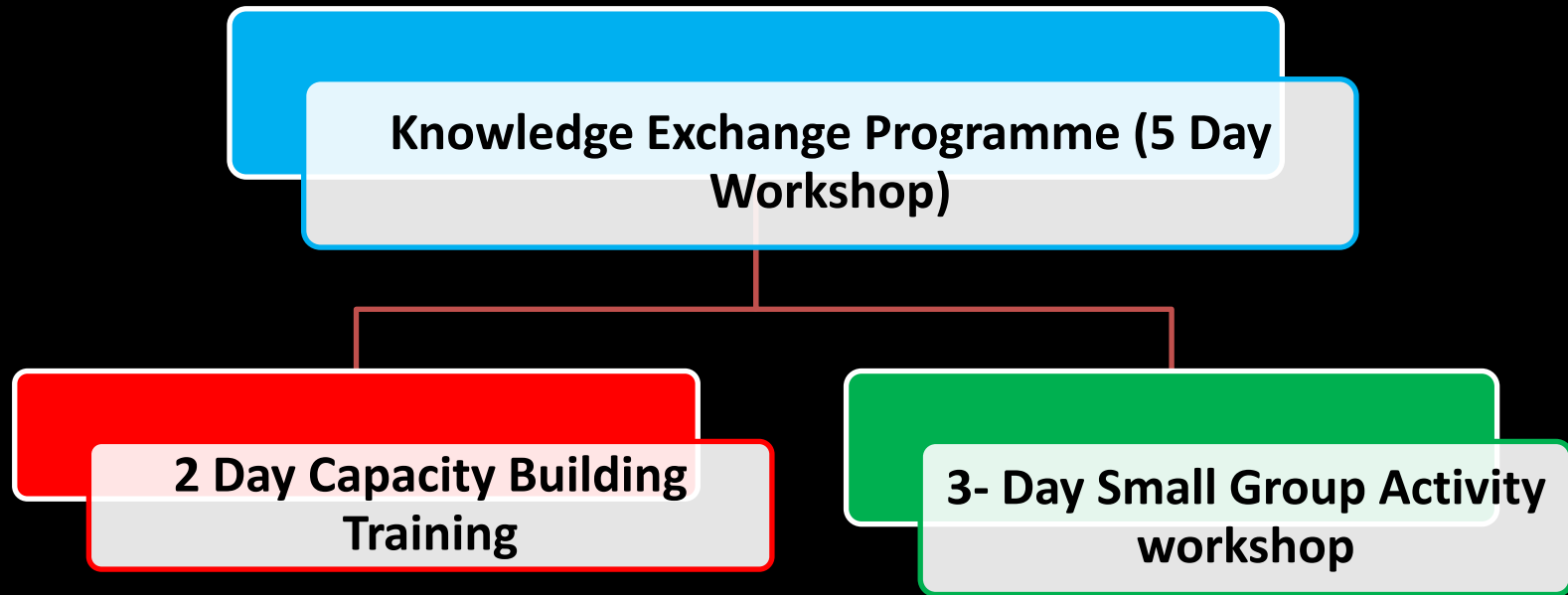
**400** Towns

**150** Cities

Exports to **55** Countries

It was listed as India's most trusted apparel brand by The  
Brand Trust Report in 2015.

# KEP WORKSHOP IN RAYMOND LTD



**49** Participants from **10** Different divisions of Raymond Group

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# SGA WORKSHOP

- A 3 day SGA workshop was organized from 20<sup>th</sup> to 22<sup>th</sup> October 2018 where 49 members from 10 different units of Raymond group were divided into 9 small groups.
- Each group gave a presentation on energy conservation initiatives that can be implemented in their respective plants.

TEAM NAME	NO OF PROJECTS TO BE IMPLEMENTED	EXPECTED ANNUAL SAVINGS (IN MT for coal and in kWh for power)	EXPECTED ANNUAL SAVINGS IN RUPEES
Lakshya	3	1.95 lac kWh	14.63
Explorers	2	2.87 lac kWh 175 MT	30.15
Vision	3	3.5 lac kWh 105 MT	32.00
Diamond	2	3.2 lac kWh	24.00
Energy Commandos	2	10.7 lac kWh 10.74 MT (GAS)	62.00
Impulse	7	7.87 lac kWh 57 MT	110.00
Electron	3	0.31 lac kWh 216 MT	16.2
Sunrisers	8	1.55 lac kWh 144 MT	20.1
Spark	3	3.76 lac kWh	26.32

