Grasim Industries Limited

Unit-Indian Rayon, Veraval

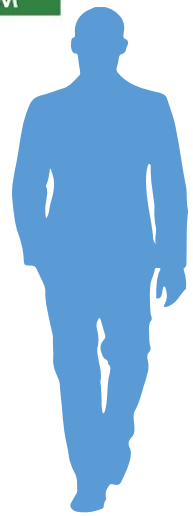
CII National Award for Excellence in Energy Management 2024

Presenting Team:

Mr. Maitrey Pathak(AGM SSY -Mechanical)
Mr. Shivraj Singh Solanki (Manager SSY-Textile)

Date : 10-12th Sep'2024

Our Journey So far…



Establishment

1956- IR Incorporated as a producer of Pot Spun VFY with 4 TPD capacity

1959- Foundation stone laid by Late Sh. Lal Bahadur Shastri

1956-1959

Acquisition

1963- Commercial production started

1966- Acquired by Aditya Birla Group

3.7 KTPA

1963-1966

Reawaken

1987-Indian Rayon Corporation renamed as Indian Rayon and Industries Ltd.

10.5 KTPA

1987

Backward Integration

1996- Installed 16.5 MW Captive Power Plant

1997- Installed 100 TPD Caustic Soda.

1998- Installed Continuous Spinning Machines (CSY).

15.6 KTPA

1996-1998

Expansion

2004 - 1st Expansion of Continuous Spinning Machines & Indian Rayon became a unit of ABNL

2000-2004

CSY & PP Expansion

2006- 2nd Expansion of CSY Machines & erection of 18.5 MW Captive Power Plant

2006

Expansion

2008- 1st Expansion of Caustic Soda Plant (up to 250 TPD)

2009- 6 Nos. PSY Machines commissioned

2012- 66 KV 12 MVA Power Grid Connection

2013- SSY Expansion with capacity 5.5 TPD

2014 - CSY Expansion of 7 M/Cs

2015- SSY Expansion with indigenous M/C

2015- CSY Prototype M/C development

2015-18 SSY Expansion : 21 M/Cs commissioned bringing total capacity to 13.5 TPD

2017- Merger of ABNL with Grasim

21.2 KTPA

2008-2017

Continuous Progress

2021-20.0 MW Turbine

2022-CSY-4 12 M/C expansion

2023- SWRO and 3 SSY m/c (U/P)

23 KTPA

2019-22

Process Flow

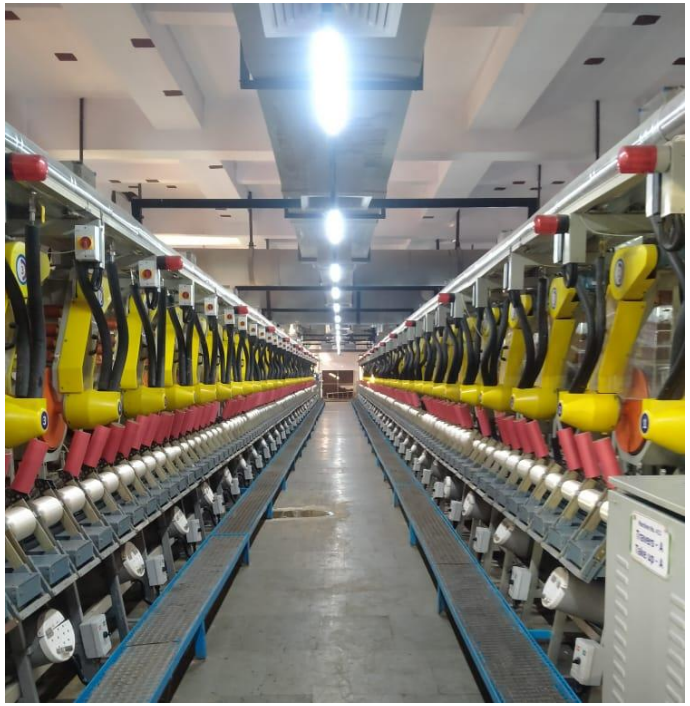
VFY Manufacturing Technology

PSY

No. of machines	94.2 (19H+75V+0.2 Pilot)
Production	43.0 TPD
Product Range	Bright, Dope Dyed, Dull finish yarn, High denier per filament yarn
Denier	60-1200

CSY

No. of machines	36.5 (Sanico:22,Himson:09, Handan-5.5, Pilot:01)
Production	6.5 TPD
Product Range	Bright, Dope Dyed, Dull finish yarn
Denier	20-300

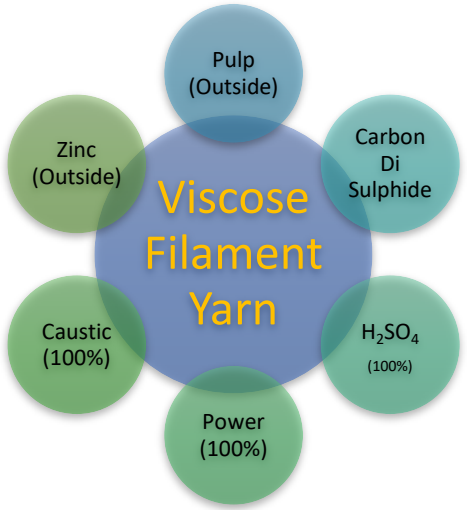


SSY

No. of machines	61+1 Pilot Machine
Production	13.5 TPD
Product Range	Bright
Denier	20-120

Integrated operations and Major Product

Product	Capacity	Uses
VFY	63.0 TPD	Textile Apparel , Satin, Sarees
Sodium Sulphate	37.8 TPD	Dye, Organic Chemical
Sulfuric Acid (H_2SO_4)	105 TPD	Captive for VFY
Carbon di Sulphide	27.4 TPD	Captive for VFY
Captive Power Plant	42.0 MW	Captive (VFY + Caustic)
Caustic	250 TPD	In process, Dye, Detergent Chemical



Manufacturing Technologies

Provides different yarn types suitable for specific applications across a particular denier range

Pot Spun Yarn (PSY)

60Denier to 1200Denier

IR - Veraval | CR-Kalyan

- Zero Shrinkage
- Wider Applications

Continuous Spun Yarn (CSY)

20Denier to 300Denier

IR - Veraval | CR-Kalyan

- Higher Shrinkage
- Higher Tenacity

Spool Spun Yarn (SSY)

20Denier to 120Denier

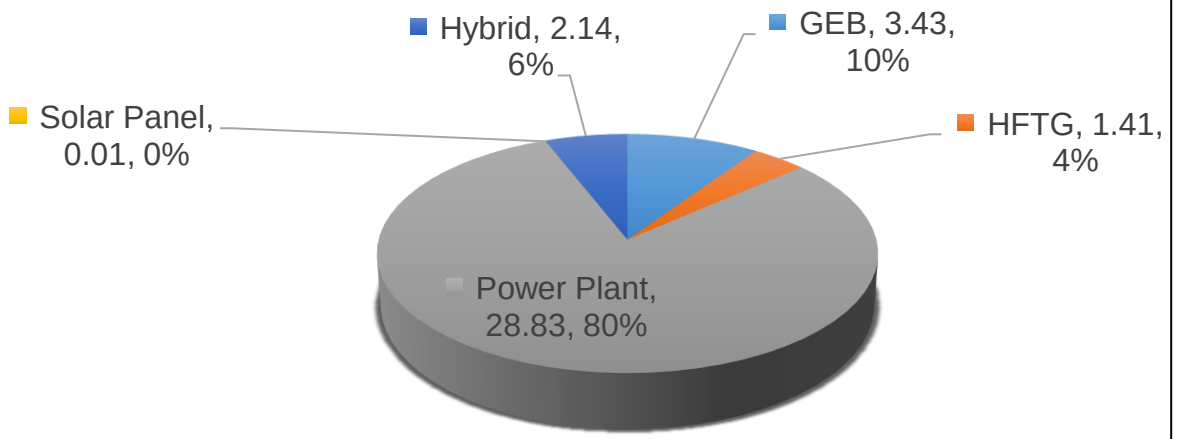
IR - Veraval

- Zero Shrinkage
- Better Uniformity
- Higher Tenacity

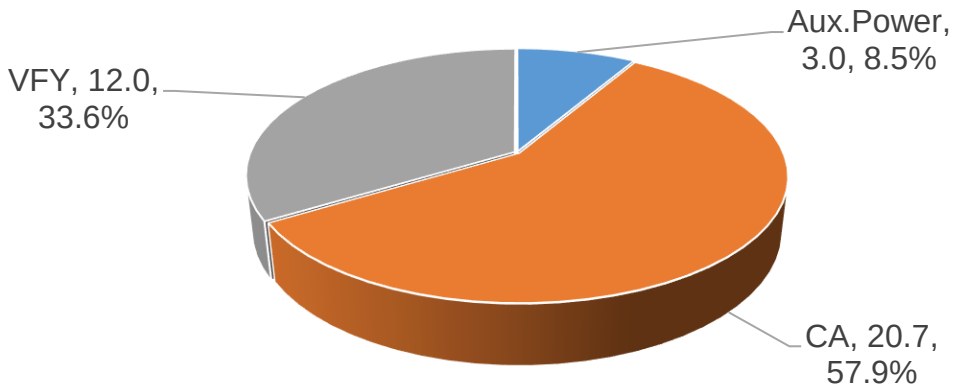
Management Systems

#	Management System	Version	Certifying Agency	Issued On (Initial issue)	Validity
1	**ISO 9001:2015 (Quality Management System – "QMS")**	2015	TUV-NORD	29/05/2022 (29.08.2003)	28/05/2025
2	**ISO 14001:2015 (Environment Management System – "EMS")**	2015	TUV-NORD	29/05/2022 (27.04.2005)	28/05/2025
3	**ISO 45001:2018 (Occupational Health & Safety)**	2018	TUV-NORD	29/05/2022 (28.04.2004)	28/05/2025
4	**SA 8000:2014 (Social Accountability – "SA")**	2014	TUV-NORD	19.01.2023 (30.11.2007)	30/11/2025
5	**ISO 50001:2011 (Energy Management System)**	2018	TUV-NORD	29/05/2022 (11.06.2015)	28/05/2025
6	**Oeko Tex Standard 100 Class – 1 (Product Certificate)**	-	Shirley Technology -UK	Jan-23	24/01/2024
7	**FSC – COC (Chain of custody)**	2017	SGS	18.09.2019	Sept'2024
8	**Canopy Style (Green Shirt)**	2020	-	-	-
9	**Inditex Social Audit**	2021	-	Social Audit	-
10	**Higg Index**	2021	Intertek	Third party verification	-
11	**ISO/IEC 17025:2017**	2017	NABL	26/07/2022	25/07/2024
12	**ISO 27001:2013**	2013	TUV-NORD	29/05/2022	28/05/2025

