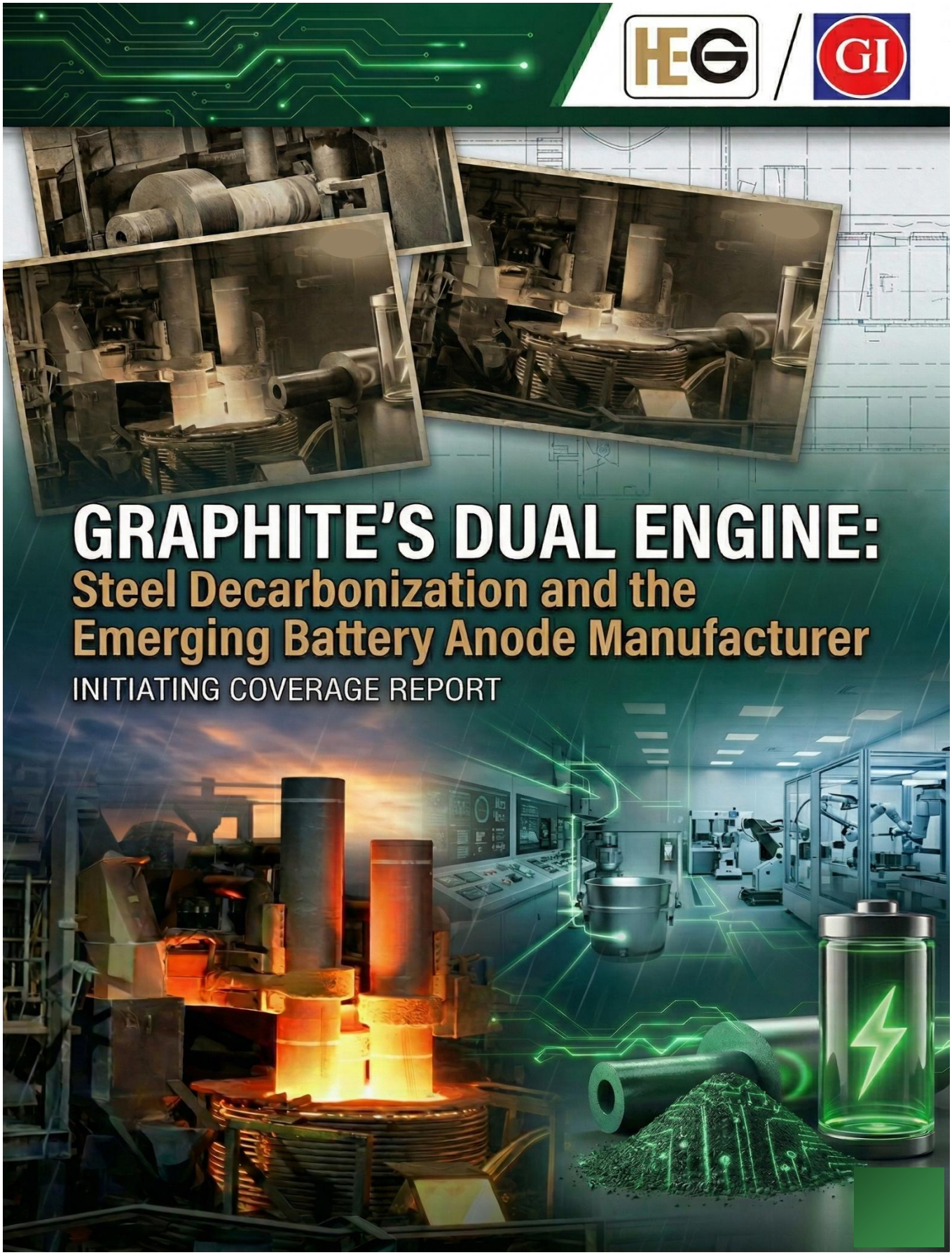


GRAPHITE'S DUAL ENGINE:
Steel Decarbonization and the Emerging Battery Anode Manufacturer
INITIATING COVERAGE REPORT

Abhishek Jain
abhishek.jain@arihantcapital.com
022-42254872

Rohan Baranwal
rohan.baranwal@arihantcapital.com

ArihantCapital
Generating Wealth

INITIATING COVERAGE
27th Mar 2026

Graphite Electrodes & Anode

Graphite's Dual Engine: Steel Decarbonization and the Emerging Battery Anode Manufacturer

HEG Ltd	
CMP (INR)	500
Rating	Buy
Target Price (INR)	708
Upside	41.6%

Shareholding Pattern % *(As on Sep, 2025)*	
Promoters	56.13%
Public & Others	43.87%
Stock Info	
BSE	509631
NSE	HEG
Bloomberg	HEG:IN
Sector	Electrodes & Refractories
Face Value (INR)	2
Mkt Cap (INR Bn)	96.49
52w H/L (INR)	572/381.8
Avg yearly Vol (in 000')	2,072

Graphite India Ltd	
CMP (INR)	595
Rating	Buy
Target Price (INR)	735
Upside	23.6%

Shareholding Pattern % *(As on Sep, 2025)*	
Promoters	65.34%
Public & Others	34.66%
Stock Info	
BSE	509488
NSE	GRAPHITE
Bloomberg	GRIL:IN
Sector	Electrodes & Refractories
Face Value (INR)	2
Mkt Cap (INR Bn)	116.25
52w H/L (INR)	676/451
Avg yearly Vol (in 000')	1,443

HEG Ltd Vs Nifty 50

Stock Performance (%)	1m	6m	12m
HEG: NSE	-15.6	-8.7	+10
Nifty_50	-11.4	-10.6	-4.8

Graphite India Ltd Vs Nifty 50

Stock Performance (%)	1m	6m	12m
Graphite India Ltd	-6.8	+9.1	+24
NIFTY	-8.8	-6.8	-2.67

With the stabilizing of steel demand and transition of old Blast Oxygen Furnace (BOF) to Electric Arc Furnace (EAF) steelmaking, we expect the graphite electrode market to enter a phase of structural recovery. This revival is supported by the rapid adoption of EAF steelmaking, driven by global decarbonization goals and a simultaneous tightening of supply as western manufacturers reduce capacity due to higher labor cost and energy consumption. The industry is set to benefit from the rising adoption of EAF method due to "green steel" transition and stabilizing electrode prices. Furthermore, the battery anode market is creating a new, massive demand vertical for the same raw material. We initiate coverage on HEG Ltd (BUY) and Graphite India (BUY).

Global Steel Demand Stabilizes as Decarbonization Fuels EAF Expansion: Global steel demand is stabilizing after several years of softness. Output grew from ~1,634 Mt in 2015 to ~1,885 Mt in 2024 (CAGR ~0.7%) and is projected to reach ~1,970 Mt by 2030. After a modest decline in 2024, world steel consumption is expected to rise ~1-1.2% in 2025 . A major structural shift is the rapid expansion of EAF steelmaking share with global steel climbed from ~25% in 2015 to ~29.6% in 2024 and is forecast to reach ~40% by 2030E. Decarbonization policies are driving this trend, roughly 60% of new steelmaking capacity additions are planned as EAFs . For example, the US has pledged to cut emissions by 50% and maintain ~70% of its steel making via EAF. By 2030, North America, is expected to add about 25-30 MT of new EAF capacity. These factors underpin continued demand for high-quality electrodes and related materials. In total, globally close to ~100 MT of EAF steel making capacity is to be added by FY2030E.

Graphite Electrode Market Tightens: Rising Demand Meets Structural Supply Constraints: The graphite electrode (GE) market is witnessing a structural shift, driven by the global transition toward EAF steelmaking amid strong decarbonization push. With ~60% of planned new steel capacity globally expected via the EAF route, electrode demand is on a firm upward trajectory. The global GE market, pegged at ~USD 6-6.5 Bn in 2024, is expected to grow at a steady ~3% CAGR to ~USD 7-8 Bn by 2030. UHP electrode demand is especially strong, expected to increase by ~192 kt in FY27E with a CAGR ~16.4%, largely from developed markets. After years of oversupply, the market is now structurally tightening in terms of supply due to continuous shutdown of electrode manufacturing mainly situated in high cost developed economies as of rising operational cost, lower demand, reduced manpower. Globally ex-China, GE capacity has fallen ~18% from 733 kt to ~633 kt in FY25. Resonac alone is closing ~1/3rd of its global capacity, while Japan has imposed a 95% anti-dumping duty on Chinese electrodes, triggering a ~25% domestic capacity cut. Meanwhile, Western manufacturers have raised prices by ~18-20% in FY25 amid steady demand and constrained availability. **With global electrode production lagging demand and incremental EAF additions of ~225 MT announced ex-China expected to add ~238 kt of GE requirement, the market is entering a phase of constrained supply and firm pricing.** This structural transition positions the industry for sustained volume growth, margin recovery, and improved earnings visibility in the coming cycles.

Shift to Low-Carbon Steelmaking Challenges Traditional BOF Route: The steel industry emits ~7-8% of global CO_2, and the BOF route is much more carbon-intensive than EAF (BOF emits roughly four times or ~70% higher CO_2 compared to EAF per ton of steel). Due to higher demand of controlling carbon emission and steel makers are preferring EAF capacity for longer sustainable development. Modern EAF routes produce ~0.2-0.3 tCO_2 per ton of steel with the usage of clean electricity, versus ~1.7 tCO_2/t via BOF. In fact, EAF mills generate twice the steel output with ~75% lower GHG emissions compared to blast furnaces. Globally, EAF's share of steel production currently at ~30% is expected to reach ~60% by 2030E as most developed economies pursue net-zero emission. Since each ton of EAF steel requires roughly 1-1.7 kg of graphite electrodes, this green shift directly boosts graphite demand. Indeed, EAF crude steel output is projected to grow from ~540 Mt in 2023 to ~790 Mt by 2030, implying roughly +200 kt of additional electrode demand (ex-China) by 2030.

Emerging Demand for Graphite in EV Battery Anodes: Graphite undergoes a graphitization process to produce electrodes this very same graphitizing technique is also employed to manufacture the spherical, highly pure synthetic graphite anodes it is an essential anode material in lithiumion batteries (LIBs). About 95% of LIB anodes use graphite, due to its high electrical conductivity and chemical stability. The rise of EV is driving surging demand for graphite in battery anodes. Lithium-ion battery demand is largely consumed by EVs is expected to jump from ~15 GWh in FY2024 to ~260 GWh by FY2030E. Graphite which is available in natural and synthetic form are both used as a dominant anode material. As per analysis synthetic anode accounts to ~75% of the market due to its high purity, uniform particle size and higher energy density and faster charging capabilities. Consequently, graphite anode demand is forecast to rise from ~77 ktpa today to roughly 200-250 ktpa by 2030. In India's market from FY22-FY30E, anode demand is projected to reach ~135-150 ktpa by 2030 showing expected CAGR of ~57%, as domestic EV adoption accelerates, and more indigenous company adds up cell manufacturing facility. However, on supply-side challenges appear as China currently supplies ~70% of natural graphite and ~90% of purification/processing capacity. Meeting the projected anode demand will require massive new supply estimates suggest graphite production must rise ~60% by 2030 versus 2023 levels. In sum, graphite anodes offer a large growth opportunity aligned with EV trends, but also a supply constraint given resource concentrations.

	FY25			CAGR FY25-27E			EV/EBITDA (X)			P/E (X)			P/B (X)			ROE (%)		
Companies	**Revenue**	**EBITDA**	**PAT**	**Revenue**	**EBITDA**	**PAT**	**FY25**	**FY26E**	**FY27E**	**FY25**	**FY26E**	**FY27E**	**FY25**	**FY26E**	**FY27E**	**FY25**	**FY26E**	**FY27E**
HEG Ltd (INR Mn)	21,530	2,551	1,151	19.6%	58.8%	116.8%	40	20	17	39	16	18	2	2	2	3%	12%	11%
Graphite India Ltd (INR Mn)	25,600	2,540	4,580	14%	35%	14%	46	55	25	25	26	19	2	2	2	8%	7%	9%
US																		
Graftech Int (INR Mn)	43,945	-792	-14,564	19%	-	-	43	33	12	-	-	-	-	-	-	-	-	-
Japan																		
Resonac Hold (INR Bn)	785	235.572	16.92	0%	-19%	94%	20	13	12	69	25	18	3	3	3	4%	12%	14%
Tokai Carbon (INR Bn)	188	32.935	11.7	8%	12%	6%	6	6	5	10	13	9	-	-	-	7%	5%	8%
South Korea																		
POSCO Holdings (INR Trn)	4239	367.16	40.49	5%	20%	90%	8	6	6	56	14	11	0	0	0	1%	3%	4%
EU																		
SGL Carbon (INR Mn)	84,091	13,302	-7,715	-	-	-	5	5	4	46	14	9	-	-	-	-	-	-

Sources: Bloomberg, Arihant Capital Research

Note

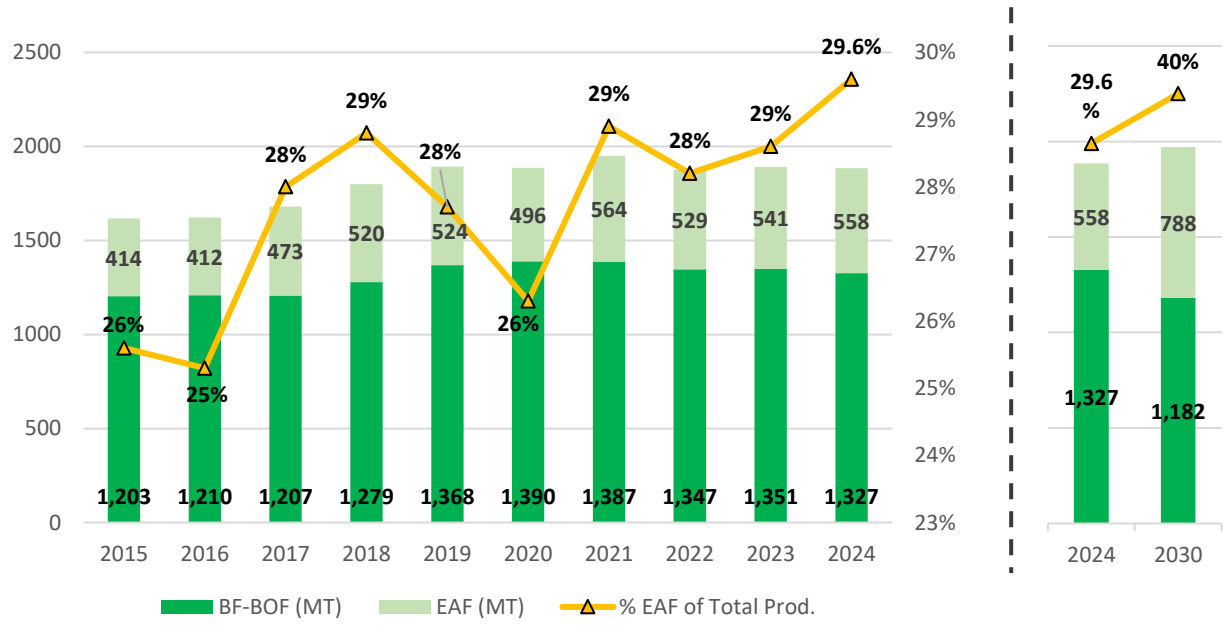
Table of Contents

Industry Overview

Rising Global Steel Demand with Rising Infrastructure: Global steel consumption is poised for only modest growth in 2025 after a prolonged downturn. The estimated global demand will rise about 1-1.2% in 2025 (to roughly 1.77-1.89 Bn tons), following a ~0.9-1.1% decline in 2024. Demand has been held back by weak real estate markets and tight financing: industrial activity and housing construction remain subdued in many economies. Indeed, world demand was "sluggish" in 2024 and is expected to stay soft in half of 2025 due to property-sector weakness and only moderate infrastructure growth. Nonetheless, this an uptick in the past 1-1.5 years, reflecting a gradual stabilization as monetary conditions ease and pandemic-era distortions (high inventories, supply chain bottlenecks) unwind. As EAF capacity expands under decarbonization policies, electrode demand is rising as ~60% of new steelmaking capacity is planned EAF. This shift strengthens growth of the global graphite electrode market at ~USD 6.5-6.9 Bn in 2024, rising to ~USD 7-8 Bn by 2030 with ~3% CAGR.

Overall Production Volume of Steel by Production Methods (Global), 2015-2030E

Production Volume	CAGR (2015-2024)	CAGR (2024 - 2030E)
EAF	3.4%	5.9%
BOF	1.09%	-1.9%
Total	0.7%	3.10%



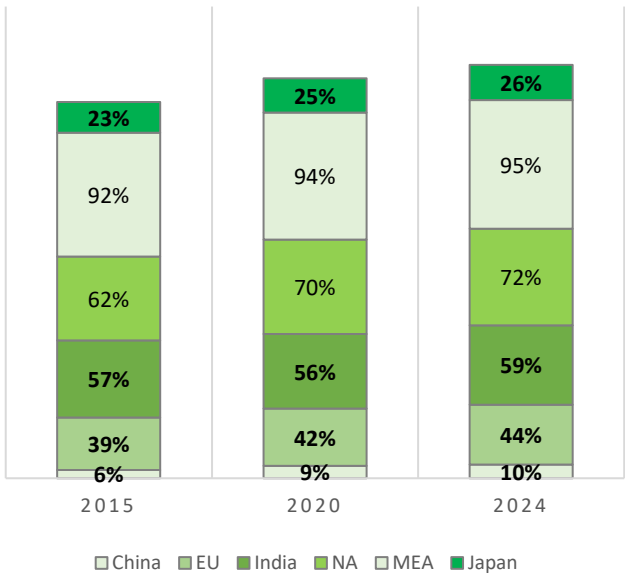
WSA 2025 report, Company Report, Arihant Capital Research

Global steel demand has grown steadily, with production increasing from 1,634 mn tons (MT) in 2015 to 1,885 MT in 2024 with a CAGR of 0.7% from FY15-24 and is expected to reach 1,970 MT by 2030. The share of Electric Arc Furnace (EAF) production has risen from 25% in 2015 to 29.6% in 2024 with a CAGR of 3.4% and expected it will reach 40% by 2030. Developed economies are likely leading the shift to EAF due to environmental regulations and sustainability goals, US has committed to reduce 50% of its carbon emission by 2030E, produce 70% of steel through EAF process.

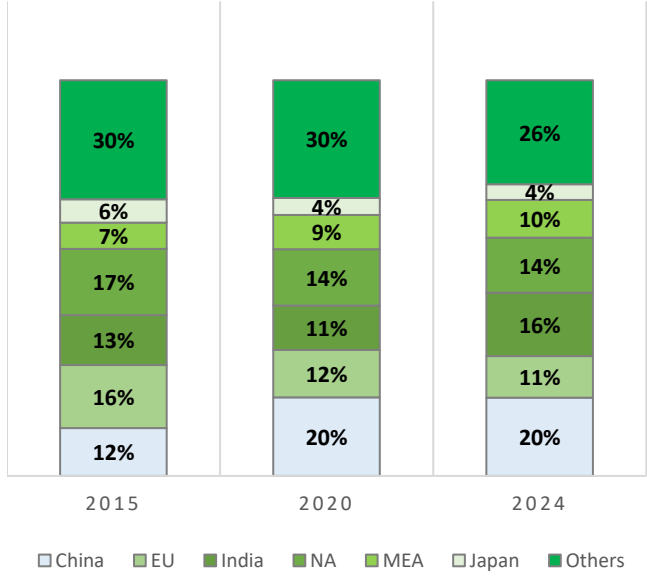
Regional Demand Trends, Developing Nations Leads EAF Contribution: Outside China, growth is relatively broad-based. In China, ongoing real-estate distress drives steep demand reduction, Chinese steel use was down about -3.0% in 2024 and another -1.0% in 2025. By contrast, emerging markets are powering global growth. India remains a standout, with steel demand growing roughly 6-8% annually through 2024-25, reinforced by infrastructure and industrial investments. ASEAN countries also continue strong growth expected near +4 - 5% in 2025. Demand in MENA and African shows a strong growth ~4 - 5% YoY further boosts consumption in developing countries. In contrast, most mature economies are essentially flat demand dropped in 2024 but is expects a modest ~+1% in 2025. Excluding China, global steel use is seen growing nearer 2-3% in 2025, driven mainly by Asia and emerging regions.

On the supply side, new capacity trends and trade policies are reshaping the market. A surge of new EAF adoption projects ~60% of planned capacity between FY25 - FY27E will increase the steel production through EAF by significant level. Currently only about 29% of global steel in 2025 is produced through EAF which is expected to rise at 40% in FY30E. The developing countries has steelmaking accounts to higher contribution of EAF process into steel manufacturing, India accounts to close to 60% of EAF steel manufacturing whereas MEA is 90% contribution. India and MEA has also seen recovery ad strong infrastructure spend after a short term slowed down due to rising uncertainty as of war, political voting etc.

EAF Steel Production as a (%) of Total Steel Production by Country, 2015 - 2024



Country-Wise Share in Global Steel Production via EAF, 2015 - 2024



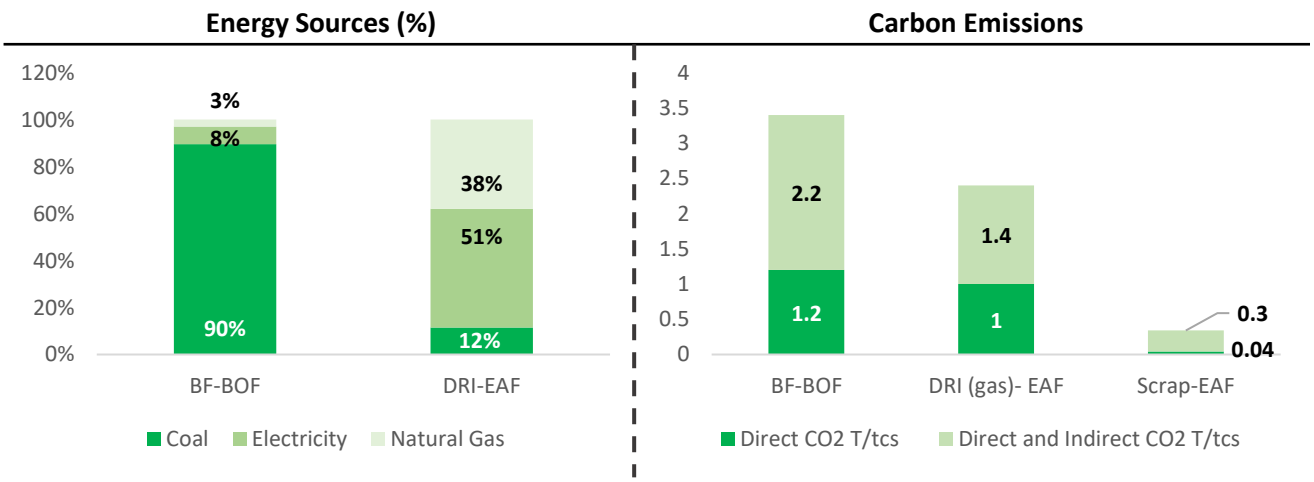
WSA 2025 report, Company Report, Arihant Capital Research

Meanwhile, with the improvement of the quality of steel products, steel manufacturers have been focusing on EAF steel manufacturing, raising higher requirements for the quality of graphite electrodes, which is essential for EAFs. Moreover, with rising awareness of carbon neutrality and carbon emission becoming main topic for discussions into developed economics. US and EU has committed to cut the emissions by transitioning to greener alternatives like EAF production process to manufacture steel.

Modern Steelmaking Processes: Basic Oxygen Furnace & Electric Arc Furnace
There are three main steel production processes. : i) Basic Oxygen Furnace (BOF) Process iia) DRI - Electric Arc Furnace (EAF) Process iib) Scrap based EAF.

The most widespread, is the integrated blast furnace and basic oxygen furnace process (BF-BOF) accounting for ~70% of the world's steel. This process begins with molten iron (pig iron) from a blast furnace, which contains ~4-4.5% carbon along with various impurities like silicon, manganese, phosphorus, and sulfur. In the BOF process, molten pig iron is poured into a large, pear-shaped vessel lined with refractory material. Steel scrap (25-30% of the charge) is added for cooling and yield increase. The furnace is tilted, and a water-cooled lance lowers into it, blowing pure oxygen, which reacts with carbon releasing carbon monoxide, generating heat that raises temperatures to 1600-1650°C. During this process, impurities are oxidized and removed by adding fluxes like lime or dolomite into a fluid slag for easy separation. The entire process takes only 30-45 minutes, making it efficient but with high carbon emissions. Once the desired composition is achieved, the furnace tilts and the molten steel pours into a ladle for secondary steelmaking.

Shift to Low-Carbon Steelmaking Challenges Traditional BOF Route: The blast furnace process is inherently more polluting compared to the EAF method, even though both routes can yield steel of comparable quality. Steelmaking contributes roughly 7% of global CO_2 emissions, so reducing its carbon footprint is essential. The key distinction between the two processes lies in the raw materials used. In the traditional integrated route based on blast furnaces, steel is produced from a combination of iron ore, coking coal, limestone, and recycled steel. On average, producing 1,000 kg of crude steel via this method requires about 1,370 kg of iron ore, 780 kg of metallurgical coal, 270 kg of limestone, and 125 kg of recycled steel. It also requires ~15 GJ of energy input.



Source: Company Reports, Arihant Capital Research

Producing a ton of crude steel via the BF-BOF route with coal injection directly emits around 1.2 t CO2. Whereas EAF producing a ton of crude steel produced by natural gas-based DRI-EAF results in 1.0 t CO2 in direct emissions. EAF as it uses electric arc to melt the steel scrap or DRI EAF it requires 15-30 GJ of final energy to produce one ton of steel. The blast furnace and basic oxygen furnace (BF-BOF) process releases the highest carbon emissions: 2.2 tons of CO2 emission per ton of crude steel. Because it uses coal (accounting to ~90% of energy), this process is becoming obsolete in an emissions-challenged world.

Note

EAF Steelmaking: Process & Resource Comparison

Capital Investment
~USD 1-1.5 Bn
Required per 1 MT of EAF capacity

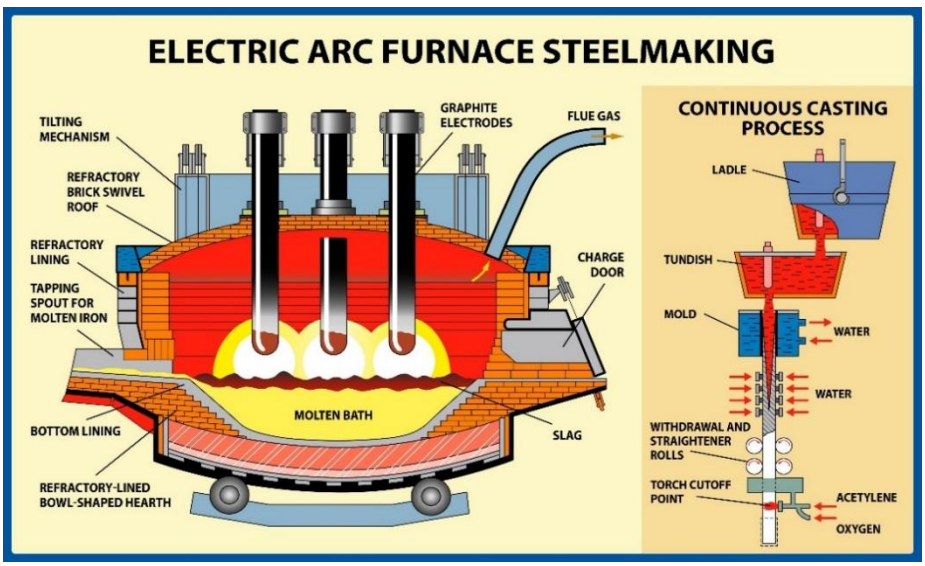
Resource Requirements per 1,000 kg of Crude Steel Produced

Resource Input	DRI-EAF Process	Scrap-EAF Process	Savings vs. DRI-EAF[1]
Recycled Steel (Scrap)	710 kg	1,000-1,100 kg	-
Iron Ore	1450 kg	Not required	>1,400 kg saved
Coal	150 kg	~5-15 kg	~120 kg saved
Limestone	88 kg	~30-50 kg	~45 kg saved
Electricity	~630 kWh (2.3 GJ)	~450 kWh (1.4-1.8 GJ)	Significant reduction
Carbon Emissions	Moderate	Lowest	Substantial reduction

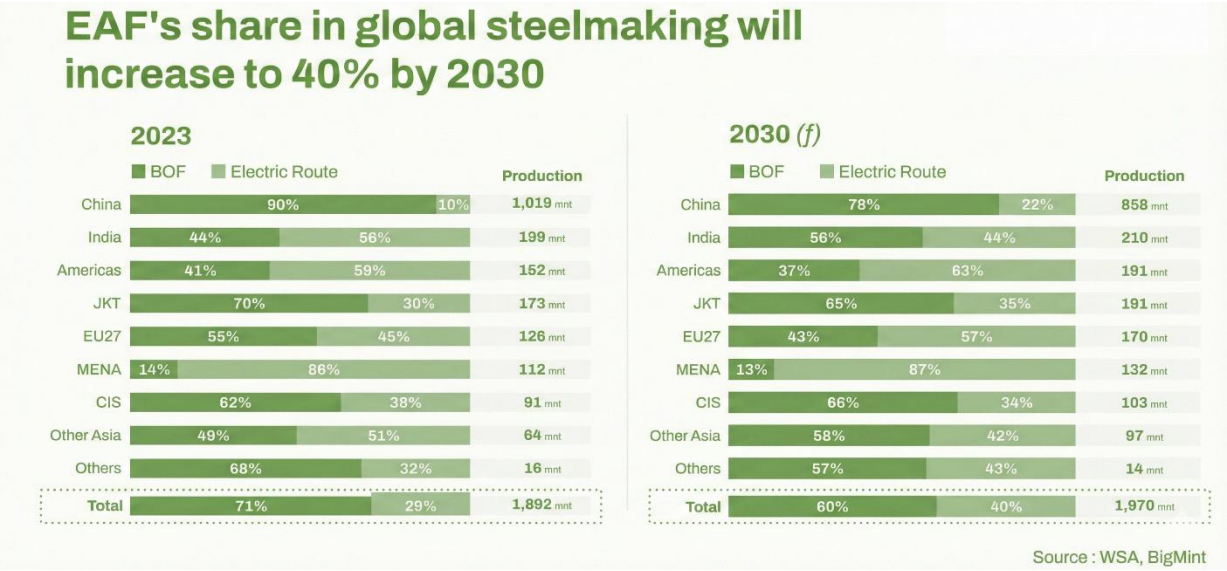
Savings per 1,000 kg of steel scrap used in Scrap-EAF vs. conventional integrated steelmaking. | Source: Industry data

The Transition to EAF Steelmaking: Capital and Carbon Efficiency

The EAF process currently accounts for about 30% of global steel production, with projections to rise to 40% by FY2030E. EAF involves loading steel scrap into a refractory-lined vessel where graphite electrodes create an electric arc, reaching temperatures of 3,500°C to melt the scrap metal. The Direct Reduced Iron (DRI)-EAF method emits ~1.4 tons of CO_2 per ton of crude steel, and, when powered by renewable energy, its direct emissions can be nearly zero. EAF produces twice the steel with 75% fewer greenhouse gas (GHG) emissions compared to Basic Oxygen Furnace (BOF) production, averaging 0.2 tons of GHG per ton of steel versus BOF's 1.7 tons. EAF requires a lower capital investment of ~Usd 1 to 1.5 bn for 1 mn tons of capacity installation, making it a cost-effective choice. Its primary energy source is electricity, used to melt recycled steel scrap. The DRI-EAF process is resource-efficient, needing 710 kg of recycled steel and conserving significant amounts of iron ore, limestone, and coal when 100% recycled steel is used. Overall, it represents a sustainable approach to steel production amid a focus on carbon neutrality.



