UK Government | iDeeksha | Bureau of Energy Efficiency, Ministry of Power, Government of India | Government of India, Ministry of Power

ASPIRE Programme

Accelerating Smart Power & Renewable Energy in India

Sectoral Workshop & Study Trip

BEST PRACTICES IN ENERGY EFFICIENCY IN TYRE SECTOR: A PATH FOR DECARBONISATION

WORKSHOP:

August 7th, 2024
(09:30 – 17:30 IST / 04:00 – 12:00 GMT)
Conference Hall, EMC, Thiruvananthapuram

CONTENTS

About ASPIRE Programme

Accelerating Smart Power and Renewable Energy (ASPIRE) is a bilateral programme being implemented by the Foreign Commonwealth and Development Office (FCDO), Government of UK in association with the Ministry of Power and Ministry of New and Renewable Energy (MNRE), Government of India (GoI). Key objective of the ASPIRE Programme is to facilitate India's transition towards a sustainable, low carbon energy ecosystem to fulfill its net-zero commitments. KPMG is the implementation advisor to FCDO in relation to the ASPIRE programme and Idam Infrastructure Advisory Private Limited (India) is a key consortium member.

Industrial Energy Efficiency and Decarbonisation (IEED) is a key thematic area of support under the ASPIRE programme which is being implemented in association with Bureau of Energy Efficiency (BEE), GoI.

About IDEEKSHA Platform

The Industrial Decarbonisation and Energy Efficiency Knowledge Sharing (IDEEKSHA) Platform has been developed under the ASPIRE Programme in collaboration with the BEE to promote and share best practices and energy-efficient technologies among large-scale industries. The IDEEKSHA platform was launched by Mr. R.K. Singh, Hon'ble Cabinet Minister

Snapshots from IDEEKSHA Platform and Newsletter launch during BEE's Foundation Day Event

for Power and New and Renewable Energy, Government of India during the 21st Foundation Day Event of BEE on 1st March 2023, in Delhi.

The IDEEKSHA platform is a one-stop shop for all energy efficiency/ decarbonisation needs of large industries covered/ expected to be covered under BEE's PAT Scheme. The IDEEKSHA platform would thus facilitate:

- Exchange of knowledge and information to enhance peer to peer learning.
- Designated Consumers (DCs) in adoption of new and emerging IEED tools & technologies by facilitating access to Indian and global (including from the UK) technology suppliers.
- Access to a database of financial institutions.

- Access to IEED tools, technologies & technology providers available in India and globally.
- Access to data sources and knowledge repositories to support knowledge translation.
- Sector/ industry specific workshops/ seminars to enhance EE measures.
- Knowledge and commercial partnerships.

The IDEEKSHA platform facilitates knowledge exchange and partnerships among industry and technology suppliers for 8 hard-to-abate industrial sectors (Cement, Aluminium, Iron & Steel, Textile, Fertiliser, Chlor-Alkali, Pulp & Paper, and Refinery) which are also covered under BEE's Perform Achieve and Trade (PAT) scheme. Under the IDEEKSHA Platform, support was extended to ten (10) energy-intensive industrial sectors (Cement, Aluminium, Iron & Steel, Textile, Fertiliser, Refinery, Chlor-Alkali, Pulp & Paper, Sugar and Tyre Manufacturing) in terms of providing access to database of global industrial energy efficiency & decarbonisation (IEED) technologies, organising capacity building workshops and study trips, etc. Seven (7) sectoral workshops and study trips were organised between 2022 and 2024, each focusing on key industries: Aluminium, Textile, Cement, Iron & Steel, Pulp & Paper, Chlor-Alkali and Sugar sectors. These events are aimed at understanding industry-specific challenges, opportunities, and identifying strategies for sustainable development. The details of the events, including background notes, presentations, event summary reports, etc., can be accessed through the IDEEKSHA Platform under 'Past Events' tab. Below are the direct links to access the resources:

S.No.	Past Events	Sector	Reference Links
1	Sectoral Workshop on Best Practices in Energy Efficiency in Aluminium Sector: A Path for Decarbonisation	Aluminium	https://www.ideeksha.in/pages/Sectoral Workshop on Best Practices in Energy Efficiency in Aluminium Sector
2	Study Trip/ Visit of Aditya Aluminium Plant, Lapanga, Odisha		https://www.ideeksha.in/pages/A Study Tour Visit of Aditya Aluminium Plant
3	Sectoral Workshop on Best Practices in Energy Efficiency in Textile Sector: A Path for Decarbonisation	Textile	https://www.ideeksha.in/pages/Sectoral Workshop on Best Practices in Energy Efficiency in Textile Sector
4	Study Trip/ Visit of Raymond Textile Plant, Chhindwara, Madhya Pradesh		https://www.ideeksha.in/pages/A Study Tour Visit of Raymond Textile Plant
5	Sectoral Workshop on Best Practices in Energy Efficiency in Cement Sector: A Path for Decarbonisation	Cement	https://www.ideeksha.in/pages/Sectoral Workshop on Best Practices in Energy Efficiency in Cement Sector: A Path for Decarbonisation
6	Study Trip/ Visit of Udaipur Cement Works Limited (UCWL)		https://www.ideeksha.in/pages/A Domestic Study Tour-Visit of Cement Plant
7	Sectoral Workshop on Best Practices in Energy Efficiency in		https://www.ideeksha.in/pages/Sectoral Workshop on Best Practices in Energy

S.No.	Past Events	Sector	Reference Links
	Iron & Steel Sector: A Path for Decarbonisation	Iron & Steel	Efficiency in Iron & Steel Sector: A Path for Decarbonisation
8	Study Trip/ Visit of Godawari Power & Ispat Limited (GPIL)		https://www.ideeksha.in/pages/A Domestic Study Tour-Visit of Iron & Steel Plant
9	Sectoral Workshop on Best Practices in Energy Efficiency in Pulp & Paper Sector: A Path for Decarbonisation	Pulp & Paper	https://www.ideeksha.in/pages/Sectoral Workshop on Best Practices in Energy Efficiency in Pulp & Paper Sector: A Path for Decarbonisation
10	Study Trip/ Visit of Khanna Paper Mills, Amritsar		https://www.ideeksha.in/pages/Study Tour-Visit of Khanna Paper Mills Limited
11	Sectoral Workshop on Best Practices in Energy Efficiency in Chlor-Alkali Sector: A Path for Decarbonisation	Chlor-Alkali	https://www.ideeksha.in/pages/Sectoral Workshop on Best Practices in Energy Efficiency in Chlor-Alkali Sector: A path for Decarbonisation
12	Study Trip/ Visit of Gujarat Alkalies and Chemical Limited (GACL)		https://www.ideeksha.in/pages/A Study Tour-Visit of Gujarat Alkalies and Chemicals Limited
13	Sectoral Workshop in Best Practices in Energy Efficiency in Sugar Sector: A Path for Decarbonisation	Sugar	https://www.ideeksha.in/pages/Sectoral Workshop on Best Practices in Energy Efficiency in Sugar Sector: A path for Decarbonisation
14	Study Trip/ Visit to Balarampur Chini Mills Ltd (BCML), Haidergarh		https://www.ideeksha.in/pages/A Study Tour-Visit of Balrampur Chini Mills Limited

Tyre Sector in India

India is the 7th largest tyre manufacturer in the world.[1] There are ~30 companies and 60+ manufacturing units. The tyre industry contributed to 2.2% of India's manufacturing GDP in FY2022 and is expected to reach 3.4% by FY2032.[2] The tyre sector is divided into two segments- end market segment and product segment. The end market is driven by original equipment manufacturing (OEM) for different vehicle categories and replacement sectors. The product segment consists of tyres for truck & bus, passenger vehicle, two/ three-wheeler, off-highway tyres (OHT), among others. The revenue of the Indian tyre industry has doubled over the last decade and is further expected to increase from ~INR 744 billion (~GBP 7.5 billion) in FY2022 to ~INR 1,800 billion (~GBP 17 billion) by FY2032. At present, ~90% of the tyre industry's revenue is from the domestic market, of which, 70% is on account of the replacement segment. The three leading tyre companies in India i.e., MRF Tyres, Apollo Tyres and JK Tyre together account for ~60% of the market share in terms of revenue.[3]