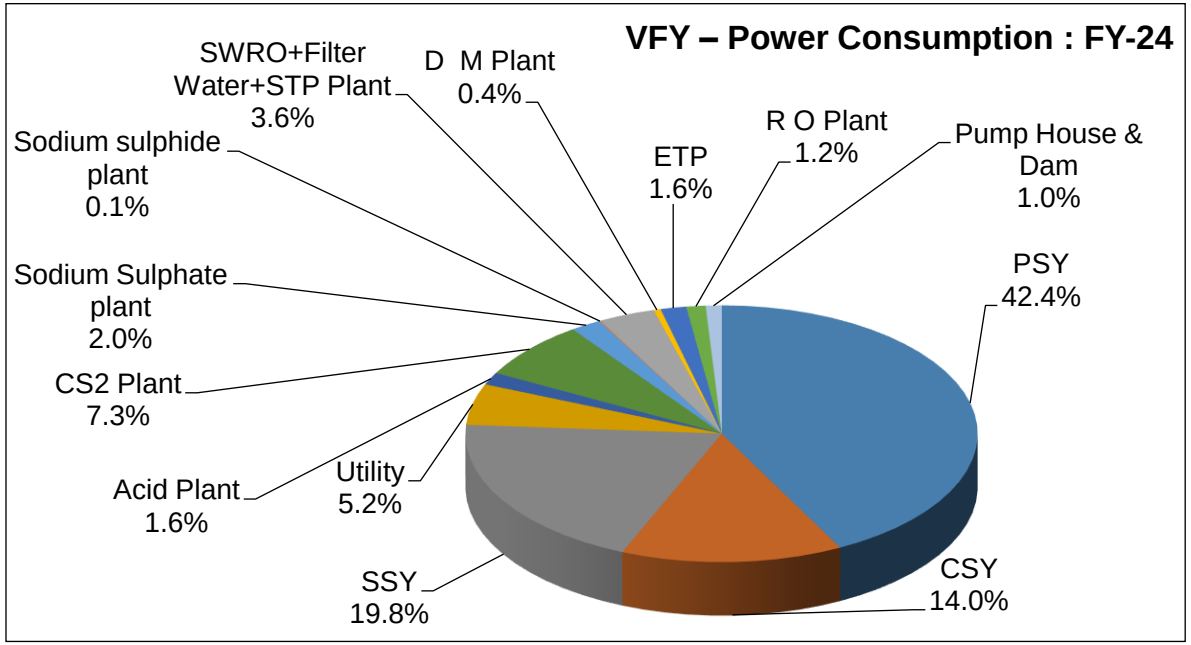
Energy Profile



Power Sources : FY 24



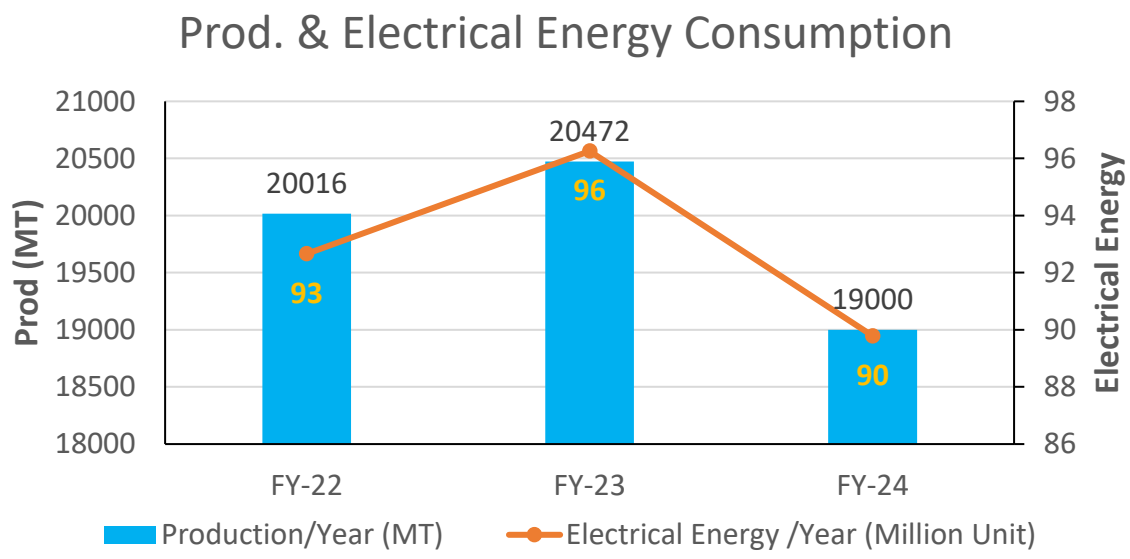
Power Consumption : FY-24

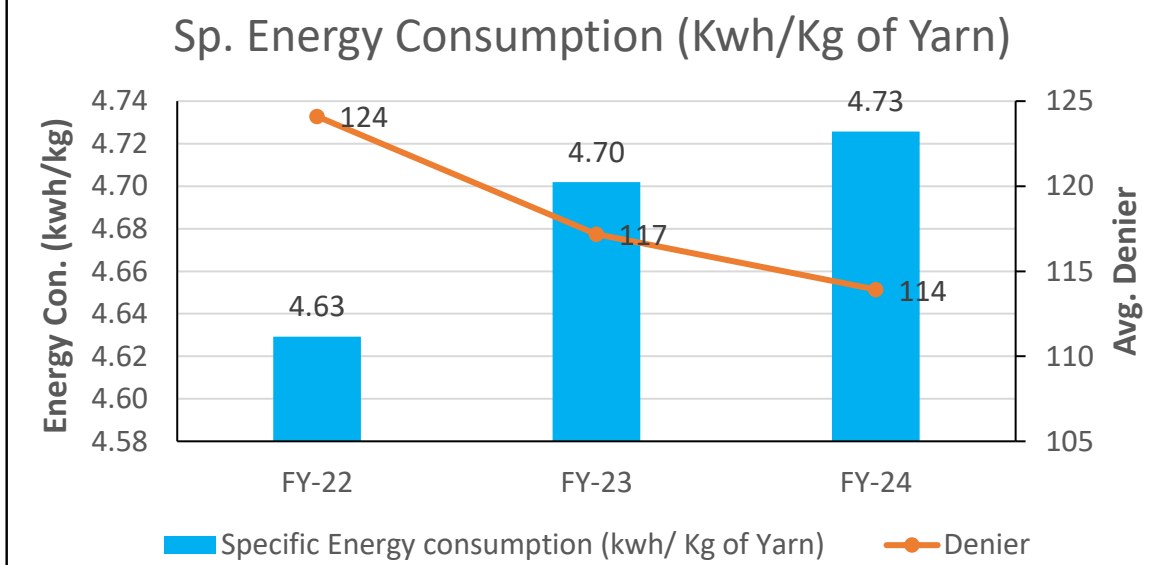


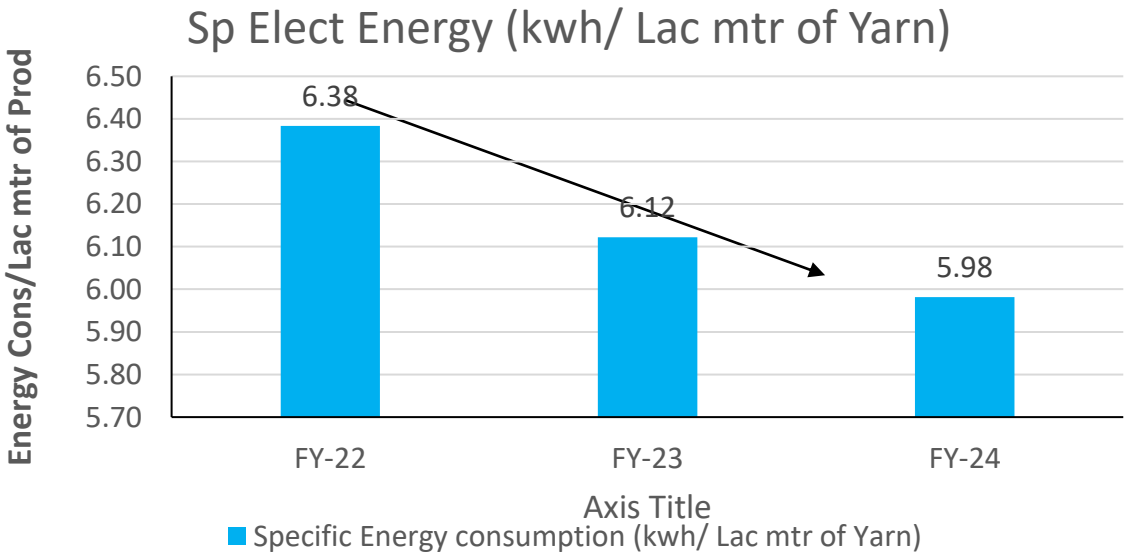
VFY – Power Consumption : FY-24

- Overall power consumption is 36-37 MW
- 84% is our own generation and 16% is from GEB
- In Jun'2023 business has started purchase of hybrid 7.2 MW renewable energy (3.5 MW from Solar generation & 3.5 MW from wind Energy) from Aditya Birla Renewable Pvt. Ltd.
- This has a potential to increase the share of renewable energy source

Overall Energy Consumptions: Electrical





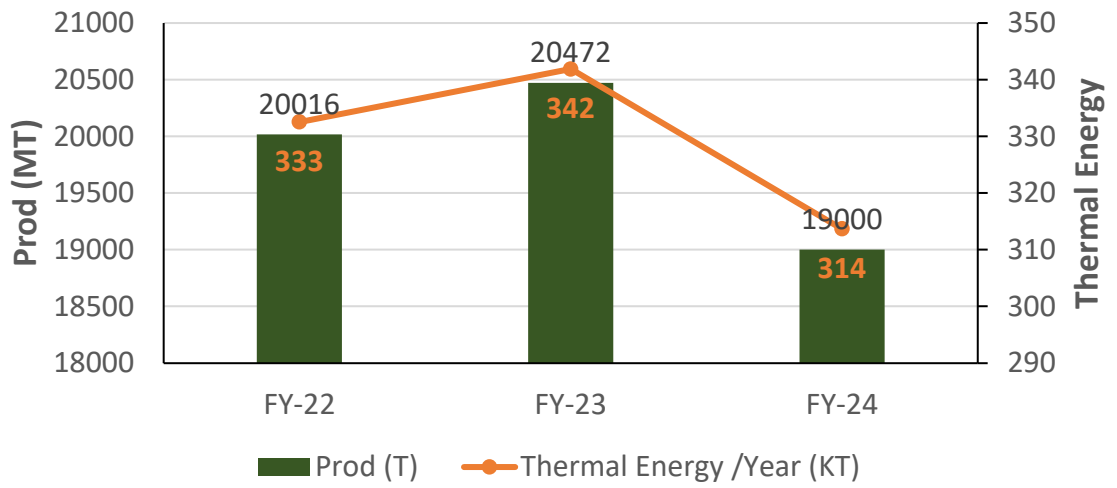


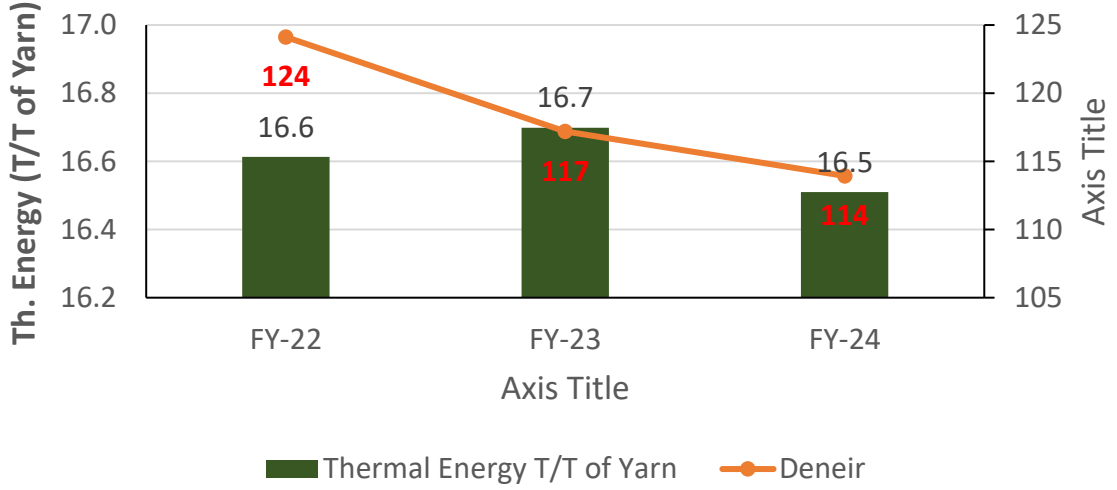
- *Specific energy consumption in terms of Kwh/Kg is appearing increased, but it is due to reduction in Denier as well as PSY plant run at 76% capacity in FY-24*
- *If Denier is reduced, the production in Mass will also reduced while running the plant at same capacity*