Decarbonization Driving the Shift to EAF, Benefiting Graphite Electrode Demand: The steel industry is one of the largest contributors to carbon emissions, responsible for ~8% of global CO_2 emissions. As climate concerns intensify, the urgency to decarbonize steel production has gained momentum, with significant push from governments and industries worldwide. Steel produced mainly through two methods: Blast Oxygen Furnace (BOF) and Electric Arc Furnace (EAF). The BOF process emits nearly four times more CO_2 than EAF, making it a major target for emissions reduction.



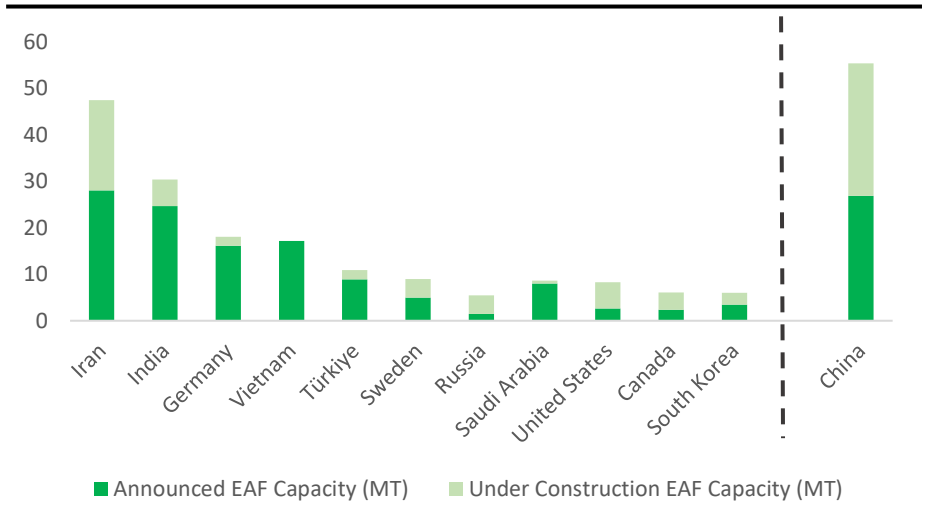
India is aiming to shift its steelmaking capacity from a 56% reliance on the EAF method to an increased focus on the BOF method, currently account to 44% of production. With a total production of crude steel around 140 mn tons (MT) in FY24, this shift contrasts with global trends, as Indian manufacturers continue to invest heavily in BOF facilities. Consequently, the share of EAF in India's steelmaking is projected to decrease to 44% from the present 56%, despite an increase in production via EAF route to over 92 MT by 2030, up from 78 MT in 2023.

Globally, the BOF share is expected to decline to 60% by 2030 from its current 71%, with significant shifts driven by the EU and China. EAF steel production, which stood at 550 MT in 2023, is anticipated to grow to 790 MT by 2030. China, with a current EAF share of 10%, is targeting an increase to 15% by 2025 and over 20% by 2030 as part of its transition to cleaner methods. The EU is also expected to boost its EAF share from 43% to 57% by 2030, aligning with its commitment to clean energy initiatives. In Japan, major players like JFE Steel have announced a strategic pivot toward EAF, supporting a wider industry shift away from traditional BOF methods.

US accounts close to 70% of the steel production is through the EAF route. Europe is also embracing this transition, with 45% of its steel production in 2023 coming from EAF routes. EAF-based steel production, which stood at ~540 MT in 2023, projected to grow to 790 MT by 2030.

China, despite current overcapacity concerns, aims to increase its EAF share from 11% to over 20% by 2030, while Japan’s major steelmakers, such as JFE Steel, have already begun pivoting toward EAF methods.

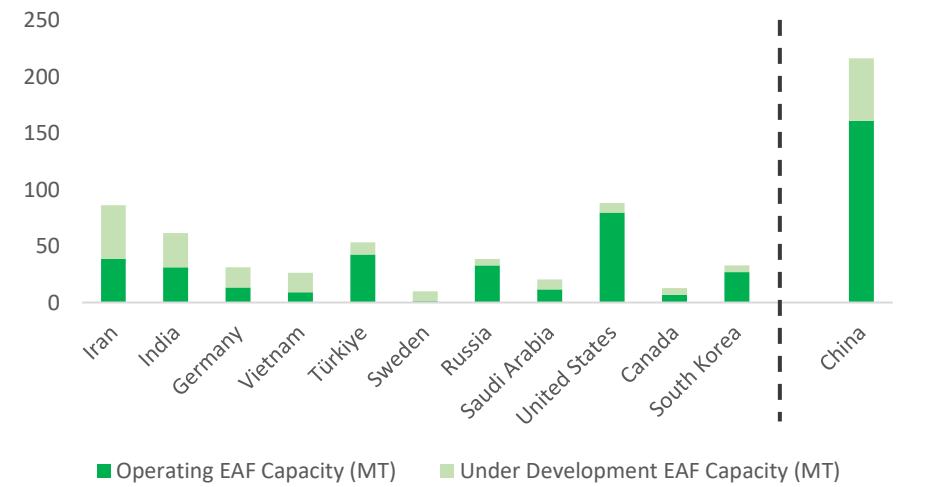
EAF Projects Move to Construction Phase Faster than Traditional BOF



Source: Industry, Arihant Capital Research

EAF developments are progressing through the pipeline significantly faster than legacy methods. While the total development pipelines are similar the 349 mtpa of EAF capacity in development vs 348 mtpa of BOF capacity in the pipeline, 58% of all new steelmaking capacity actively under construction worldwide is EAF-based. Currently, 109.2 mtpa of EAF capacity is actively under construction, compared to only 79.1 mtpa of BOF capacity. Overall ~31% of all EAF developments have successfully moved into the construction phase, whereas only 23% of BOF developments have achieved this milestone.

30 MTPA EAF Capacity to Commission by FY25 of ~100+ MTPA



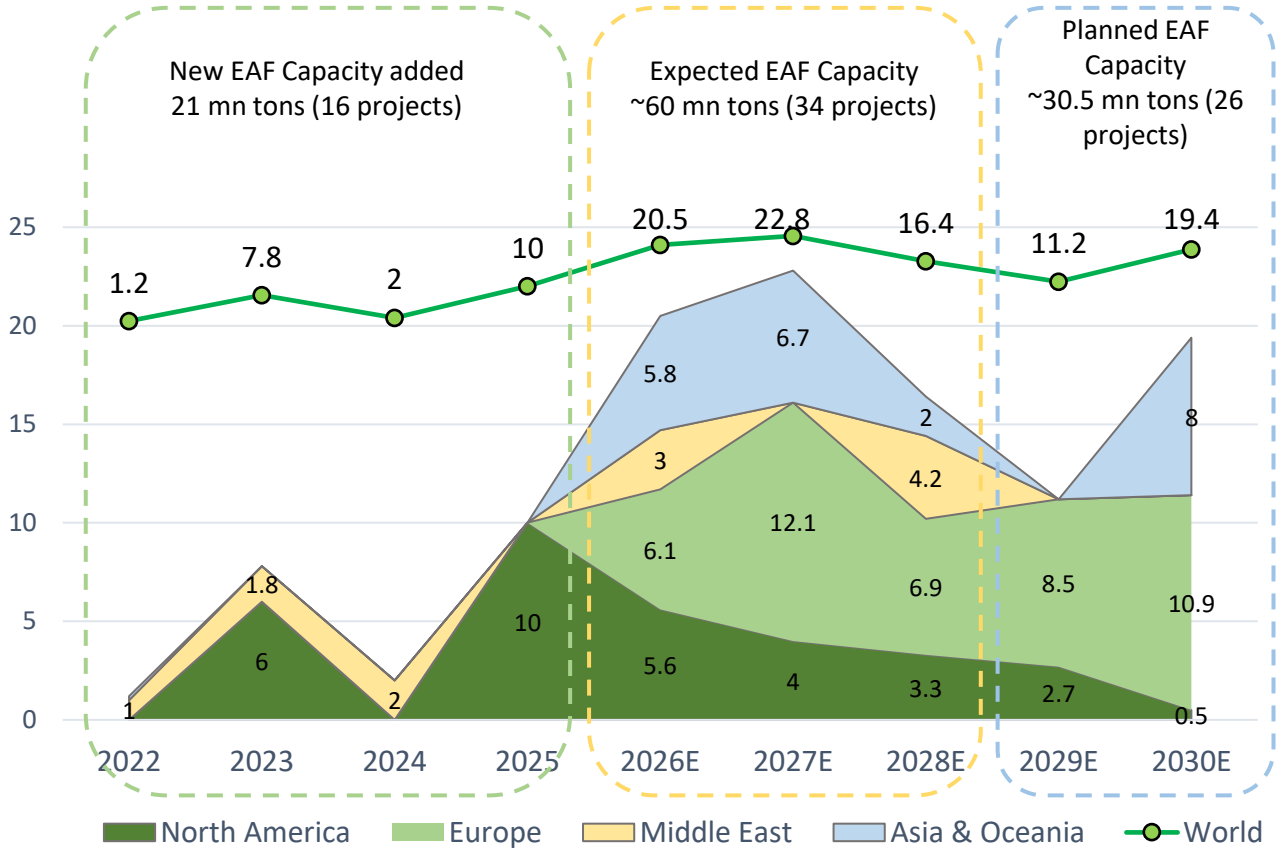
Source: Industry, Arihant Capital Research

Over the past few years, more than 100 mn tons of new greenfield EAF expansion and replacement projects have been announced across the US, EU, and other regions. Currently, 9 to 10 mn tons of these projects are already operational, with ~30 mn tons expected to begin by FY25. This shift is in line with global commitments to achieve net-zero emissions. The global demand for electrodes is roughly proportional to the output of EAF steel, estimated at about 1 to 1.7 kg of electrodes/ton of steel produced.

Note

With the decarbonization the steel industry is shifting to EAF capacity from traditional BOF capacity. The EAF steelmaking has grown from 30-32% to 40-45% over the past three years, with expectations to soon cross the 50% threshold. We expect a massive pipeline of new EAF capacity that will directly drive graphite electrode demand with ~16 new EAF projects accounting to ~21 mn tons of capacity have become operational and 34 projects with ~60 mn tons are slated to come online over next 2-2.5 years.

~136 mn tons of EAF Capacity Addition to Drive ~190-200K MT Incremental GE Demand by 2030

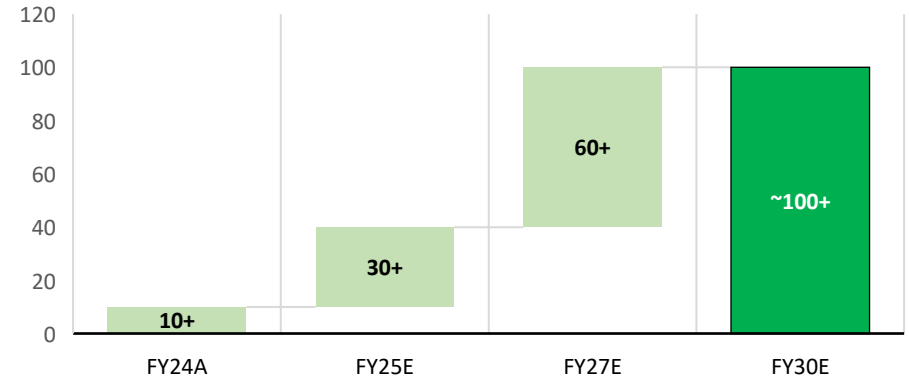


Source: Industry, Company reports, Arihant Capital Research

EAF facilities typically require ~2-3 years for commissioning. The upcoming ~60 mn tons of EAF capacity is expected to come online between 2026-28E, with most projects currently underway and progressing as planned. A large share of this expansion is concentrated in Western regions, led by Europe (~24 mn tons) and North America (~13 mn tons). This shift is largely driven by the industry's transition toward EAF-based steelmaking amid decarbonization efforts, while older BOF capacities are increasingly being phased out due to higher carbon emissions and elevated energy costs.

EAF Facilities	Company	Capacity (mmt)
Europe	H2 Green/SSAB/Acelor Mittal/TATA	25
North America	Nucor/CMC/Ternium/Arcelor Mittal	13
Asia	POSCO/JFE/JSPL/TATA	12
M. East & Oceania	HABAS/Liberty Steel	10

World New EAF Greenfield Capacity (ex. China) ~100+ MT



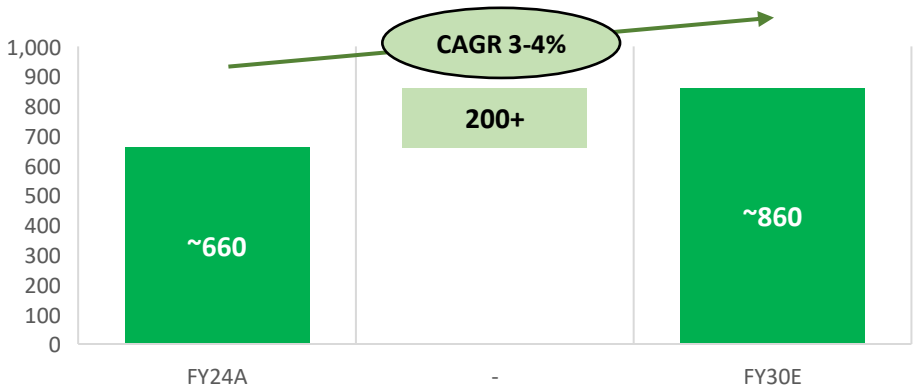
This transition is projected to create an additional demand of ~200k tons of graphite electrodes over and above of existing demand of 589k tons by 2030 (exc China), further supporting the long-term growth outlook for this market. Graphite electrodes are essential industrial consumables primarily used in EAF steel production. Demand for GE is directly related to the amount and efficiency of EAF steel production. The GE industry globally (exc China) had capacity to produce ~786k MT of GE.

Incremental EAF capacity additions between (FY24-FY30E) in key regions only are…

	Est. EAF Capacity Additions (in MT)	Est. Increase in Electrode Demand (in Thousand Ton)
North America	~25	~37.5
EMEA	~48	~72
APAC	~52	~78

…. Expected to drive incremental demand for graphite electrodes

Projected Graphite Electrode Demand, ex. China (Thousand Ton)



Source: Company Reports, Arihant Capital Research

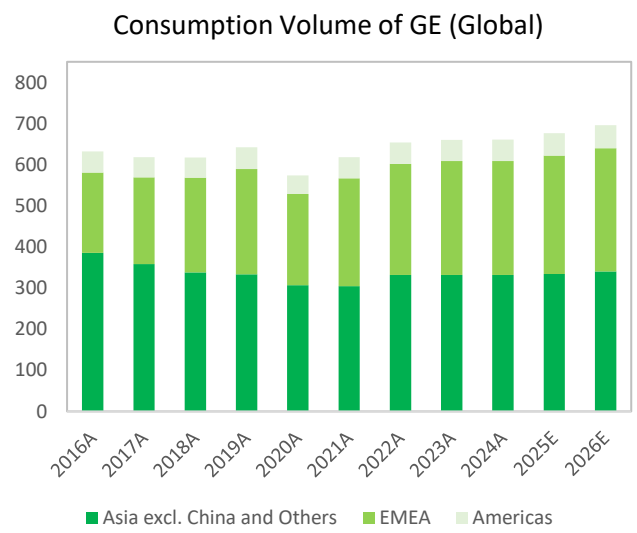
The GE industry is fairly consolidated, with the five largest global (exc China) producers in the industry, GrafTech, Resonac Holdings Corp, HEG Ltd., Tokai Carbon Co., and Graphite India Limited, collectively, representing ~82% of global (exc China) graphite electrode production capacity. Global (exc China) demand for UHP GE has been ~660k MT on avg for past several years. announced global EAF capacity additions (excluding China) total ~225 MT, which is projected to generate an incremental demand of ~238k tons of UHP GE annually.

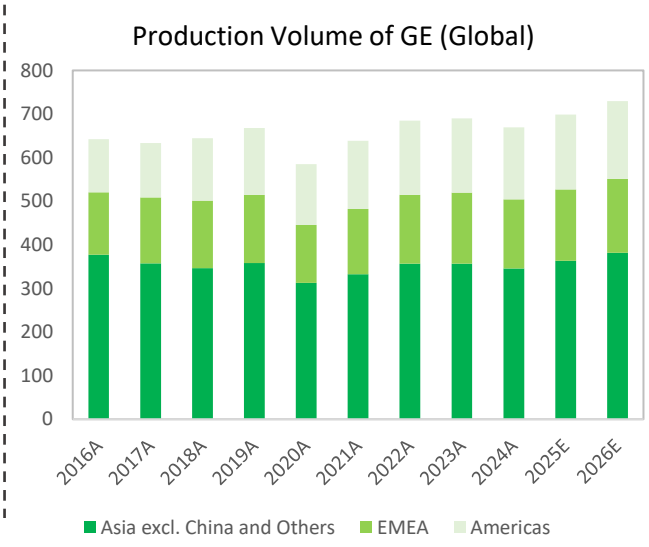
Electrode Plants Are Shutting Down Worldwide Amidst Rising GE Demand: The graphite electrode market has experienced significant volatility. From 2010-2017, global prices fell dramatically due to overcapacity, resulting in the closure of six Western plants and removing 200k tons/year of production capacity. From 2016-2025, the production volume of graphite electrodes in the world excluding China decreased from 0.71 MT to 0.62 MT, with a CAGR of -0.95%. Market dynamics shifted when western countries implemented strict environmental controls on graphite manufacturing while EAF steelmaking expanded outside China, triggering renewed demand for high-quality electrodes. Along with the recovery of the EAF steel industry, the graphite electrode market is expected to resume its long-term growth trajectory.

Global Geographical Distribution of Graphite Electrode Production and Consumption Volume *(Thousand Tons)* (Global), 2016-2026E

Consumption Volume	2016-2023	CAGR 2024-2026E
Americas	0.10%	4.00%
EMEA	4.45%	4.00%
Asia excl. China and Others	-1.84%	1.21%
Total	2.59%	3.37%

Production Volume	2016-2023	CAGR 2024-2026E
Americas	3.83%	4.00%
EMEA	1.30%	3.50%
Asia excl. China and Others	-1.08%	5.00%
Total	2.43%	4.42%

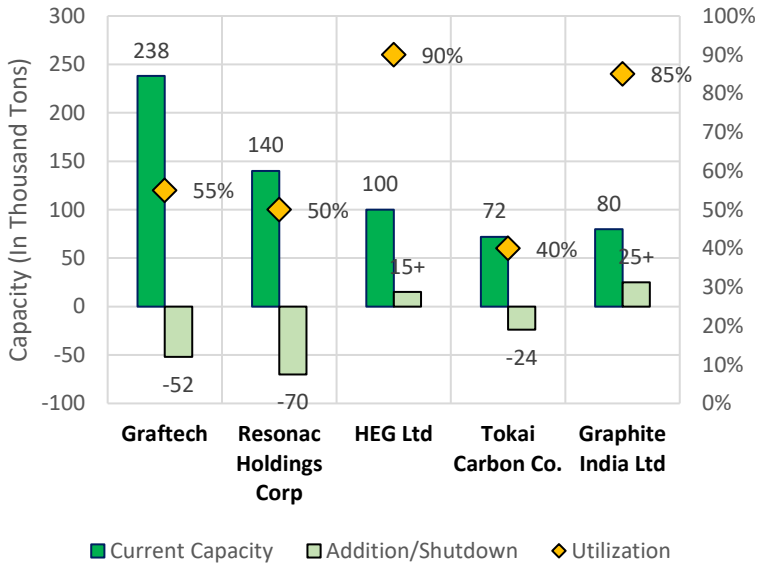




Source: Industry Reports, WSA, Arihant Capital Research

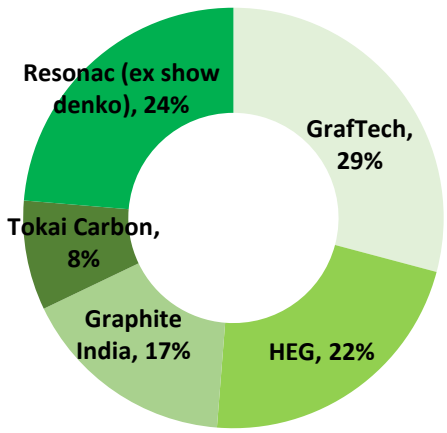
From 2022 to 2026, the potential demand for ultra-high power (UHP) graphite electrodes in developed countries is projected to rise from 105k tons to 192k tons, reflecting a CAGR of 16.4%. Additionally, the combined global consumption and potential demand for UHP graphite electrodes are expected to consistently surpass global production volumes during this period, with the shortfall increasing from 115k tons in 2022 to 222k tons in 2026. The global electrode industry, previously grappling with overcapacity, has resolved this issue in recent years. Furthermore, the widespread shift from BOF to EAF processes is likely to boost the use of graphite electrodes, particularly increasing the demand for UHP electrodes, as nearly 90% of UHP electrodes are consumed in developed countries (US and EMEA), as these high-purity electrodes are capable of withstanding extreme furnace temperatures without degrading.

Sluggish Demand and Rising Costs Pushes Global Electrode Giants to Shut Operations. (Thousand Tons)



Source: Industry, Arihant Capital Research

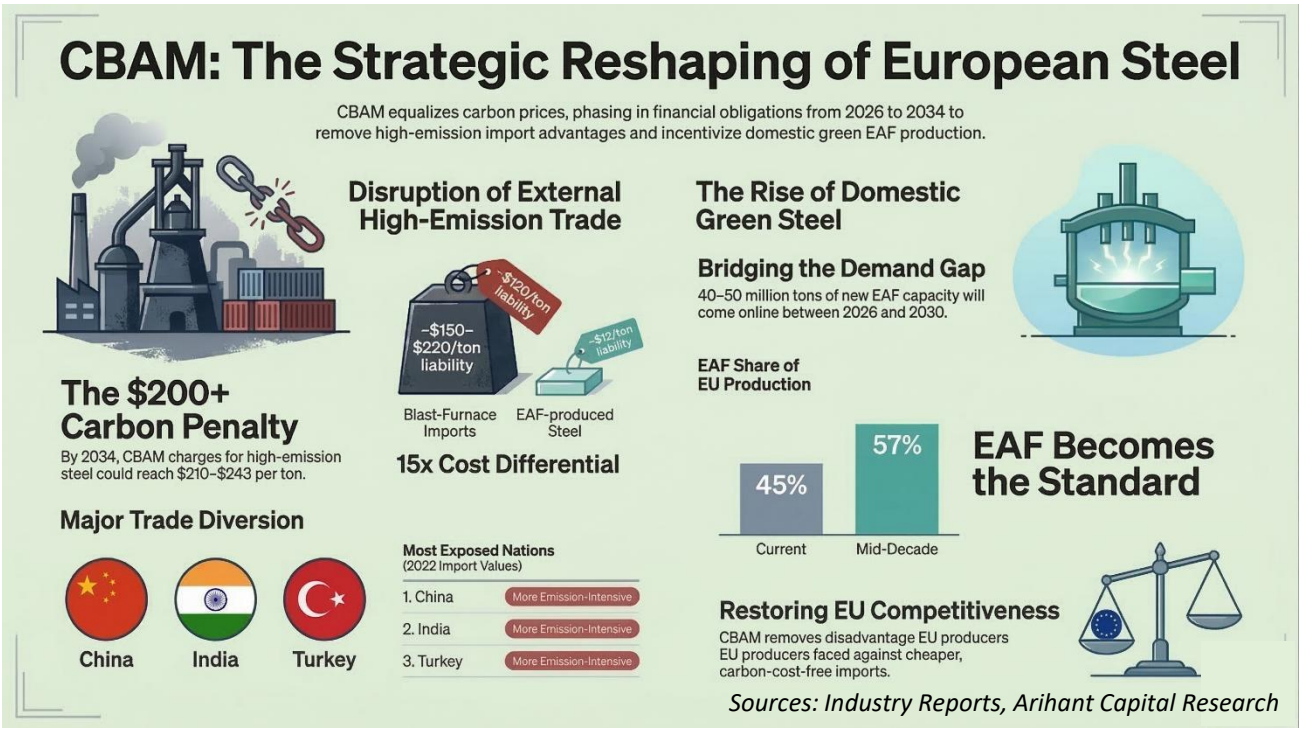
Top 5 player Market Share (%)



Source: Industry, Arihant Capital Research

Global Capacity Contraction Tightens Supply-Demand Balance: The graphite electrode industry has moved from a period of weak demand into a phase of tighter supply, driven by plant shutdowns, shortage of needle coke, and regional trade restrictions. Global capacity has already fallen by ~18%, from 7,50 kt to 640 ktpa, as higher raw material costs, labour shortages, and weak pricing forced companies to close plants. Resonac, with ~140 ktpa of capacity, is shutting its operations in China and Malaysia, cutting almost one-third of its global capacity. At the same time, Japan has put a 95% anti-dumping duty on Chinese electrodes and has seen a ~25% fall in its own capacity. This has created a sharp shortage, especially for UHP electrodes, where China is unable to meet technical requirements. Since restarting closed plants takes time and money, and new projects are costly with long lead times, supply growth is expected to remain limited.

This tighter supply situation has improved the demand-supply balance and supported higher realizations. After almost two years of falling prices, electrode prices have now stabilized, and global producers have already increased prices by 18-20% in CY25. EAF steelmakers have absorbed these increases, as they continue to raise production to meet decarbonization targets, which will further push electrode demand. Indian companies like HEG and Graphite India are in a strong position to take advantage of this shift. Their lower production and labour costs, along with sizeable UHP/HP capacity, allow them to serve both local and global markets and benefit from the improved pricing. With global peers now showing more pricing discipline, Indian players are likely to see stronger margins and earnings. The main factors to track ahead are needle-coke supply, timelines for plant restarts, and the trend in realized prices. Sustained firmness in prices, along with efficient utilization, could drive further upgrades in earnings and returns for Indian producers.



CBAM and the Rise of Domestic Green Steel: The European steel sector is standing at a critical inflexion point, heavily influenced by shifting regulatory frameworks and decarbonization mandates. For the graphite electrode market, the implementation of the European Union's Carbon Border Adjustment Mechanism (CBAM) acts as a powerful structural tailwind, speeding up the transition toward EAF steelmaking.

In Oct-2023, the CBAM began its transitional phase. Starting Jan-2026, EU importers must buy and surrender CBAM certificates for CO2 emissions embedded in their imports, priced at around Eur 70 to Eur 100/ton of CO2. For steel importers, CBAM charges are expected to be ~USD 72/ton for steel from South Korea and USD 83/ton for steel from India by 2030. BF-BOF steel incurs a liability of USD 150 to USD 220/ton, while EAF steel faces only about USD 13/ton, resulting in a 15 to 17x differential. Indian steel exports, with about 2.5 tons of CO2 emissions/ton of steel produced, compared with the EU's 1.8 tons, may incur CBAM charges of USD 210-243/ton by 2034.

Before the CBAM was implemented, European BF-BOF steelmakers benefited from free carbon allowances under the EU Emissions Trading System (EU ETS), keeping their carbon costs low amid prices of USD 55-100/ton. In contrast, steel imports from China, India, Turkey, and South Korea entered the EU without carbon costs, disadvantaging European EAF producers who faced high electricity expenses. Furthermore, while over Eur 14.6 bn in public funding for the green steel transition is planned by the end of 2024, most of it is allocated to BF-BOF producers, with limited support for EAF players.

CBAM helps maintain the competitiveness of EU steel by benefiting EAF steelmakers, who enjoy a cost advantage due to their low carbon footprint. Currently, ~55% of steel in Europe is produced using the BF-BOF method, while 45% is made through EAF. This EAF share is expected to increase to about 57% as the EU aims for net-zero emissions by 2050. Between 2026 and 2030, 40-50 mn tons of new EAF/DRI-EAF capacity is anticipated, boosting EAF's share of European steel output by mid-decade.

Note

Anti-Dumping Duty Measures Protecting Margins and Stabilizing the Earnings: The global graphite electrode and steel industries are currently in a protection mode, choosing stricter trade policies. Due to the slowdown in the Chinese economy, particularly the real estate sector, steel consumption has reduced internally. China has been aggressively dumping its production volume in other regions like the EU, the US and various other economics challenging other regions' domestic EAF steelmaking. GE remains a critical raw material have also been impacted due to this, as countries' domestic EAF steel makers produced less steel because of cheap steel imported from China. So, to counter this major economic, specifically the US, EU, Japan and the EAEU have increased their regulatory requirement against the import of Chinese graphite electrodes and associated carbon materials.

Country / Region	Product Category	Measure / Tariff Type	Duty Range	Effective Date	Status / Notes
EU	Graphite Electrode	Anti-Dumping	23% - 75%	2024 - 2025	The EU industry (Eur 765M in 2022) suffered from low utilization and reduced domestic steel production.
EU	Artificial Graphite Blocks / Cylinders	Anti-Circumvention Extension	23% - 75%	Extended from Jun 2025	Prevents the bypassing of trade remedies by blocking identical substitute materials.
US	Graphite Electrode (SDGE)	Section 301 Tariffs	~25% tariff (~160% for SDGE)	Continuation order Sep 2025	Acts as an effective embargo that secures high prices; restricts Chinese imports.
US	Anode Material	Anti-Dumping + Section 301	160%	Feb-26	Represents a combined rate (93.5% AD + 25% tariff + other duties).
Japan	Graphite Electrode	Anti-Dumping	93.5% - 95%	Jul-25	Imposed to target unfair pricing; effectively blocks Chinese imports.
EAEU	Graphite Electrode	Anti-Dumping	20-22% AD on imports above quotas (Armenia: 700t, Belarus/Kazakhstan: 1kt)	1-Dec	Penalizes carbon-heavy, coal-based Chinese production; fully effective by 2026.
EAEU	Graphite Electrode	Anti-Dumping	duty rates at 16% for HEG and 32.83% for GRIL	Extended till Mar-2029	Fair competition and to protect its internal market
India	Graphite Electrode	DGTR Mid-Term Review	Pending	Feb-26	Local players consider current measures insufficient to prevent dumping.

The evolving global tariff situation creates a structural advantage for global steelmakers to adopt a China+1 strategy or secure long-term contracts with non-Chinese producers such as GrafTech, Resonac, Tokai Carbon, and Indian manufacturers like HEG and Graphite India, that benefit from their primary low-cost competition. While Indian exports to the U.S. currently face a manageable ~18% duty, which management confirms can be absorbed due to their low-cost structure, the prohibitive anti-dumping duties levied against Chinese electrodes in the U.S. (up to ~160% combined) and Japan (~93.5-95%) effectively block Chinese supply from these premium regions. This protectionism, combined with the closure of ~120k-200k tons of high-cost Western electrode capacity, positions Indian manufacturers as the only viable, large-scale, non-Chinese suppliers capable of filling the supply vacuum for EAF steelmakers in the Western world.

Entry Barriers & Competitive Moats in Graphite Electrodes

The graphite electrode business is naturally protected. It requires very high capex, complex technology, and most importantly, access to a rare raw material petroleum needle coke. On top of that, steel companies typically take up to 2 years to test and approve new suppliers. These factors make it very difficult for new players to enter, and that keeps the market concentrated among a few established companies.

Cost Advantages: GrafTech is unique because it owns its own needle coke plant, so it has security of raw material supply. HEG, on the other hand, benefits from having the largest single graphite electrode plant in the world, strong supplier relationships, and its own captive power plants. This allows HEG to keep production costs among the lowest globally, which is a big competitive edge.