As per a study, in the entire lifecycle of a tyre, 2.1% of the GHG emissions is found to occur during manufacturing and 87% is attributed to product use, mainly due to rolling resistance. Moreover, production of tyre related raw materials such as carbon black, synthetic rubber, natural rubber generate four times as much carbon dioxide (CO_2) emissions per tyre, than the manufacturing of tyre does. In the year FY2023, the production intensity, which captures the Scope 1 and Scope 2 emissions (tCO_2e) per production capacity (million), of Apollo Tyres, JK Tyre, and MRF Tyres are 0.077, 0.003, and 0.115, respectively.[4] This workshop will focus on the best practices which can be adopted by the tyre manufacturing sector to reduce their emissions (except scope 3 i.e. supply chain related emissions) in their value chain.

With the evolution of Industry 4.0, India is implementing new and innovative technologies like artificial intelligence and machine learning to improve efficiencies and reduce emissions in the atmosphere. India produces some of the finest radial tyres in the world and is currently exporting tyres to more than 170 countries with maximum tyres being sold to the US and Europe. Further, the Government of India has also been supporting adoption of new-age technologies including funding support for technological advancements in the tyre sector.

Energy Consumption

As per the Ministry of Power's (MoP) notification dated 6th June 2023, tyre manufacturing plants with energy consumption of 7,000 MTOE per year or more are expected to qualify as a Designated Consumer (DC) under the Bureau of Energy Efficiency's (BEE) flagship Perform Achieve and Trade (PAT) scheme.

In the tyre industry, the typical ratio of electrical and thermal energy is 35:65 (in Kcal terms). While the thermal energy is mainly used in utilities and process, electrical energy is utilised to drive the motive load of the plant and utilities.

According to research studies, it is found that the electricity required to produce one tonne of virgin tyres is 1,019 kWh[5], producing 86.9 kg of CO_2 emissions while power consumption for waste tyre treatment is 800 kWh, producing 60.5 kg CO_2 emissions which results in a 30%

[1] Top Indian Tyre Makers Secure Spots in Global Top 30 Manufacturers List (tyremarket.com)
[2] https://www.crisil.com/en/home/newsroom/press-releases/2023/07/tyre-industry-on-a-roll-driving-towards-doubling-in-size.html
[3] https://www.ideeksha.in/pages/Tyre%20Sector
[4] https://www.crisilratings.com/content/dam/crisil/our-analysis/esg-research/esg-readings/the-scope-3-series.pdf
[5] https://www.sciencedirect.com/science/article/pii/S2666789421000258

reduction in emissions. Recycling of waste tyres also leads to the generation of by-products such as steel wire, fibre and iron scrap which can be used for other purposes.[6]

The tyre sector in India can adopt best available techniques (BATs) and other emerging technologies to enhance energy efficiency and enable decarbonisation of its operations.

[6] https://www.fenderbender.com/running-a-shop/finance/article/33031150/new-study-looks-at-carbon-footprints-of-tires-retreads

Decarbonisation of Indian Tyre Industry

The Indian tyre industry is committed to minimise the impact of its operations on global climate change and reduce carbon footprint to support India's commitment to achieve net-zero emissions by 2070. Few initiatives undertaken by Indian tyre manufacturing companies are provided below:

- **JK Tyre-** Develops smart tyres with low rolling resistance and have also made their entire value chain sustainable. Recently, the company developed a new tyre called 'UX Green' which is made from 80% sustainable, recycled, and renewable materials. This tyre shows the same performance characteristics and efficiency as the standard tyre along with creating a positive impact in the environment.[7] The company aims to achieve carbon-neutrality by 2050 and Net Zero by 2070.[8]
- **Apollo Tyres-** Committed to increase their renewable energy power in the total power share from 10% in 2022 to 25% by the year 2026. The company has also committed to source 40% of the raw materials from sustainable products by 2030, of which 30% will be biomass-based.[9] The company has committed to become Net Zero by 2050.[10]
- **MRF Tyres-** The company aims to achieve carbon-neutrality for Scope 1 and Scope 2 emissions by FY2050 (Base year- FY2023).[11] To achieve this, they are working to improve the sustainability of the tyre industry through its '4R strategy' which includes Reduce, Recycle, Reuse and Renewable.
    - Reduce: Reduction of carbon emissions by developing low rolling resistance tyres, resulting in lower fuel consumption.
    - Recycle: Usage of raw materials from end-of-life tyres.
    - Reuse: Promoting re-treaded tyres
    - Renewable: Sourcing raw materials from sustainable products such as biomass and waste materials.[12]
- **CEAT Tyres-** The company's primary goal is to reduce its carbon footprint by 50% by 2030. To achieve this target, they have implemented the 4IR (Fourth Industrial Revolution) use cases to improve cycle times and digitise operator's touchpoints to increase usage of greener materials and meet specified in-process targets. The company recently received the Lighthouse designation by World Economic Forum. Through this initiative, the company reduced cycle times by 20%, processing scrap by 46% and energy consumption by 15%, which resulted in a 2.5x increase in exports and OEM sales.[13]

