BUSINESS SEGMENT REVIEW

Carbon

2.40 Mn tonnes Sales volume

₹106,575 Мп

Revenue from operations

70%

Contribution to consolidated revenue

Did you know?

Calcined petroleum coke (CPC) and coal tar pitch (CTP) are the two key materials required to produce anodes for aluminium smelting. They are blended together to form anode paste, which is then formed and baked into solid anodes. These anodes are essential in the electrolytic reduction process, where they facilitate the conversion of alumina into aluminium, ensuring the efficiency and effectiveness of aluminium production. We offer a range of products, including CPC and CTP. Our commitment to eco-friendly and energy-efficient practices ensures profitability and sustainability. We generate energy at six Carbon segment plants and have invested significantly in flue-gas desulphurisation in our Carbon plants in Germany, India and the US.



Upcycling industrial byproducts into high-value materials +

We repurpose over **2.8 million** tonnes of byproducts annually from the petroleum and steel industries to create essential carbon materials.

Carbon products portfolio

	CPC	СТР	Other carbon products
Raw materials	Green petroleum coke (GPC) is a byproduct of crude oil refining	Coal tar is a byproduct of metallurgical coke used in the iron and steel industries	Coal tar is a byproduct of metallurgical coke used in the iron and steel industries
Manufacturing	CPC is created through a high- temperature calcining process using rotary-kiln and vertical- shaft technologies, eliminating moisture and volatile matter from GPC	CTP is obtained by distilling coal tar, which separates its components based on varying boiling points	Other carbon products are generated through the distillation of coal tar, a process that separates its components based on their distinct boiling points
End-industry applications	CPC is essential for producing anodes used in primary aluminium production and in the steel and titanium dioxide industries	CTP is a vital raw material for anodes utilised in the aluminium industry as well as in the graphite and refractory sectors	These products are utilised in various industries, including wood treatment, carbon black production and construction, among others
Production locations	India and the US	Belgium, Canada, Germany, Poland and Russia	Belgium, Canada, Germany and Russia

Carbon business value chain



Green petroleum coke, a byproduct of crude oil refining, is upcycled through the calcination process to produce CPC, which is a critical material in the anodes required for aluminium smelting. There are no known commercially viable substitutes for CPC in aluminium smelting. Without calcination, larger volumes of GPC would be burned as a highly emitting fuel for power generation.



Market dynamics

Carbon calcination

Global carbon markets in 2024 faced significant challenges, with pressures from the supply and demand sides. Key dynamics include:

GPC availability

Limited availability and increased competition for green petroleum coke (GPC), driven by demand in emerging applications like battery anodes.

Environmental regulations

Growing regulatory pressures worldwide demand higher compliance standards for the carbon industry.

Regional demand shifts

Declining demand in traditional markets such as Europe is offset by emerging opportunities in regions with expanding industrial capacity.

Our response

Carbon calcination

We implemented a strategic and multi-faceted approach in response to the changing market conditions.

Expanded supply base

Strengthened partnerships with GPC suppliers across geographies, focusing on long-term sourcing agreements and logistical efficiency.

Utilisation of blending capabilities

Used advanced blending techniques to optimise CPC quality and cost, including the blending of rotary-produced CPC from the US with shaftproduced CPC from the Atchutapuram plant in India.

Sustainability investments

Continued investments in environmental controls and sustainability-focused operations to meet current and anticipated regulations.

Operational efficiency

Leveraged global logistics networks to reduce freight and handling costs while maintaining consistent product quality.

Carbon distillation

In 2024, the European market faced significant disruptions due to:

Coal tar pitch (CTP) demand

Declines linked to aluminium smelter closures and reduced graphite electrode production, both driven by high energy costs and low steel production.

Coal tar supply challenges

Tar supply in Europe was constrained by coke oven closures, reflecting reduced steel industry activity.

Our response

Carbon distillation

Operational adaptation

Adjusted production levels to align with lower demand while optimising cost structures.

Circular economy practices

Enhanced focus on upcycling feedstocks into high-value materials for sustainable applications, such as lithium-ion batteries and long-lasting infrastructure coatings.

Key developments of 2024

Received approvals to fully utilise both Carbon segment plants in India, ensuring maximum operational capacity from 2025 onwards.

Future prospects

In 2025, we plan to operate our Indian capacity at full potential for the first time, supported by enhanced global procurement strategies and strengthened supplier relationships. These efforts position us to navigate market pressures while driving operational efficiency and sustainability.