Market Concentration Rising (Closures by Resonac and Tokai): In the last year, two big Japanese players Resonac and Tokai Carbon have shut down or reduced capacity in China, Malaysia, Japan, and Europe. This has taken meaningful supply out of the market. As a result, the industry outside China is becoming more consolidated, meaning less competition and more pricing power for the remaining large producers like HEG and GrafTech.

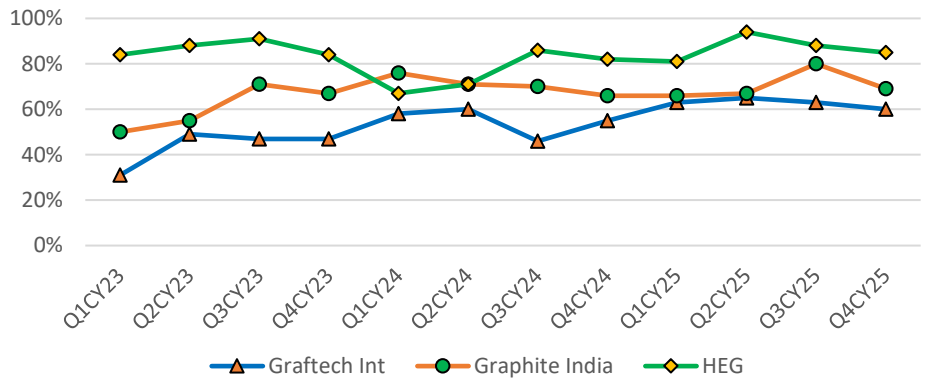
HEG's Scale and Utilization: HEG's plant in Mandideep is now at 115 ktpa capacity, making it the largest single-site graphite electrode plant in the world. Importantly, the plant is running at more than 85% utilization, even when many global peers are struggling at lower levels. This shows HEG's strong order book, efficiency, and reliability in the eyes of steel customers.

Risk & Sensitivity (Power vs Raw Material): In terms of risks, HEG is less sensitive to electricity price fluctuations because of its captive hydro and thermal power setup. GrafTech, meanwhile, is less affected by needle coke price swings since it owns its own supply. Both have strong moats that protect their profitability in different ways, while new entrants without such advantages would see their margins fluctuate heavily.

Entry Barriers	HEG Ltd	Graphite India	Graftech	Resonac	Tokai Carbon
Scale (Plant capacity)	100 ktpa largest single site: expansion of 15k tons underway, expected by FY28	~80 ktpa; expansion of 25k tons approved, taking total to ~105 ktpa in ~36 months.	Multi-site global ~178 ktpa global (post-optimization)	~165ktpa (pre-cuts), closures in China/Malaysia reduce meaningful capacity	~72 kt (post-cuts); Japan/EU cuts reduce regional capacity by ~24 kt (Japan+EU) by mid-2025.
Utilization	~80-90% (post-expansion), vs industry 50-60%.	~80-85% utilization on existing 80 ktpa base in Q1FY26.	Mid-60%, suggest improvement and cost cuts	Lower/uneven closures indicate weak utilisations at some sites	Reduced utilization in Japan/EU before consol., aim to restore utilizations.
Needle-coke integration / security	Long-term contracts; purchases from Phillips-66 and others; invested in GrafTech stake.	Manufacturers CPC in-house); not integrated in needle coke, relies on external suppliers for UHP.	Vertically integrated (Seadrift ~140-150kt PNC capacity).	Purchases from global suppliers; limited upstream integration.	Procures from global suppliers; emphasis on secure procurement relationships.
Energy / captive power	Captive power (~80 MW thermal + hydro) lowers costs.	~18 MW hydro plus ~14 MW solar and ~19 MW wind capacity.	Typically grid-tied (higher energy cost in NA/EU).	Grid & own generation mix; higher regional costs.	Grid & own generation mix; higher regional costs.
Customer qualification / LTAs	Strong export relationships; ~70% exports to major EAFs good LTAs.	Supplies full range up to 750 mm UHP; established domestic and export EAF customers.	Long-term offtakes; structured LTAs and contractual exposure.	Long customer ties in Japan/EU; economizing to defend margins.	Long established relationships with EAFs; tech trust.
Recent strategic moves	Completed 115kt expansion; demerger; TACC anode project.	Approved INR 6 Bn capex for 25 ktpa expansion (to 105 ktpa) incl. INR 1 Bn for renewables.	Reducing cost - focus on cash-cost/volume mix; negotiating LTAs	Closed China/ Malaysia plants. Raised prices by 15-20% due to higher cost.	Establishing structural reforms mainly in the Graphite Electrodes.

The global graphite electrode industry (exc China) is operating at just 60%-70% capacity utilization, depressing prices as producers compete aggressively to cover high fixed costs. Margins for HEG, Graphite India, and GrafTech will fundamentally improve once utilization crosses the critical 80%-85% threshold. Beyond this threshold, pricing power shifts to electrode manufacturers. Since electrodes represent only 1.5%-2% of EAF steelmakers' production costs, customers will accept significant price increases over the risk of a furnace shutdown. This inflection is approaching as 100 mn tons of new EAF capacity comes online, matching with the permanent closure of over 120k tons of inefficient Western electrode plants.

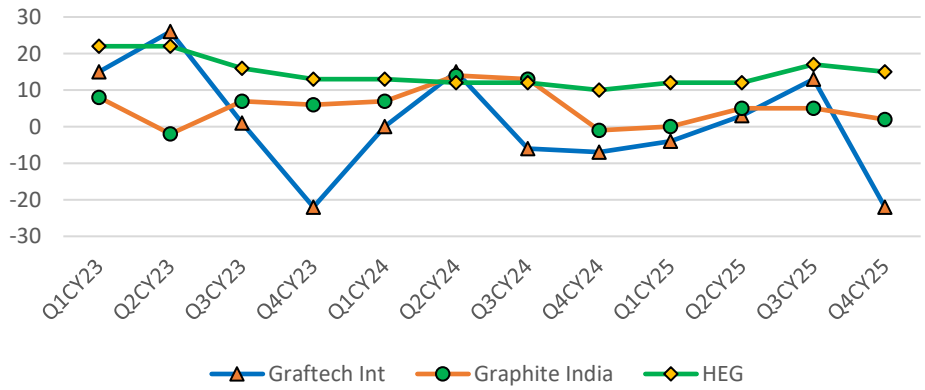
Capacity Utilization by Player: HEG and Graphite India Outperform GrafTech



Source: Company, Arihant Capital

HEG sustains industry-leading margins through the world's largest single-site electrode plant in India, enabling 80%-90% utilization while peers struggle at 50%-65%. Back-to-back contracting and matching needle coke purchases to quarterly sales contracts, protect spreads and inventory losses during price downturns. Graphite India maintains healthy margins through a lean domestic manufacturing model. The closure of its high-cost German facility, partial CPC self-sufficiency, and dominance in the Indian market keep operating costs ~20%-25% below Western competitors.

Op. Margins: HEG Leads Western Peers on Operational Efficiency



Source: Company, Arihant Capital

GrafTech currently operates near breakeven, as high fixed costs cannot be absorbed at today's low prices and 50%-65% utilization. However, 70% internal needle coke self-sufficiency positions it for disproportionate margin expansion at the 85% threshold, insulated from raw material inflation that will compress HEG and GIL margins. HEG and Graphite India offer resilient profitability underpinned by scale and structural cost advantages. GrafTech is a high-leverage recovery play, structurally disadvantaged in downturns but positioned for exponential margin growth in the next upcycle through its captive raw material supply.

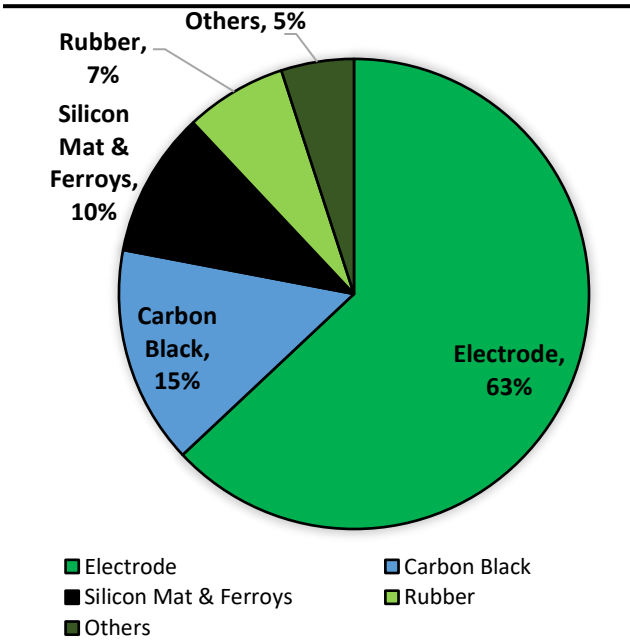
Needle Coke: In recent quarters, subdued demand for electrodes has kept needle coke prices stable, compressing profit margins for producers. It is an essential raw material for graphite electrodes, available in two forms: petroleum-based and coal-based. It is characterized by low thermal expansion, low impurities, high conductivity, and easy graphitization. Petroleum needle coke, primarily produced in the US, UK, and Japan, is critical for ultra-high-power (UHP) electrodes and is tightly controlled by a handful of global producers, such as Phillips 66 and a few Japanese firms. Coal-based needle coke, derived from coal tar pitch, is mainly produced in China, Japan, and India and is suitable only for high-power (HP) electrodes. The superior quality of petroleum needle coke positions it as a strategic raw material in the premium graphite electrode market. The profitability of graphite electrode manufacturers depends on the price differential between graphite electrodes and needle coke. **Total needle coke consumption is estimated to grow from ~1.7 MT in CY25 to ~2.8 MT in CY30, with a CAGR of 10.49%.**

Needle Coke accounts for ~45% of the cost of manufacturing UHP Electrodes, while Coal Tar Pitch accounts for 10% of the cost. The entire manufacturing process is power-intensive, accounting for ~25% of the cost of production, the majority of which is consumed in the pitch impregnation and graphitizing process. Graphite electrodes, crucial for EAFs, rely on needle coke due to its high thermal and electrical conductivity and low impurity levels. Furthermore, infrastructure development and industrialization globally further boost steel production, increasing the demand for ultra high-quality graphite electrodes and, consequently, needle coke.

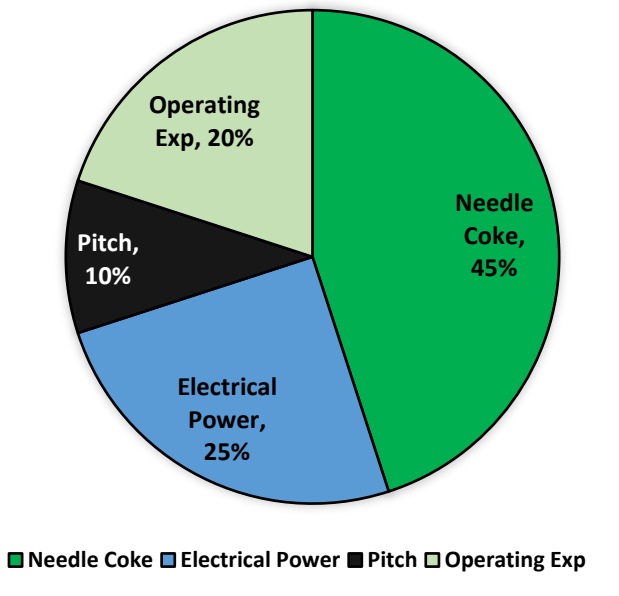
Key needle coke manufacturers across the world

Phillips 66 (UK & US) - 370k tons	Seadrift Coke (Graftech) - 140k tons
Mitsubishi Chemical Holding Corp	C-Chem Ltd (Japan) - 110k tons
ENEOS (Japan) - Unspecified	JX Holdings Inc (Japan) Unspecified
Indian Oil Corp. Ltd - 56k tons	Sumitomo Chemical (Japan)

Needle Coke Market Share By application 2024 (%)



Raw Material Breakdown for Graphite Electrodes (%)



Value Chain Of Synthetic Graphite Products Manufacturing

Upstream | **Midstream** | **Downstream**

Raw Materials

Pet Needle Coke

Coal Tar Pitch

Synthetic Graphite

Synthetic Graphite Products

UHP Graphite Electrode

Graphite Anode

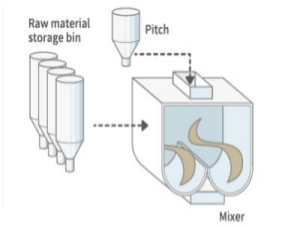
End Users

Electric Arc Furnace Steelmaking

EV Li-Ion Battery

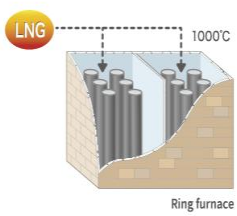
The Manufacturing Process of Graphite Electrodes

Step 1: Extrusion



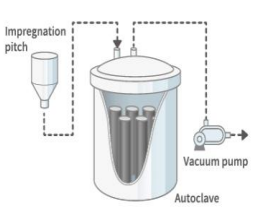
Needle cokes are crushed and sieved to get the right particle sizes. These are mixed with pitch to make a paste, which is then extruded and molded into cylinders using specific molds.

Step 2: Baking



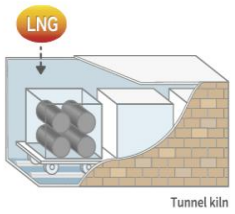
To carbonize pitch, it's heated to about 1000°C. A slow baking and cooling process, lasting around a month, prevents cracks and pores from forming due to volatile substances or shrinkage.

Step 3: Pitch Impregnation



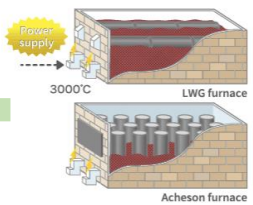
During baking, pitch's volatile substances evaporate, creating pores. These are filled with pitch to increase density. This impregnation is repeated for electrode joints (PIN) to ensure high density and strength.

Step 4: Rebaking



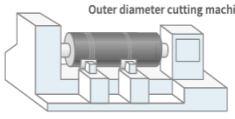
To carbonize impregnated pitch, a secondary heat treatment below 800°C is done, with rebaking taking about one week.

Step 5: Graphitization



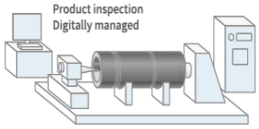
Rebaked electrodes are graphitized using electric Joule heating at around 3000°C. Depending on the furnace, this process takes one week to a month.

Step 6: Machining



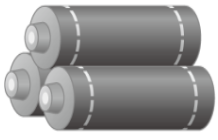
Both electrode body and the joint are machined using special machine to achieve precision levels as fine as 1/1000mm, depending on the part.

Step 7: Inspection



After undergoing product property measurements and conducting visual inspections, the product is shipped out as the finished product.

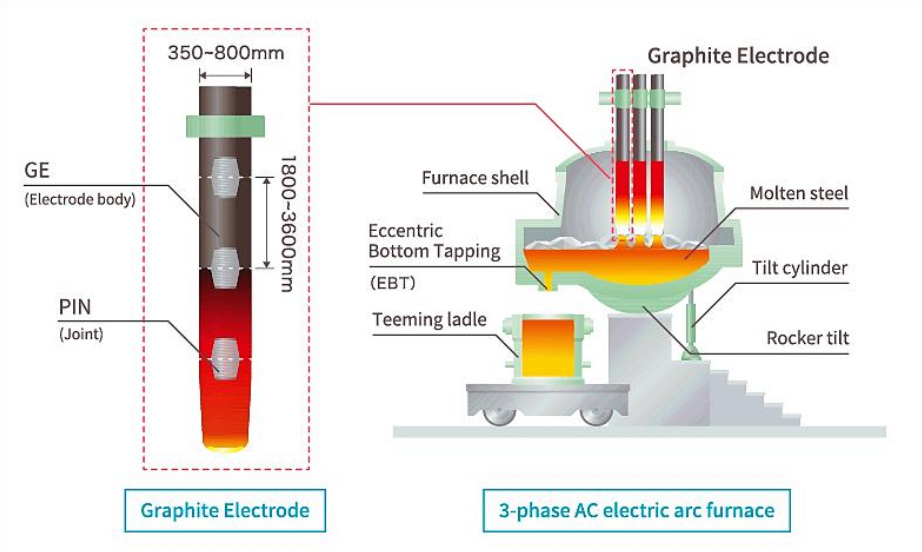
Step 8: Finished Products



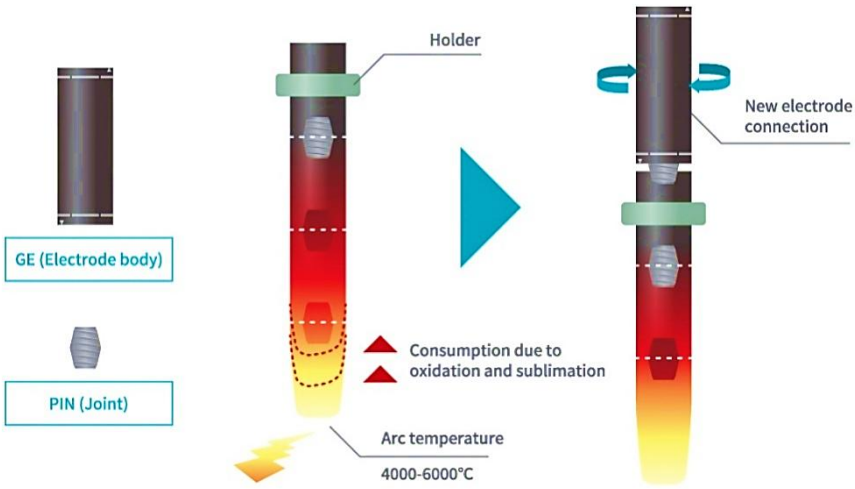
After inspection is done electrodes are wrapped and sealed into wooden boxes depending on the size of the products

What is Graphite electrodes?

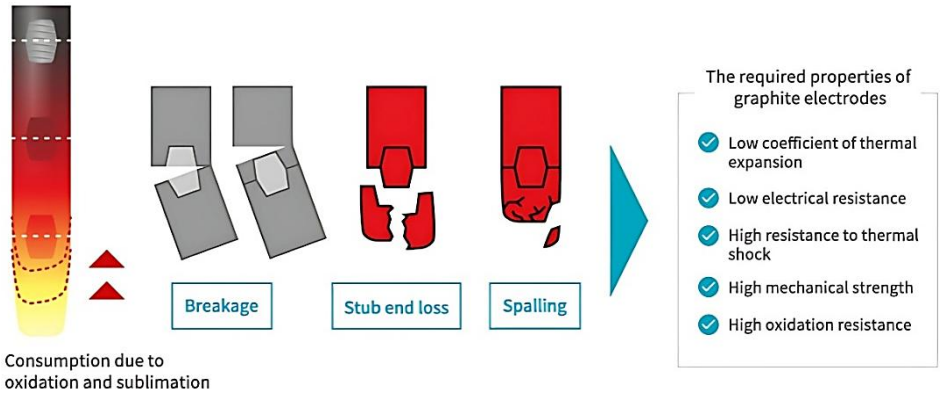
Graphite electrodes is an essential component used in the production of steel through the electric arc furnace (EAF) process.



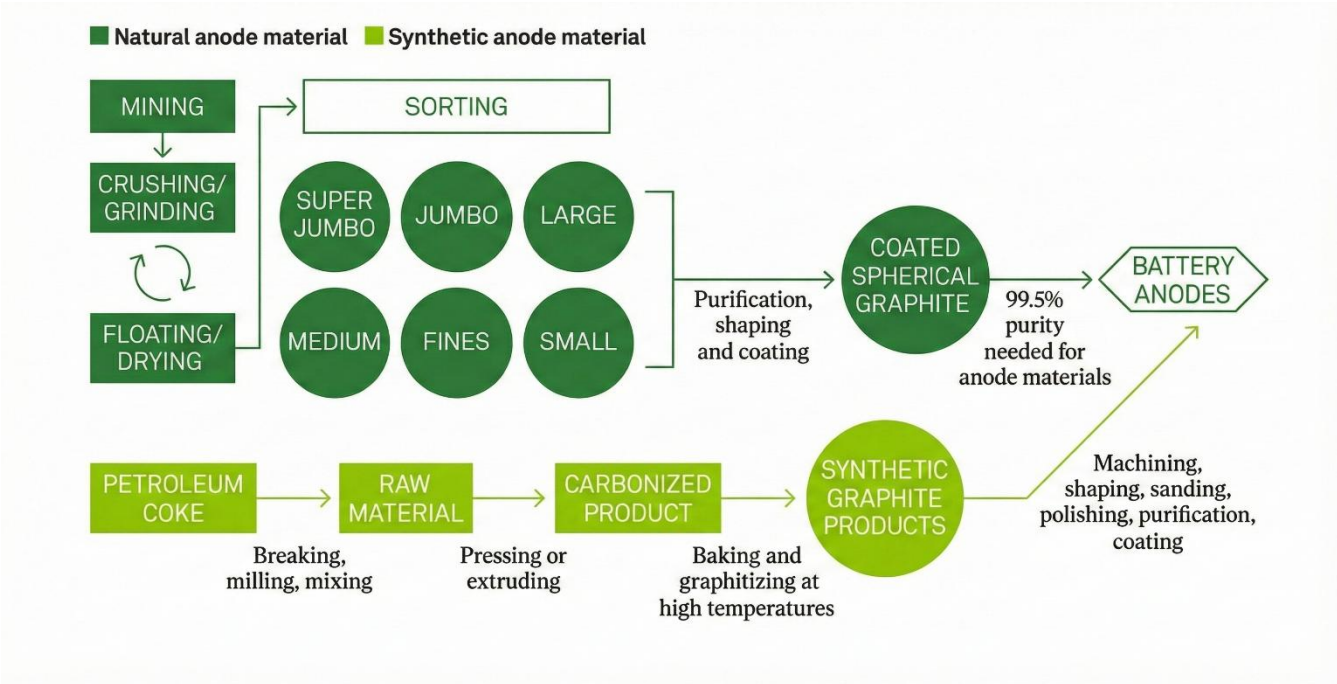
Required properties of graphite electrodes and how they are used: Graphite electrode which is a specialty carbon components that conduct the immense electric currents and withstand the extreme temperatures reaching up to ~3,500 °C inside electric arc furnaces and ladle furnaces. These electrodes are indispensable to modern steelmaking, accounting for over 90 % of global graphite-electrode demand. The production of graphite electrodes mainly uses petroleum or coal-based needle coke and binder pitch from coal tar as raw materials. Graphite electrodes are typically made of high-purity graphite materials and are used in a variety of applications, including steelmaking, aluminum smelting, and other industrial processes where high-temperature and high-current conditions are required. Graphite electrodes are preferred over other types of electrodes because of their high thermal conductivity, low electrical resistance, and ability to withstand high temperatures and corrosion. They are cylindrical rods and their primary role is to conduct electricity in EAFs, where scrap steel is melted and refined.



Different steelmaking methods require varying amounts of graphite electrodes. Traditional blast furnace/basic oxygen furnace methods use only 0.2-0.3 kg of peripheral electrodes per ton of steel, while EAF require 1.7-1.8 kg of main-furnace electrodes (UHP) per ton. It typically requires 5-6 months for the production of these electrodes and takes average 8-10 hrs to consume in an electric furnace and it's a continuous process where electrodes must be replaced in timely manner. While erosion of graphite electrodes due to process of oxidation, failure to meet quality requires of graphite electrodes may result in more severe damage such as cracks, chipping of tip. Electrodes account for 1.5-2% of a steel company's total production costs. To avoid significant losses, steel manufacturers opt for reliable UHP electrodes over riskier HP or lower-quality alternatives, as the potential costs of failure exceeds the savings. This consumption difference explains why graphite electrodes are essential to modern steelmaking, with EAF production accounting for over 90% of global graphite electrode demand.

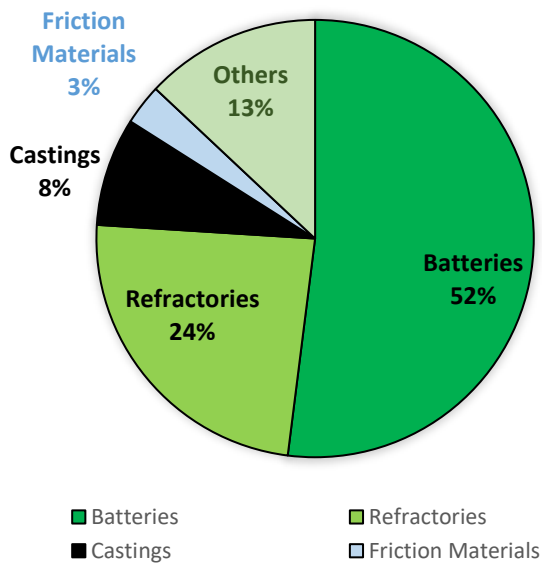


Graphite Remains Dominant Material in Upstream EV Battery Value Chain, Graphite undergoes a graphitization process to produce electrodes this very same graphitizing technique is also employed to manufacture the spherical, highly pure synthetic graphite anodes it is an essential anode material in lithium-ion batteries (LIBs). **About 95% of LIB anodes use graphite, due to its high electrical conductivity and chemical stability**. In batteries, graphite's layered structure allows Li-ion intercalation with minimal volume change, giving long cycle life. Graphite anodes are used in all major chemistries (e.g. NCM/NCA, LFP).

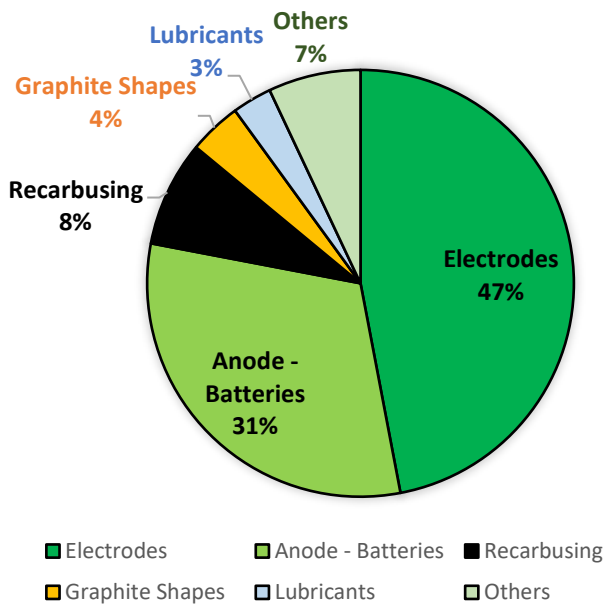


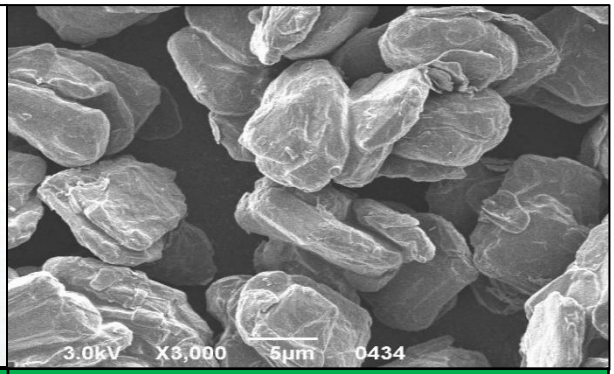
Two forms are used: natural graphite (mined flakes or vein graphite) and synthetic graphite (manufactured from petroleum coke/tar). Key distinctions:

Natural Graphite Market Share By Application (%)



Synthetic Graphite Market Share By Application (%)

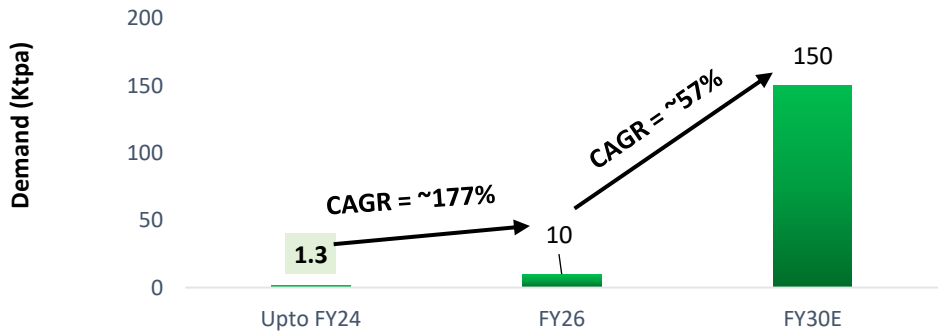




Types	Natural Graphite	Synthetic Graphite
Define	Typically flake graphite that is purified and spheroidized for battery use. Amorphous graphite is the most common and cost-efficient form of natural graphite. It is abundant (major reserves in Africa, India, Brazil) and less energy-intensive to produce. Natural graphite anodes generally have lower energy density than synthetic but cost less. High-quality natural (spherical) graphite is used in many commercial cells, especially where cost-sensitivity is high (e.g. some LFP batteries).	Made by heat-treating carbon precursors (coke, coal-tar) at high temperatures. It achieves very high purity (99%+ carbon) and uniform particle size. Synthetic graphite offers higher energy density and faster charging, favored in premium EV batteries. However, its production is **energy-intensive and carbon-intensive**. China dominates synthetic graphite (~80% of production). Synthetic graphite currently commands the larger market share: **one analysis estimated ~75% of battery anode material is synthetic**.
Opportunity	Both types are forecast to see soaring demand as EVs expand. ***IEA projects global graphite demand for clean technologies to reach ~6.0 - 7.0 Mn tons by 2030***.	
Uses by Application	Natural graphite resources are ample (**India alone has >200 Mn tons of graphite resources**), but developing mines and processing to battery-grade requires investment.	Synthetic graphite can be supply scaled up too but is tied to refining capacity (which is majorly located in China) and petroleum coke availability, exposed to price dependency of per oil prices.
Dominant Material	• Graphite is still the most used anode material due to its affordability and reliable performance. **Global supply is heavily dependent on China which represents 70% of natural graphite production and 90% of processing capacity**.	
Advances	• Graphite producers can leverage these trends by moving into spherical/purified natural graphite production and even synthetic graphite fabrication. Many anode formulations combine both (e.g. 80% synthetic + 20% natural) to balance performance and cost. • High purity (99%+) graphite demand is rising, and China's recent restrictions on sensitive graphite exports in Oct 2023 emphasize the material's strategic importance.	
Benefits/ Issues	• Requires long production process: mining of flake graphite, grinding, beneficiation, purification and spheroidization to produce USPG. • Capacity and rate capability can be slightly better than synthetic graphite. • But Mining can cause environmental degradation. Chemical purification can be hazardous.	• Production process: Made by heat-treating carbon precursors (e.g. petroleum coke and coal tar) are processed at high temperatures and refined. • Cycle life and thermal stability can be slightly better than USPG. • **Synthetic currently commands the larger market share estimated ~75% of battery anode material.** • Energy-intensive production process and precursors are byproducts of the petrochemical industry.

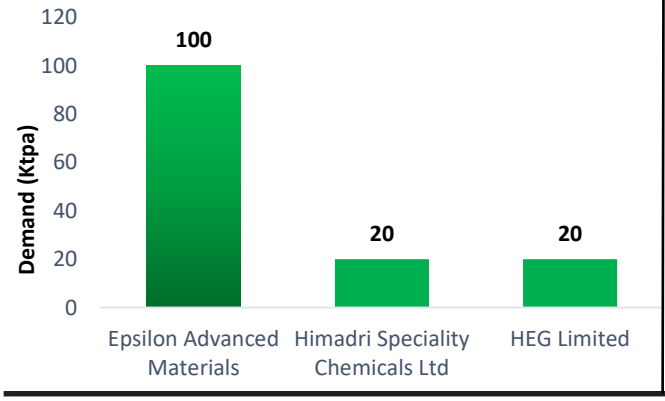
India Anode Growth Outlook	• Rising EV adoption and government initiatives empowering upstream capacity expansion in EV battery material value chain. • Reduction in dependency on battery material processing, China and Hong Kong accounted for **around 84% of the imports, while South Korea at ~9% of total lithium-ion imports in 2023-24.** • Overall demand for LiB is expected to increase from 10GWh in FY26 to 180 GWh (promising case) in FY2030E. • Consequently, the demand for anodes is also projected to rise in parallel with the increasing need for lithium-ion batteries. • **Anode demand is estimated at 77 kt, with projections indicating it will reach ~150-180 Ktpa by 2030E**, reflects the immense opportunity for anode production to meet domestic needs and potential export markets.
Key Players	• Anode manufacturing in India is still nascent, with an estimated capacity of less than ~10 Ktpa. • Companies like Epsilion Advanced Material, Himadri Chemicals Ltd, HEG Ltd have announced plans for green capex in anode manufacturing in India.