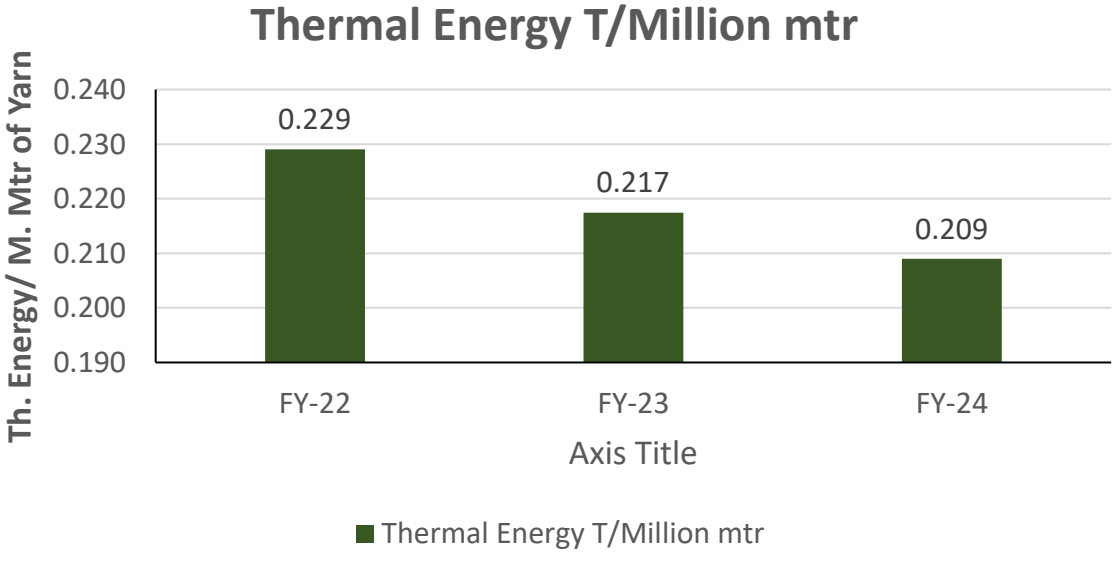
The third graph shows the energy consumption based on length :

- *In FY-24 Electrical energy consumption has reduced by ~ 6.30%*
- *Savings is the results of various energy saving initiatives which will be explained in corresponding slides*

Overall Energy Consumptions: Thermal

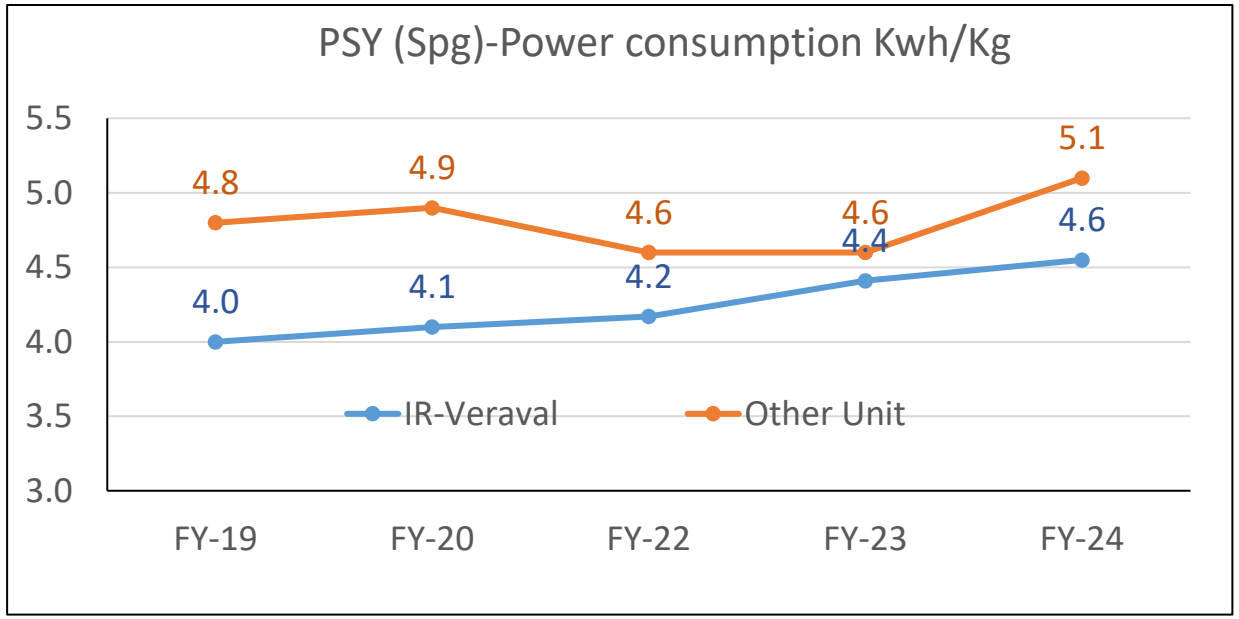






Thermal energy has also reduced by ~ 8.80% as compared to FY-22 by taking various energy saving initiatives which will be explained in corresponding slides

Benchmarking



- The Major competitors for Grasim is Chinese suppliers, the energy data from oversees competitors are not available
- Grasim having two business units Veraval and Kalyan
- Benchmarking with our other business units
- Identified the opportunity on process level
- We are also benchmarking our energy intensity with PAT (Perform Achieve and Trade) baseline and target data of similar type of industry notified as designated consumer

Plant	E-Certificate allotted			Sold			Balance		
	PAT-1	PAT-2	Total	PAT-1	PAT-2	Total	PAT-1	PAT-2	Total
VFY	0	103	103	0	22	22	0	81	81
CA	1985	2936	4921	1071	0	1071	914	2936	3850
Total	1985	3039	5024	1071	22	1093	914	3017	3931

Short Term and Long Term Targets

Sustainability Target	
Goal 1 – Safety	Reduce LTIFR below 80% by 2025 (over the base year of FY17)
Goal 2 – Water	Reduce specific freshwater consumption of the main product by 30% by FY25 (over the base year of FY17); all units to be ZLD in water stressed area by FY25.
Goal 3 – Carbon Emission	Reduce GHG emission of the main product by 30% by 2030 (over the base year of FY17) by utilizing energy-efficient technologies, improving operational efficiencies, and increasing the share of renewable energy and other energy initiatives.
Goal 4 -Diversity and Inclusion	Increase woman employees in Management Cadre by three times (over the base year of FY19) to FY25.
Goal 5 – Employees Engagement	100% of employees to receive Code of Ethics training; Minimum 1 training day per employee per year
Goal 6 – Community Development	100% of our facilities to participate in community engagement.

Additional Goals	
Goal 1 – Waste and Circularity	Sludge reduction, recycling of solid waste, zero waste to landfill being ultimate objective
Goal 2 – Water	Increasing recycling of water, new rain water harvesting measures, recharge of community or local wells towards water positive
Goal 3 – Carbon Emission	Possible replacement of coal in package boiler with bio-fuel, usage of bio-fuel in DG sets, other PAT 7/CCTS related energy/emission measures
Goal 4 -Social Accountability and human rights	Strengthening/Roll out of SA8000, deployment of human rights due diligence tools to cover contractors and other partners

List of Major Encon Project 24-25

VFY energy saving Projects for 2024-25								
Sr. No	Plant	Suggested Measures	Annual Savings (Lac KWH)	Annual Steam Saving (Tons)	Annual Savings (Lac. Rs)	Investment (Lac Rs)	Payback in years	Remarks
1	Acid plant	Energy efficient heat recovery system for acid cooling requirement	0.00	6388.23	134.0	113.0	0.8	Capex
2	CS_2 Plant	Improvement waste heat recovery boiler performance by efficient condensate & flash steam recovery	0.00	1423.5	29.9	45.8	1.5	Capex
3	PSY - AT	Improvement in steam condensate hookup for washing station.	0.00	1008.13	21.2	16.9	0.8	Capex
4	PSY - AT	Improvement in steam & condensate system for dryers - better capacity utilization & heat optimizations.	0.00	903.74	19.0	91.3	4.8	Capex
5	PSY & CSY	Chilled Water Pump	0.79	0	5.8	18	3.1	Capex
6	PSY & CSY	Water Filter Pump	1.44	0	10.5	5.6	0.5	Opex
7	PSY & CSY	Air Compressor	0.76	0	5.5	20.0	3.6	Capex
8	PSY & CSY	Maintenance of Reynold brine chiller	1.2	0	8.7	2.0	0.2	Opex
9	PSY & CSY	Install PP blowers/axial fan instead of SS Centrifugal blowers at exhaust units	0.31	0	2.3	12.0	5.3	Capex
10	PSY & CSY	PSY Textile Air Washer modification	0.00	800	16.8	40.0	2.4	Capex

List of Major Encon Project 24-25

VFY energy saving Projects for 2024-25								
Sr. No	Plant	Suggested Measures	Annual Savings (Lac KWH)	Annual Steam Saving (Tons)	Annual Savings (Lac. Rs)	Investment (Lac Rs)	Payback in years	Remarks
11	PSY & CSY	PSY Textile Air Washer modification	1.54	360	18.8	50.0	2.7	Capex
12	PSY & CSY	CSY-2&3 Air Washer modification	3.23	860	41.6	175.0	4.2	Capex
13	SSY	Replacing impeller	3.01	0.00	21.91	5.20	0.2	
14	SSY	Air Compressor	1.32	0	9.6	28.0	2.9	Capex
15	SSY	Installation of energy-efficient motors	0.75	0	5.4	29.0	5.3	Capex
16	SSY	EC fan for AHU system(UPS, Spinning, Viscose)	0.44	0	3.2	34.4	10.8	Capex
17	SSY	Replacement of Energy efficient cooling tower fan	0.34	0	2.4	14.2	5.8	Capex
18	SSY	EC fan for Air washer system textile 1st floor	1.00	0	7.3	24.0	3.3	Capex
TOTAL SAVING - VFY			**16.12**	**11744**	**364**	**724**	**1.99**	