# SUMMARY

- As of Feb-18, savings achieved through Small Group Activity Programme:
  - Total electrical savings: **11.8 lac kWh**
  - Total thermal savings in coal: **410 MT**
- In terms of INR
  - Total electrical savings: **Rs 89.25 Lacs**
  - Total thermal savings in coal: **Rs 26.65 Lacs**

# ENERGY CONSERVATION INITIATIVES UNDERTAKEN AT VARIOUS PLANTS THROUGH SGA WORKSHOP

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# INSTALLATION OF STEAM EJECTOR IN DIRECT HEATING SYSTEMS

- Steam injector draws in cool water from one end and mixes it with the steam being injected inside and only hot water go out . These ensure full utilization of the total heat as well as avoid steam venting and noise.
- When steam is injected using spurge pipe around 25 -30 % steam is vented due to very high density difference of steam to water.





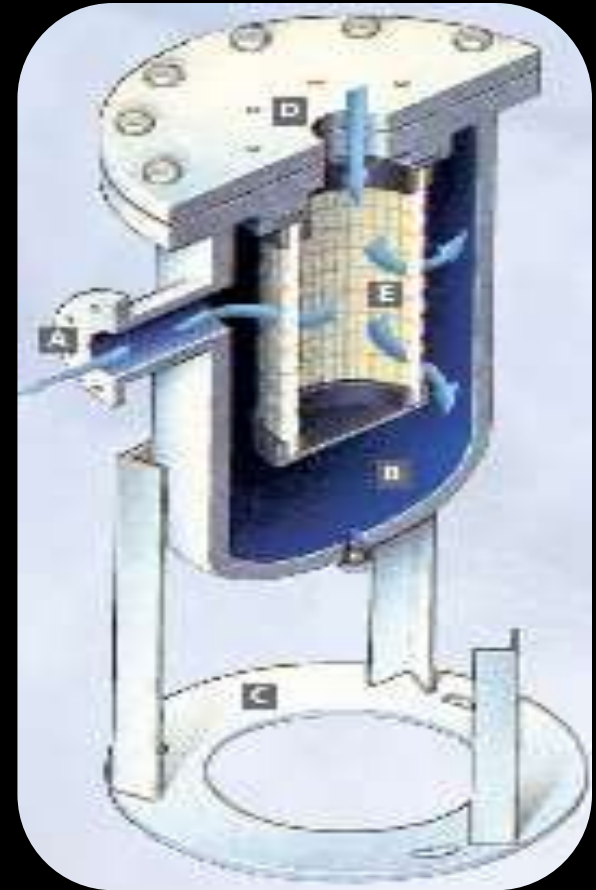
# SAVINGS THROUGH STEAM EJECTOR

- Direct Heating Process is used in –  
Jigger m/c, Vibro, Supervelox, Feed water Tank, Hot Water Tank

DESCRIPTION	UOM	
Daily Steam loss	MT	2.8
Annual Steam loss	MT	1000
Thermal Energy savings in terms of coal	MT	172
Cost Savings	Rs (Lacs)	11.21
Investment	Rs (Lacs)	1.50
Payback	Months	1.6

# JUMBO FILTER IN PLACE OF DDX/PDX FILTER

- This reliable, efficient filter offers following features –
- Expected pressure drop after 4 years is approx. 1.5 psig
- Contaminant free air discharge. It collects particle greater than 3 micron at 100% efficiency and 0.1 micron at 99.98% efficiency.
- The unique element designed results in element life up to 4 years
- The housing is internally painted with epoxy painted for long lasting corrosion resistance.



# SAVING CALCULATIONS

## EXISTING LINE FILTERS VS. INGERSOLL RAND NL MODULE (ROIC)

	Existing LF	IR NL Module	Remarks
DDX (Primary)	0.15 bar		Replacement Life for each element is 1 year as per site data
PDX(Secondary)	0.15 bar		Replacement Life for each element is 1 year as per site data
Total	0.3 bar	0.06 bar	Difference = 0.24 bar (Replacement Life is around 4-5 Years)
Thumb Rule	0.06 bar	= 0.5%	Power consumption of rated power
Measured Pressure Drop @ site	0.3 bar	= 2.5%	Power saving after installing IR NL module
Total Power Consumption Per Day (Current)	18000		Average 18000 Units per day
Savings for per year (kWh Units)	159750		
CFM savings @ 6.3 Kg/Cm <sup>2</sup> per hour	93 cfm		450 units Per day unit = 18.75 Kwh / 0.201 SPC
Saving in INR	11. 98 lacs		Units 159750 * 7.50 Power cost per unit
Total Investment (Rs)			9.5 lacs
ROI			8.5 Months

# POWER SAVING BY CHANGING DELTA TO STAR CONNECTION IN RINGFRAME MACHINES

- In Sampling dept., Ringframe machines of 15 kW main motor were running in delta connection.
- We checked and found out that the motor load is 4kW in running.
- So all the delta connections of the Ringframe machines were converted to star connections.