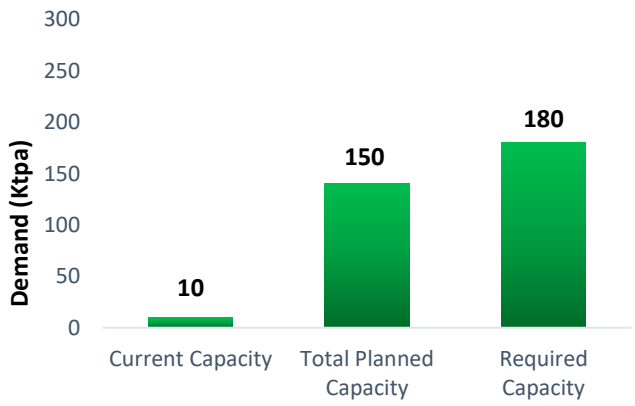
India Anode Demand Is Projected to reach ~150 Ktpa estimated to grow by CAGR of 57% during FY26-FY30E.



- **Epsilon Advanced Materials** is establishing an anode manufacturing facility in Karnataka, starting **commercial scale-up to 30k TPA in FY27E** and **100k TPA by 2030E.**
- **HEG Greentech will include Bhilwara Energy (power) and TACC, which is setting up a 20k tons graphite anode facility with ~INR 18.50 Bn** investment, commissioning by FY27E.
- **Himadri Speciality Chemical** set-up of manufacturing facility of Advance Carbon material (HSCP) at West Bengal with an **annual capacity of 20k Tons**.

Current vs Planned vs Required Capacity for Localising Anode Battery Materials Manufacturing in India

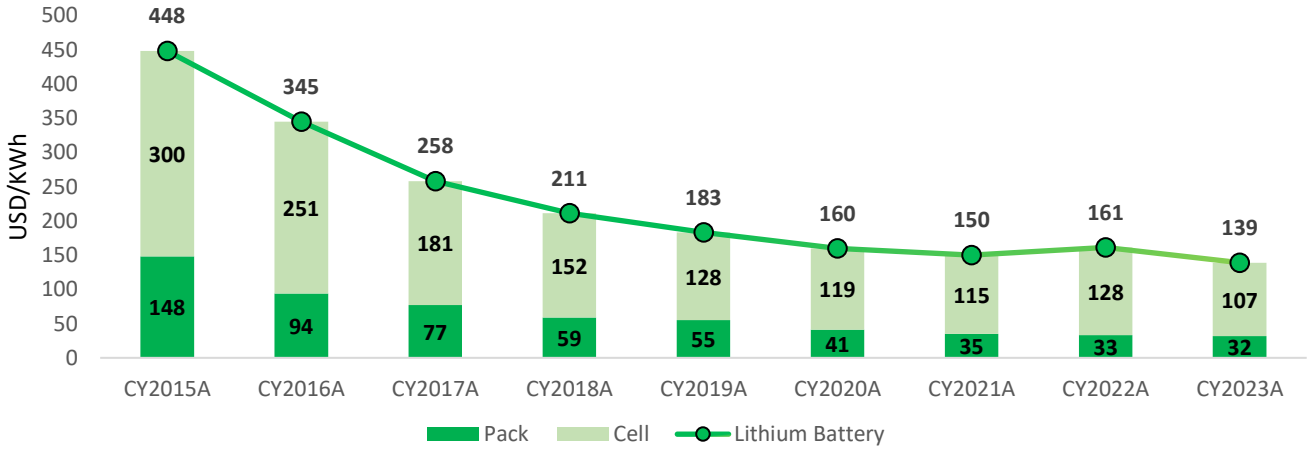




India's LiB demand is projected to reach ~127 GWh by FY30E, growing at a CAGR of ~24% from FY24.

Lithium Ion Demand	• The demand for lithium remains largely unaffected by the choice of electric vehicle (EV) battery chemistry, since most EV battery technologies depend on it. Sodium-ion batteries, which do not rely on lithium, may enter the EV battery market later in the decade, but their impact on reducing lithium demand will likely be more significant after 2030. Long-term availability of lithium is not a constraint. Instead, addressing potential lithium deficits will significantly rely on expanding the supply chain or increasing the energy density of existing lithium-ion batteries.
Battery Cost Scenario	• Previously the high cost of Lithium-Ion batteries was a major hindrance for their large-scale adoption, **However the cost has significantly declined from 780 USD/kWh in CY13 to 139 USD/kWh in CY23**, on the back of technological advancement and economies of scale, making Li-ion batteries the most dominant battery technology.
Graphite Demand Scenario	• Based on current supply projections, natural graphite will likely be insufficient to meet all expected graphite demand by 2030. Synthetic graphite, although more energy intensive, could be scaled up to bridge the supply gap. Beyond that, a transition towards anodes with increased silicon content is already occurring and could further reduce pressure on the material.
Demand/Supply Scenario of Critical Material in FY30E	• The supply demand of material present significant uncertainties regarding future market balances. On the demand side due to fast paced innovation in EV battery chemistries, effectively adapt to rapidly evolving EV battery landscape. • On the supply side, uncertainty stems from various factors, including fluctuating demand due to technological innovation, geopolitical tensions, resource nationalism and export restrictions. • Compared to FY23, lithium supply would need to increase by up to 160%; graphite supply would have to increase by about 60%; refined copper by about 13% and manganese and nickel by about 10%.
India Growth Outlook	• **India had a demand for ~15 GWh of Li-ion battery storage largely from EVs and consumer electronics. This demand is expected to reach ~54 GWh by FY27 and ~127 GWh by FY30E.** • Government has taken good initiatives on several measures and set to achieve 30% EV penetration by 2030E (as a % of annual sales).

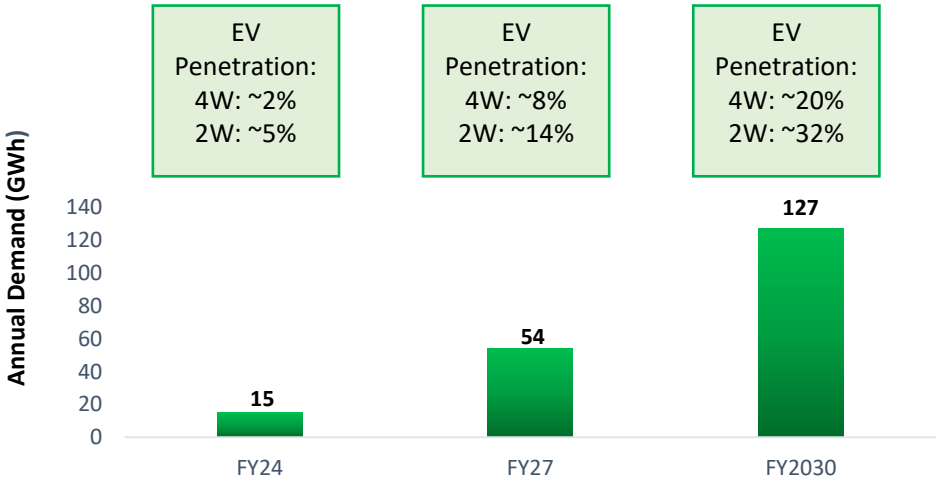
Consistent YoY battery cost decline driven by China's overcapacity and improved manufacturing efficiency



Cost of lithium-ion batteries has declined over the decade ended CY23 on the back of technology advancement along-with greater economies of scale which has supported its faster adoption by its end-use sectors resulting in significant growth in its demand.

The Indian LiB market, by 2030E, will primarily be driven by EVs as they will account for ~80 per cent of the entire demand.

Annual demand for Lithium-ion battery storage expected to reach ~54 GWh by FY27 and ~127 GWh by FY30



India had a demand for ~15 GWh of Li-ion battery storage (almost entirely being met through imports of Li-ion cells/batteries), largely from EVs and consumer electronics. This demand is expected to reach ~54 GWh by FY27 and ~127 GWh by FY30. With the GOI target of 30% EV penetration by 2030 and empowering indigenous local manufacturing of lithium-ion cells through incentives, expected to support build-up of giga-scale lithium-ion battery capacities, aided by Advanced Chemistry Cell (ACC) PLI scheme. India's import dependency will reduce to ~20% by FY27. The GoI has reduced PLI allocation by 37.7% for ACC Battery Storage to INR 1557.6 Mn in 2024 Budget. Each selected ACC battery storage manufacturer will have to commit to setting up an ACC manufacturing facility of a minimum 5GWh capacity.

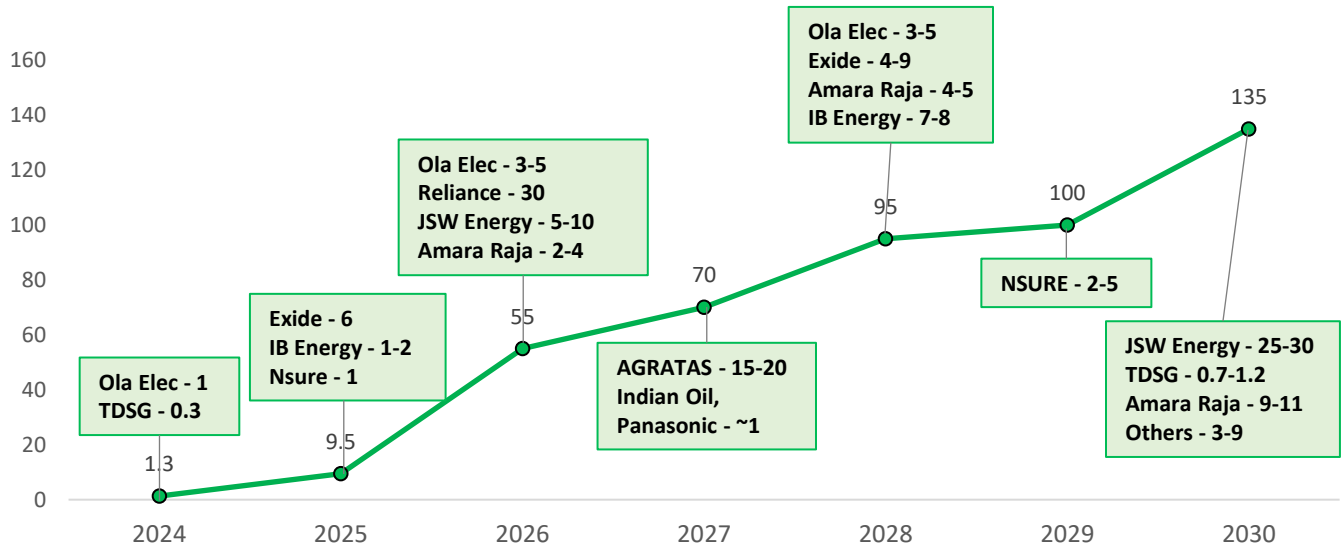
Key Existing/Upcoming Battery Cells/Pack Manufacturers Approval for PLI Schemes

Reliance Industries Limited	**Reliance New Energy Solar Limited**	AMARA RAJA	**Amara Raja Batteries Limited**
ACME Leading Through Innovation	**ACME Cleantech Solutions**	ANVI POWER	**Anvi Power Industries Pvt Limited**
JSW	**JSW Energy Limited**	WAAREE	**Waaree Energies Limited**
Lucas TVS	**Lucas-TVS Limited**	OLA ELECTRIC	**Ola Electric Mobility Limited**

- Amara Raja will invest INR 74 Bn (USD 1Bn) for a 10-12GWh facility under the ACC PLI Scheme over five to seven years.
- Lucas TVS partnered with US based 24M Technologies to manufacture semi-solid cells at an investment of INR 25 Bn, adding 10 GWh capacity plant built in two stages.
- Exide also plans to set up greenfield multi-gigawatt LiB cell manufacturing plant in India.

Building a Self-Reliant Battery Ecosystem to Reduce Import Dependence, India's LiB market is growing rapidly, driven by demand from EVs and energy storage, but remains heavily reliant on China for cell manufacturing, which accounts for ~60% of battery costs. Domestic players are primarily battery assemblers, producing subcomponents but importing cells, leading to cost volatility and supply chain risks. The market is also fragmented, with many small-scale pack manufacturers lacking standardization. Companies such as Godi India, Amara Raja, Exide, Ola Electric, and Reliance New Energy are stepping in with investments in R&D and giga-scale facilities these efforts are gradually building a robust domestic ecosystem to reduce import dependence.

India cell manufacturers announced massive capacity plans of 120 - 140 GWh by 2030, leading to a demand of 130-150 ktpa anode.



Current/ Planned Capabilities along the Battery (Li-ion) Manufacturing in India

Stage of Value Chain	Current Status	Issues	Current/Potential Players in India
Material Sourcing	No current capabilities available	Limited domestic production, the lack of commercial-scale technology for AAM and CAM	None
Material Manufacturer (Manufacture/chemical processing of anode, cathode, separator)	Synthetic Graphite anode by Epsilon being setup, HEG has announced its anode plant to commercialise by 2027E,	India can manufacture copper-aluminium foils and do battery-grade graphite processing with graphite being available	Epsilon Carbon, HEG Ltd, Himadri Specialty Chemical Ltd
Cell Manufacturer	TDSG started cell production from December 2020, cell chemistry: LTO (Lithium Titanium Oxide); GODI announced manufacture of first batch of cells in January 2022 with cell chemistry.	Raw material availability: lack of industry knowledge and technology to design, engineer, manufacture, test, assemble, and service cells. PLI Scheme to motivate by incentives and Fame II also boost cell manufacturing	TDSG; GODI; Lucas-TVS/24M Technologies, Inc. Reliance, Adani, Greenko, ChargeXO, Amara Raja, Exide
Cell to Pack Conversion	Mostly dominated by unorganized players and only a few OEMs and big battery packs manufacturers	Using inferior Chinese technology which is not capable of withstanding high Indian temperatures	Exide Industries, Amara Raja, and Ola Electric, Ather.

ArihantCapital
Generating Wealth

INITIATING COVERAGE
27th Mar 2026

HEG Ltd

From Electrodes to Anodes: HEG's Bet on Carbon's Next Chapter

CMP: INR 500

Rating: Buy

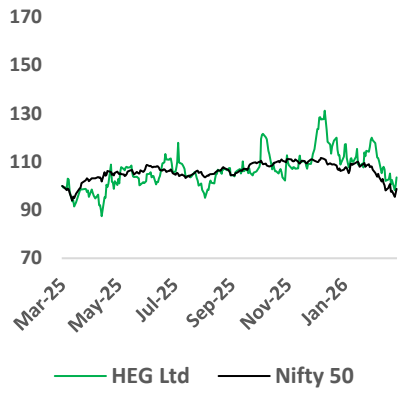
Target Price: INR 681

Stock Info	
BSE	509631
Bloomberg	HEG:IN
Sector	Capital Goods
Face Value (INR)	2
Mkt Cap (INR Bn)	102.8
52w H/L (INR)	620/317
Avg Daily Volume (in 000')	1019

Shareholding Pattern % *(As on June, 2024)*	
Promoters	55.7
Public & Others	44.3

Stock Performance (%)	1m	6m	12m
HEG	-13	0.5	2.8
NIFTY50	-8.8	-6.8	-2.67

HEG Vs Nifty



Abhishek Jain
abhishek.jain@arihantcapital.com
022-42254872

Rohan Baranwal

About the company:

HEG Ltd. is a global pioneer in graphite electrode manufacturing, operating the world's largest single-location production facility. The company serves 25+ leading steelmakers, supplying critical inputs for Electric Arc Furnace (EAF) steel production.

I. Increasing demand for graphite electrodes driven by the global shift from blast oxygen furnace (BOF) to lower-carbon EAF steel production, aligning with decarbonization trends.
II. HEG's strategic entry into manufacturing graphite anodes for lithium-ion batteries, capitalizing on growing adoption of EV and alternative renewable energy demand.

Global Capacity Rationalization Creates Structural Advantage For HEG Single Site Plant: The global graphite electrode industry outside China is shrinking. In the past 12 to 18 months, Resonac, Tokai Carbon, and GrafTech have permanently closed 120k to 140k tons of high-cost capacity, accounting for 16-18% of global supply, as operating conditions in Europe and the US worsened. While these companies operate at 50-60% utilization, HEG runs the world's largest single-site plant at 80-90% capacity, giving it a unique advantage. HEG has increased its production capacity from 80k to 100ktpa and plans to reach 115ktpa by early 2028 with an investment of INR 6,500 mn. About 70% of its revenues come from exports to 30-35 countries, with the US revenue share expected to rise from 6% in FY21 to 17% in FY25, benefiting from the growing demand for EAF steelmaking.

Benefiting from Cost Leadership and Better Operational Efficiency: HEG benefits from a low-cost structure, supported by an 80 MW captive power plant and subsidized power rates of ~INR 5-5.5/unit in Madhya Pradesh, compared to higher European tariffs of 11-14 euro cents/unit. This advantage is significant, as power costs account for 15-20% of production. The company sources high-quality needle coke from top US and Japanese suppliers and takes advantage of low domestic labor costs and proximity to an inland container depot to further reduce expenses. In response to pressure from cheaper Chinese HP electrode imports post-2018 anti-dumping duty removal, HEG focuses 70% of its capacity on higher-margin UHP electrodes for export.

Valuation summary Y/E Mar, Rs mn	FY24	FY25E	FY26E	FY27E	FY28E
Net Sales	23,949	21,597	26,856	30,777	42,125
EBIDTA	3,824	2,551	5,205	6,434	10,136
Net Profit	3,115	1,151	5,965	5,408	7,364
PAT Adj	3,115	1,151	5,965	5,408	7,364
Diluted EPS	16.1	6.0	30.9	28.0	38.2
PER, x	31.0	39.3	16.2	17.8	13.1
EV/EBIDTA, x	25.9	39.9	20.1	17.3	12.0
P/BV, x	2.19	2.18	2.02	1.89	1.74
ROE, %	7.1%	2.6%	12.4%	10.6%	13.2%
Debt/Equity (x)	0.14	0.15	0.21	0.37	0.46

This strategic approach, combined with a low-cost base and a consolidating global supply landscape, strengthens HEG's margins more than most competitors recognize.

HEG Separates Its Graphite Business to Unlock Value in Both: HEG is separating its core graphite electrode business from the new emerging battery anode material business. The GE business will be listed independently as HEG Ltd. At the same time, the parent company will be renamed as HEG Greentech Ltd, focused entirely on clean energy across hydro power, battery materials, battery energy solutions, and renewable storage. For existing shareholders, the transition is simple as they receive shares in the new entity on a 1:1 ratio. Greentech will include 278 MW of operational hydro capacity, another 74 MW being built, a battery-grade anode plant under construction, and a growing battery energy solutions business targeting 7 GW of capacity by Q2FY27. A secured 500/1000 MWh battery storage project adds further weight to what is already a credible clean energy portfolio. The reason for the split is upfront: a traditional industrial business and a clean energy platform have different management priorities, attract different types of investors, and should be valued differently.

Untapped Opportunity: Anode Localization in India Support HEG Decision
HEG is capitalizing on the growing demand for lithium-ion batteries by setting up India's first graphite anode manufacturing plant through its subsidiary, TACC. With a total investment of INR 18.5 Bn, the company is building a 20,000 TPA plant in two phases, aligning capacity expansion with market demand. Phase 1 is already operational, and revenue generation is expected to begin by FY26-27. By entering the battery-grade anode space early, HEG is well placed to benefit from rising EV and energy storage adoption, where domestic cell manufacturing is gaining pace. The anode material, accounting for 10-15% of battery cost, offers higher margins and fits well with HEG's existing sourcing strengths from its graphite electrode business. HEG's ongoing restructuring, spinning off its graphite electrode business and bringing all greentech under HEG Greentech adds strategic clarity and helps unlock value.

Valuation Outlook: We value HEG's GE business at 13.0x FY28E EV/EBITDA, with EBITDA expanding from INR 4,142 mn to INR 7,634 mn, and margins recovering to ~22.7%, yielding an implied equity value of INR 491 per share. The Greentech platform is valued on a SOTP basis, the BEL hydropower business at 13.0x FY28E EV/EBITDA on EBITDA of INR 4,015 mn implies INR 110 per share, while the TACC anode business at 22x FY2030E PAT of INR 940 mn yields INR 107 per share, arriving at a combined HEG Greentech value of INR 217 per share. On a consolidated basis, **At the CMP of INR 500, we initiate with a BUY rating at a target price of INR 708 per share, implying an upside of 41.6%.**

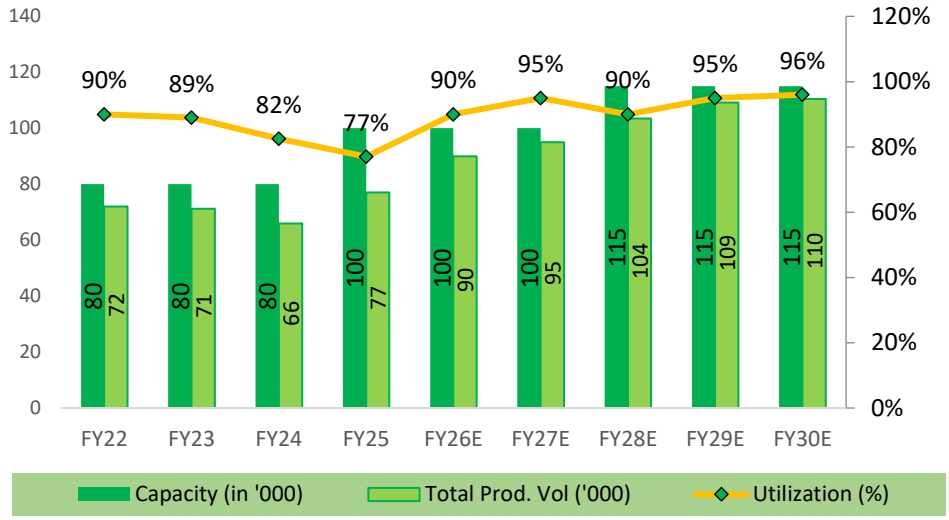
HEG Ltd based implied valuation	Graphite + Greentech Business
HEG Ltd - Graphite Business	491
HEG Greentech Business	217
HEG Ltd Equity Value/share	**708**
CMP (INR)	500
Upside/Downside (%)	**41.6%**
Rating	**Buy**

Source: Company reports, Arihant Capital Research

Investor Rationale:

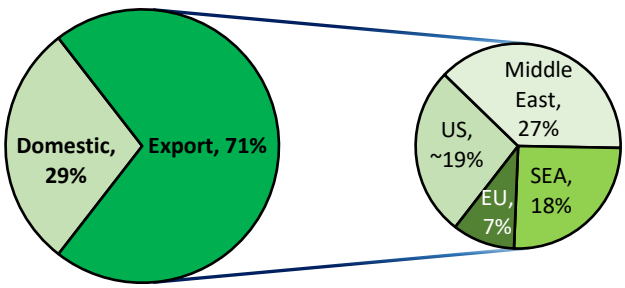
Global Capacity Rationalization Creates Structural Advantage For HEG Single Site Plant: The global graphite electrode industry (exc China) is undergoing a significant supply-side consolidation. In the last 12-18 months, ~120k to 140k tons of high-cost electrode capacity (~16-18% of global capacity) has been shut by major competitors like Resonac, Tokai Carbon, and GrafTech due to unviable operating economics in Europe and US. In contrast, HEG has successfully commissioned its expansion from 80k to 100k tons per annum and has committed a further capex of INR 6,500 mn to reach 115k TPA by early 2028.

HEG GE Capacity, Production, and Utilization Trends (FY22 - FY30E)



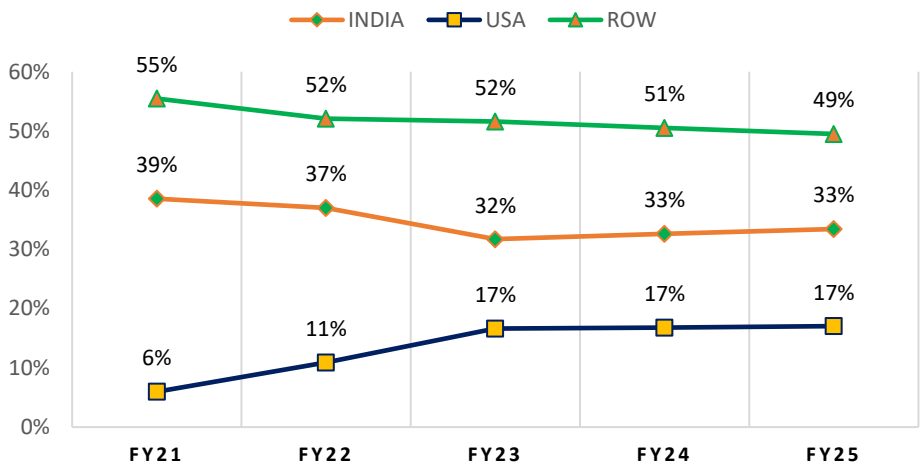
While global peers operate at sub-optimal utilization rates of 50-60%, the company consistently clocks 80-90% utilization. It operates the world's largest single-site facility, which allows for superior absorption of fixed costs compared to competitors running multiple sub-scale plants avg. 40-50k tons. Company's ~70% of sales is exported to 30-35 countries. Major countries include US, Middle East (in. Turkey), and Southeast Asia (SEA). Only ~30% of its supply is channeled in Indian market where company mainly supply High Power electrodes which are cheaper and suitable for the Indian markets.

HEG Capitalizes on Growing Global Demand for Graphite Electrodes



HEG's location wise breakdown showcase that with rising adoption of EAF and increasing demand in US has increased its revenue share from 6% in FY21 to 17% in FY25, resulting higher margins as against India which is following a negative trend. With higher adoption of EAF steelmaking process, the utilization of graphite electrodes will increase.

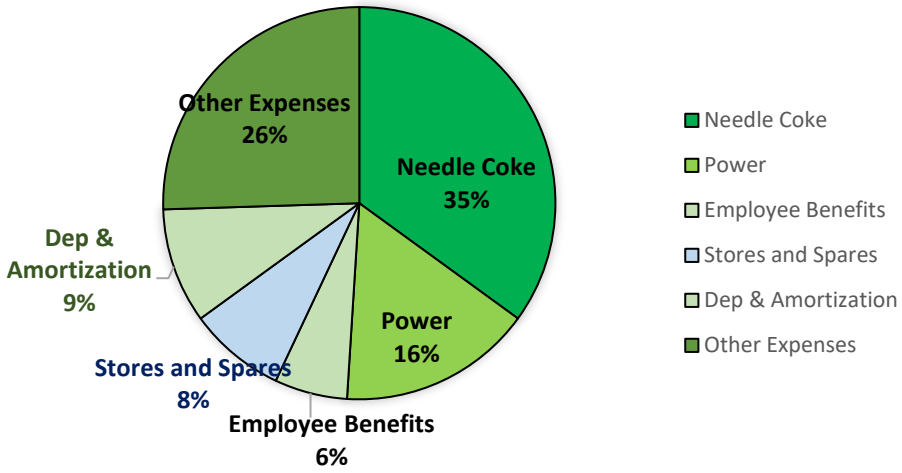
HEG LIMITED - REVENUE BREAKDOWN BY GEOGRAPHY



China Lacking the prowess of Manufacturing UHP GE: China dominates global steel production with a 53.9% share, a capacity seven times larger than any other nation, and accounts for over 27% of global steel exports. However, its steelmaking relies heavily on the basic oxygen furnace (BOF) route, which makes up 90% of production, while only 10% uses the electric arc furnace (EAF) route. Although China targeted 25% EAF production by 2025, this goal has been delayed to 2030 due to slower adoption, diminishing near-term demand for graphite electrodes, particularly ultra-high power (UHP) electrodes. China's EAF steel output, at ~825k metric tons, surpasses the rest of the world combined, but it primarily relies on high-power (HP) electrodes, which are less durable than UHP electrodes, prone to chipping under high heat, and suitable only for producing lower-quality steel products like rebars and rods. These HP electrodes are manufactured using China's abundant coal reserves and coal tar pitch. UHP electrodes, critical for efficient EAF steelmaking, require 100% petroleum needle coke, a premium byproduct of crude oil refining sourced from the US, Japan, and South Korea. China lacks domestic production of this high-grade needle coke and the expertise to manufacture UHP electrodes at scale, limiting its UHP capacity to ~50k tons. In contrast, the top five global producers collectively hold ~700k-800k tons, or 80% of total capacity (excluding China).

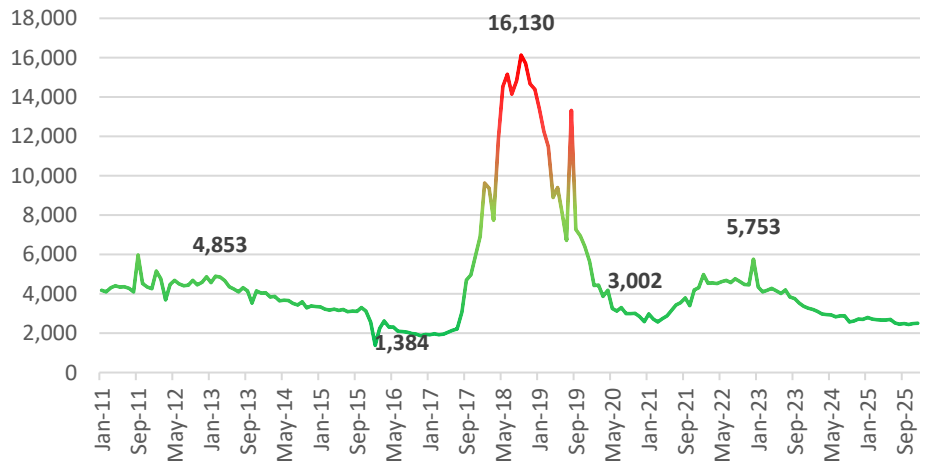
HEG Manufactures	UHP Graphite Electrodes - 70% of total production	HP Electrodes - 30% of total production
Power Handling	Superior, handles high furnace heat up to 3000°C	Fragile, chips down at very high temperatures
Usage in Steel Smelting	Used for high-quality steel manufacturing	Used for lower quality steel and in the ladle of BOF to keep steel melted
Dominance in Nations	Dominant usage in developed countries like US, EU, EMEA and Japan	Used in China, India, and some developing countries
Cost	More expensive due to higher quality and performance	Cheaper, suitable for economical steel production

Benefiting from Cost Leadership and Better Operational Efficiency: HEG stands out as the lowest-cost maker of graphite electrodes by combining deep technical expertise with a strictly disciplined cost structure. The company sources high-quality petroleum needle coke from top-tier suppliers, such as Phillips 66 in the US and leading Japanese manufacturers, ensuring superior product quality even during price volatility.