- **Total 18 EnCon project identified for FY-25**
- **Total Energy saving 16.12 Lacs unit of power and 11744 T of Steam.**
- **Expected saving 364.0 Lacs, investment 724.0 Lacs and pay back period is 2.0**

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5.0 Energy Saving Projects

Energy Saving Projects :

Year	No. of Energy Saving Project	Investment (INR Million)	Electrical Energy Saving Annually (Million KWh)	Thermal Energy saving (m KCal/annually)	Saving (INR Million)	Pay Back Period (Month)
FY 21-22	4	5.953	0.275	0	1.451	49
FY 22-23	17	18.28	2.117	0	17.454	13
FY 23-24	16	25.49	2.237	5801	30.39	10

Year	Name of Energy Saving Project	Investment (INR Million)	Electrical Energy Saving Annually (Million KWh)	Thermal Energy saving (m KCal/annually)	Saving (INR Million)	Pay Back Period (Month)
FY 21-22	Installation of energy efficient LED based lighting in plant	2.000	0.153	0	0.77	31
FY 21-22	Energy efficient pot motor rewinding in spinning machines	0.243	0.0016	0	0.07	37
FY 21-22	Energy efficient transformer replaced in spinning machines	2.480	0.079	0	0.395	75

Energy Saving Projects :

Year	Name of Energy Saving Project	Investment (INR Million)	Electrical Energy Saving Annually (Million KWh)	Thermal Energy saving (mKCal/annually)	Saving (INR Million)	Pay Back Period (Month)
FY 22-23	Airwasher chiller optimization by close loop air circulation	0	0.664	0	5.64	0
FY 22-23	Old Voltas make caustic chiller replacement with new Refcon make chiller	6.39	0.331	0	2.654	29
FY 22-23	Replacement of old and inefficient motor with energy efficient motor	6.35	0.281	0	2.253	34
FY 23-24	CSY-1 modification in Airwasher system	10.348	2.38	0	2.027	61
FY 23-24	Reduction in Twist of TFO twister from 90 TPM to 60 TPM	0.25	1.32	0	8.88	1
FY 23-24	Steam line insulation	3.68	0	2206	5.2	9

Process to identify improvement opportunities:

- Daily Energy Monitoring System and Yearly energy performance review
- External energy audit. In 2021 mandatory energy audit was done and in year 2023 two separate audit for Electricity and steam were done.
- Regulatory requirements
- Various suggestion scheme
- Best practices from the other business units etc.

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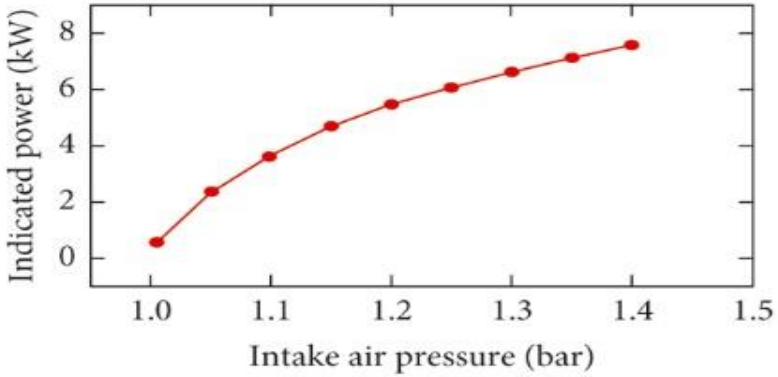
6.0 Innovative Projects

Innovative Projects

1- Installation of Air cooled two stage air compressor : Implemented 2022-23

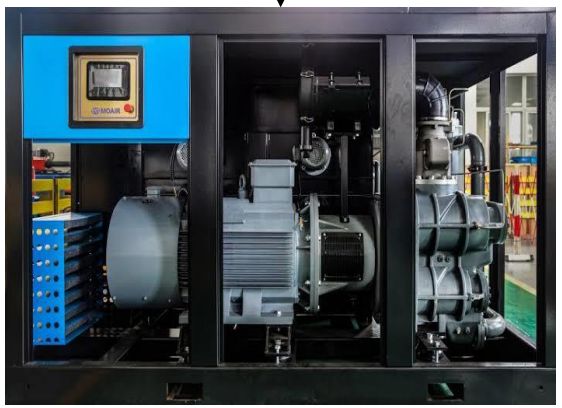
Rationale / Desired change:

As the relationship shows, intake air pressure increase lead to increase the power consumption, two stage air compressor power consumption is much lower than the single stage, hence the compressor has changed to achieve the power consumption per CFM.



Project Description:

The power consumed by air compressor was 3800 kwh /day. it was water cooled single stage compressor. it was consumed high power in SSY utility equipment. we studied and called a vendor at our site for reducing power consumption. After site visit and discussion with vendor. He has suggested us air cooled air compressor which takes less power compare to water cooled compressor. After discussion with senior team members and finally management approved our capex scheme for air cooled two stage air compressors.



Outcome:

The previous power consumption was 3800 kwh/day in water cooled air compressor and installed the new air cooled Air compressors which take 2900 kwh/days so power saving is 900 kwh/day. Annually cost saving **Rs. 23.91 lacs.**

Innovative Projects

2- Project Titles: Enhancing Textile Production Efficiency: Optimizing Yarn Specifications and Machinery Operations : Implemented : 2023-24

Tangible Benefits : –

- ✓ ***Power consumption reduced by 25%***
- ✓ ***TFO Productivity increased by 22 %***
- ✓ ***TFO reduced from 102 nos. to 95 nos.***
- ▪ ***107.85 lacs / annum saving in power cost.***

IDEA

- Twist is imparted in yarn to facilitate unwinding at customer's end.
- Entire PSY comes in 50-60 TPM
- Discussed & finalize to take trial with 60 tpm from 90 tpm
- M/c productivity will increase by 22%.
- The TFO conversion from 90 tpm to 60 tpm involves change of gear set in TFO gear box.

TRIAL INITIATION

- 50 Denier was identified for market seeding with 60 tpm.
- Product was going in twisting for weft segment.
- Product was running on 3 spinning machines and entire product was converted with 60 tpm for comprehensive feedback.

Market feedback

- Evaluation of performance of 60 tpm vs 90 tpm at Plant level & customer level.
- Comparable performance observed at Plant level as well as at customer end.

STRATEGY

- 60 denier product was added with 60 tpm for extended customer feedback.
- 10 Mt of 60 tpm product was produced in 40 denier and evaluated at customer end.
- With comparable performance the production of 60 tpm gradually increased in 40 denier and completed by Feb-24.

CURRENT STATUS

- Entire SSY product range except sizing products are running with 60 tpm.

Power Saving calculation :-

- ✓ Power consumption per TFO at 90 TPM @ 105 MPM ~132 kwh/Day
- ✓ Power Consumption per TFO at 60 TPM @ 130 MPM ~ 99 Kwh /Day
- ✓ Number of TFO's with 60 tpm : 95
- ✓ Power saving : No of twister stopped X 132 + No of twister with 60 tpm X 33

: 7 X 132 + 95 X 33

: 4059 Kwh/day

: 107.85 Lacs/ annum (@ 7.28/Rs per unit)

***Replicability**: Yes, it can be based on the application, textile units can evaluate*

Innovative Projects

3- Utility power optimization: Implemented 2022-23

Rationale / Desired change:

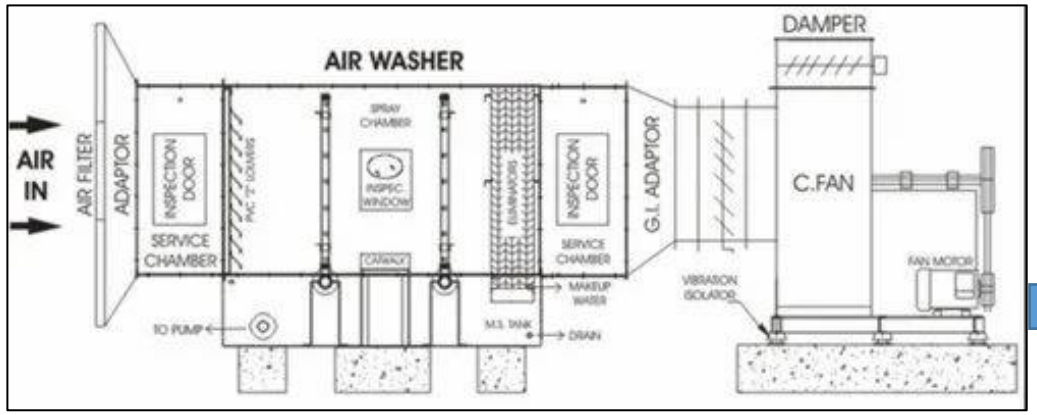
The absolute power consumption of SSY plant varies from ~56000 KWH/day to ~66000 KWH/day across the year due to seasonal influence. The major energy intensive areas in plant are, Utilities and Textiles, where around 45-50% of total power is consumed, so during the energy review , utility area was identified as an opportunity for improvement

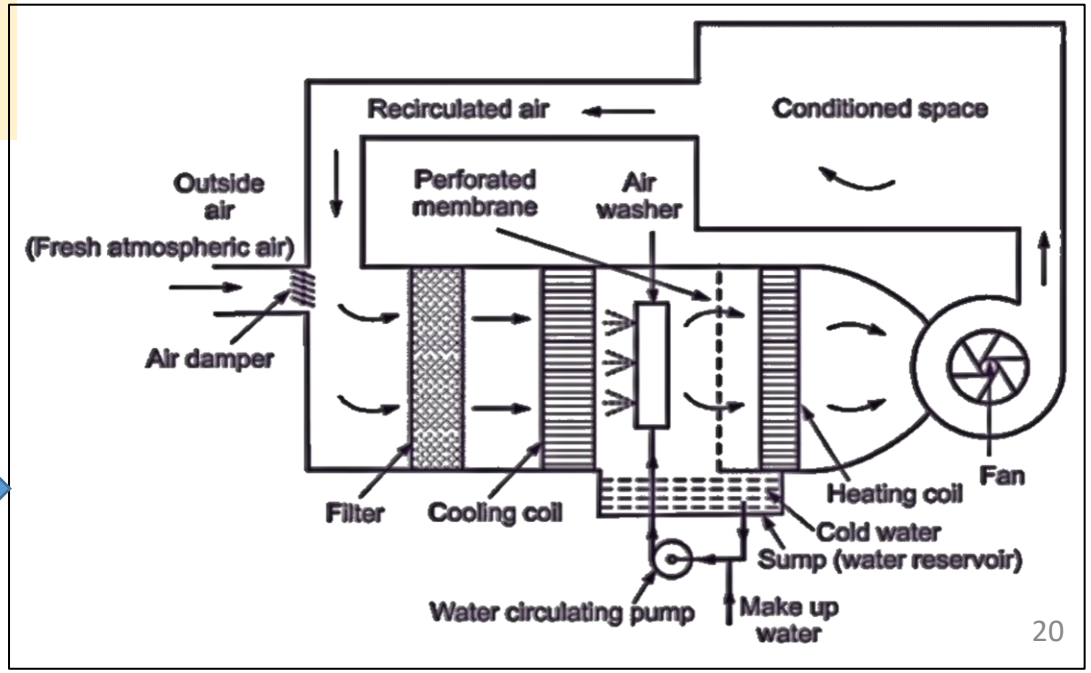
Action identified and implemented:

- *Study of textile hall conditioning*
- *Recirculating the hall air in Air Washers in place of fresh air based on ambient conditions.*
- *Insulating the air washer discharge duct at both the floors.*
- *Replacement of air washer spray nozzles with new nozzles*

Total power Saving:

- **2387 kwh/day**
- **Annual Saving : 61.0 Lakhs @ 7.0/kwh**





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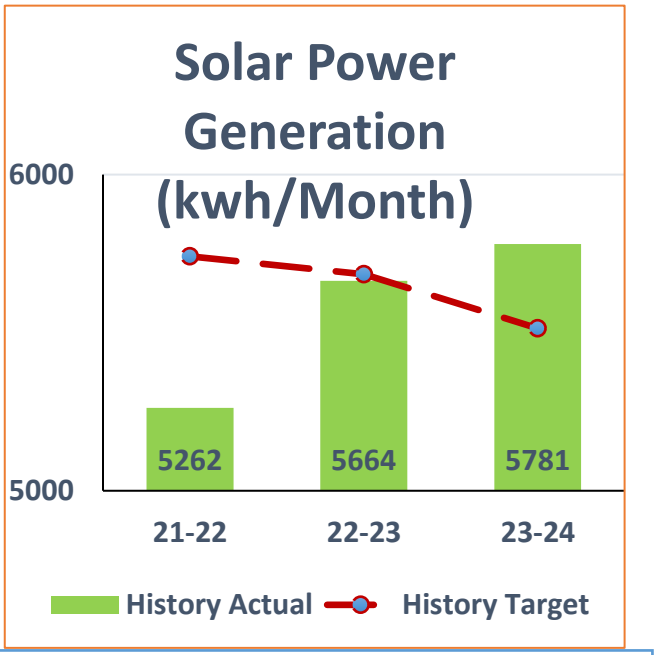
7.0 Renewable Energy

Utilization of Renewable Energy sources (Onsite and Offsite)

Year	Source (Solar, wind, etc.,)	Installed capacity (in MW)	Capacity addition (MW) after FY 2021	Total Generation (million kWh)	Share % w.r.t to overall energy consumption
FY 21-22	Solar	0.05	0	0.05	0.027
FY 22-23	Solar	0.05	0	0.06	0.025
FY 23-24	Solar	0.05	0	0.07	0.022

Year	Source (Solar, wind, etc.,)	Total off site Installed capacity (in MW)	Capacity addition (MW) after FY 2021	Total Generation (million kWh)	Share % w.r.t to overall energy consumption
FY 21-22	0	0	0	0	0
FY 22-23	0	0	0	0	0
FY 23-24	Hybrid (Solar + Wind)	7.2	7.2	18.83	6.0



Business has started purchase of hybrid 7.20 MW renewable energy (3.6 MW from each Solar & wind Energy) from Aditya Birla Renewable Pvt Ltd. reducing the conventional energy and carbon emissions from the unit from Jun'23 onwards

- Include total RE share (Onsite + Offsite) w.r.t total consumption : 6.02%
- RPO Obligation, if any- please mention : 5.0% of total consumption

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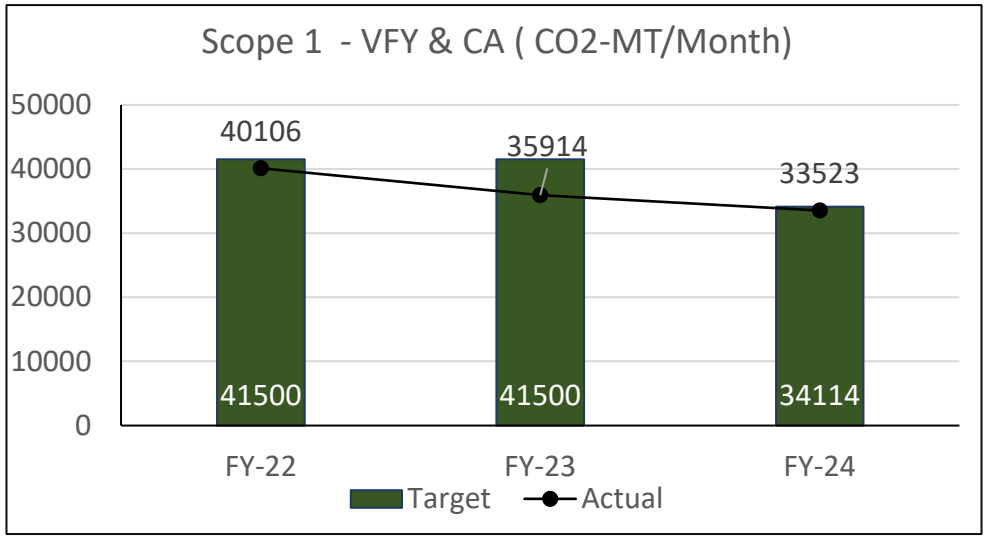
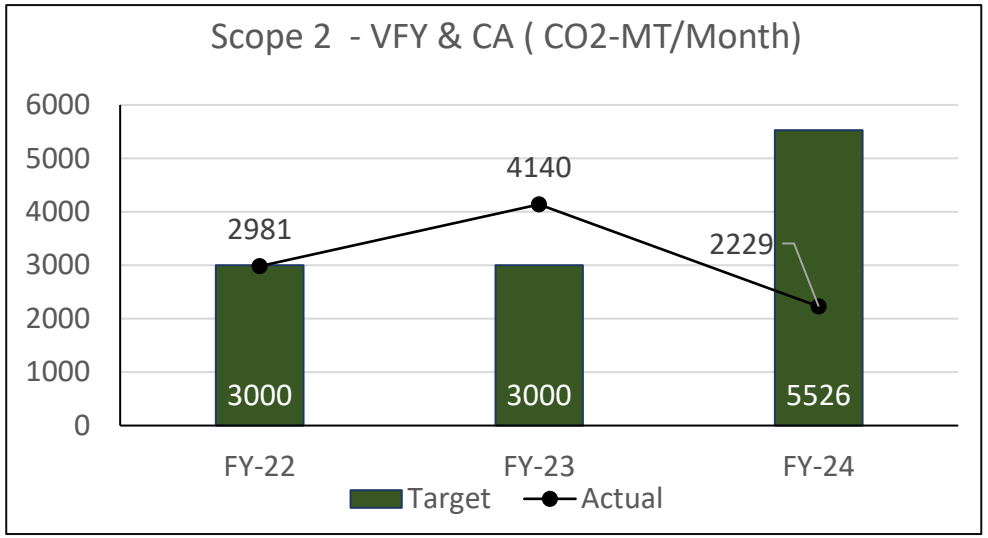
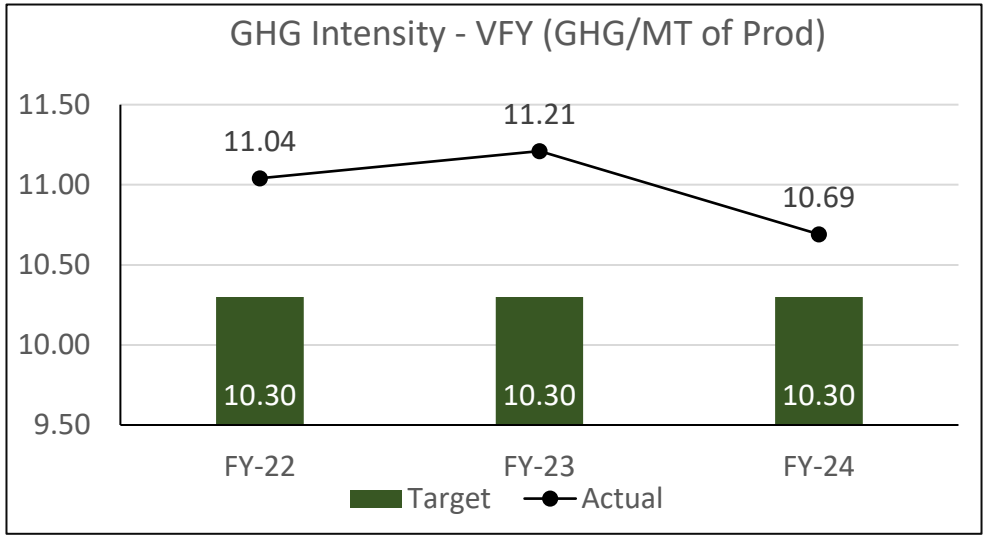
8.0 GHG Inventories

GHG Inventories





Scope-3 data capturing is started from FY-23
FY 22-23 Scope-3 GHG Emission for CFY: 40392.38 T CO2/Annum, the process is under validation for FY-24



- GHG Inventorisation : Maintaining GHG inventory for Scope 1 Emission (All fuels consumed and owned by our unit) , Scope 2 Emission (Non-renewable GRID Electricity Purchased) and Scope 3 Emission (Upstream and downstream Value chain) .
- Public disclosure: The unit is disclosing data publically at the Grasim Level in an integrated sustainability reporting.
- Scope 1 and Scope 2 Emission are in accordance to the GRI framework
- Scope 3 Emission are disclosed in accordance to Carbon Disclosure Project (CDP)
- Competitor data is not available

Action plan to reduce GHG emissions

- Third party limited assurance for GRI indicators (305-1- Direct GHG emission (Scope 1) ; 305-2- Indirect GHG emissions (Scope 2); 305-3- Other Indirect GHG emissions (Scope 3) and BRSR principle (BRSR Principle 6-E6) was done for FY23
- Our group has undertaken the target to achieve Net Zero by FY50. Carbon footprint reduction (amount of greenhouse gas emissions that are avoided or reduced) as a result of implementing energy efficiency measures or using renewable energy sources is tracked with respect to base line carbon foot print as it is a key indicator our environmental performance and our commitment to sustainability
- Using of biomass in boilers and increasing the consumption of renewable energy
- Energy performance improvement projects on regular basis