The Indian government has also launched various initiatives and policies to promote sustainability in the tyre industry. For instance, Bureau of Energy Efficiency (BEE) has recently identified 13 new sectors as Designated Consumer (DCs) to be covered under the PAT Scheme which includes Tyre sector as well. It aims to decarbonise these sectors and facilitate

[7] https://auto.economictimes.indiatimes.com/news/tyres/how-smart-tyres-can-help-mitigate-vehicle-emissions/101759725
[8] https://jktyre.com/Annual/JK_Tyre__IAR_2023-24.pdf
[9] https://corporate.apollotyres.com/content/dam/orbit/apollo-corporate/sustainability-and-ethics/reports-new/2023/Sustainability%20Report-%20FY23.pdf
[10] https://corporate.apollotyres.com/content/dam/orbit/apollo-corporate/investors/financial-reporting/annual-report/2023-24/AGM%20Notice%20and%20Annual%20Report%20FY2024.pdf
[11] https://www.mrftyres.com/downloads/Business-Responsibility-Sustainability-Report-for-FY-ended-31st-March-24.pdf
[12] https://www.financialexpress.com/auto/industry/mrf-working-on-developing-raw-materials-locally-to-cut-imports/2294546/
[13] https://www.ceat.com/content/dam/ceat/pdf/Annual_Reports/CEAT-Limited-Integrated-Annual-Report-FY23.pdf

energy efficient measures to align with India's net-zero targets. The tyre sector may also be covered in the Carbon Credits Trading Scheme (CCTS) which would be beneficial for the decarbonisation of the tyre industry in India.

Furthermore, the Indian tyre industry has adopted the following IEED measures as part of its operations:

- Recycling and Waste Management
- Installation of variable Frequency Drives (VFD)
- Use of renewable energy resources
- Replacement of air blower fans to energy efficient fans
- Use of energy efficient (IE-3 and IE-4) motor instead of conventional motors

Potential Technology Interventions for Enhancing IEED in Indian Tyre Sector

Some of the potential areas for technology intervention in the Indian Tyre manufacturing sector to reduce carbon emissions and facilitate rapid transition to net-zero by 2070 have been identified below:

- Use of synthetic rubber instead of natural rubber – Natural rubber from rubber trees (Hevea trees) can be replaced by synthetic rubber to manufacture tyres. Synthetic rubber is more resistant to abrasion and has good temperature properties compared to natural rubbers.
- Sustainable sourcing of tyre oil – Wheels can be made from a combination of algae-oil with bio-polyurethane and silica made from agricultural waste. This would provide functional advantages to that of petroleum oil along with being eco-friendly in nature.
- Thermo-compressor in Low Pressure Steam (LPS) Line by using flash steam for reducing LPS consumption – A thermos-compressor uses high pressure steam to entrain low pressure steam and discharge the mixture at intermediate steam pressure. Adoption of such technology helps to save energy and reduce emissions. They are used to recover low pressure steam in the process plant[14].
- Vapour Compression Chiller replacement by Vapour Absorption Chiller (VAM) – through use of thermal energy as a driving force to produce chilled water from a heat source such as steam or hot water and fuel gas. It enables the systems to operate without electricity using only heat. Along with reducing the overall energy consumption, VAM can also make use of waste heat, thereby contributing to a circular economy.[15]

Leveraging UK's Tyre sector strengths and capabilities

UK's tyre manufacturing industry is a key player in Europe, producing a wide range of tyres for various vehicles. It focuses on innovation, quality and sustainability and invests in research & development (R&D) for better performance and safety while meeting environmental standards. The sector offers diverse employment opportunities from skilled workers to engineers.