This competitive edge is structurally protected by low labor costs in India and an 80 MW captive power plant, which remains critical given that electrode manufacturing is a power-intensive processes like power cost account for 15-20% of total costs. Being situated in MP, the company secures grid power at subsidized rates of ~INR 5-5.5 per unit vs EU peers facing industrial tariffs as high as 11-14 euro cents per unit. The company's strategic location allows to remain near an inland container depot, streamlining logistics for import and exports. While HEG faces pricing pressure in the domestic market from cheaper coal-based coke HP electrodes China imports, especially after the 2018 removal of anti-dumping duties. The company mitigates this by dedicating 70% of its capacity to high-margin UHP electrodes for export. By leveraging these structural cost advantages and capitalizing on the global consolidation of supply, the company expects to protect its margins and maintain its market leadership.

Indian Graphite Electrode Prices: 11x Spike to >USD 15,500/t in 2018-19



Avg. Monthly FOB India, USD/t | Jan 2011 - Sep 2025 | Source: Industry data

Outlook and Valuation

The global graphite electrode (GE) industry has seen a contraction over the past 12-18 months, with manufacturers collectively shutting down 120-140 ktpa of high-cost capacity. Despite this trend, HEG has experienced positive expansion, achieving utilization rates of 85-90%. The company has increased its Mandideep facility's capacity from 80 ktpa to 100 ktpa, and it plans to invest an additional INR 6,500 mn to reach 115 ktpa by FY28E. This move builds its position as the world's largest single-site graphite electrode plant. This investment during a challenging period, when many competitors are struggling, is not spontaneous. It proves a structural cost and scale advantage that Western manufacturers cannot easily replicate. Operating from a single integrated site allows HEG to absorb fixed costs at a significantly lower per-unit rate compared to competitors who operate multiple smaller facilities, averaging 40-50 ktpa. This gives HEG the opportunity to capture a larger share of the demand recovery that is beginning to emerge in the market.

The demand is equally convincing, ~60 mn tons of new EAF capacity is under active construction, commissioning through FY26-FY28 primarily across Europe (~24 MT) and North America (~13 MT), implying ~200 kt of incremental electrode demand by FY30E (ex-China). Western steelmakers exclusively consume UHP electrodes, a segment where China structurally lacks both the petroleum needle coke feedstock and manufacturing expertise to compete at scale. HEG's deliberate focus on UHP (~70% of product mix) positions it at the juncture of supply scarcity and demand acceleration, with the US, where HEG's revenue share has grown from 6% in FY21 to 17% in FY25, serving as the most significant near-term volume utilization.

When industry utilization exceeds 80-85%, pricing power shifts significantly to electrode manufacturers, as electrodes comprise only 1.5-2% of an EAF operator's total production costs. HEG currently operates at about 89% utilization, compared to GrafTech's 50-65% and the industry average of 50-60%. In 2025, global producers have raised prices by 15-20%, with potential for further increases as new EAF capacity is introduced through FY28E. HEG benefits from a cost advantage with captive power at INR 5-5.5 per unit, compared to Eur 11-14 for European peers. Additionally, HEG's back-to-back needle coke contracting and its 9.98% stake in GrafTech's will help maintain its investment support positively during the upcycle.

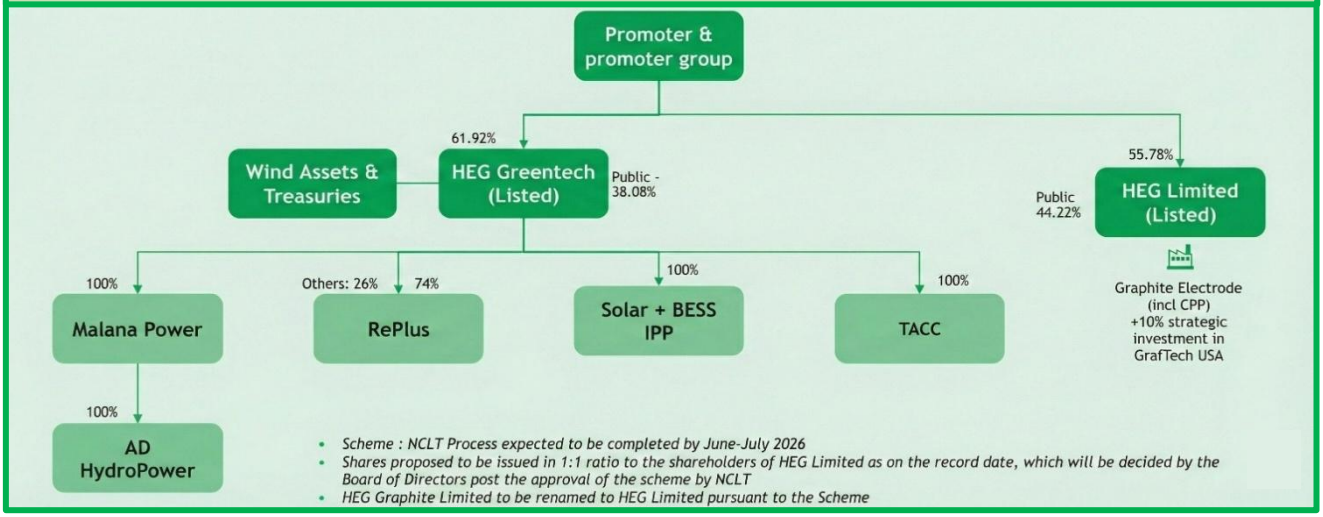
HEG's GE business revenue is expected to grow at a CAGR of ~24.9% over FY25-FY28E, with GE EBITDA expanding from INR 4,142 mn to INR 7,634 mn and margins recovering again to ~22.7%. The business is valued at 13.0x FY28E EV/EBITDA, with its cost leadership, industry-leading utilization, and sustainability through-cycle, yielding an implied equity value of INR 491 per share on the post-demerger entity.

HEG Ltd FY28E based implied valuation	Graphite Electrodes
FY28E EBITDA (INR Mn)	7,634
EV/EBITDA (x)	**13.0x**
EV (INR Mn)	99,236
Net Debt/(cash) (INR mn) - FY28E end	5,940
Graftech Inv @ 9.98%	1,427
Market Cap (INR mn)	94,723
Share outstanding (mn)	193
Value per share (INR) - FY28E	491

HEG Greentech

The promoter group has planned to separate its graphite electrode division into a new, independently listed company called HEG Ltd. This new entity will mirror the shareholding structure of the current HEG Ltd, with promoters holding a 55.8% stake and public shareholders owning the remaining 44.2%. Shareholders of the current HEG Limited will receive shares in this new company in a 1:1 ratio.

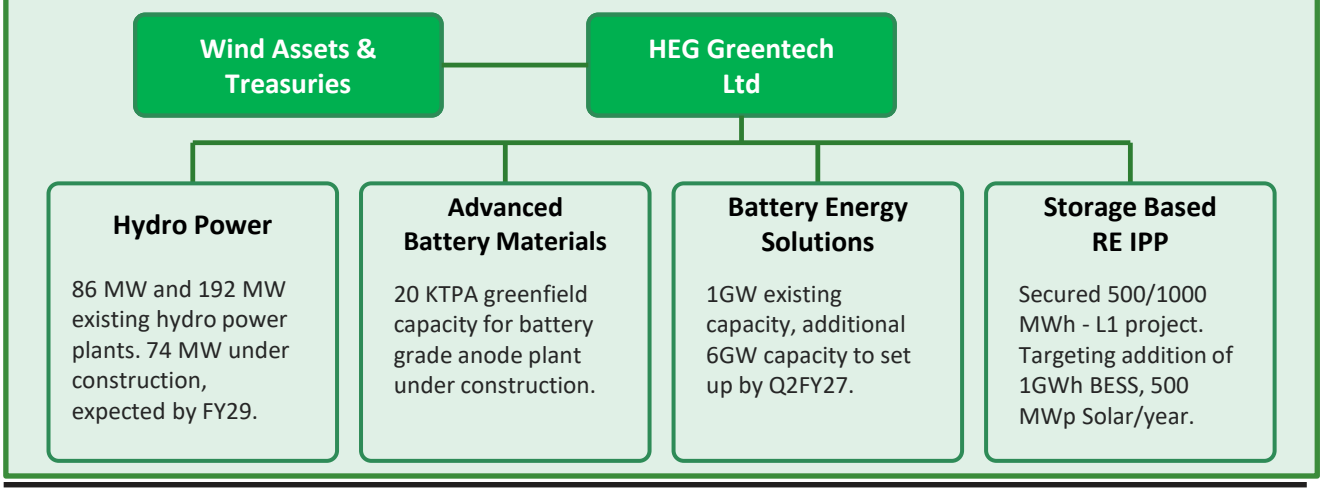
Demerger of Graphite Business and Merger of BEL - Resultant Structure



Post-demerger, HEG Graphite Limited will be renamed to HEG Limited. And HEG Ltd will be rebranded as HEG Greentech Ltd, which holds a 100% stake in Bhilwara Energy Ltd (BEL), a hydropower generation company, and full ownership of TACC, a graphite anode business for lithium-ion batteries. BEL, which holds the hydro assets (Malana and AD Hydro), will merge into the remaining shell of the HEG Greentech Ltd. The existing shareholders of BEL will be issued share of Greentech at a swap ratio of 8:7 shares. As a result, promoter shareholding in HEG Greentech Ltd is expected to rise from 56% to 61.9%. HEG separating the graphite business from green energy ventures (hydro, wind, battery storage, and advanced carbon) allows each entity to focus, aligning with unique growth strategies, risk profiles, and investor bases.

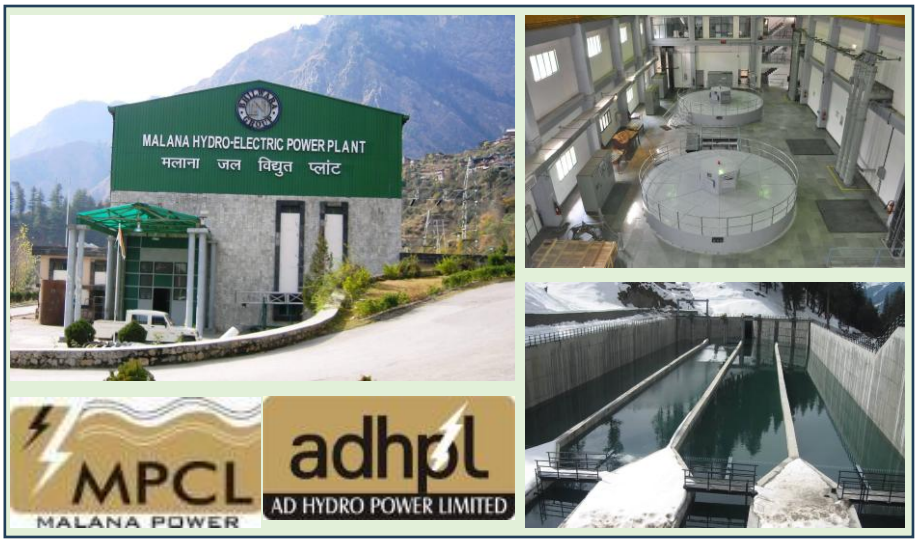
HEG Greentech Ltd will operate as an integrated clean technology platform operating across four verticals.

HEG Greentech Ltd. - Business Portfolio



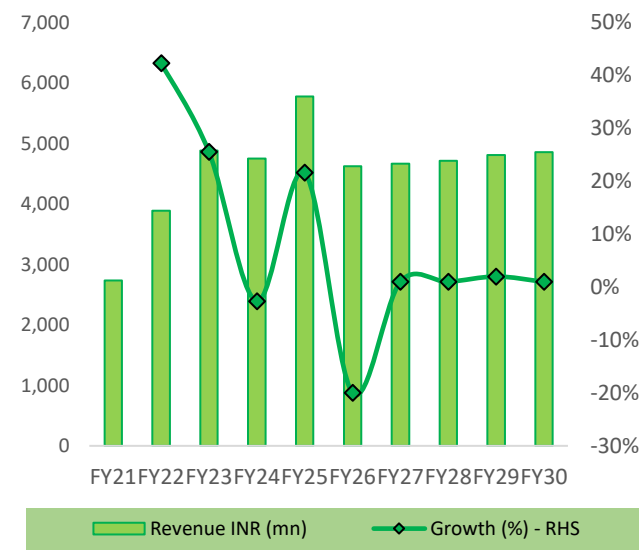
Hydro Power Assets The Cash Cow of Greentech

The hydropower business is the cash generator and acts as a reliable funding engine. The company operates two highly efficient hydropower plants in Himachal Pradesh that together produce 278 MW of power. Both the projects are debt-free and operate as run-of-river plants with a 3.5-4-hour reservoir enabling peaking generation, generating steady free cash flows of ~INR 3+ bn annually with EBITDA margins reaching ~80%, close to INR 3.7-4 bn in EBITDA. The company has acquired remaining 49% of stake from JV Statkraft for about INR 12.05 bn. To keep generating steady cash, company bought a 76 MW hydropower project in Uttarakhand called Phata Byung, the company is investing ~6,500 mn, with INR 1,500 mn required in start and will be funded majorly through internal accruals in 75:25 ratio. Approvals expected within 6 months, completion targeted in 2.5 years.

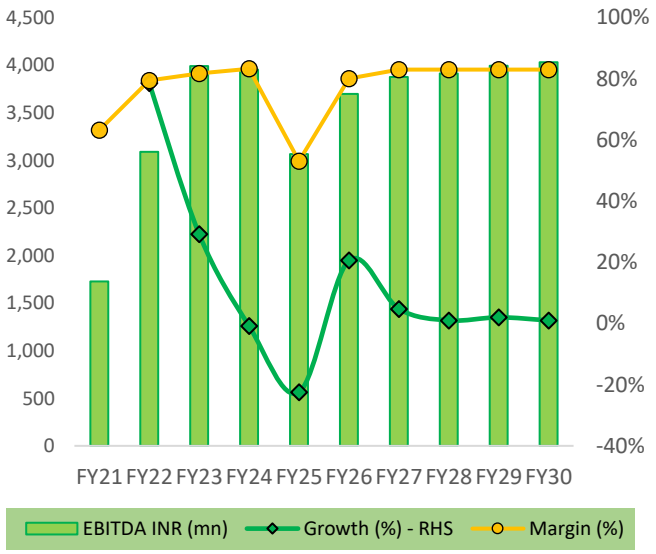


Building the Phase 1 of greenfield anode business, TACC requires a significant investment ~INR 18.5-2.25 bn. The company plans to invest ~30% of the capex from its own treasury and 30% through debt. The steady cash from hydro business will cover the interest payment, capex of the plant and the storage RE IPP expansion.

BEL revenue is expected to grow at a CAGR of 1.4% between (FY25-30E)

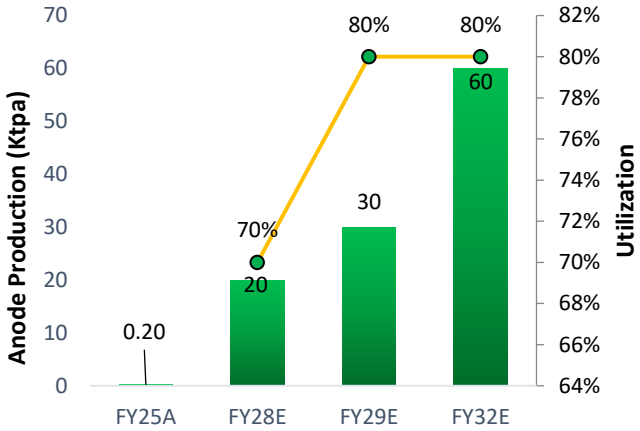


EBITDA margins to remain consistent in range of 80-85% (FY25-30E)

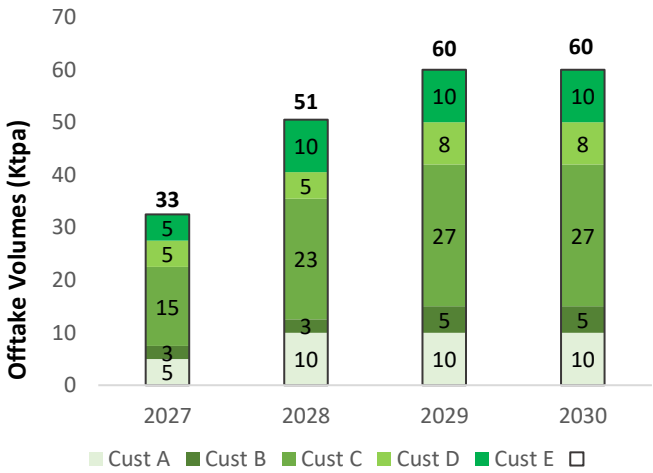


Emerging Avenue: Localizing Anode Production in India, HEG is entering the high-growth battery materials space through its 100% owned subsidiary, The Advanced Carbon Company (TACC), which falls under the HEG Greentech platform following the corporate demerger. TACC manufactures synthetic graphite anode powder for lithium-ion batteries. HEG, as a leading graphite electrode maker, has a distinct advantage here because graphitization is the core process for both products. With the manufacturing processes being 70% to 80% identical, the company easily bypasses the major technological risks that usually challenge new entrants. Anode production is heavily power-intensive, with power cost accounts ~20% of total costs. The company has secured a clear structural cost advantage by locating the plant in Madhya Pradesh to access subsidized power at under INR 5 per unit. This setup makes TACC one of the lowest-cost producers globally and allows it to compete directly with Chinese players on EBITDA margins.

Phased path to 60ktpa anode capacity and sustained 80% utilization by FY32E

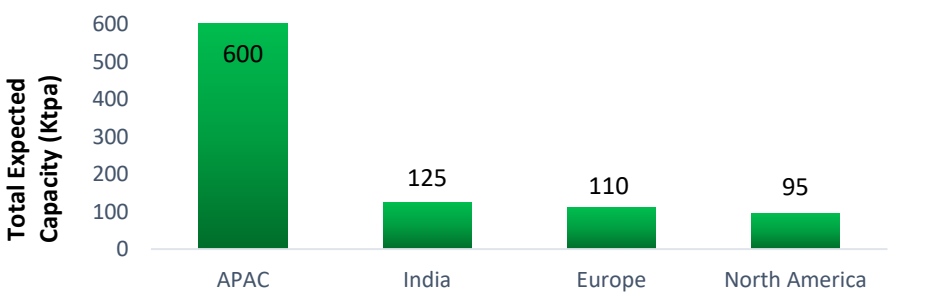


Visibility on rapid ramp up: 60ktpa pipeline secured by 2030E

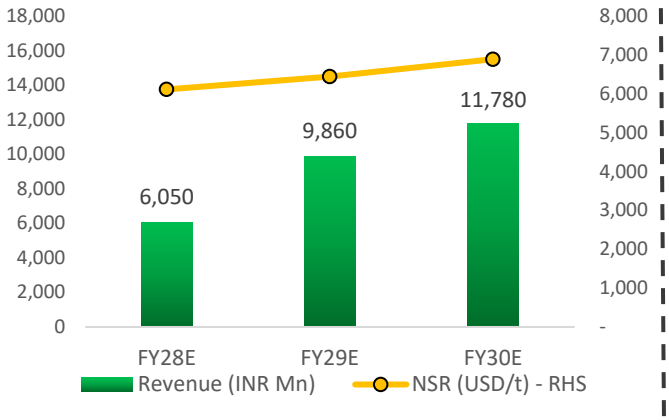


Market Opportunity and Demand Tailwinds Currently, China controls ~97% of the global synthetic graphite supply. However, global cell OEMs in the US, Europe, Japan, and Korea are aggressively pushing for a China+1 strategy to de-risk their critical mineral supply chains. The domestic Indian market is providing a massive structural tailwind. The government's PLI-ACC (Advanced Chemistry Cell) scheme mandates up to 60% domestic value addition. To meet this requirement, domestic cell manufacturers such as Reliance, Ola, Exide, and Waaree, who have announced ~200 GWh of upcoming capacity, must source materials locally rather than relying entirely on Chinese imports. Consequently, Indian domestic demand for anode materials is projected to surge to 130k-150ktpa by 2030E.

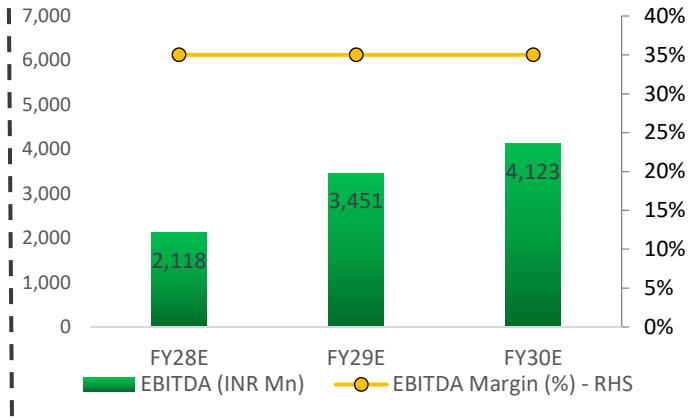
Visibility on rapid ramp up: 60ktpa pipeline secured by 2030E



TACC revenue is expected to grow at a CAGR of 25% between (FY28-30E)



EBITDA Margins increasing with better operational efficiency between (FY28-30E)



Source: Company reports, Arihant Capital Research

TACC is implementing a phased rollout of its production capacity. It has commissioned a 200-ton pilot plant at its Mandideep facility to provide samples to over 20 global OEMs. Additionally, the company is constructing a 20ktpa greenfield facility in Dewas. Following the latest land acquisition, machinery ordering is complete, and 90% of the engineering work is finished, bringing the overall project progress to ~30%. The facility is expected to commence commercial operations by April 2027. TACC plans to expand production at its existing plant to 30k tons, with a long-term goal of scaling up to 60k tons by FY32E, positioning itself as one of the largest non-Chinese anode producers in the world. The company is seeing strong demand, with offtake volumes exceeding 30k tons from Tier 1 customers across APAC, India, the EU, and North America. It aims for its customer mix to be weighted towards the higher-margin EV segment, targeting a portfolio distribution of 70% for EV applications and 30% for energy storage systems (ESS).

The total capex for Phase 1 of the 20ktpa plant is ~INR 18.50 bn. More than 50% of this capex has been committed through vendor orders, and actual cash outflows currently stand at around 30% (~INR 5.5 bn). By the end of FY27E, almost 80% to 85% of the total capex to be deployed, with the remaining amount held as vendor retention money. Funding is structured with a 30:70 equity-to-debt ratio. The company has allocated between INR 7.5 bn and INR 8.3 bn from its existing treasury. Also, a steady FCF of INR 3 bn generated through hydro power will support ongoing capital requirements and service interest costs.

TACC has successfully developed in-house technology for Graphene, called as wonder material, improves quality of anode conductivity and cycle life. IT has constructed 4ktpa graphene derivative facility, which will also cater to high-value applications in concrete, road infrastructure, and advanced textiles.

HEG Greentech's Battery Energy Storage Systems (BESS) Vertical: REPlus Engitech

The newly introduced ESS business under brand name RE Plus, the BESS vertical will act as fast growing segment for HEG Greentech. It holds 74% stake in REPlus, with remaining 26% held by technocrats. It act as a highly specialized system integrator and EPC provider, transforming lithium ion cells into battery packs and fully containerized storage solutions. The vertical is structurally asset light, highly scalable, and well placed to capture the growing India's renewable energy and EV sector need, targets INR 60 bn revenue potential at peak utilization. It currently operates 1 GWh cell to pack assembly line in Pune, is expanding to 6 GWh by Q2FY27. The incremental capex for this 5 GWh is ~2.5 bn, with total investment coming upto INR 3.3 bn. The company has received certifications for light commercial vehicles and modular designs approach for e busses and trucks, offering best cell to packs EV batterys with energy density of 160 Wh/Kg.

ESS - Utility-scale batteries demand ≥ 200 GWh till 2030

RE5K - Battery Container
5 MWh

Outdoor Cabinet Solution
100KWh to 1000KWh

EV batteries demand ≥127 GWh till 2030

Battery Packs for LCV, E-Bus, 2/3Wheelers and E-trucks
32KWh, 2KWh, 5KWh, 10KWh, 16KWh, 35KWh

Source: Company reports, Arihant Capital Research

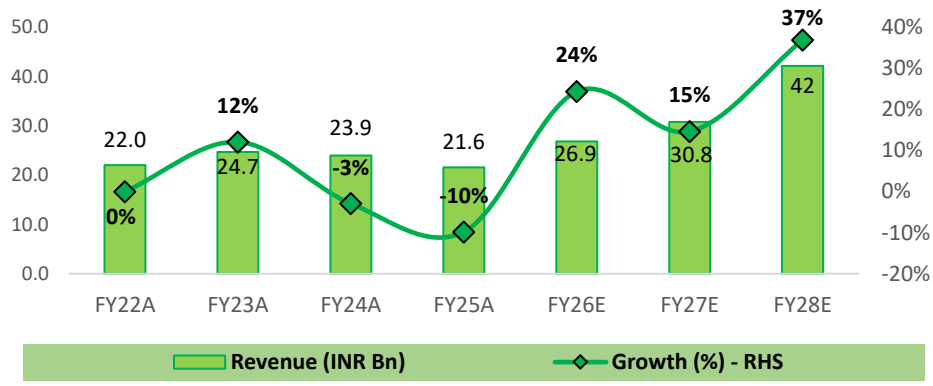
The company has already commissioned over 100 MWh of projects globally. It currently has a massive pipeline of ~2,000 MWh under execution. REPlus is actively targeting the Europe, EMEA markets, where BESS demand is expected to reach USD 5.82 bn by 2030E. The company has established a dedicated office in Dubai to interface with major global developers. It has successfully commissioned 36MWh+ micro-grid projects in Saudi Arabia and the DRC (Africa) and is a registered vendor for global energy giants like ENGIE, MASDAR, ACWA Power, and ALFANAR.

RE IPP Business: The company also building a renewable energy IPP business, targeting 5.9 GWh of storage assets by FY30E. Acting as a primary system integrator and supplier these in-house projects such as the secured 200 MWh Gujarat project and the 1,000 MWh Maharashtra L1 bid, ensuring a guaranteed baseload of orders for the BESS factory. The global lithium ion battery packs prices has crashed from ~USD 475/KWh in 2015 to ~USD 65/KWh today. This price collapse makes "Solar + BESS" economically viable, as the levelized cost of storage (LCOS) paired with solar ~INR7.5/KWh including open access charges is now cheaper than peak grid power tariffs INR 9 to INR 10/KWh for C&I customers.

Financial Analysis

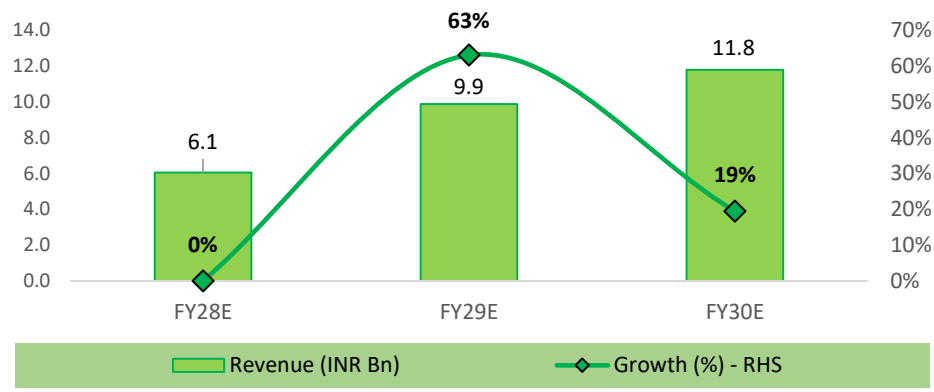
Revenue is expected to grow at a CAGR of 24.9% over the period of FY25-28E: This growth is set to accelerate as new electric arc furnace (EAF) facilities are built across western markets, particularly in Europe and US, with construction targeting completion within the next 12 months. The company expects strong demand for graphite electrodes, driven by the closure of several manufacturing plants. These closures are a result of high operating costs and expensive needle coke, which is actively helping to clear out excess supply. As new EAF facilities ramp up output, the graphite electrode market is likely to face a shortage. Supported by lower labor costs and captive power generation, HEG enjoys reduced operational expenses, allowing it to achieve higher margins compared to its global peers. HEG has proactively expanded its production capacity from 80k tons to 100k tons and will add another 15k tons by FY28 to meet this tightening supply and fulfill higher production needs. Additionally, major industry players have already raised prices by 15-20%, leaving HEG well-placed to attract new customers seeking technically reliable and cost-competitive suppliers. Driven by growing demand, increased production, tightening supply, and a less competitive landscape, HEG's consolidated revenue from operations is expected to rebound strongly in FY26 and grow significantly over the next 12-18 months.

Revenue is expected to grow at a CAGR of 24.9% between (FY25-28E)



The anode business is expected to start contributing from FY28 as it is currently under development. The first phase has been deployed, with pilot production yielding ~10,000 tons in the first month. The company plans to begin commercial production at the start of FY28E, generating revenue of around INR 6,100 Mn in FY28E. As the anode facility's capacity utilization increases from an expected 45% in FY28 to 70-80% in subsequent years, revenue is projected to grow significantly.

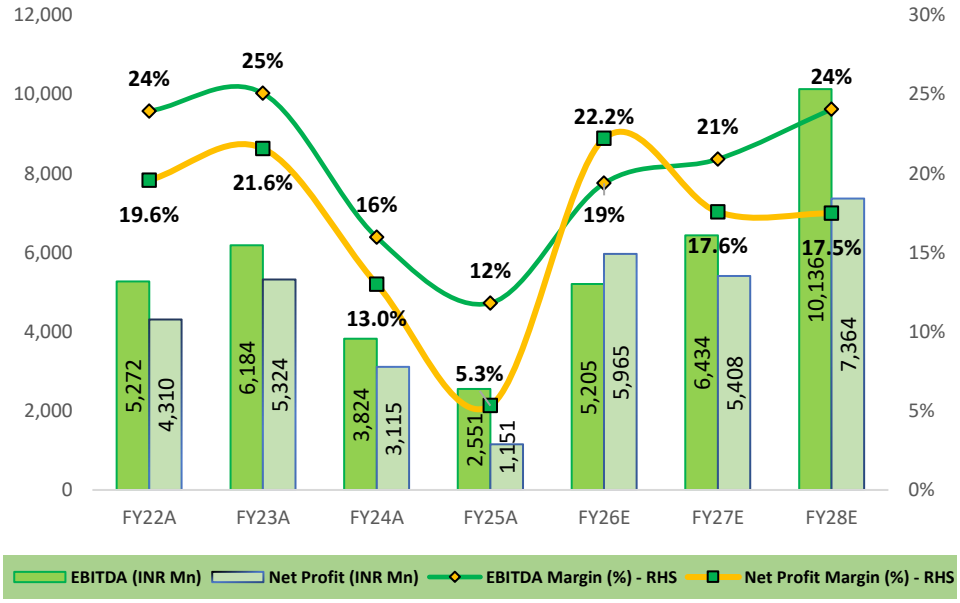
Anode business revenue is expected to start contributing from FY28E.



Financial Analysis

However, anode prices are narrowed currently due to high petroleum needle coke costs and declining battery prices , the estimated base line prices will be ~USD 6500-7,000/ton, which may impact margins in the near term. To maximize revenue realization, company targets 70% of sales coming from Evs. Management guided EBITDA margin to be in the range of 30-35% for the anode.