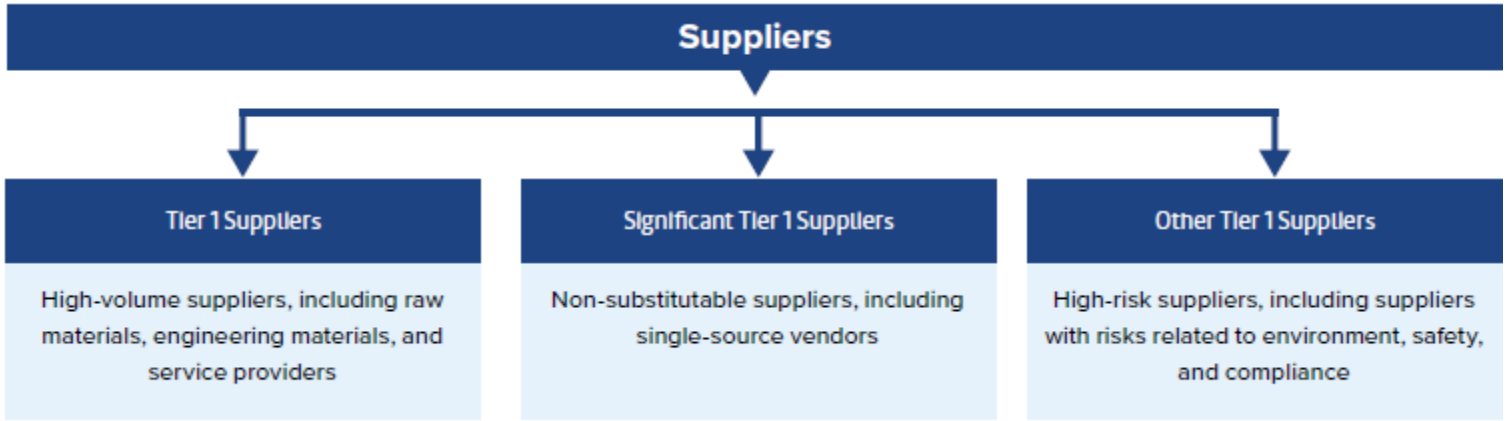
Roadmap from 2025-27

Year	Planned Measures	Investment (Lac Rs)	Annual Power Saving (Lac Kwh)	Annual Steam Saving (T)	Annual Savings Lac Rs
FY25	24	724.37	16.12	11744	363.7
FY26	11	129.00	6.79	0.00	49.4
FY27	7	436.77	11.80	0.00	85.9
Grand Total	42.0	1290.0	34.71	11744.0	499.1

9.0 Green Supply Chain Management

Green Supply chain Management :

Supplier assessments incorporating environmental and social considerations are undertaken annually, either by an independent third party through on-site visits, or internally through online surveys to thoroughly evaluate and identify key supply chain partners. Our suppliers are categorised as follows:



Supplier ESG Programme

We have developed and implemented a comprehensive ESG programme to enhance the sustainability of our value chain partners. We ensure the alignment of purchasing practices with the Grasim's Supplier Code of Conduct to avoid potential conflicts with ESG requirements. We hold regular workshops and provide technical support to build capacity around key ESG areas such as social issues and human rights, environmental stewardship and decarbonisation, and diversity and inclusion. Our training sessions aim to enhance the performance of our partners, with continuous feedback gathered to address their concerns promptly.

Policy and Initiative

SUPPLY CHAIN MANAGEMENT POLICY

Grasim Industries Limited, Unit-Indian Rayon (IR) is committed to build a Sustainable Supply Chain for the growth and sustenance of businesses, develop a strong relationship with suppliers and build their capabilities to improve the Supply Chain performance. We shall endeavor to work with suppliers on improving their process and practices to attain and maintain a Sustainable, robust and viable Supply Chain.

Indian Rayon, Veraval endeavors to achieve this by:

- Carry out responsible procurement with Integrity, Respect and maintain high Ethical standards
- Comply with all applicable legal requirements within the supply chain
- Create a supply chain that is resilient and viable in presence of risks and opportunities
- Promote resource conservation, use of alternative materials and renewable energy, water stewardship, safety, health, respect for human rights and elimination of child and forced labour across the supply chain
- Build capability within the supply chain and work towards creating best in class supply chain solutions
- Adhere to the principle of traceability to the origin of materials throughout the supply chain
- Influence suppliers to adopt our supply chain management's sustainability framework policies and standard and encourage them to develop an equivalent management system throughout the supply and value chain
- Actively communicate and disclose our approach and achievements to suppliers

This policy will be reviewed periodically for its suitability and updated as necessary.

Shashank Pareek
Unit – Head

Date: 01-12-2020

- Green supply chain concept occurs to mitigate environmental degradations and control air, water and waste pollution through the adoption of green practices in business operations.
- Application of environmental management principles to the entire set of activities across the whole customer order cycle, including, design, procurement, manufacturing and assembly, packaging, logistics and distribution.
- Integrating environmental thinking into supply chain management, including ecological design of products, purchasing green materials and components, reengineering of manufacturing steps towards eco-friendly, reverse logistics management of the product after its useful life.
- Integrating environmental consideration into company's supply chain including reverse logistics.
- In this context our Company is working with logistic partners for Reducing Scope-3 GHG emission related to Goods Receipt, Goods Sold and Waste disposal. Company is taking steps to choose suppliers in proximity and also creating base of preferential customers in vicinity. Thus, it can be controlling the harmful impacts of supply chain on the environment.
- We adhere to globally recognized standards such as FSC for sourcing wood pulp from sustainable managed forest

ADITYA BIRLA
GRASIM

10.0 EMS System and other requirement

Monitoring and Review Systems

Grasim Industries limited
(Unit : Indian Rayon)

Date : 18-08-24

DEPARTMENT WISE POWER CONSUMPTION

Time : From 00.00 AM to 00.00 AM next day

(A) PSY Plant

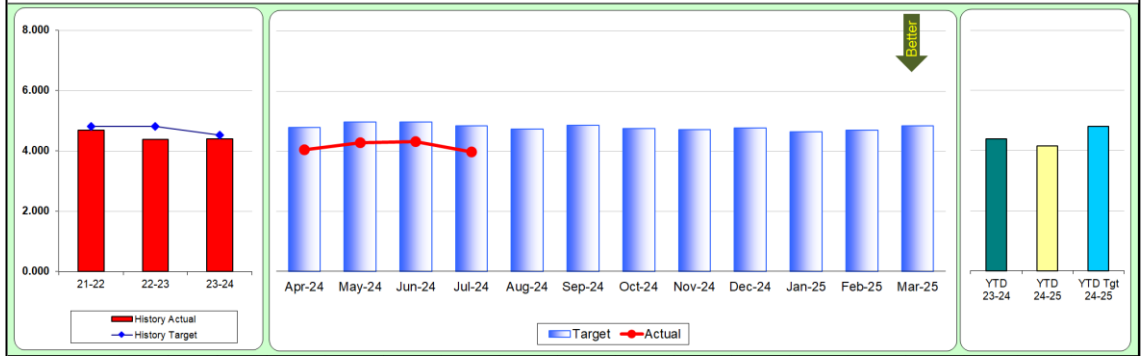
Sr. No.	Department	Power Consumption 18-08-24	Power Consumption 17-08-24	Diff.	%	KW
(1)	Viscose	14558	14752	-194	-1%	607
(2)	Spin Bath	13804	13489	315	2%	575
(3)	Spinning	70909	70411	498	1%	2955
(4)	After Treatment	13599	13281	318	2%	567
(5)	Textile	3871	3586	285	8%	161
(6)	ATY	0	0	0	0%	0
(7)	Engine Room	17953	17622	331	2%	748
(8)	Exhaust Fan	9436	9155	281	3%	393
(9)	Airwasher	10123	10136	-12	0%	422
(10)	Main Plant Lighting	5205	6179	-974	-16%	217
	Total of Main Plant	**159458**	**158610**	**848**	**1%**	**6644**

Grasim Industries Ltd.
Unit: Indian Rayon
Veraval

SSY: Monthly Report

Year	2024-25
Dept.	SSY
Month	July '24
Page	Page 15

Power Ratio (kwh/Kg)



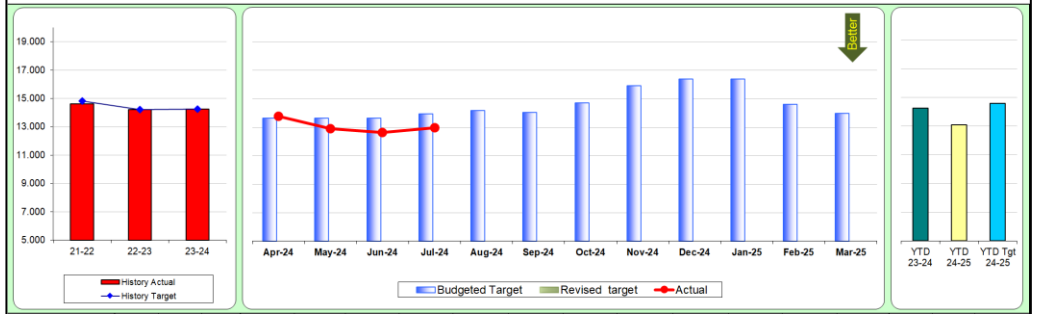
	21-22	22-23	23-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	YTD 23-24	YTD 24-25	YTD Tgt 24-25
History Target	4.82	4.82	4.52	4.46	4.72	4.70	4.46	4.45	4.48	4.87	4.60	4.44	4.31	4.31	4.44			
History Actual	4.68	4.39	4.40	4.74	4.94	4.88	4.62	4.45	4.59	4.43	4.39	4.11	3.93	3.88	3.82			
Actual				4.05	4.28	4.33	3.97											
Target				4.79	4.97	4.97	4.85	4.74	4.87	4.75	4.72	4.78	4.65	4.71	4.84			
YTD				4.05	4.17	4.22	4.16									4.40	4.16	4.80

Grasim Industries Ltd.
Unit: Indian Rayon
Veraval

Monthly Report

Year	2024-25
Dept.	SSY
Month	July '24
Page	Page 14

Steam Ratio (MT/MT)



	21-22	22-23	23-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	YTD 23-24	YTD 24-25	YTD Tgt 24-25
History Target	14.83	14.23	14.26	13.33	13.33	13.33	13.64	13.85	13.75	14.39	15.57	16.00	16.00	14.28	13.65			
History Actual	14.62	14.22	14.26	14.20	13.80	13.54	13.85	13.69	13.00	13.30	14.75	15.25	15.62	15.13	15.00			
Actual				13.76	12.92	12.65	12.96											
Budgeted Target				13.63	13.63	13.63	13.95	14.17	14.06	14.73	15.94	16.38	16.38	14.61	13.96			
YTD				13.76	13.34	13.11	13.07									14.26	13.07	14.59
Revised target																		

- Process wise / equipment wise measurement system is in placed
- Daily dash board of energy Generation, process wise consumption
- It is reviewed on daily meeting with comparing to previous day and target
- Monthly review by senior management
- Any deviations in consumption pattern are analyzed

EMS and Some Certificates towards Green Co..

ISO 50001

TÜV NORD

CERTIFICATE

Management system as per

ISO 50001 : 2018

The Certification Body TÜV NORD CERT GmbH hereby confirms as a result of the audit, assessment and certification decision according to ISO/IEC 17021-1:2015, that the organization

GRASIM INDUSTRIES LIMITED
Corporate Office
Birla Aurora Tower, 10th floor, Near Century Bhavan,
Dr. Annie Besant Road, Worli Mumbai - 400 030,
Maharashtra,
India

operates a management system in accordance with the requirements of ISO 50001 : 2018 at the location

GRASIM INDUSTRIES LIMITED.
Unit - Indian Rayon Veraval,
Junagad - Veraval Road, Veraval - 362 266,
District Gir Somnath,
Gujarat, India

will be assessed for conformity within the 3 year term of validity of the certificate.