# SAVINGS CALCULATIONS

		Initials	Finals	Diff
15 KW motor running in Delta Connection	kW	2588.1	2673.4	85.2
	Hr	714.9	737.7	22.8
Power Calculated in Delta Connection	kWh	3.73		
15 KW motor running in Star Connection	kW	2812.5	2939.1	126.6
	Hr	768.1	831.4	63.3
Power Calculated in Star Connection	kWh	2		
Savings achieved per Ring frame m/c	kWh	1.7		
Savings per year per Ring frame m/c	kWh	12070		
Savings per year for 10 Ring frame m/c	Rs (Lacs)	9.05		

# ELECTRICAL SAVING BY CONTROL OF SUCTION FAN MOTOR IN RINGFRAME MACHINE

- Initially suction fan motor of ring frame machine was running in full rpm.
- Now, VFD has been installed for suction fan motor along with Pressure transducer in main suction duct.
- Transducer provide feedback signal to the drive and accordingly, the motor RPM can be controlled as per required the suction.



# SAVINGS CALCULATIONS

DESCRIPTION	UOM	
Reading before installation of VFD	kW	3.31
Reading after installation of VFD	kW	1.47
Total Saving/Day	kW	1.84
Total Saving/Year	Lac kW	0.16
Saving In Rupees	Rs (in Lacs)	1.19
Investment	Rs (in Lacs)	0.7
Payback	Months	7.1

# CONVERSION OF DC TO AC MANGLE MOTOR WITH VFD ON STENTER MACHINE IN FINISHING DEPT

- Initially DC motor of 16.5 kW was installed for mangle on Stenter machine two in nos. and speed control was done by dimmer.
- Now, AC motor of 16 kW has been installed with VFD.



DESCRIPTION	UOM	
Annual Saving	kWh (Lacs)	0.16
Annual Saving	Rs (Lacs)	0.95
Investment	Rs (Lacs)	1.00
Payback	Months	1.00



# ENERGY SAVING BY INSTALLATION OF VFD ON SPEED FRAME MACHINE AT PV SPG

- Initially the speed control of the main motor 20 kW was done by using fluid coupling.
- This system has been replaced with VFD



DESCRIPTION	UOM	
Annual Saving	kWh (Lacs)	0.10
Annual Saving	Rs (Lacs)	0.84
Investment	Rs (Lacs)	0.54
Payback	Months	8

# ENERGY SAVING BY CONVERSION OF DC TO AC DRIVE ON STENTER NO.4 AT FINISHING DEPT

- Initially DC motor was installed for mangle, platter and main drive on Stenter machine having load of 38 kW.
- This has been replaced with AC motor with VFD, PLC and HMI of load 35 kW.