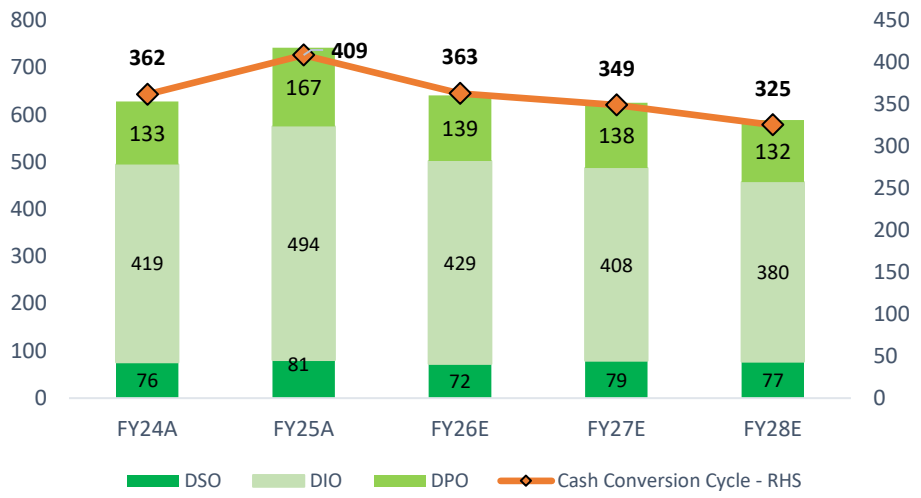
EBITDA and PAT margins are expected to grow at a CAGR of ~58% & 86% FY25A-FY28E and further improvement is expected gradually



Margin Improvement Expected Ahead: HEG stands out as one of the world's lowest-cost graphite electrode producers, with exports accounting for nearly two-thirds of its revenue. The recent uptick in EAF capacity, coupled with capacity reduction in graphite electrode facility, is gradually restoring demand-supply balance, providing a cushion against margin volatility and setting the stage for a more stable operating environment. While input costs particularly needle coke remain a concern, HEG offsets this risk through long-standing relationships with reliable suppliers like Phillips 66 and GrafTech, ensuring consistent access to these raw material. The company also benefits from a strong control on fixed costs, aided by its captive power plant, which helps manage the high energy requirements of the graphitization process. Notably, the same cost-efficient infrastructure and raw material profile give it a strategic edge in the development of its upcoming anode manufacturing facility, were process similarities support cost synergies and organic expansion. Globally, several competitors have raised electrode prices by 15-20% due to higher operational costs in high-cost developed regions like Japan and US. However, steel supply has faced short-term headwinds as Chinese steelmakers flood global markets with low-cost steel, cutting production by non-Chinese EAF operators which has similar effect on electrode consumption. On the positive side, the shutdown of multiple electrode facilities in Japan and the West has tightened global supply, lending support to price stability. As needle coke prices hold steady and HEG continues to leverage internal power generation, the path toward margin expansion remains robust. Going ahead in mid to long term, profitability will build upon on the stability in needle coke prices, efficient energy costs, and increasing global electrode demand.

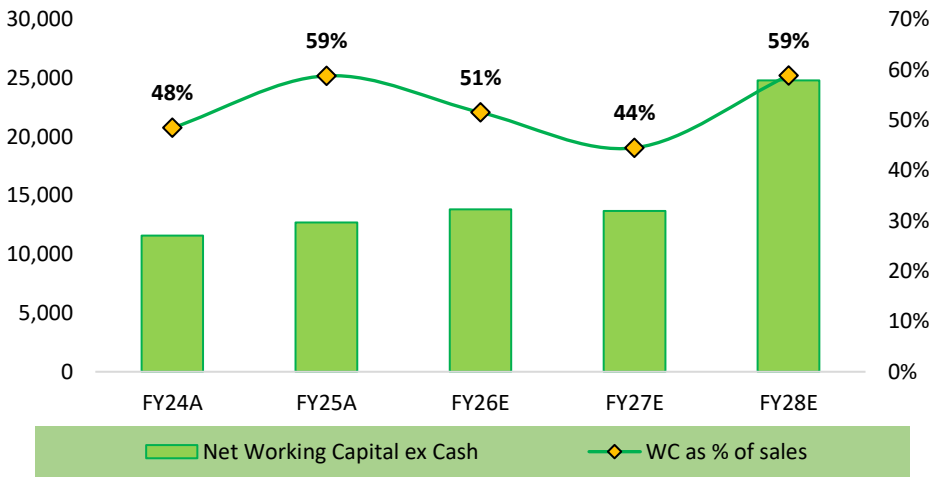
Financial Analysis

Targeting a Steady Working Capital with optimized inventory management



Working Capital Cycle to Improve: The graphite electrode manufacturing process is time-intensive, taking about 4-6 months to complete. This includes 3-4 months for work-in-progress and an additional 2-3 weeks for the electrodes to cool down after crystallization. Once manufactured, the electrodes are stored at the facility until they are delivered to customers. About 70% of the company's sales are contributed through exports, meaning payments from customers receivables take longer to collect due to delivery timelines. The company has also faced higher inventory days because of slower sales and stable raw material prices, leading to electrodes sitting in stock for longer periods. However, with growing demand and a tighter supply of graphite electrodes, the company is expected to sell its inventory faster, improving inventory turnover. On the payables side, the company maintains stable payment terms with its suppliers, supported by strong relationships with key needle coke suppliers like Phillips 66. Additionally, the company acquired stake in Graftech, which is also a needle coke manufacturer, helps ensure a steady and reliable supply of raw materials. These factors, faster inventory turnover, stable payables, and secure raw material supply are likely to reduce the working capital cycle going forward.

Working capital in-terms of sales are expected to be around ~60% going forward



Outlook and Valuation

HEG Greentech Ltd operates as an integrated clean technology platform with four verticals: hydropower, advanced battery materials, BESS, and storage-based renewable IPP, with the hydropower business serving as the financial backbone backing the growth capital needs of the emerging segments. The two operational run-of-river hydro plants in Himachal Pradesh collectively generate 278 MW of capacity, are entirely debt-free, and produce stable free cash flows of ~INR 3+ bn annually at ~80% EBITDA margins. A further 74MW expansion in Uttarakhand (Phata Byung) is under construction at a capex of ~INR 6,500 mn, targeted for commissioning within 2.5 years. BEL revenue is expected to grow at a CAGR of ~1.2% over FY25-FY30E, with EBITDA margins remaining consistently in the 80-85% range, resulting it a stable cash asset in the portfolio and a natural funding provider for TACC's capital-intensive business.

TACC, the anode manufacturing subsidiary, represents a significant growth opportunity. A new facility in Dewas, with a capacity of 20 ktpa, is being built with a Phase I investment of ~INR 18.5 bn. Over 50% of this funding is secured through vendor orders, and 30% has already been deployed, aiming for commercial operations by April 2027. TACC benefits from a 70-80% overlap in the graphitization process with electrode manufacturing, lowering technology and execution risks. With power costs below INR 5 per unit, TACC is positioned as a low-cost producer of non-Chinese synthetic graphite anodes. India's domestic Li-on battery demand is projected to reach about 127 GWh by FY30E, and TACC has secured demand for over 30 kt from Tier-I customers across various regions. Management expects EBITDA margins of 30-35% at maturity, with revenues projected to grow at a CAGR of 25% between FY28 and FY30. TACC's revenue is expected to increase from INR 6,050 mn in FY28E to INR 11,780 mn in FY30E, with EBITDA rising from INR 2,118 mn to INR 4,123 mn. Hydro EBITDA is estimated to remain stable at INR 3,700-4,000 mn annually through FY30E. The upcoming demerger, expected by Q1FY27E pending NCLT approval, will provide clearer valuations for the clean energy platform separate from the electrode business.

The Greentech platform is valued on a SOTP basis. The BEL hydropower business is valued at 12.0x FY28E EV/EBITDA applied to EBITDA of INR 4,015 mn, implying an EV of INR 110 per share, with the predictable hydro cashflows, debt-free balance sheet, and ~80% EBITDA margins protected from commodity or demand cycles. The TACC anode business is valued on a forward PE basis, applying 22x on PAT of INR 940 mn in FY2030E, yielding INR 107 per share. On a combined SOTP basis, HEG Greentech Ltd is valued at INR 217 per share, with the hydro business providing the valuation floor and TACC contributing the growth premium as anode utilization scales from 45% in FY28E toward 70-80% by FY30E.

BEL FY28E based implied valuation	Power Business
FY28E EBITDA (INR Mn)	4,015
EV/EBITDA (x)	**12.0x**
EV (INR Mn)	48,175
Net Debt/(cash) (INR mn) - FY28E end	(4,439)
Market Cap (INR mn)	52,615
EV attributable to HEG 40.4%	21,256
Share outstanding (mn)	193
Value per share (INR) - FY28E	110.15

HEG Greentech Ltd FY30E based implied valuation	Anode Business
PAT	940
No. of share	193
PE x	22
Value per share (INR) - FY30E	107

HEG Greentech Ltd based implied valuation	Both Combined
BEL - Hydro Asset Business Value/share	110
TACC - Anode Business Value/share	107
HEG Greentech Equity Value/share	**217**

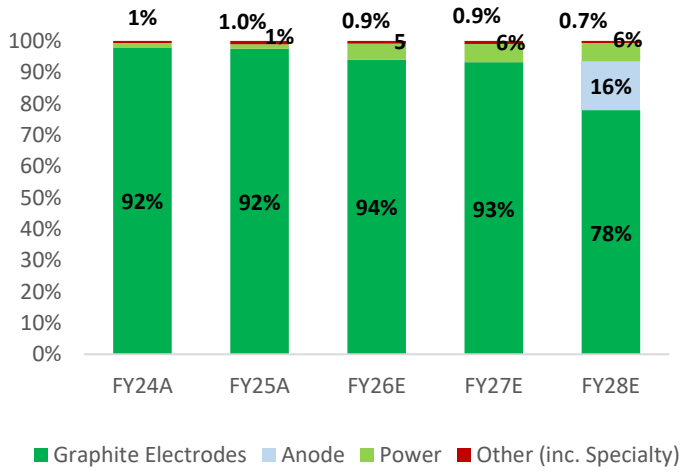
Presented Business Model & Revenue Share: FY25

Business Segment	Products Offered	End Users	% Share of Revenue
Graphite Electrodes	✓ UHP Electrodes (accounts to 70-75% of revenue share) ✓ HP Electrodes ✓ Electrode Pins	EAF Steel Manufacturers	98%
Power Division	✓ Two Coal Based 30 MW ✓ Power Plant 33 MW	Captive & Sold to Third Parties	1.7%
Speciality	✓ Blocks & Rounds ✓ Carbon Specialty ✓ Mini Rods ✓ Tubes - Flux Tubes & Heat Exchanger Tubes	Refractories, Metal & Electrical Applicants	0.3%

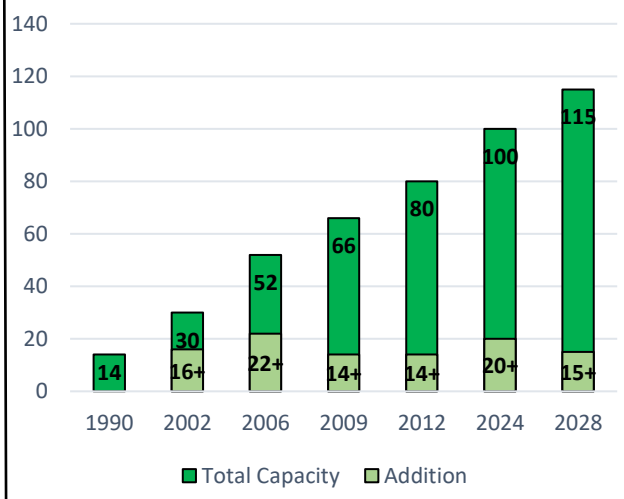
New Business Model Addition & Revenue Share: FY28E

Anode Division	✓ Anode Powder ✓ Graphene	Lithium-Ion Battery Manufacturing	16%

Revenue Share By Product (%)



GE Capacity Build Up (Thousand Tons)



HEG Ltd: Company Overview

HEG, previously know as Hindustan Electro-Graphites Ltd is part of the six-decades-old LNJ Bhilwara Group, which manufactures UHP and HP electrodes used in Electric Arc Furnaces for steel production. Company have an integrated manufacturing facility near Bhopal, Madhya Pradesh. It has the world's largest single-site graphite electrode manufacturing plant strategically located near a port, and has expanded its capacity to 100k TPA operating at ~80% utilization. It has a diversified customer base with 70% of the revenue generated from exports to more 100 customers around the world including ArcelorMittal, Nucor, Posco, Tata, SAIL, Jindal Steel and Power (JSPL), Sabic, Gerdau, Ferroatlantica, Celsa etc. It has captive power generation capacity of around 80 MW (2 thermal power plants & 1 hydro power plant).

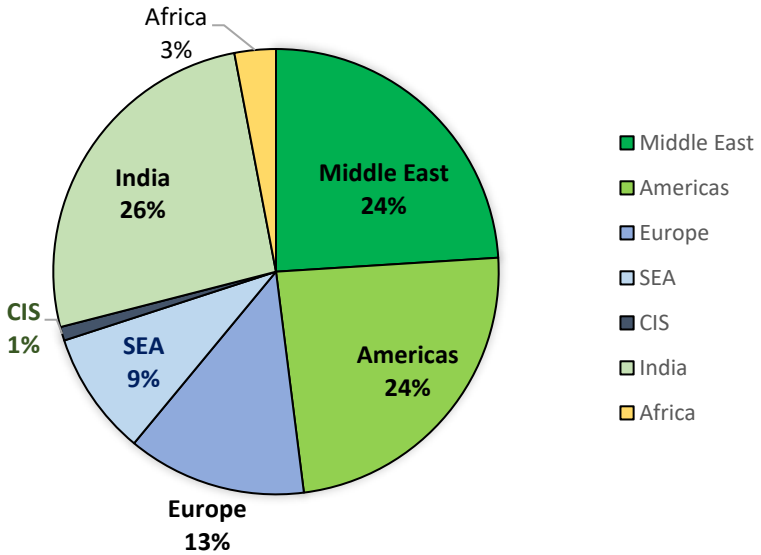
World's Largest Single Site Graphite Electrode Plant

Location: Mandideep, Near Bhopal. Madhya Pradesh, India	**Est:** 1977, **Plant Area**: 170 acres
Capacity: 100,000 MTPA,	**Graphitization Process**- State-of-the-art LWG furnaces
Equipped with modern extrusion process, imported baking furnace, and CNC machines for machining of Graphite Electrodes and Nipples	

- Largest single-site graphite electrode plant under one roof with a capacity of 100k tons pa for a long time.
- Exporting ~70 - 75% of its production to about 35 countries around the world consistently, with a diversified customer base ensuring stabilization.
- Captive power generation capacity of around 80 MW (Two thermal power plants & One hydropower plant).
- Manufactures both UHP Graphite electrodes from the nominal length of 1800mm - 2800mm, with suitable 3/4 TPI nipples and HP graphite electrodes, maintaining a strong presence across the graphite electrode market.
- Dedicated R&D Set-up for Carbon and Graphite, focusing on development of new products lines.

HEG's graphite electrodes are exported to over 30 countries globally. With the recent closure of several global electrode manufacturing facilities across the globe, HEG is poised to strengthen its market position and capture a larger share of the growing worldwide demand. Company expected to benefit from tightening global supply chain for ultra-high-quality graphite electrodes, which requires exclusive technology, thereby raising entry barriers for Chinese manufacturers and enhancing HEG's competitive edge. With largest single site, and exports contributing 70-75% of sales. The US has noted as one of the larger geographies for HEG, and its revenue share has grown from 6% in FY21 to 17% in FY25, reflecting the rising adoption of EAF steelmaking. Middle East (27%), Southeast Asia (SEA) (18%), and Europe (EU) (7%) are also a significant contributors, so any impact of regional tariffs is expected to be limited due to diversification.

HEG's caters to diverse market, with major ~70% contribution coming from Oversees



HEG Ltd. - Key Milestones

1972
- *Company became part of the LNJ Bhilwara Group and initiated graphite electrode manufacturing with technical collaboration from La Société des Electrodes et Réfractaires Savoie (SERS), a subsidiary of Pechiney, France. In 1978, the plant started with a modest production capacity of 10,000 TPA.*

1995
- *In collaboration with Rajasthan Spinning & Weaving Mills Ltd., established a 100% export-oriented cotton spinning unit. Modernized the Rishabhdev textile unit with an investment of INR 330 Mn.*

1997
- *Expanded graphite electrode production capacity to 24,000 MT and commissioned a 13.5 MW hydroelectric power plant at Tawa, Madhya Pradesh, the states first private-sector hydro project.*

2001
- *Exited the telecom sector by dissolving a joint venture with Motorola*
- *In 2003, Demerged the textile business which was merged with RSWM.*

2005
- *Increased graphite electrode capacity to 30,000 MT with a INR 470 Mn investment.*
- *Divested the steel business to Jai Balaji Industries Ltd.*

2011
- *Expanded its graphite electrode production capacity from 66,000 TPA to 80,000 TPA with a Capex of INR 2,750 Mn, motivated by the revival of demand for graphite electrodes, particularly from the EAF steel production route.*

2015
- *Faced substantial pressure due to declining graphite electrode prices and reduced global demand, utilization dropped to 50%.*
- *HEG implemented cost-cutting measures, optimized power consumption.*

2017
- *China's environmental regulations leading to the closure of several graphite electrode production facilities, resulting in a tightened global supply.*
- *A sharp increase in demand for graphite electrodes, coupled with constrained supply, led to substantial profits for manufacturers in the industry, resulting abnormal gains to HEG Ltd.*

2020
- *HEG announced the establishment of a 100% subsidiary, TACC, to manufacture graphite anodes for lithium-ion batteries. With planned investment of INR 10 Bn in the first phase, will be commenced by FY25. Second phase, involving another INR 10 Bn, aimed to double the capacity. Facility will produce 20k tons of graphite anodes.*

2023
- *Successfully completed its GE plant expansion, increasing capacity from 80k to 100k tons per annum. This INR 12 Bn project, completed over three years.*
- *HEG Ltd now has world's largest single-site GE facility and become the third-largest producer globally.*

2024
- *HEG underwent a corporate restructuring, demerging its GE business into a new entity, also named HEG Limited, while the existing company was renamed HEG Greentech.*
- *As part of the restructuring, HEG Greentech merged with Bhilwara Energy Limited (BEL), consolidating their renewable energy assets, including hydro and wind power projects.*

2025
- *HEG Limited acquired an 9.98% stake in GrafTech International, a NYSE-listed graphite electrode manufacturer, to expand its global footprint.*
- *HEG aims to reduce India's reliance on imports from China and Japan, which control 90% of the global market, and meet the domestic demand of 150k tons by 2030.*

Name	Position	Experience
Shri Ravi Jhunjhunwala	Chairman, Managing Director and CEO	Over 45 years of leadership experience, holds a B.Com (Hons.) and an MBA in Corporate Finance from Geneva. Has driven significant company growth since joining in 1979, focusing on strategic expansion and operational excellence.
Shri Riju Jhunjhunwala	Vice Chairman	Experienced industrialist with expertise in textiles, power, IT, and graphite electrodes. Actively participates in industry associations and contributes to strategic oversight.
Shri Manish Gulati	Executive Director	Over 30 years of experience, starting in marketing and expanding to operations, with degrees in BSc (Statistics), BE, and MBA. Led an INR 12 Bn expansion project, enhanced plant efficiency, and participated in CSR initiatives.
Shri Shekhar Agarwal	Director	Over 40 years in the textile industry, holds a B.Tech in ME from IIT Kanpur and an MS from Illinois, USA. Brings technical expertise and industry leadership to strategic decision-making.
Dr. Kamal Gupta	Director	CA and CMA with a Ph.D. in Business Management. A renowned expert in finance, accounting, and corporate laws, with extensive contributions to auditing standards and authorship of books on auditing and company law.
Smt. Vinita Singhania	Director	Industrialist with rich experience, particularly in cement business management. Actively involved in social organizations and industry associations, earning numerous accolades for her contributions to business and community development.
Ramni Nirula	Independent Director	Over 40 years in the financial services sector and corporate banking. Retired as a senior leader from a major financial institution, bringing deep insights into financial strategy and resource planning.
Shri Satish Chand Mehta	Independent Director	Former IFS officer with over 30 years of diplomatic experience. Advised on strategic sectors like external affairs and defence, offering global perspectives to the board.
Shri Jayant Davar	Independent Director	Mechanical Engineer and Harvard Business School alumnus with experience in founding and leading businesses. Active in startups as an investor and advisor, with involvement in professional bodies, contributing to innovation and governance.
Nand Gopal Khaitan	Independent Director	Senior attorney practicing at the Calcutta High Court and Supreme Court of India, with extensive experience in legal advisory and corporate governance. Provides expert guidance on board procedures and legal compliance.
Sandip Somany	Independent Director	Leads a major conglomerate, with leadership roles in prominent industry bodies for over 23 years. Brings strategic insights from diverse sectors and a strong network in business and trade organizations
Priya Shankar Dasgupta	Independent Director	Specialist in JV, M&A, with experience in legal and business advisory across industries like cement, textiles, and renewable energy.
Shri Ravi Kant Tripathi	Chief Financial Officer	Over 3 decades of experience in finance, with a B.Com, LLB from Bhopal University, and ICWA. Joined the company in 1994, managing auditing, taxation, cost control, treasury, customs, financial statements, and budgeting.

HEG Limited Q3FY26 Concall KTAs

The company reported flat QoQ, operating at industry-leading capacity utilization of 85% despite a challenging global steel environment due to declining production and elevated Chinese exports. The management remains positive on the mid-term growth, driven by the global decarbonization shift from BOF to EAF, which is expected to generate incremental electrode demand of 200k tons by 2030E. A significant corporate restructuring is underway, with the NCLT order for the demerger, setting the stage for the separation of the Green Tech business by Q1FY27E.

Operational updates & Capacity
The company clocked ~85% in Q3 and 89% over the last 9MFY26, based on the capacity of 100k tons.
The company is expanding its capacity by a further 15k tons, targeted for completion by Q1FY28,
The company's UHP product constitutes 70-75% of the product mix, catering to growing electrode demand.

EAF transition
The global shift towards EAF steelmaking is expanding due to climate goals. Globally ~20 mn tons of new greenfield EAF capacities were added in CY24-25, with another 60 mn tons expected between CY26-28E.
This transition is expected to create incremental graphite electrode demand of ~200k tons by 2030E, exc China.

Chinese steel impact
Global steel production declined by 2% in 2025, largely due to a 4.4% decline in China. However, Chinese steel exports surged by 78% over the last six years to 119 mn tons, building competitive pressure globally.

US Tariffs reduction
The 50% reciprocal US tariffs on graphite electrodes have been reduced to 18%. This 18% duty is calculated after exempting the value of raw material sourced from US.
Despite the 18% tariff, the company absorb the cost to protect its long-term customer relationships and market share in the US, where 70% of steel is produced via EAF.

Demerger & restructuring
Management received the NCLT order regarding the first motion application for the composite scheme of arrangement.
Expects the final approval of the scheme by Q1FY27E.
Post-demerger, the Green Tech business, including anode and ESS, will operate as a separate entity. The debt for the Anode plant will be funded internally within the specific project entities once the scheme is effective.

Green tech & Energy
Bhilwara Energy, continues to generate revenue primarily from hydro assets and holds significant liquid assets.

BESS
The company has won BESS tenders in Gujarat, Maharashtra and expects the Anode plant to be commissioned by Q1FY28E, with peak revenue contribution starting from FY29E.

Investment in GrafTech
Management views the industry fundamentals as strong and believes that with 175k tons of capacity, GrafTech will survive benefiting from shortage of electrodes globally.

Pricing pressure
Realizations remain under pressure due to cautious procurement and Chinese competition. Management expects pricing to remain similar for the next two quarters without significant upticks.

Needle Coke
While needle coke prices are contracted quarterly to match electrode production cycles, raw material costs remain important.

Guidance
Management expects that the addition of 110 mn tons of new EAF capacity globally by 2030, with 20 mn already added and 60 mn to be added during CY26-28E.
The company aims to gain market share due to low-cost single site electrode plant.

Income Statement					
Y/E Mar, Rs mn	FY24	FY25E	FY26E	FY27E	FY28E
Net sales	**23,949**	**21,597**	**26,856**	**30,777**	**42,125**
Growth, %	**-2.9%**	**-9.8%**	**24.4%**	**14.6%**	**36.9%**
Other income					
Raw material expenses	11,514	9,038	10,944	12,465	17,377
Employee expenses	953	1,037	1,265	1,423	1,850
Other Operating expenses	7,658	8,972	9,443	10,455	12,763
EBITDA (Core)	**3,824**	**2,551**	**5,205**	**6,434**	**10,136**
Growth, %	-38.16%	-33.29%	104.01%	23.63%	57.53%
Margin, %	15.97%	11.81%	19.38%	20.91%	24.06%
Depreciation	1,748	2,006	2,121	2,237	2,360
Interest paid	357	392	385	1,394	1,986
Other Income	1,417	1,276	3,900	3,000	3,060
Non-recurring Items					
Pre-tax profit	**3,952**	**1,604**	**7,849**	**7,115**	**10,228**
Tax provided	837	453	1,884	1,708	2,864
Profit after tax	**3,115**	**1,151**	**5,965**	**5,408**	**7,364**
PAT Adj.	**3,115**	**1,151**	**5,965**	**5,408**	**7,364**
Growth, %	-41.49%	-63.06%	418.43%	-9.34%	36.19%
Unadj. shares (m)					
Wtd avg shares (m)	193	193	193	193	193

Cash Flows					
Y/E Mar, Rs mn	FY24	FY25E	FY26E	FY27E	FY28E
Profit After tax	1,480	278	3,579	3,245	4,419
Adjustments: Add					
Depreciation and amortisation	1,748	2,006	2,121	2,237	2,360
Interest adjustment	-1,774	-1,668	-4,285	-4,394	-5,046
Change in assets and liabilities	**2,169**	**1,400**	**2,185**	**3,876**	**5,705**
Inventories	2,460	-605	-646	-1,492	-6,680
Trade receivables	-191	635	-1,774	-908	-3,575
Trade payables	133	-260	355	741	2,339
Other Liabilities and provisions	-362	-237	75	82	90
Other Assets	-425	-237	-69	-19	-19
Taxes	65	14	142	164	188
Net cash from operating activities	**2,651**	**332**	**558**	**2,748**	**-1,633**
Net Sale/(Purchase) of tangible and intangible assets, Capital work in progress	-3,684	-1,827	-6,062	-10,500	-8,500
Net Sale/(Purchase) of investments	-2,301	-714	2,280	2,561	2,577
Others	708	1	-	-	-
Net cash (used) in investing activities	**-4,961**	**-2,551**	**-2,371**	**-7,939**	**-5,923**
Interest expense	-340	-679	3,093	7,733	6,715
Dividend paid	1,635	873	2,386	2,163	2,946
Other financing activities	-1,665	-872	-2,386	-2,163	-2,946
Net cash (used) in financing activities	**-492**	**-413**	**2,740**	**6,994**	**4,377**
Closing Balance	**3,909**	**1,277**	**2,205**	**4,009**	**830**

Balance Sheet

As at 31st Mar, Rs mn	FY24	FY25E	FY26E	FY27E	FY28E
PPE	17,690	18,922	16,960	17,235	33,388
CWIP	2,123	709	5,209	13,209	3,209
Rights Of Use Assets	386	375	1,785	1,778	1,770
Financial Assets	462.7	532.9	559.5	573.5	587.9
Other Non Current Assets	153	151	151	151	151
Total Non current Assets	**30,716**	**31,916**	**36,093**	**44,808**	**51,445**
Inventories	11,942	12,546	13,192	14,684	21,365
Receivables	5,082	4,447	6,221	7,130	10,705
Cash & CE	3,909	1,277	2,205	4,009	830
Other Current Assets	1,467	1,474	1,474	1,474	1,474
Other Financial Assets	469	697	766	785	804
Total Current Assets	**26,105**	**24,373**	**27,789**	**32,012**	**39,109**
Total assets	**56,821**	**56,289**	**63,882**	**76,820**	**90,554**
Total Equities	**44,066**	**44,345**	**47,924**	**51,168**	**55,587**
Non current borrowings	0	0	3,150	11,550	17,925
Other Non current liabilities	76.4	90.3	3,241.4	11,642.6	18,018.8
Total Non current liabilities	**1,078**	**1,089**	**4,384**	**12,950**	**19,515**
Current borrowings	6,339	6,494	6,850	7,228	7,628
Trade Payables	85	3,993	4,348	5,088	7,428
Other Current Liabilities	299	368	377	386	396
Total Current Liabilities	**11,676**	**10,855**	**11,575**	**12,702**	**15,452**
Total equity & liabilities	**56,821**	**56,289**	**63,882**	**76,820**	**90,554**

INITIATING COVERAGE
27th Mar 2026

Graphite India Ltd

Graphite India at the Turn of the Electrode Cycle, With Domestic Market Dominance

CMP: INR 595

Rating: BUY

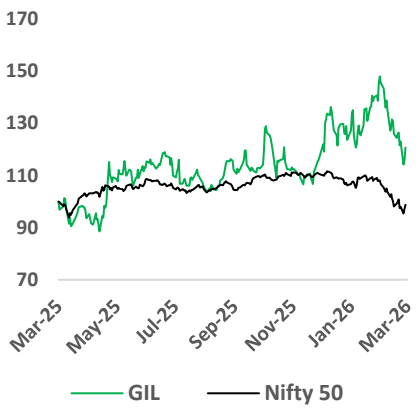
Target Price: INR 735

Stock Info	
BSE	509631
Bloomberg	GRIL:IN
Sector	Electrodes & Refractories
Face Value (INR)	2
Mkt Cap (INR Bn)	108
52w H/L (INR)	623/366
Avg yearly Vol (in 000')	1,358

Shareholding Pattern % *(As on Dec, 2024)*	
Promoters	65.34%
Public & Others	34.66%

Stock Performance (%)	1m	6m	12m
Graphite India Ltd	-6.8	+9.1	+24
NIFTY	-8.8	-6.8	-2.67

GIL Ltd Vs Nifty 50



Abhishek Jain
abhishek.jain@arihantcapital.com
022-42254872

Rohan Baranwal

About the company:

Graphite India Ltd. (GIL) holds ~65% domestic market share and ranks among the top global players. With 98k TPA capacity across six strategically located plants, it caters to a diversified global clientele across industries.

I. Global shutdowns of high-cost capacities have tightened supply, creating an opportunity for cost-efficient players like GIL. Rising EAF steel capacity and growing demand further strengthen its growth outlook.

II. GIL has partnered with Godi India to enter EV battery cell manufacturing and is investing in graphene technology aligning with future-ready growth areas beyond traditional electrodes.

Global Capacity Shutdowns Leading To Supply Contraction Creates Clear Opportunity: With ~20% of global graphite electrode capacity going offline, the market is entering a meaningful supply consolidation phase, with top producers now controlling a dominant share (70%) of remaining output. This structural tightening is gradually steering the industry toward improved price realisations. Graphite India is well-placed to capitalize on this shift; its lean, low-cost manufacturing model offers a 20-25% operational cost advantage over global peers, who continue to face high fixed costs and squeezed margins. As needle coke prices stabilize and capacity cuts firm up electrode pricing, the company is positioned to benefit on both fronts, margin expansion and incremental market share gains, making it a compelling beneficiary of the ongoing global supply reset.

Strong Domestic Leadership with Cost Advantage and Global Tailwinds: GIL holds around 65-70% of the domestic market share, making it India's top manufacturer of graphite electrodes, with about two-thirds of its revenue coming from the domestic market. After shutting down its high-cost German plant, GIL now has a capacity of 80ktpa and operates at 80-85% utilization. With India's crude steel production expected to grow by 11% YoY in FY25, and EAF capacity increases from Tata Steel and Jindal Steel, demand remains strong. EAFs are projected to represent 40% of India's 300 MT steel capacity by FY2030E, providing a favorable demand outlook. The company's cost advantage, enhanced by global capacity shutdowns, positions it well to sustain its domestic leadership while gradually expanding exports as global markets improve.