The UK tyre industry consists of some of the biggest tyre manufacturers in the world. Two of the major players- Continental and Pirelli are the 4th and 5th largest tyre manufacturing companies, respectively, globally. [16] In the year FY2023, the production intensity, which captures the Scope 1 and Scope 2 emissions (tCO_2e) per production capacity (million), of Continental and Pirelli are 0.007, 0.016, respectively.[17]

Sustainability is a priority with effort to reduce environmental impact through recycling and eco-friendly technologies. The industry is a part of global supply chain sourcing materials from international markets and is affected by global market dynamics and regulations. Few initiatives taken by the UK tyre manufacturing companies are listed below:

- **Continental-** The Company's 'Conti Green concept' tyre minimises resource consumption throughout the entire value chain, from raw material sourcing through every stage of

[14] https://invenoeng.com/wp-content/uploads/2017/12/Best-Practice-No.-44-Steam-Thermocompressor-Systems.pdf
[15] https://iwma.in/pdf/JK%20Tyres%20Chennai%20Plant%20%20-%20IWMA.pdf
[16] https://www.tyrepress.com/leading-tyre-manufacturers/
[17] https://www.crisilratings.com/content/dam/crisil/our-analysis/esg-research/esg-readings/the-scope-3-series.pdf

production and beyond, including new ways of extending service life. The tyre uses 35% of renewable materials, 17% recyclable materials, and it is 40%. This leads to a reduced rolling resistance, thereby improving the energy efficiency. [18]

- **Pirelli-** The company is working toward 100% non-fossil fuel origin through various steps such as using natural rubber, rayon, lignin, bio and circular polymers, bio resins and veg oils, rice husk ash silica, and recovered carbon black, leading to benefits like unparalleled tear resistance, high tenacity and stability, reduced rolling resistance, etc. [19]

Some of UK's tyre sector companies and technologies offer key solutions incorporating decarbonisation and energy efficient measures which could be implemented in India are listed below:

- **Black-Ram-** Specialises in recovering steel, rubber, and carbon black from used tyres. Their process involves collecting scrap tyres, removing steel from the rubber using magnets, and then sending the resulting tyre chips for energy recovery.
- **Centrica PLC**- Offers patented technology driven by wireless sensors & advanced analytics from power radar software enables machine-level energy management systems for enhancing operating margins and driving sustainability across the organisation.
- **Fluid Ice-** Specialises in the recovery of materials from end-of-life tyres. The recovered materials are then recycled and used to make new products. Their technology showcases an environmentally friendly way to dispose of end-of-life tyres and helps to reduce the amount of waste going to landfills.
- **rFpro-** An engineering-grade simulation environment for the automotive and motorsport industries where tyre makers can develop new models, reduce prototypes, which helps to save time and money.
- **Biomass Boiler**s**-** A heating system which uses biomass obtained from organic matter to produce heat or steam to use in the industry. This steam or heat is used for cleaning, moulding, and drying of rubbers. This leads to reduced emissions.
- **Smart Tyres-** Equipped with embedded sensors which provide real-rime data on temperature, pressure and tyre's wear improving performance and safety of the vehicle and human.
- **Thermal Energy Management Systems technology-** Used to enhance energy efficiency by recovering heat from other processes. It captures heat from vulcanisation process and used for heating purposes across the production line. This leads to energy savings and emission reduction.
- **Carbon Nanotubes (CNT)-** Hollow tubes which are made of graphene sheets and have diameters less than 100 nano meters and lengths in microns. CNTs are 10% the weight of copper reducing weight of vehicles and improving fuel efficiency. They also improve electrical conductivity, reduce rolling resistance, and enhance mechanical properties.
- **Eco tyres-** Tyres that are made from sustainable materials and have low impact on the environment. The materials contain 200 different materials including natural rubber,

[18] https://www.continental-tyres.co.uk/b2c/stories/greenconcept-iaa-mobility/#accordion-b2092f51f4-item-83ddd1ea8b

[19] https://www.pirelli.com/tyres/en-gb/car/sustainability-tyres

organic cotton, and other eco-friendly materials. They reduce fuel consumption by 7-10%, provide better grip, increase durability and are light in weight.