Scope -

Manufacture and Dispatch of Viscose Rayon Filament Yarn, Caustic Soda Lye and Flakes, Sulphuric Acid, Carbon Di Sulphide Anhydrous Sodium Sulphate, Sodium Sulphide, Hydrochloric Acid, Liquid Chlorine, Compressed Hydrogen and Sodium Hypochlorite, Captive Power Generation

Certificate Registration No. **44 764 22393463-006**
Audit Report No. **2.5-10656/2021**

Valid from **29.05.2022**
Valid until **28.05.2025**
Initial certification **11.06.2015**

Certification Body
at TÜV NORD CERT GmbH

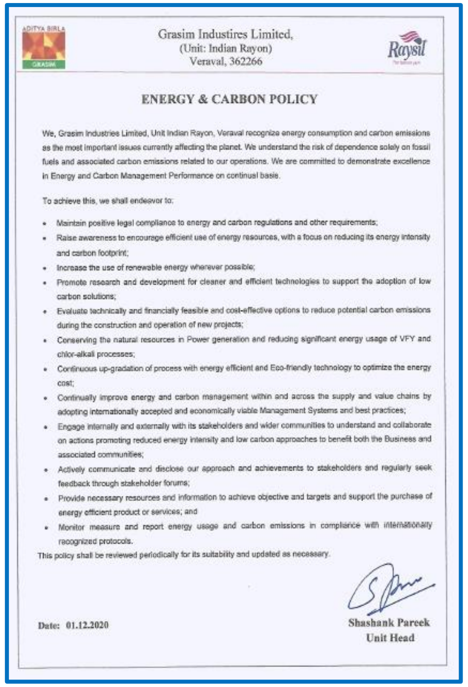
Mumbai, **29.05.2022**

This certificate is valid in conjunction with the main certificate.

TÜV NORD CERT GmbH Am TÜV 1 45307 Essen www.tuev-nord-cert.com

TUV India Pvt. Ltd., 801, Raheja Plaza – 1, L.B.S. Marg, Ghatkopar (W), Mumbai - 400 086, India www.tuv-nord.com/in

IAF DAkkS Deutsche Akkreditierungsstelle D-ZM-12007-01-00



Grasim Industires Limited,
(Unit: Indian Rayon)
Veraval, 362266

ENERGY & CARBON POLICY

We, Grasim Industries Limited, Unit Indian Rayon, Veraval recognize energy consumption and carbon emissions as the most important issues currently affecting the planet. We understand the risk of dependence solely on fossil fuels and associated carbon emissions related to our operations. We are committed to demonstrate excellence in Energy and Carbon Management Performance on continual basis.

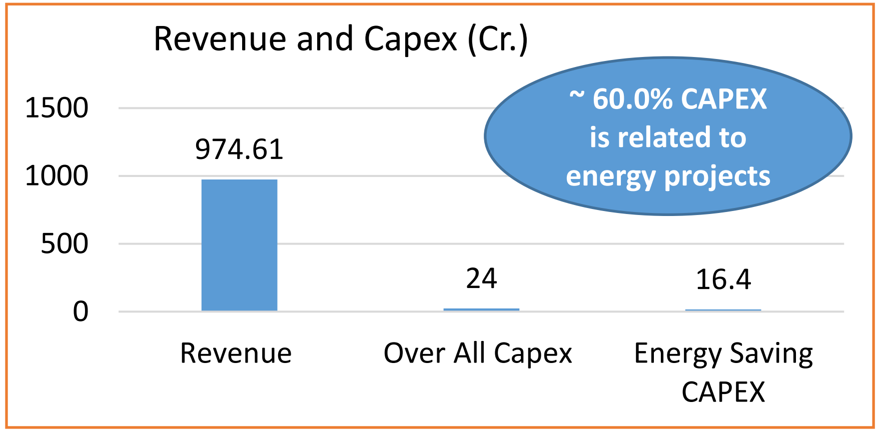
To achieve this, we shall endeavor to:

- Maintain positive legal compliance to energy and carbon regulations and other requirements;
- Raise awareness to encourage efficient use of energy resources, with a focus on reducing its energy intensity and carbon footprint;
- Increase the use of renewable energy wherever possible;
- Promote research and development for cleaner and efficient technologies to support the adoption of low carbon solutions;
- Evaluate technically and financially feasible and cost-effective options to reduce potential carbon emissions during the construction and operation of new projects;
- Conserving the natural resources in Power generation and reducing significant energy usage of VFY and chlor-alkali processes;
- Continuous up-gradation of process with energy efficient and Eco-friendly technology to optimize the energy cost;
- Continually improve energy and carbon management within and across the supply and value chains by adopting internationally accepted and economically viable Management Systems and best practices;
- Engage internally and externally with its stakeholders and wider communities to understand and collaborate on actions promoting reduced energy intensity and low carbon approaches to benefit both the Business and associated communities;
- Actively communicate and disclose our approach and achievements to stakeholders and regularly seek feedback through stakeholder forums;
- Provide necessary resources and information to achieve objective and targets and support the purchase of energy efficient product or services; and
- Monitor measure and report energy usage and carbon emissions in compliance with internationally recognized protocols.

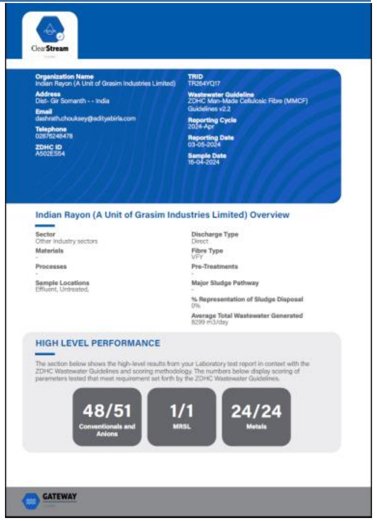
This policy shall be reviewed periodically for its suitability and updated as necessary.

Date: 01.12.2020

Shashank Pareek
Unit Head



ZDHC contributors



ClearStream

Organization Name: Indian Rayon (A Unit of Grasim Industries Limited)
Address: Dist- Gir Somanth - - India
Email: dashrathchouksey@adityabirla.com
Telephone: 02876248478
ZDHC ID: A502ES54
TRID: TR264YQ17
Wastewater Guideline: ZDHC Man-Made Cellulosic Fibre (MMCF) Guidelines v2.2
Reporting Cycle: 2024-Apr
Reporting Date: 03-05-2024
Sample Date: 16-04-2024

Indian Rayon (A Unit of Grasim Industries Limited) Overview

Sector: Other industry sectors
Materials: -
Processes: -
Sample Locations: Effluent, Untreated,
Discharge Type: Direct
Fibre Type: VFY
Pre-Treatments: -
Major Sludge Pathway: -
% Representation of Sludge Disposal: 0%
Average Total Wastewater Generated: 8299 m3/day

HIGH LEVEL PERFORMANCE

The section below shows the high-level results from your Laboratory test report in context with the ZDHC Wastewater Guidelines and scoring methodology. The numbers below display scoring of parameters tested that meet requirement set forth by the ZDHC Wastewater Guidelines.

48/51 Conventionals and Anions | 1/1 MRSL | 24/24 Metals

GATEWAY

FSC certificate for Pulp procurement

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD Czech
ACCREDITED CERTIFICATION BODY
for Certification of FSC® Chain of Custody
assessed the chain of custody system of:

Grasim Industries Limited, Unit Indian Rayon
Veraval-Junagadh Road, Dist- Gir Somnath
IN – 362266 Gujarat

with the following scope:
Manufacturing and Supply of Viscose Filament Yarn

including the following FSC claim: **FSC Mix**

implementing the following Chain of Custody system: **Credit**

The full list of products, species and FSC claims covered by this certificate is detailed in the FSC database: http://info.fsc.org.

The company was assessed and found in compliance with the Forest Stewardship Council® standard: **FSC-STD-40-004.** The version number of the FSC standard that the company was audited against is documented in the FSC database.

This is a single site certification. The annex of this document contains product types that belong to this certificate. The annex is an integral part of the certificate and contains 1 page.

Issue date: 21.09.2022
Certificate valid till: 24.09.2024
Certificate Registration Code: TSUD-COC-002050

Prague, 21.09.2022
Luděk Maryška, Head of Certification Body

The certificate is subject to regular surveillance. This certificate itself does not constitute evidence that a particular product supplied by the certificate holder is FSC-certified (or FSC Controlled Wood). Products offered, shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required FSC claim is clearly stated on invoices and delivery documents.
This certificate is the property of TÜV SÜD Czech s.r.o and all copies or reproductions of the certificate shall be destroyed or returned immediately on request.
Validity of this certificate shall be verified on the FSC database (http://info.fsc.org/).

TÜV SÜD Czech s.r.o. • Novodvorská 994 • 142 21 Prague 4 • Czech Republic • certification@tuv-sud.cz

OEKO-TEX Class-I product certification

Grasim Industries Limited, Unit-Indian Rayon, Veraval
Junagadh Road,
Veraval Dist - Gir Somnath
362266 Gujarat, INDIA

SHIRLEY TECHNOLOGIES LIMITED
SAGAR BUILDING, UNIT 11, WESTPOINT
ENTERPRISE PARK
CLARENCE AVENUE
M17 1QS MANCHESTER, UNITED KINGDOM

OEKO TEX®

Certificate
OEKO-TEX® STANDARD 100

Grasim Industries Limited, Unit-Indian Rayon, Veraval
is granted the OEKO-TEX® STANDARD 100 certification and the right to use the trademark.

SCOPE
Rayon viscose filament yarn in bright, dull and dope dyed. Produced in PSY and CSY, SSY from 20 denier to 1800 denier; partly produced by using material certified according to ECO PASSPORT.

PRODUCT CLASS
I (baby articles) - Annex 6

STANDARD 100 19078 Shirley

This certificate 19078 is valid until 25.01.2025.

SUPPORTING DOCUMENTS
- Test report : 70928
- Declaration of conformity in accordance with EN ISO 17050-1 as required by OEKO-TEX®
- OEKO-TEX® Terms of Use (ToU)

Agustina Oliver
Senior Technical Officer

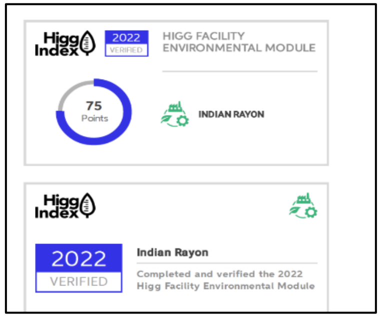
Joe Prince
Ecology Services Manager

Further compliance information (REACH, SVHC, POP, GB18401 etc.) can be found on oeko-tex.com/en/faq.
The certificate is based on the test methods and requirements of the OEKO-TEX® STANDARD 100 that were in force at the time of evaluation.