Valuation summary Y/E Mar, Rs mn	FY24	FY25	FY26E	FY27E	FY28E
Net Sales	29,497	25,600	28,562	33,177	40,216
EBIDTA	-1,441	2,534	2,117	4,657	6,786
Net Profit	8,048	4,582	4,428	5,985	7,409
PAT Adj	8,048	4,582	4,428	5,985	7,409
Diluted EPS	41	23	23	31	38
PER, x	14.4	25.4	26.3	19.4	15.7
EV/EBIDTA, x	-82	46	55	25	16
P/BV, x	2.1	2.0	1.9	1.7	1.5
ROE, %	14.3%	7.8%	7.1%	8.7%	9.7%
Debt/Equity (x)	0.04	0.04	0.04	0.06	0.07

Strategically Placed to Gain from Global EAF Growth with Cost and Export Edge: Graphite India's acquisition of a 31% stake in Godi India for INR 500 mn marks a strategic entry into the lithium-ion battery market, leveraging Godi's advanced research capabilities, early-mover advantage in solid-state chemistries, and BIS certification for EV-grade cells. This allows GIL to engage directly in the battery cell value chain through its graphite expertise, with supportive policies like PLI and FAME II further bolstering Godi's growth prospects and positioning GIL well in the expanding clean energy sector.

Graphite India maintained operational efficiency amid capacity reduction to 80k tons: After shutting down its German plant in 2023 due to high power costs. All remaining production now takes place in India, where utilization rates have increased from around 60% to 80-85%. The company benefits from lower labor and operating costs, giving it an edge over Western competitors. Currently, it holds about 65% of the domestic market share, with exports accounting for 33-35% of total revenues. As capacity approaches its limits, Graphite India plans to add 25k tons of capacity domestically. The growing global EAF capacity and tight graphite electrode supply are expected to favor Indian manufacturers. Both Graphite India and HEG are expanding to capitalize on this demand, but their capex varies significantly. Graphite India is investing INR 6 bn for the capacity increase, with a cost/ton of ~USD 2,200, compared to HEG's USD 4,800/ton.

Strategic Entry into EV Battery Manufacturing through Godi India Acquisition: The company's vertically integrated operations, in-house needle coke processing, and captive power plants provide a strong buffer against industry cyclicality and raw material fluctuations. Domestic tailwinds from rising steel capacity and government infrastructure initiatives reduce reliance on export orders, while a debt-free balance sheet and healthy cash reserves offer flexibility to navigate near-term headwinds and capitalize on the upcoming global electrode upcycle.

Valuation Outlook: Graphite India is well placed to benefit from a tightening global electrode market driven by western capacity shutdowns and growing EAF adoption, backed by a near-debt-free balance sheet, a structural cost advantage of 20-25% over western peers, and a self-funded 25 ktpa expansion. Revenue and EBITDA are projected to grow at CAGRs of ~16% and ~39% over FY25-FY28E respectively, with margins recovering toward ~16.9%. **We initiate with a BUY rating at a target price of INR 735 per share, valued at an EV/EBITDA of 16x FY28E, implying an upside of ~23.6%.**

Graphite India Ltd FY28E based implied valuation	
FY28E EBITDA (INR Mn)	6,786
EV/EBITDA (x)	**16.0x**
EV (INR Mn)	108,577
Net Debt/(cash) (INR mn) - FY28E end	(34,077)
Graftech Inv @ 6.8%	993
Market Cap (INR mn)	143,648
Share outstanding (mn)	195
Value per share (INR) - FY28E	735.24
CMP (INR)	595
Upside/Downside (%)	**23.6%**
Rating	**BUY**

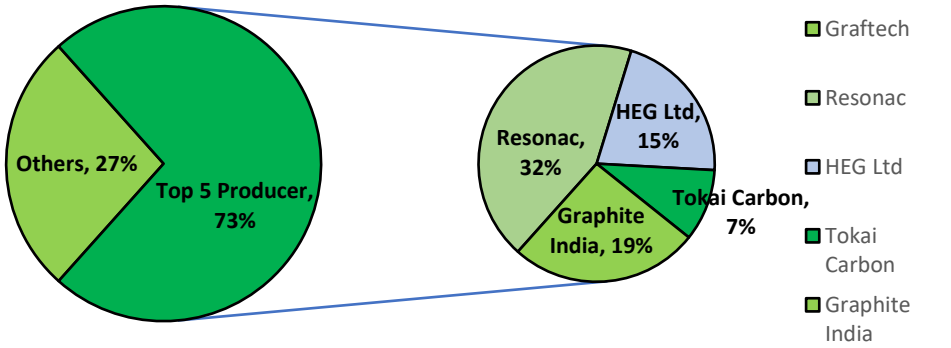
Source: Company reports, Arihant Capital Research

Investment Rationale

Global capacity shutdowns leading to supply contraction creates clear opportunity: The graphite electrode market is tightly linked to the global EAF steel industry, which fluctuates with economic conditions. Slowdowns in developed markets like the EU and Russia, largely driven by geopolitical tensions, alongside China's persistent real estate and infrastructure slump, have disrupted global steel supply chains. Simultaneously, China's elevated dumping of low-priced steel into global markets has pressured international steel prices, reducing demand for EAF-based steelmaking. This has directly impacted graphite electrode producers through overcapacity, inventory build-up, and lowered price realizations. In addition, global electrode manufacturers have faced pressure from high fixed manufacturing costs, which remained a burden even when production volumes dropped. This, along with weak infrastructure spending in Europe, global uncertainties, and a surge in cheap steel imports from China, led to higher inventory levels and lower margins across the industry.

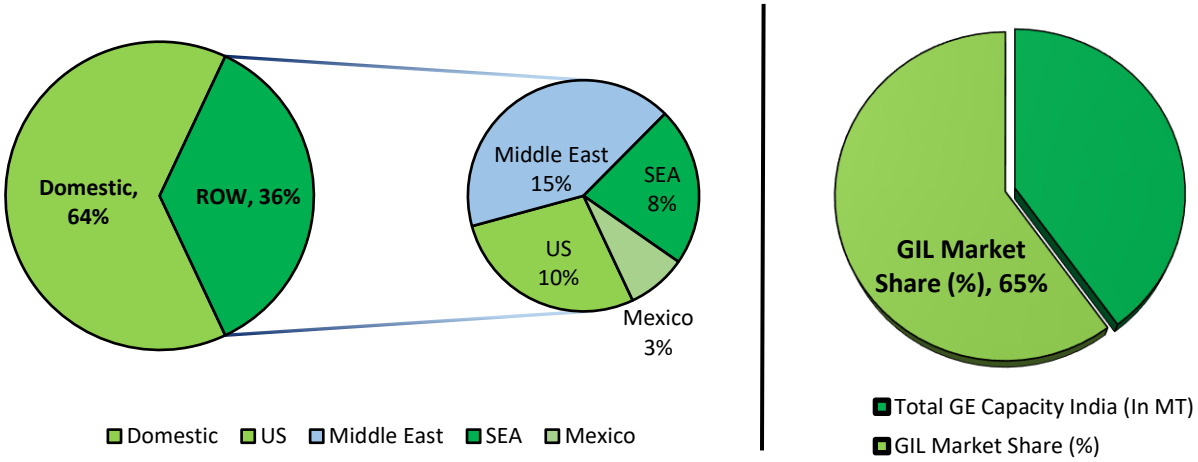
However, the steel demand in developed countries is gradually recovering and emerging markets are already resulting a higher consumption, and leading steelmakers are expanding their EAF capacities as part of their transition from traditional BOF/DRI setups to cleaner, scrap- and DRI-based EAF routes in line with decarbonization targets. As new EAF capacities come online in the US, Europe, Middle East, and Southeast Asia combined targeting 100 MT by 2030E, graphite electrode consumption is set to rise. With current electrode inventories at reduced levels due to prior demand slowdown and capacity shutdowns, a tightening in the supply-demand balance is imminent opening a window of opportunity for cost-efficient manufacturers.

Top 5 Global Electrode Producers Account for ~70-80% of Global GE Capacity (Ex-China)



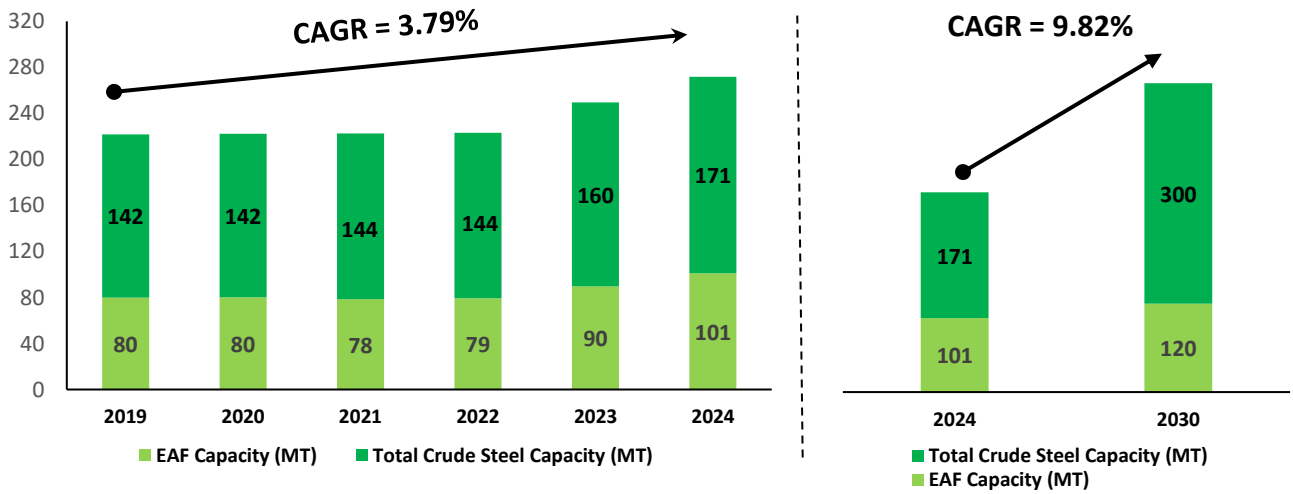
A major shift in the graphite electrode market is the 20% reduction in global manufacturing capacity, now at ~630,000 tons. This tightening supply from shutdowns and cutbacks by key players has resulted in capacity constraints. Excluding China, about 786 kt of graphite electrode capacity exists worldwide, with the top five producers controlling ~70-80%. This significant contraction in supply establishes a favorable environment for Graphite India to realize improved pricing, representing a substantial strategic advantage. Graphite India can capitalize on the tightening global supply of graphite electrodes. With needle coke prices, which constitute a significant 45% of its raw material costs, now stabilizing, the company is set for incremental margin expansion. This advantageous cost environment, combined with its established low-cost manufacturing capabilities, provides Graphite India a substantial competitive edge over its counterparts in developed markets, who are currently struggling with lower price realization, rising raw material cost that have narrowed their profitability.

Graphite India Leads Domestic Market with ~65% Share: Graphite India is the leading supplier of graphite electrodes in its domestic market, commanding a significant ~65% market share. The company's strategy prioritizes the domestic market, which accounts for ~2/3rd of its sales. The total installed capacity for graphite electrodes is 98k tons, with 80k tons in India and 18k tons in Germany. However, the German plant was closed in 2022 due to unsustainable power costs, reducing the effective operational capacity to 80k tons from the Indian plants. These domestic facilities are currently operating at 80-85% utilization.

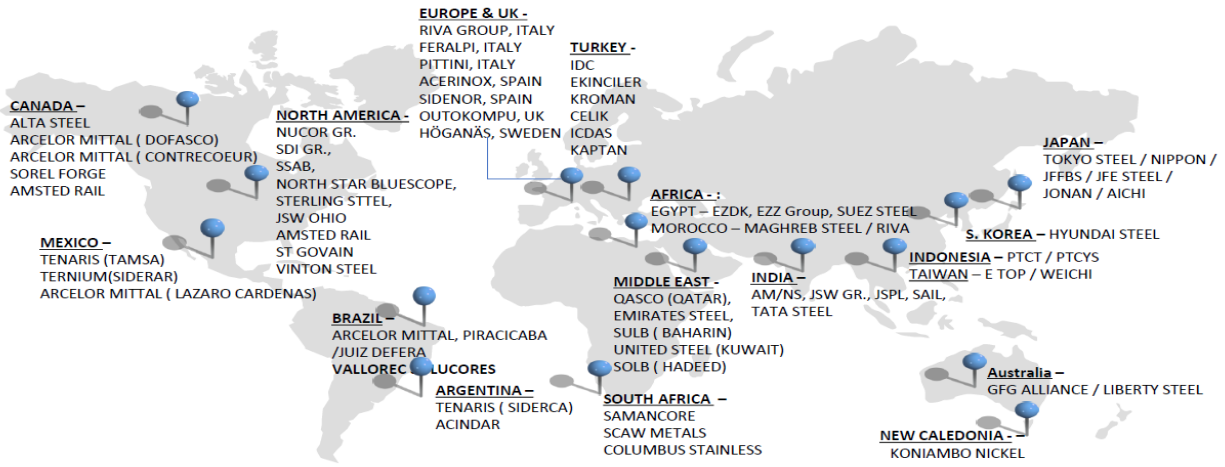


While global steel production growth has been modest, regional disparities exist. India, the second-largest steel producer globally with a 7.4% share of world crude steel production, has seen growth of around 11% YoY in FY24, while China's output has declined. Despite India's recent investments in BOF steel manufacturing facilities, the current domestic EAF steel capacity is expected to be maintained. Any incremental capacity additions, such as Tata's upcoming 3 MT plant in Ludhiana, are anticipated to follow the EAF route. Additionally with the closure of unviable graphite electrode capacities by global competitors is seen as a net positive for cost-competitive players like GIL, which employs domestic manufacturing and lower operating expenses. This development is expected to benefit GIL as the market recovers, potentially increasing its export revenues if market conditions improve.

Total EAF Capacity in India are expected to grow at a CAGR of 9.82% FY24A-FY28E



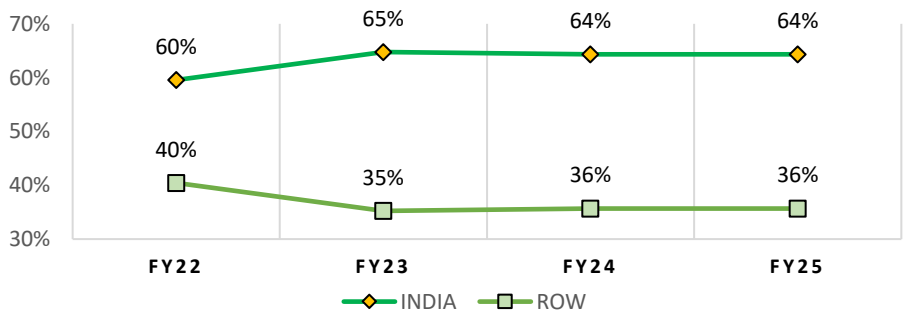
Diversified Premier Global Customer Base



Source : Company Reports, Arihant Capital Research

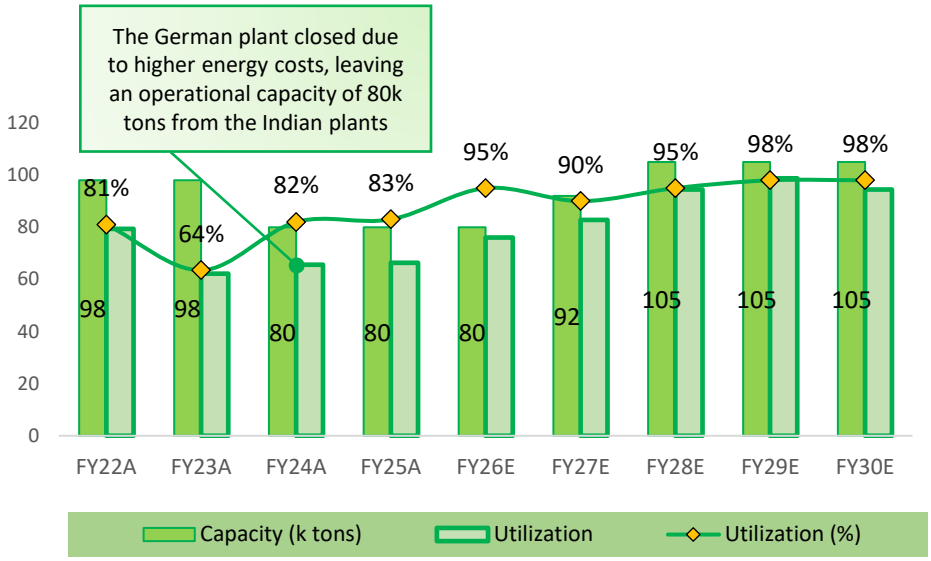
Strategically Placed to Gain from Global EAF Growth with Cost and Export Edge: Graphite India is well-placed to benefit from the rising adoption of EAF steelmaking, which is gaining traction across developing countries, Southeast Asia, and the EMEA region. Notably, the Middle East has close to 90% of its steel production based on EAF technology, showcasing the strong opportunity and growing demand of steel with rising infrastructure spend and real estate will mirror similar growth for graphite electrodes. The company has decades of experience in manufacturing high quality graphite electrodes and has earned product satisfaction from major steel producers globally. This long-standing reputation, built over decades, helps it maintain strong customer relationships across geographies. Although we a see a shift in the company's sales tilted towards domestic, still exports make up around 36% of its revenue, showing its global reach and ability to serve large clients outside India.

Graphite India - Revenue Breakdown by Geographic (%)



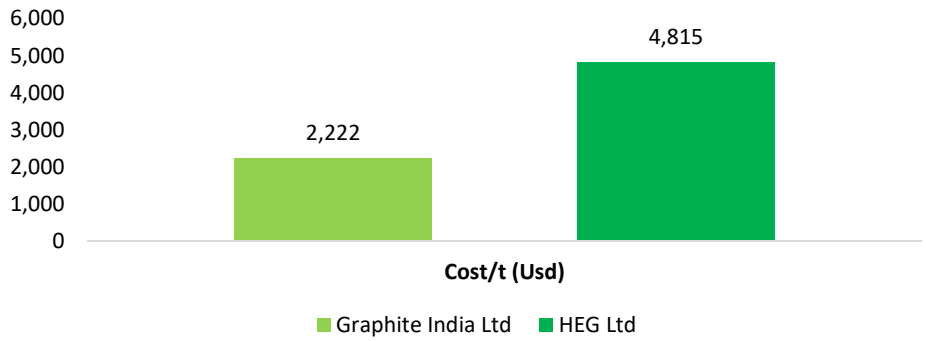
One of Graphite India's key advantages is its cost-efficient manufacturing setup in India. With plants located close to three major ports, the company enjoys smoother export logistics and lower freight costs. This gives it a natural edge over global peers operating in higher-cost regions. The graphite electrode industry remains concentrated, with limited new players entering the market. In this backdrop, Graphite India's established presence, technical approvals, and scale of operations allow it to benefit from stable pricing and growing volumes. As more countries adopt EAF-based production for cleaner and flexible steelmaking, the demand for electrodes is expected to remain firm. With its strong manufacturing base, export capabilities, and trusted customer relationships, Graphite India is in a good position to grow both its domestic and international business in the coming years.

Set to expand capacity by 13k by the end of FY27 and the remaining 12k within 36 months.



Graphite India maintained operational efficiency amid capacity reduction to 80k tons: After shutting down its German plant in 2023, due to high and volatile power costs, which brought its total capacity down from 98k tons to 80k tons, with all remaining plants located in India. The two Indian facilities have managed to absorb the entire production load, resulting in utilization rates increasing from ~60% to between 80-85%. Operating solely out of India has been advantageous for the company, as it benefits from lower labor, power, and operating costs. This gives the company a structural cost advantage over Western producers. The company currently cater to ~65% domestic market share while also supporting exports, which account for 33-35% of total revenues. With capacity already approaching its limits, the company plans to add 25k tons of capacity domestically. On the demand side, the increasing global EAF capacity, coupled with tight graphite electrode supply, is expected to enhance the demand-supply balance, which is favorable for Indian electrode manufacturers.
Both HEG and GIL are expanding to capitalize on the anticipated surge in EAF steel capacity. However, their capex outlays per ton of new capacity differ significantly. HEG is operating with a much higher capex intensity (cost per ton of capacity added) compared to GIL. Graphite India is investing INR 6 bn to increase capacity by 25k tons, allocating INR 1 bn to renewable captive power and the remaining INR 5 bn for manufacturing capex. This results in a cost per ton of ~USD 2,200 for GIL and USD 4,800 for HEG.

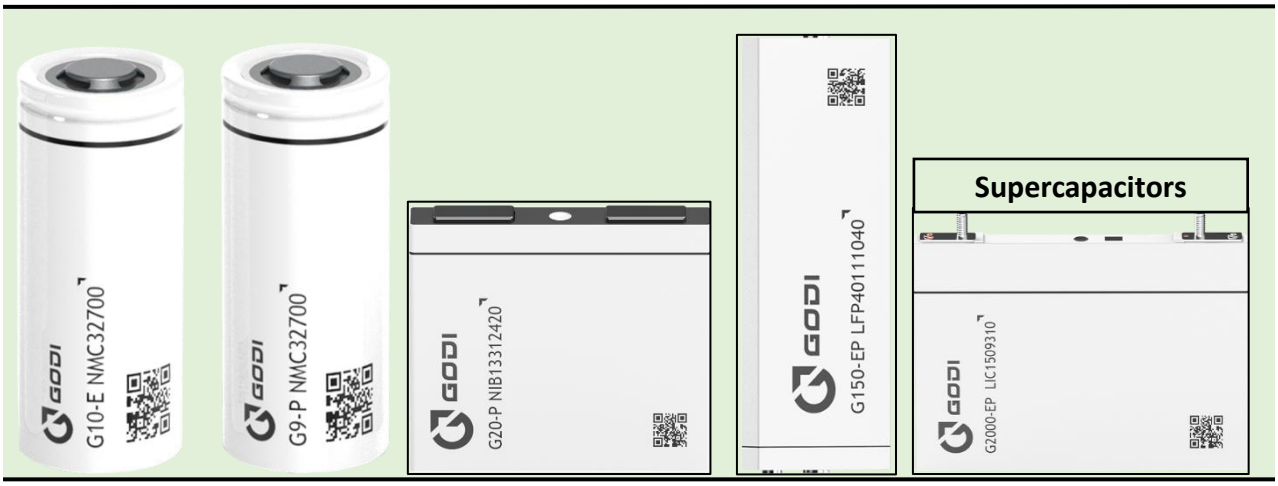
Gil's capex adding new capacity at ~USD 2,200/t vs. HEG's ~USD 4,800/t



GODI India are working on unique materials and new cell chemistries for next generation batteries to bring down the cost by 25-35% per kWh.

Strategic Entry into EV Battery Manufacturing through Godi India Acquisition: Graphite India has taken a major step towards entering the fast-growing electric mobility and energy storage space by acquiring a 31% stake in Godi India for INR 500 Mn. Godi is deeply involved in advanced battery chemistry R&D and focuses on sustainable energy solutions for EVs and supercapacitor BESS. This move gives Graphite India direct access to the EV battery value chain, especially in the anode materials segment, where it can leverage its decades of expertise in graphite and carbon technologies. Meanwhile, Godi brings strong technical capabilities in lithium-ion, sodium-ion, and solid-state battery technologies, positioning itself at the forefront of energy innovation. The partnership enhances Graphite India's presence in high-growth sectors like electric vehicles and consumer electronics, both driving demand for efficient, high-performance batteries. Godi India has also developed supercapacitor solutions aimed at large-scale regenerative storage in automotive, railway, telecom, and power grids. With a skilled R&D team and in-house facilities, Godi India has secured BIS certification for its EV battery cells an important milestone for product credibility and commercial scale-up This strategic investment not only diversifies Graphite India's revenue streams but also aligns it with the global clean energy transition, creating a clear pathway beyond traditional electrode markets into the broader battery ecosystem.

GODI India Products Offered: Batteries Cells/Supercapacitors

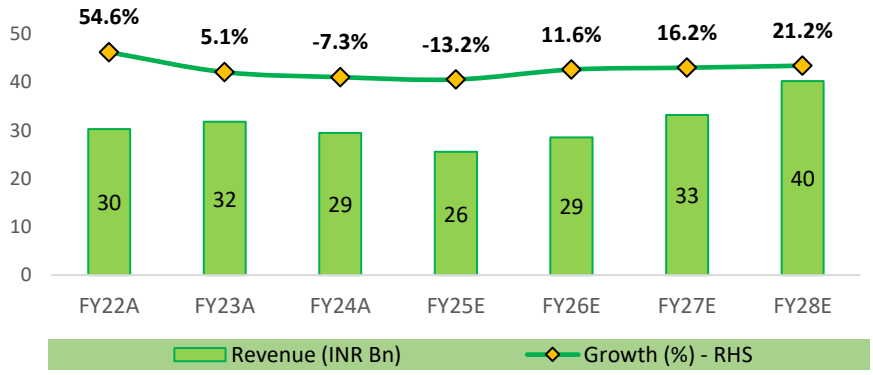


India's EV Boom Spurs Opportunities in Cell Manufacturing for Players like GODI India, India is poised for a sharp rise in LiB demand, driven by the growing EV sector. Yet, the country has so far relied entirely on imports for its cell needs, creating heavy dependence on China. To reduce this reliance, several major OEMs currently focused on battery pack assembly are now planning to establish their own cell manufacturing plants. Amidst this transition, GODI India has emerged as a leader, building capabilities aligned with Indian performance standards. In partnership with Graphite India Ltd, GODI is investing in R&D for battery packs and supercapacitors tailored to Indian terrains and capable of withstanding extreme heat up to 45°C, a critical advantage given India's tough climate and road conditions. Cell manufacturing is capex-intensive, with a 5 GWh facility requiring ~INR 10 Bn. However, government support through the PLI for ACC (~INR 180 Bn) and FAME II schemes provides a strong policy push by easing cost pressures and encouraging technology advancement. Motivated by these initiatives, GODI India (eligible for the incentives) stands to benefit from early-mover advantage and the shift toward regional manufacturing ecosystems. By aligning innovation with local needs and leveraging policy incentives, GODI is well-placed to play a key role in India's EV cell manufacturing industry.

Financial Analysis

Revenue is expected to grow at a CAGR of 16.2% over the period of FY25-28E: Graphite India's revenue performance has been cyclical, reflecting fluctuations in global graphite electrode demand and realizations. After a sharp expansion of 54.6% in FY22, before slipping into contraction, with revenue down 7.3% in FY24A and declining further by 13.2% in FY25A to INR 2,560 Bn. From FY26E onwards, the business is projected to enter a recovery phase, supported by the commissioning of new EAF capacities in Europe and the US over the next 12-18 months. With several high-cost global producers reducing or shutting operations due to expensive needle coke and elevated energy costs, the industry is expected to see a tightening in supply. This shift, along with early signs of price increases by leading players, is likely to create a favourable environment for Graphite India. Revenue is forecasted to grow at a CAGR of ~16.2% over FY25-28E, reaching INR 35.17 Bn by FY28E, with the company positioned to capture demand recovery aided by its cost advantages, such as captive power and a lean operating structure.

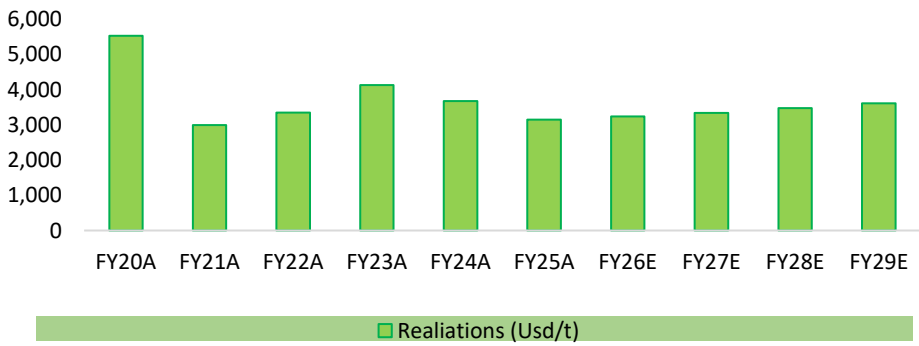
Revenue is expected to grow at a CAGR of 16.2% over the period of FY25-28E



Realization Recovery: UHP GE prices set to improve at a steady rate

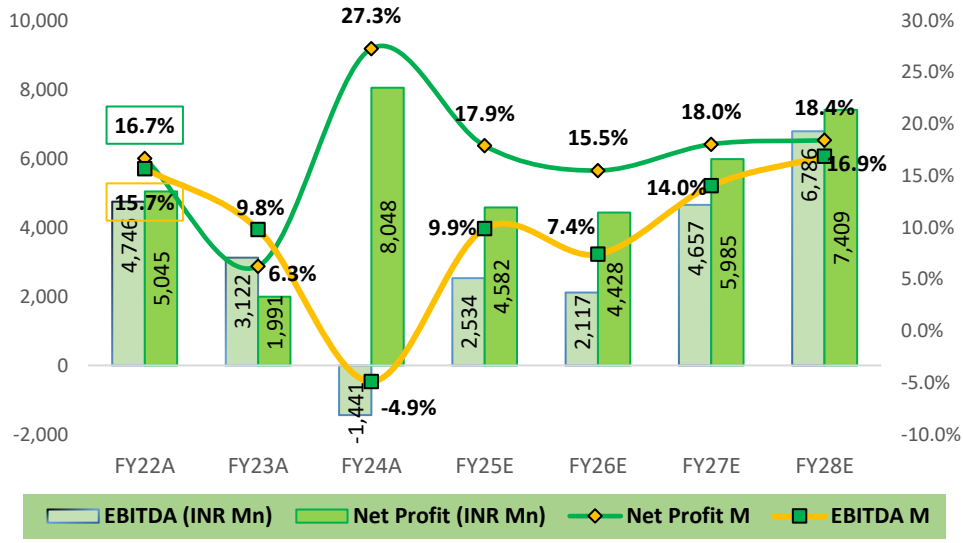
GE prices appear to have stabilized, with conditions aligning for a gradual increase. EAF-based steelmaking has risen from about 26% to 29% of global steel output over five years, indicating a structural shift in electrode demand. High needle coke and energy costs have led many western capacity to shut down. GIL stands out due to its low-cost production. Chinese producers cannot compete in UHP grades, allowing the company to charge similar prices as Westerners, ~50% higher than Chinese competitors. With incremental capacity additions requiring minimal strain on the balance sheet, even slight volume recovery at these price levels will significantly boost margins, making this the central earnings driver through FY28E.

GE realizations are recovering, at a slow but steady rate after significant drop



Gradual Recovery in Profitability: Graphite India has experienced significant margin volatility in recent years, reflecting the cyclical nature of graphite electrodes and sharp swings in global steel production. EBITDA margins contracted sharply from low double-digits in FY22 to 9.8% in FY23, before turning negative in FY24 (-4.9%) as realizations weakened and fixed costs weighed on profitability. PAT margins also followed the same trend, declining from 12.7% in FY22 to 6.4% in FY23 and slipping into negative territory in FY24. This downturn was driven by a combination of subdued demand, elevated energy costs, and volatility in needle coke prices.