IDEEKSHA Workshop for Tyre sector

A one-day workshop on **"*Best Practices in Energy Efficiency in Tyre Sector: A Path for Decarbonisation*"** is being organised by ASPIRE Programme in collaboration with BEE on **7th August 2024** at EMC's Conference Hall in Thiruvananthapuram, Kerala**.** The workshop will cover various aspects of the tyre sector such best practices, and new & emerging low-carbon technologies to enhance industrial energy efficiency and decarbonisation (IEED) measures. The workshop is designed to provide national and international organisations with a platform to present their best practices and technologies in the above areas. This platform would provide an opportunity for stakeholders to understand the tyre sector in India and connect with key stakeholders for potential partnerships. The workshop would thus enable in capacity building of Tyre sector stakeholders.

ASPIRE programme promotes gender equality, and the sectoral workshop is expected to deliver GESI (Gender Equality and Social Inclusion) through the participation of women and stakeholders from marginalised groups from large energy-intensive industries. The workshop will also include a presentation on importance of Gender Equality and Social Inclusion (GESI) measures in Indian industries.

The detailed agenda for the tyre sectoral workshop has been provided in Annexure.

Annexure – Agenda for Tyre Sectoral Workshop

Theme: Best Practices in Energy Efficiency in Tyre Sector: A path for Decarbonisation

Date: 7th August 2024

Time: 09:30 – 17:30 IST / 04:00 – 12:00 GMT

Venue: Conference Hall, EMC, Thiruvananthapuram

Time (IST)	Name of Session	Presenter
Inaugural Session		
09:00 – 09:30	Registration	
09:30 – 09:35	Lighting of Lamp	
09:35 – 09:40	Welcome Address	Mr. Anurag Singh Sirola, Associate Director, KPMG, ASPIRE Programme Team
09:40 – 09:50	Introduction of ASPIRE Programme*	FCDO representation
09:50 –10:00	Special Address on tyre manufacturing sector's initiatives on energy & emission reduction	Designated Representative, Automotive Tyre Manufacturers Association (ATMA)
10:00 – 10:10	Special Address by Ministry of Power (MoP)*	Mr. Dhiraj Kumar Srivastava, Chief Engineer, MoP
10:10 – 10:20	Keynote Address by Bureau of Energy Efficiency (BEE)	Mr. Sunil K. Khandare, Director, BEE
10:20 – 10:30	Vote of thanks	Mr. K. K. Chakarvarti, Senior Advisor, IDEEKSHA Platform (ASPIRE Programme Team)
10:30 – 10:40	Group photograph	
10:40 – 11:00	Tea break and networking	
Technical Session I: Perform Achieve and Trade Scheme for Tyre Sector		
11:00 – 11:05	Moderator	Mr. Sunil K. Khandare, Director, BEE
11:05 – 11:35	Perform Achieve and Trade (PAT) Scheme and Carbon Credit Trading Scheme (CCTS) for the Tyre Sector	Mr. Naveen Kumar, Senior Sector Expert, BEE
11:35 – 11:45	Q&A	
Technical Session II: Sharing of best practices by Indian Tyre Sector		
11:45 – 11:50	Moderator	Mr. K. K. Chakarvarti, Senior Advisor, IDEEKSHA Platform (ASPIRE Programme Team)
11:50 – 12:10	Presentation by JK Tyre & Industries Ltd '*Best practices in energy efficiency to attain carbon neutrality by 2050*'	Mr. M Bharathidasan, DGM, EEI Mr. T.Jayakanthan, Chief Manager, EEI (EM) Mr. D.Prabhu, Chief Manager, Utility (EM)