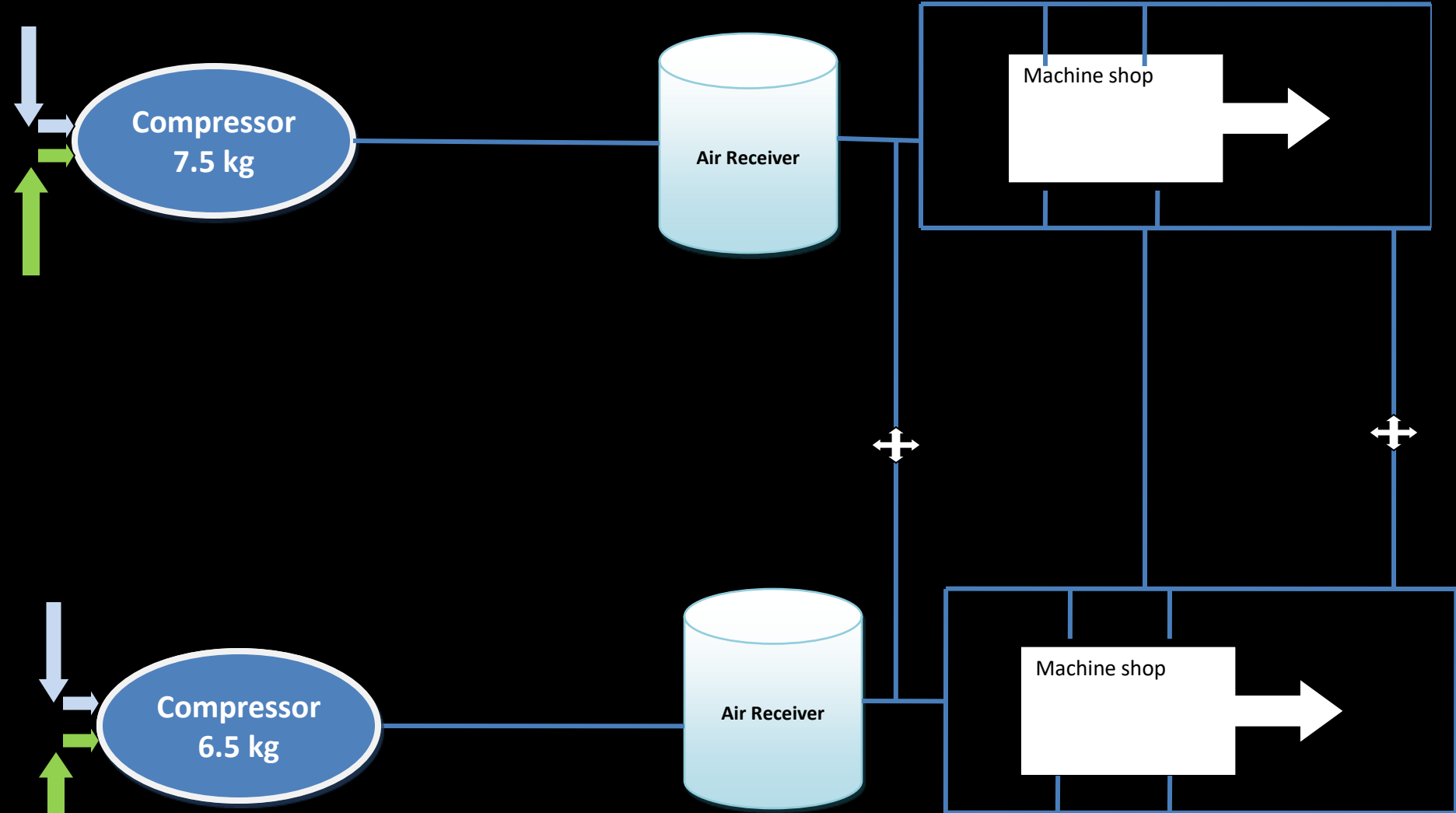
DESCRIPTION	UOM	
Annual Saving	kWh (Lacs)	0.32
Annual Saving	Rs (Lacs)	1.92
Investment	Rs (Lacs)	12.55
Payback	Years	6

# ENERGY SAVING IN COMPRESSED AIR SYSTEM



- Reduction of generation air pressure from 7.8 kg/cm<sup>2</sup> to 7.5 kg/cm<sup>2</sup> and further up to 6.5 kg/cm<sup>2</sup>.
- This has been done by separation of High pressure compressed Air Network into (7.5 Kg/cm<sup>2</sup>) and (6.5 Kg/cm<sup>2</sup>).
  - Total Saving per year = 10.7 Lac kWh
  - Total Saving in Rs per year = Rs 60 Lacs

# Segregation of compressor line network



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# BIOGAS GENERATION FROM SIZING MIX WASTE

- Currently, food waste is being used for biogas generation.
- By adding sizing waste, the overall biogas generation capacity will be increased from 40 kg/day to 70 kg/day.
- Increased qty. of biogas can utilized at Guest house and canteen for cooking.

# SAVING CALCULATIONS

DESCRIPTION	UOM	
Daily Saving	kg	30
Annual Saving	MT	10.74
Annual Saving	Rs (Lacs)	3.60
Investment	Rs (Lacs)	10
Payback	Months	33

- This will lead to Natural resource saving.
- Reduction in GHG Emission.

# REPLACEMENT OF 36 W 6000 FLUORESCENT TUBE LIGHT IN PLANT WITH 18 W LED TUBES.

- 6000 numbers of old 36 W Fluorescent tube lights have been replaced with energy efficient 18 W LED tubes in Silver Spark Apparel Limited, Bangalore.
- Annual Savings:
  - **3.03 lac kWh**
  - **Rs 21.2 lacs**

# CONCLUSION

- *The 5-day workshop organized by KEP has proved to immensely beneficial for Raymond Group.*
- *With participation from 10 different units of Raymond Group, the event was a huge success that lead to exchange of information, ideas , knowledge & Huge Energy saving initiatives.*
- *This Workshop ignite the light of Energy Efficiency in Everyone's mind.*
- *Every industrial group should take initiative to organizing such events.*

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*A huge thank you to KEP for enlightening us in the*



***THANK YOU*** 😊

***Save Energy ...Save Future !***

8-9 March 2018