Manchester, 2023-11-22

OEKO-TEX Service GmbH Genferstrasse 23, CH-8002 Zurich

Third party Higg Index assessment



REACH Compliance

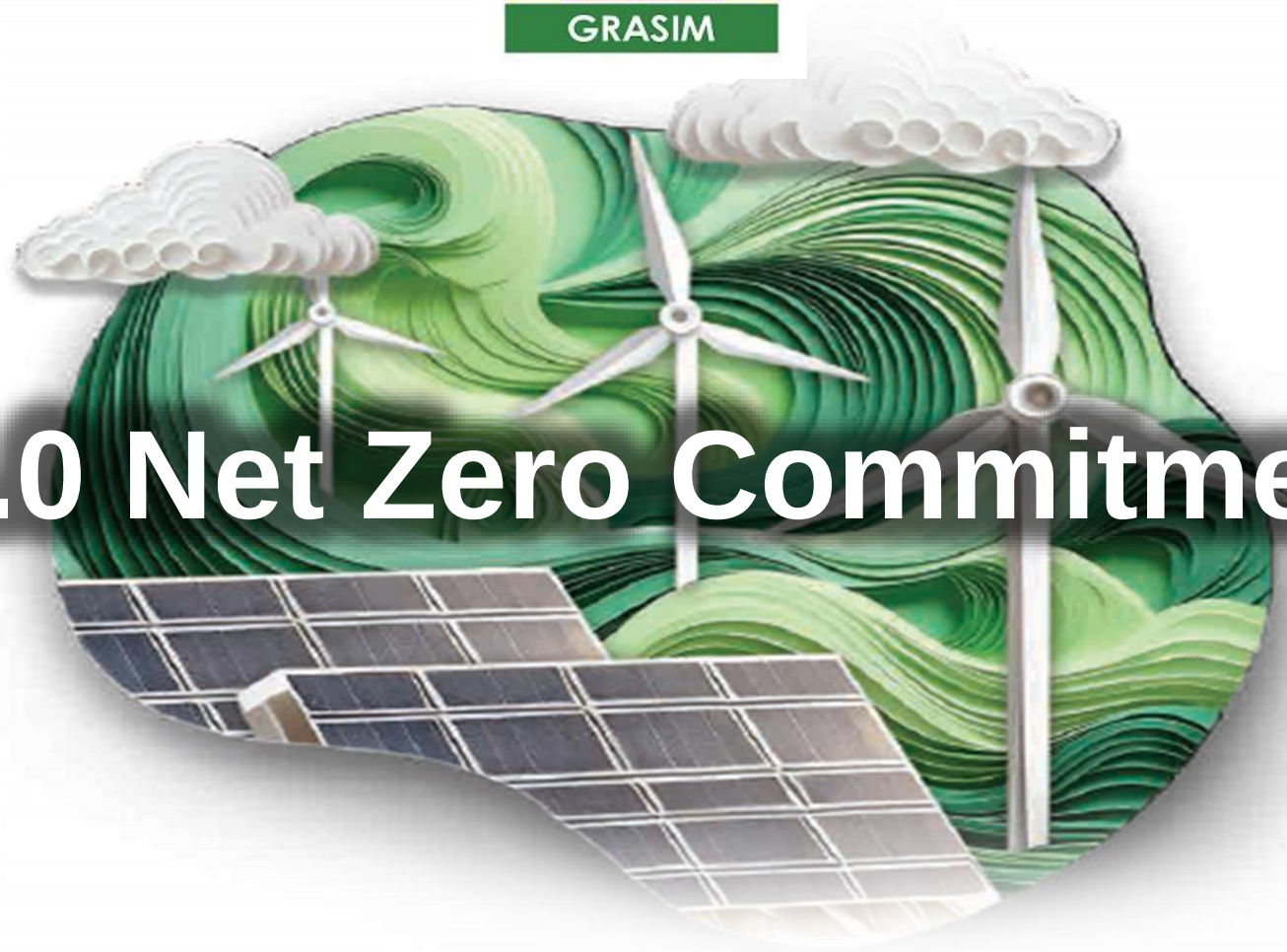
Canopy style- Hot button shirt designation

Learning from CII and other sources

S.No	Source of Learning	Learning
1	CII	➢ Reviving the Boiler water treatment to improve quality & reduce cost. ➢ Refurbishing existing flange joint valves by weld end valves to prevent frequent breakdowns. ➢ Installation of venti light pipe in new TG building
2	CMAI - Carbon Markets Associations of India	Identify de-carbonisation projects, its viability, financing & trading
3	NTPC - Green Hydrogen usage	Energy security, Hydrogen usage for green mobility, Methanol blending
4	Godavari Power & steel - ARTIST concept for encon	A-Awareness, R-Raw material cheap raw material , T-Technology green steel I-Innovation, S-Specific consumption, T-Top driven approach
5	Janitza & Sonel India Measurement instruments manufacturer	EMS system Residual current monitoring Power quality analyzer & Controller
6	Yaskawa - Drives & Robotics	• ASPIRE bilateral tech programme between India & UK, for de- carbonization technology exchange • Use of pipe lights, EC fans for HVAC & AHU • Use waste heat recovery from centrifugal compressor
7	ISHRAE - HVAC	• Good building design - effectively reduce HVAC energy consumption • Three stage cooling & acdiabatic cooling for energy saving. • AHU's fan overall efficiency around 60% which can be improved by EC • fans with higher efficiency of 85%
8	IOT-Infosys	• Solar power IOT solar monitoring • Smart solution for water management • Solar robot for solar panel cleaning

ADITYA BIRLA

GRASIM

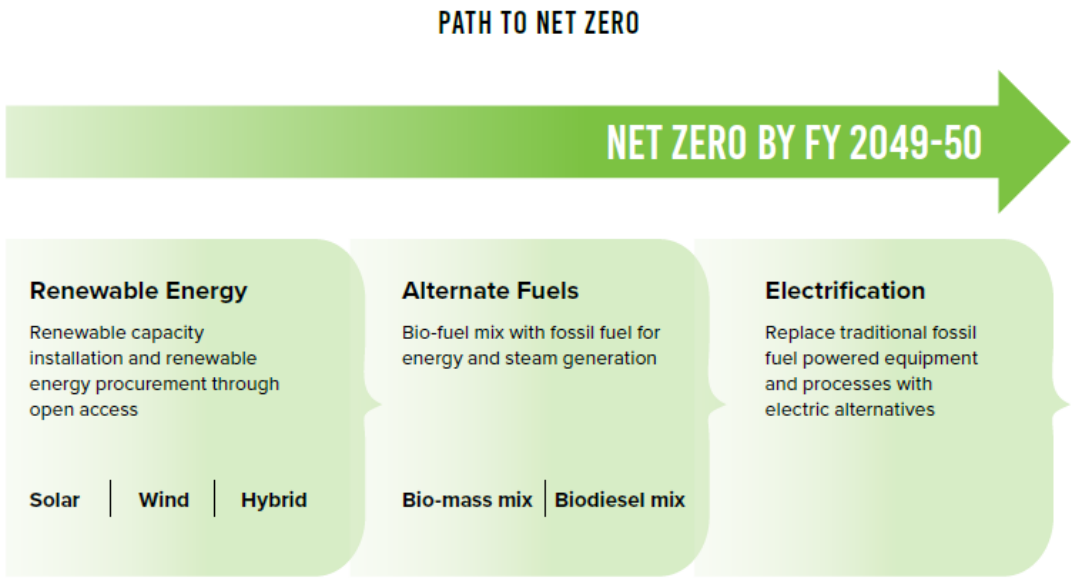


11.0 Net Zero Commitment

Net Zero Commitment

Net Zero Vision

We aim to achieve net zero emissions by FY 2049-50, aligning with the Science Based Targets initiative (SBTi). Our strategic roadmap outlines the necessary steps and financial commitments to achieve reach this goal. By adhering to this detailed roadmap, we commit to implementing scientifically grounded and measurable targets that align with the goals of the Paris Agreement. We are also investing in research and development, leveraging our technical expertise, and collaborating with stakeholders to drive innovation and accelerate the transition to a low-carbon future.



Initiative towards sustainability:

1. ***Energy Conservation Breakthrough***: Cellulosic Fashion Yarn unit in Veraval has made remarkable strides in energy conservation. The implementation of Frigitech solutions, has not only reduced energy consumption but also improved the overall efficiency of chilling processes.
2. ***Water Security and Innovation***: The commissioning of the 12 MLD SWRO plant is a ground breaking achievement. This state-of-the-art facility demonstrates our proactive approach to addressing water scarcity challenges and securing a sustainable water supply for our operations.
3. ***Renewable Energy Adoption and Carbon Reduction*** : Our unit's commitment to reducing carbon footprint is evident in the adoption of renewable energy sources. The utilization of biomass fuel at our Veraval captive power plant, along with the sourcing of 17.27 Mn Units of renewable power, demonstrates our leadership in sustainable energy practices.
4. **Empowering Communities :** The CSR initiatives reflect our commitment to giving back to the community. The water conservation efforts, support for organic farming, and women's empowerment programs have made a tangible difference in the lives of people in and around Veraval

12.0 Other Information

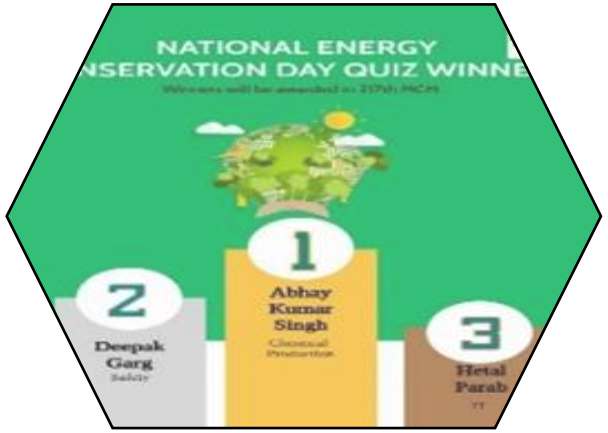
Awareness on energy

Energy badge to aware all

Energy Oath

Walkthrough to identify

Plantation



Energy Conservation Quiz

Slogan and poster competition

Through Energy & Carbon emission subcommittee :

- Energy champions are nominated
- Various awareness programs are conducted.
- On energy conservation day every year theme based competitions and quiz are arranged
- Winners are awarded in our Mass Communication meeting.
- Every Energy & carbon emission meeting starts with sharing of Energy Contacts

Reward and Recognition

IGMC 2020-21

Gold Award in 1st Kaizen Convention, Vadodara

Gold Award in 1st Kaizen Convention, Vadodara

Energy Efficient Unit – CII 2022

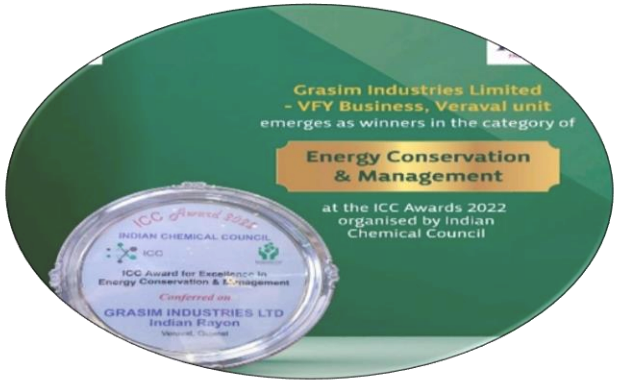
CII -Energy Efficient Unit Award – 2021

Excellence award in QCFI 2021

3M Competition CII Silver Award 2021

Reward and Recognition

ICC Gold award 2022



SEEM Gold Award 2022, Delhi,

Gold Award in 1st Ever TQM India Summit, Bangalore, Waste to Wealth

Energy Saving champion award-2023

Discussions