Time (IST)	Name of Session	Presenter
12:10 – 12:30	Presentation by Apollo Tyres '*Energy saving initiatives of Apollo Tyres'*	Mr. Aneesh R., Group Manager Mr. Renjit, Group Manager Mr. Alagarsamy, Manager
12:30 – 12:50	Presentation by JK Tyre & Industries Ltd '*Best practices in energy efficiency at Kankroli plant'*	Mr. Gaurav Bohra, Dy. General Manager (EE&I)
12:50 – 13:00	Q&A	
13:00 – 14:00	Lunch break and networking	
Technical Session III: Case Studies and Low Carbon & Digital Technologies for Tyre – by Indian Experts		
14:00 – 14:05	Moderator	ASPIRE Team/ Sector Expert (BEE)
14:05 – 14:25	Presentation by Alphageek Enterprises Private Limited *'Harnessing IoT and AI for enhanced energy efficiency in Industrial and commercial facilities: embracing the net-zero transition'*	Mr. Shinoj Lal K, Chief Business Development Officer, Alphageek Enterprises Private Limited, Bengaluru
14:25 – 14:45	Presentation by Systel Energy Solutions '*Digitalizing compressed air for energy efficiency and sustainability in tyre manufacturing'*	Mr. Hiday K, Managing Director, Systel Energy Solutions, India Pvt. Ltd., Coimbatore
14:45 – 15:05	Case Study by TurboTech Precision Engineering Private Limited '*Micro Turbine supplied for Tyre Manufacturing'*	Mr. Syed Muneeb Ellias Peeran, Marketing Engineer, TurboTech Precision Engineering Private Limited, Bengaluru
15:05 – 15:25	Presentation by Forbes Marshall Pvt Ltd. '*Energy efficiency benchmarking and solutions for thermal utilities in tyre industry'*	Mr. Jain Jacob, Energy Auditor Mr. Omkar Deshpande, Engineer- Tyre and Rubber, Forbes Marshall Pvt Ltd., Pune
Technical Session IV: Standards & Decarbonisation Technologies for Tyre Sector – by International & UK Technology & Solutions Providers		
15:25 – 15:30 ***(10:55 – 11:00 GMT)***	Moderator	Mr. Anurag Singh Sirola, Associate Director, KPMG, ASPIRE Programme Team
15:30 – 15:45 ***(11:00 – 11:15 GMT)***	Presentation by Fluid Ice, UK* *'Recovery of waste materials from end-of-life and used Tyres'*	Ms. Mary Sweere, Director, Fluid Ice, UK
15:45 – 15:50 ***(11:15 – 11:20 GMT)***	Q&A	
15:50 – 16:05 ***(11:20 – 11:35 GMT)***	Presentation by rFpro, UK* *'High-definition tyres in high-definition worlds*'	Mr. Sharan Ramachandran, Global Business Development Manager, rFpro, UK
16:05 – 16:10 ***(11:35 – 11:40 GMT)***	Q&A	

Time (IST)	Name of Session	Presenter
16:10 – 16:25 ***(11:40 – 11:55 GMT)***	Presentation by Centrica PLC, UK* *'Improve operational energy efficiency predict breakdowns with Centrica's wireless, real-time technology'*	Mr. Anand, Director, HTFE (India Partner of Centrica PLC, UK)
16:25 – 16:30 ***(11:55 – 12:00 GMT)***	Q&A	
16:30 – 16:45 ***(12:00 – 12:15 GMT)***	Presentation by Black-Ram, UK* *'Maximizing steel, rubber, and carbon black recovery through tyre recycling'*	Mr. Henry Hodge, Managing Director, Black-Ram, UK
16:45 – 16:50 ***(12:15 – 12:20 GMT)***	Q&A	
Session on importance of Gender Equality and Social Inclusion (GESI) measures in Indian Industries		
16:50 – 17:10	Importance of GESI measures in Indian Industries	Mr. Anurag Singh Sirola, Associate Director, KPMG, ASPIRE Programme Team
Discussions, Feedback and Concluding Remarks		
17:10 – 17:30	Mr. Sunil K. Khandare, Director, BEE Ms. Sanyukta Das Gupta, Senior Advisor, Smart Power, Climate and Energy Team, BHC Senior Member, Automotive Tyre Manufacturers Association (ATMA) Mr. Anurag Singh Sirola, Associate Director, KPMG, ASPIRE Programme Team Mr. Balawant Joshi, MD, Idam Infra, ASPIRE Programme Team Mr. K. K. Chakarvarti, Senior Advisor, Idam Infra, ASPIRE Programme Team	
17:30 onwards	Tea and networking	