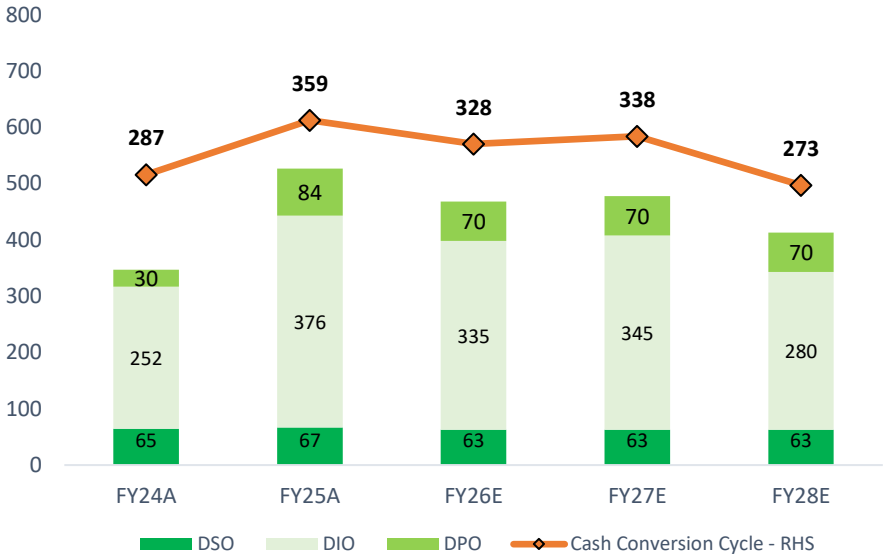
Targeting a Steady Working Capital with optimized inventory management



Looking ahead, margins are expected to improve as demand-supply dynamics normalize. The commissioning of new EAF capacities in Europe and the US over the next 12-18 months is set to boost electrode consumption. At the same time, multiple high-cost electrode facilities in Japan and the West have either shut down or scaled back operations, tightening global supply. These structural shifts are already supporting price stability, with global players initiating 15-20% price hikes. As a result, Graphite India's EBITDA margins are projected to return to positive territory in FY25E and expand gradually to mid-single digits by FY28E, supported by operating leverage and better cost absorption. On the cost side, needle coke availability and pricing remain a critical risk, as the material accounts for a large share of raw material costs. However, unlike high-cost global peers, Graphite India benefits from a lean operating base and access to captive power, which lowers its energy costs in the graphitization process. These efficiencies provide a partial cushion against raw material volatility, helping to stabilize margins even during weaker cycles.

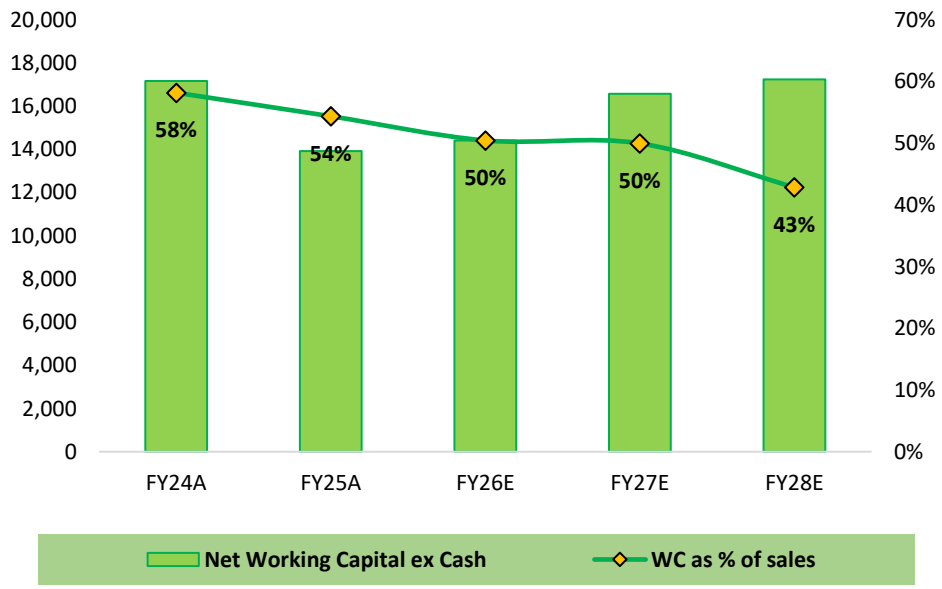
At the PAT level, profitability is expected to mirror the EBITDA recovery. After recording losses in FY24, Graphite India is projected to return to profitability in FY26E, with PAT margins gradually improving to around CAGR of 15% by FY28E. This improvement reflects both stronger top-line growth and improving operating leverage as utilization levels rise. In the medium to long term, Graphite India's margin profile is set to strengthen on the back of three key drivers: stabilization in needle coke prices, better energy cost control through captive power usage, and steady demand growth from EAF-led steel production. With global supply tightening and a more balanced industry environment, company is in a good position to show steady recovery in margins and profitability.

Targeting a Steady Working Capital with optimized inventory management

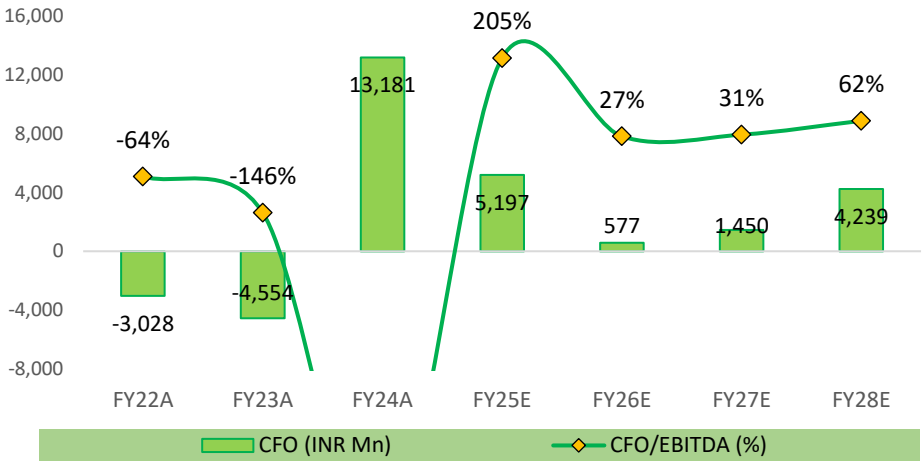


Working Capital Cycle Set for Normalization: The graphite electrode manufacturing process is time-intensive, which inherently leads to a high working capital requirement. Graphite India's cycle became particularly stretched in FY25A, peaking at over 350 days, driven primarily by a massive inventory buildup with inventory days of 376 days due to higher demand from the steel sector. With a large portion of sales coming from domestic, receivable days are structurally stable at a consistent 63-67 days. However, after a sharp inventory correction in FY24A, the cycle is poised for a significant improvement. As global steel demand recovers and the electrode market tightens, the company is expected to sell its inventory faster, improving turnover. On the payables side, payables are projected to normalize to a more sustainable 70-75 days, reflecting the company's strong supplier relationships and efficient cash management. These factors faster inventory movement, stable receivables, and normalizing payables are expected to substantially reduce the company's working capital cycle going forward.

Working capital in-terms of sales are expected to be around ~60% going forward



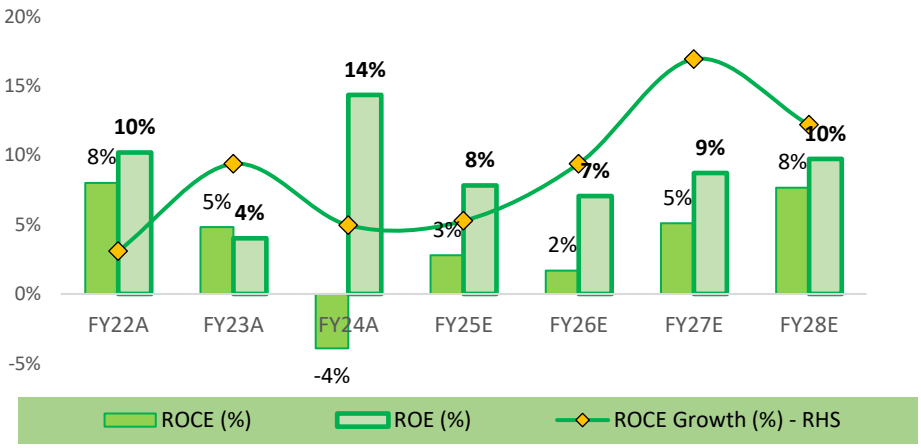
CFO funds 25ktpa expansion with EBITDA expected to improve



The company turned a FY24 operating cash outflow of INR 13,181 mn, inflated due to higher inventory, into a healthy positive net cash flow from its combined operations. This strong cash generation allowed the company to comfortably maintain a substantial cash reserve of INR 1,000 mn in FY25. However, the core operating EBITDA has seen recent pressure. While the company achieved a combined EBITDA of INR 2,116 mn, the QoQ showed a steep decline in the FY25. This earnings squeeze was largely caused by falling prices for the company's graphite products, while the cost of its primary raw material, petroleum needle coke, remained stubbornly high.

Looking ahead, the company's earnings and cash flow are positioned to benefit from major shifts in global manufacturing. The worldwide push to reduce carbon emissions is driving steelmakers to adopt the EAF method. The demand for the company's graphite electrodes will naturally rise. To capture this growing market, the company is actively expanding its manufacturing capacity by 25ktpa over the next few years. While the gap between product prices and raw material costs may create short-term hurdles, the expected surge in long-term demand, combined with the company's large cash reserves and debt-free status, provides a strong foundation for future cash flow growth and sustained profitability. The company's strong balance sheet enables self-funding for all capex and maintenance needs, reducing reliance on external funding.

Margin improvement is driving a steady improvement in return ratios



Outlook and Valuation

Graphite India is entering a new competitive landscape, where the industry is shifting from a state of excess supply to a tighter supply and demand scenario. The global graphite electrode market (exc China) has contracted by about 18% in capacity from ~733 kt to ~633 kt, as high-cost western producers like Resonac, Tokai Carbon, and GrafTech have permanently shutdown certain facilities. This drop in supply, along with growing EAF adoption worldwide, is for a strong sustainable earnings recovery for low-cost Indian producers. On the demand side, approximately 60 MT of new EAF capacity is under active construction and expected to commission between FY26–FY28E, primarily in Europe and North America, implying ~200 kt of incremental electrode demand above existing levels by FY30E.

Graphite India, with its efficient India-based manufacturing, ~65% contribution coming domestically, and no debt, will provide an advantageous of this shift. Post the shutdown of its Germany plant, the company operates an all-India manufacturing base at 80-85% utilization, with a structural cost advantage of 20-25% over western peers. Its approved 25 ktpa capacity expansion at ~USD 2,200 per ton vs 4,800 per ton of investment is timed to coincide with the new EAF commissioning wave. EBITDA margins, which faced difficulty in FY24, are expected to recover toward ~17% by FY28E as operating leverage builds on higher utilization and gradual realization improvement.

The near-debt-free balance sheet, backed by substantial liquid investments, allows the company to self-fund its expansion while peers have been forced to close capacity. The 31% stake in Godi India offers early exposure to India's growing battery cell manufacturing space, adding longer-term optionality beyond the core electrode business. Near-term headwinds from weak global steel demand and cautious customer procurement are expected to be temporary. With Chinese producers structurally unable to manufacture UHP electrodes at scale and anti-dumping duties ring-fencing premium markets across the US, EU, and Japan, Graphite India's cost leadership, domestic franchise, and financial strength position it as a compelling beneficiary of the recovery now. The company's revenue is expected to recover at a CAGR of ~16% over FY25-FY28E, from INR 25,600 Mn in FY25 to an estimated INR 40,216 Mn in FY28E, driven by improved volume utilization on expanded capacity and gradually recovering realizations. EBITDA is expected to grow from INR 2,534 Mn in FY25 to INR 6,786 Mn in FY28E, a CAGR of ~39% as operating leverage from higher utilization combines with normalizing input costs to deliver substantial margin expansion. EBITDA margins are forecast to widen from 9.9% in FY25 to ~16.9% by FY28E. We are estimating a revenue CAGR of 16.2% for FY25-FY28E, and RoE is expected to improve from 8% in FY25 to 10% in FY28E. At the CMP of INR 595, We initiate with a BUY rating at a target price of INR 735 per share, valued at an EV/EBITDA of 16x FY28E, implying an upside of ~23.6%.

Graphite India Ltd FY28E based implied valuation	
FY28E EBITDA (INR Mn)	6,786
EV/EBITDA (x)	**16.0x**
EV (INR Mn)	108,577
Net Debt/(cash) (INR mn) - FY28E end	(34,077)
Graftech Inv @ 6.8%	993
Market Cap (INR mn)	143,648
Share outstanding (mn)	195
Value per share (INR) - FY28E	735
CMP (INR)	595
Upside/Downside (%)	**23.6%**
Rating	**BUY**

Source: Company reports, Arihant Capital Research

Graphite India Ltd: Company Overview

Graphite India Limited (GIL) is the pioneer in Carbon and Graphite products in India and a ranks in top 5 globally in total capacity and boasts a high-capacity utilization of ~80%, outperforming global peers. With a manufacturing capacity of 98,000 TPA spread across facilities in Durgapur and Nashik in India, its Nurnberg, Germany plant was shut down in FY24. With over six decades of technical expertise, the company focuses on higher-margin, large diameter, ultra-high power (UHP) electrodes, which contribute close to 75% of its total sales, while exports account for ~30% of its total revenues. GIL maintains a strong competitive edge in the global graphite electrode industry due to its quality which matches the global standards, operational scale, and low-cost production base.

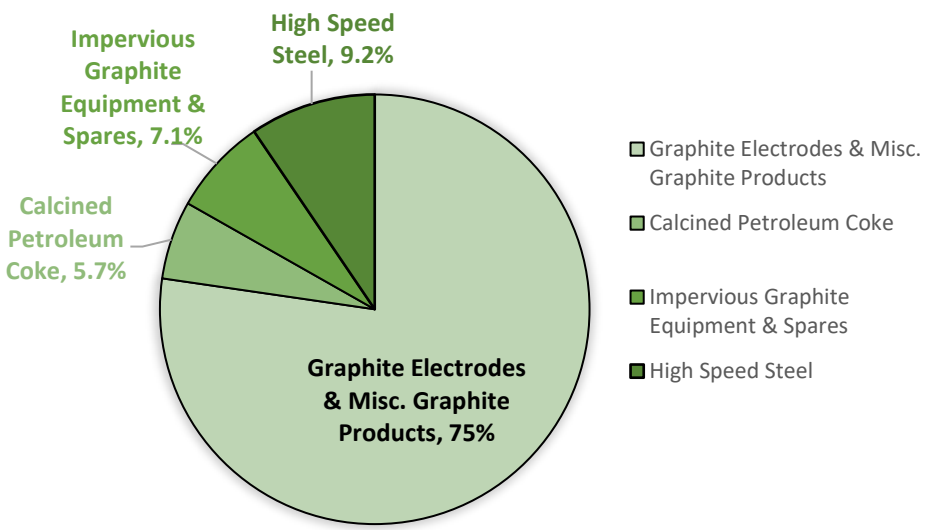
◊ Strategically, GIL pursues vertical integration, and value-enhancing inorganic opportunities, marked in its manufacturing of Calcined Petroleum Coke (CPC) for internal electrode production, contributing around 5.7% to total sales. The company is expanding its presence in value-added graphite products for diverse industries including automotive, aerospace, chemical, pharmaceutical, metallurgical, and machine tools.

◊ Further diversification includes facilities for impervious graphite equipment and glass-reinforced plastic pipes and tanks, alongside a notable commitment to renewable energy with 18 MW of hydro, 18.9 MW of wind, and 13.8 MWp of solar power installed capacity.

◊ GIL's 31% stake in Godi India is a key move into the expanding EV and energy storage (ESS) markets. This partnership provides access to Godi India's cutting-edge R&D in lithium-ion, sodium-ion, and solid-state batteries, significantly diversifying GIL's future growth avenues beyond traditional graphite electrodes.

◊ With over 60% ownership in General Graphene Corporation, GIL is exploring niche product development from large-area, low-cost graphene sheets, presenting a promising, future-oriented product avenue in electronics, aerospace, and energy storage.

Graphite India Revenue Contribution By Products - FY25



Graphite India

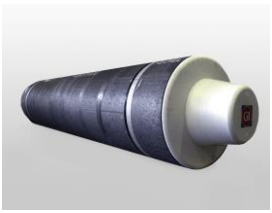
Graphite and Carbon 91%

Highlights

- **Core Expertise:** Production of value-added Ultra-High Power (UHP) electrodes.
- **Capacity: 80,000 tonnes/year (TPA)**, capable of producing all electrode grades.
- **Backward Integration:** Manufactures Calcined Petroleum Coke for electrode production.
- **Product Range:** Includes large diameter UHP electrodes and specialty graphite products.
- **Impervious Graphite Equipment:** Used in corrosive chemical industries like pharmaceuticals, agro-chemicals, chloro-alkali, and fertilizers.

Products

- **Graphite Electrodes**
- **Specialty Carbon and Graphite**
- **Calcined Petroleum Coke**
- **Carbon Paste**
- **Impervious Graphite Equipment: Heat Exchangers**



Others 9%

- **Power Generation:** 18MW hydel power, It is used primarily for external supply.
- **High-Speed Steel (HSS):** Largest producer in the country, used in cutting tools like drills, taps, milling cutters, reamers, hobs, broaches, and special form tools for automotive, machine tools, aviation, and DIY markets.
- **GRP Pipes:** Used for water supply, sewage/industrial effluent collection and disposal, cooling towers, industrial process pipelines, seawater pipelines, industrial ducting, and gasoline storage.

- **High Speed Steel (HSS)**
- **Alloy Steel**
- **GRP Pipe**

Manufacturing Facilities

Electrode — Durgapur (54,000 MT), Nashik (13,000 MT), Nuremberg Germany (18,000 MT - **Shutdown**)

Speciality — Nuremberg (Germany) (**Shutdown**), Nashik

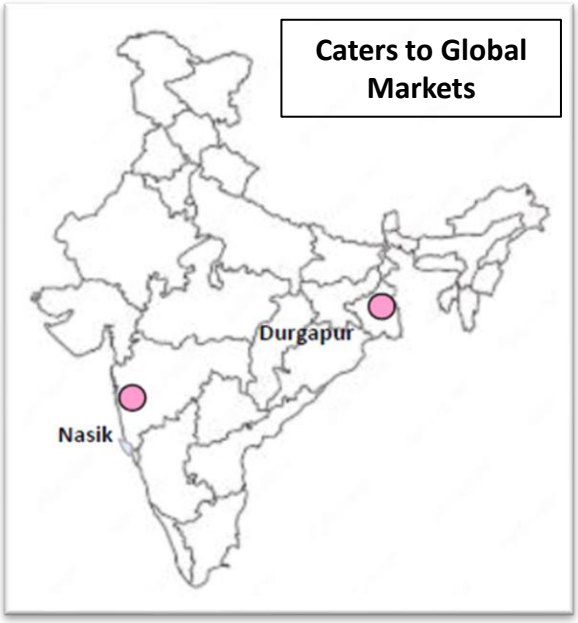
Coke and Paste — Barauni

Impervious Graphite Equipment (IGE) — Nashik

GRP — Nashik

Power — Chunchunkatte

Powmex Steel Division - Titilagarh



Name	Position	Experience
K.K. Bangur	Chairman (Non-Executive Non-Independent)	• Over 31 years of experience in managing the affairs of companies and its business activities. • Has been a Director of Graphite India since July 1988 and Chairman since July 1993. • Chairman of the Shareholders/Investors Grievance Committee and Committee for Borrowings. • Past President of Indian Chamber of Commerce, Kolkata, Executive Committee member of FICCI, New Delhi and the past President of All India Employers Organization, New Delhi
A Dixit	Executive Director	• Mechanical Engineer with an MBA and PG Certificate in Metallurgy and has over 25 years of experience in the industry. • Joined the Company in November 2017 and is responsible for the management of Company affairs and is actively involved in strategic investment decisions
P. K. Khaitan	Director (Non Exe., Independent)	• He is a L.L.B., Attorney-at-Law, is a distinguished legal expert and member of the Bar Council of India, Bar Council of West Bengal, the Incorporated Law Society (Kolkata), and the Indian Council of Arbitration (New Delhi). He specializes in Commercial and Corporate Laws, Taxation, Arbitration, Intellectual Property, Foreign Collaboration, M\&A, and Restructuring. He also serves on the boards of several reputed Indian companies.
N. S. Damani	Director (Non-Executive, Independent)	• He is an industrialist and is presently Chairman and Managing Director of Simplex Mills Limited. He is a science graduate and has completed business management studies
A. V. Lodha	Director (Non Executive, Non Independent)	• He is a CA and was Country Managing Partner of Lodha and Company.
B Shiva	Senior VP (Lega & CS)	• He is a Law graduate and a Fellow member of the Institute of Company Secretaries of India. He has been with the Company for around 29 years.
N S Deshpande	Senior VP (Technical)	• He is a Mechanical Engineer. He has been with company for around 35 years and in various capacities and is presently Head - Corporate Technical , customer service and planning.
BKP Saha	Executive VP (Marketing)	• He is a Mechanical Engineer with Post Graduate Diploma in Management having more than 34 years experience in Marketing. He has been associated with the company for around 2 decades.
M.K. Chhajer	CFO	• He is a qualified Cost Accountant from The Institute of Cost Accountants of India. • He has in depth knowledge and experience of Accounts and Finance functions and has been with the Company for over 30 years.

Graphite India Ltd. - Key Milestones

1962
- *Predecessor company formed by Bangur family and Great Lakes Carbon Corp (USA)*

1967
- *Durgapur plant started production*

1971
- ***Fully integrated plant established in Bangalore***

1974
- ***Promoted Carbon Corp** Ltd with Horizontal transfer of technology to Manufacture Graphite electrodes in Nasik.*

1994
- *- **Backward integration through acquisition of two CPC Manufacturing** units in Barauni.*
  - Amalgamation of IGE & GRP division with Carbon Corporation Ltd

1998
- *Installed a 7.5MW multi fuel power plant at Nasik & 24 MW power capacity in Karnataka.*

2004
- ***Acquired 18K MT** electrode Manufacturing facility in Nurnberg, Germany.*

2005
- ***Expanded Durgapur** plant capacity from 14K MT pa to 34K MT pa, taking group capacity to 78K MT pa.*

2013
- *Further expanded Durgapur plant capacity from 34K to 54K MTPA taking group capacity to 98K MT pa.*

2018
- *Graphite India made investment in **General Graphene Corporation.***

2024
- ***Graphite India acquires a 31% shareholding in Godi India for INR 500 Mn***
- *Strategic entry into advanced battery technologies and energy storage systems*

2025
- *The company **reduced its capacity from ~98,000 MTPA in FY2023 to 80,000 MTPA after shutting down its German facility** (18,000 MTPA) due to high operational costs and increasing graphite electrode price pressures.*
- Announced capacity expansion plan for 25,000 TPA.

Income Statement Y/E Mar, Rs mn	FY24	FY25	FY26E	FY27E	FY28E
Net sales	**29,497**	**25,600**	**28,562**	**33,177**	**40,216**
Growth, %	-7.27%	-13.21%	11.57%	16.16%	21.22%
Other income	3,044	4,384	4,735	4,384	4,384
Raw material expenses	19,584	11,510	13,082	14,930	17,695
Employee expenses	2,808	2,932	2,856	2,654	2,815
Other Operating expenses	5,267	5,238	6,427	6,196	7,174
EBITDA (Core)	**(1,441)**	**2,534**	**2,117**	**4,657**	**6,786**
Growth, %	-146.15%	-275.88%	-16.47%	120.01%	45.71%
Margin, %	-4.88%	9.90%	7.41%	14.04%	16.87%
Depreciation	804	895	1,054	1,238	1,438
Interest paid	171	112	121	131	234
Other Income	3,044	4,384	4,735	4,384	4,384
Non-recurring Items					
Pre-tax profit	**(2,245)**	**1,639**	**1,063**	**3,420**	**5,349**
Tax provided	2,118	1,330	1,249	1,688	2,090
Profit after tax	**8,048**	**4,582**	**4,428**	**5,985**	**7,409**
PAT Adj.	**8,048**	**4,582**	**4,428**	**5,985**	**7,409**
Growth, %	304.34%	-43.07%	-3.35%	35.16%	23.79%
Margin, %	27.29%	17.90%	15.50%	18.04%	18.42%
Unadj. shares (m)					
Wtd avg shares (m)	195	195	195	195	195

Cash Flow Statement Y/E Mar, Rs mn	FY24	FY25	FY26E	FY27E	FY28E
Net profit after tax	**8,048**	**4,582**	**4,428**	**5,985**	**7,409**
Other Income	(3,044)	(4,384)	(4,735)	(4,384)	(4,384)
Finance Costs	171	112	121	131	234
Depreciation & Amortisation Expenses	804	895	1,054	1,238	1,438
Profit Before WCC	**5,980**	**1,204**	**868**	**2,969**	**4,696**
Inventories	9,745	1,676	(143)	(2,105)	537
Trade receivables	241	536	(248)	(797)	(1,215)
Trade payables	(1,420)	1,028	(98)	731	24
Other financial assets	(24)	(252)	51	-	-
Other current assets	1,170	318	-	-	-
Short term Borrowings	(2,481)	(43)	146	651	196
Other current liabilities	(136)	469	-	-	-
Other financial liabilities	(172)	(314)	-	-	-
Deferred tax liabilities (net)	302	642	-	-	-
Income-tax-assets (net)	(22)	8	-	-	-
Loans	(3)	(75)	-	-	-
CFO	**13,181**	**5,197**	**577**	**1,450**	**4,239**
CFI					
Property, plant and equipment	(2,412)	(2,347)	(5,571)	(3,300)	(3,600)
Capital work-in-progress	(187)	800	-	-	-
Rights of Use Assets	21	2	-	-	-
Goodwill	(3)	(12)	-	-	-
other intangible assets	2	2	-	-	-
Intangible Assets Under development	9	-	-	-	-
Non current tax assests (net)	3	(274)	-	-	-
Other non-current assets	77	36	-	-	-
Investment	(12,476)	(4,546)	820	-	-
Other Income	3,044	4,384	4,735	4,384	4,384
CFI	**(11,923)**	**(1,955)**	**(16)**	**1,084**	**784**
CFF					
Equity share capital	-	-	(352)	-	-
Other equity	(1,579)	(2,030)	-	-	-
non - controlling interest	34	(31)	-	-	-
Others financial assets	-	-	-	-	-
Long term Borrowings	-	-	-	825	900
Loans	-	-	-	-	-
Lease liabilities (Non-current)	2	(2)	-	-	-
Lease liabilties	(9)	-	-	-	-
Provisions (Non-Current)	(0)	3	-	-	-
Other non-current liabilities	-	-	-	-	-
Provisions	39	47	-	-	-
Dividend	-	-	-	-	-
Current Tax Liabilities(net)	215	7	-	-	-
Finance Costs	(171)	(112)	(121)	(131)	(234)
CFF	**(1,470)**	**(2,118)**	**(472)**	**694**	**666**
NET	**-212**	**1,124**	**89**	**3,228**	**5,689**
Opening Cash	**908**	**696**	**1,820**	**1,909**	**5,137**
Closing Cash	**696**	**1,820**	**1,909**	**5,137**	**10,825**

Balance Sheet

As at 31st Mar, Rs mn	FY24	FY25	FY26E	FY27E	FY28E
PPE	8,788	10,239	14,756	16,819	18,981
CWIP	1,450	650	650	650	650
Goodwill	532	544	544	544	544
Rights Of Use Assets	11	10	10	10	10
Financial Assets	9,265	10,287	9,467	9,467	9,467
Other Non Current Assets	771	1,000	1,000	1,000	1,000
Total Non current Assets	**20,965**	**22,878**	**26,574**	**28,637**	**30,799**
Inventories	13,539	11,864	12,006	14,112	13,574
Receivables	5,218	4,682	4,930	5,726	6,941
Cash & CE	370	1,087	1,909	3,487	9,025
Bank Balances	326	733	0	1,650	1,800
Other Current Assets	692	375	375	375	375
Other Financial Assets	26,845	30,696	30,645	30,645	30,645
Total Current Assets	**46,991**	**49,435**	**49,864**	**55,994**	**62,360**
Total assets	**67,955**	**72,313**	**76,438**	**84,630**	**93,159**
Total Equities	**56,152**	**58,672**	**62,749**	**68,734**	**76,143**
Non current borrowings	0	0	0	825	1,725
Other Non current liabilities	1,498	2,141	2,141	2,141	2,141
Total Non current liabilities	**1,498**	**2,141**	**2,141**	**2,966**	**3,866**
Current borrowings	1,766	1,723	1,870	2,521	2,717
Trade Payables	1,606	2,634	2,536	3,267	3,291
Other Current Liabilities	6,934	7,142	7,142	7,142	7,142
Total Current Liabilities	**10,306**	**11,500**	**11,548**	**12,930**	**13,150**
Total equity & liabilities	**67,955**	**72,313**	**76,438**	**84,630**	**93,159**

Arihant Research Desk

Email: instresearch@arihantcapital.com

Tel. : 022-42254800

Head Office	Registered Office
#1011, Solitaire Corporate Park Building No. 10, 1st Floor Andheri Ghatkopar Link Road Chakala, Andheri (E) Mumbai - 400093 Tel: (91-22) 42254800	6 Lad Colony, Y.N. Road, Indore - 452003, (M.P.) Tel: (91-731) 4217100/101 CIN: L66120MP1992PLC007182

Stock Rating Scale	Absolute Return
BUY	>20%
ACCUMULATE	12% to 20%
HOLD	5% to 12%
NEUTRAL	-5% to 5%
REDUCE	-5% to -12%
SELL	<-12%

Research Analyst Registration No.	Contact	Website	Email Id
INH000002764	**SMS: 'Arihant' to 56677**	www.arihantcapital.com	instresearch@arihantcapital.com

Arihant Capital Markets Ltd.
1011, Solitaire Corporate park, Building No. 10, 1st Floor,
Andheri Ghatkopar Link Road, Chakala, Andheri (E)
Tel. 022-42254800

Disclaimer: This disclosure statement is provided in compliance with the SEBI Research Analyst Regulations, 2014. Arihant Capital Markets Limited (ACML) is a registered stockbroker, merchant banker, and research analyst under SEBI, and is also a Point of Presence with the Pension Fund Regulatory and Development Authority (PFRDA). ACML is registered with SEBI with Research Analyst Registration Number INH000002764, Stock Broker Registration Number INZ000180939, and is a Trading Member with NSE, BSE, MCX, NCDEX, and a Depository Participant with CDSL and NSDL.

ACML and its associates may have business relationships, including investment banking, with companies covered by its Investment Research Department. The analysts of ACML, and their associates, are prohibited from holding a financial interest in securities or derivatives of companies they cover, though they may hold stock in the companies they analyze. The recommendations provided by ACML's research team are based on technical and derivative analysis and may differ from fundamental research reports.

ACML confirms that neither it nor its associates have a financial interest or material conflict concerning the companies covered in the research report at the time of publication. Furthermore, ACML, its analysts, and their relatives have no ownership greater than 1% in the subject companies as of the month prior to publication. ACML guarantees that the compensation for its research analysts is not influenced by specific securities or transactions.

ACML affirms that neither the analyst nor the company has served as an officer, director, employee, or engaged in market-making activities for any of the subject companies. Additionally, the research report does not reflect any conflict of interest and is not influenced by specific recommendations made. Neither ACML nor its analysts have received compensation for investment banking or brokerage services from the subject companies in the last 12 months.

The views expressed in this report are those of the analysts and are independent of the proprietary trading desk of ACML, which operates separately to maintain an unbiased stance. Analysts comply with SEBI Regulations when offering recommendations or opinions through public media. The report is intended for informational purposes only and is not an offer or solicitation for the purchase or sale of securities.

This report, which is confidential, may not be reproduced or shared without written consent from ACML. It is based on publicly available data believed to be reliable but has not been independently verified, and no guarantees are made about its accuracy. All opinions and information contained in the report are subject to change without notice. ACML disclaims liability for any losses resulting from reliance on this report. The report does not constitute an offer to buy or sell securities, and ACML is not responsible for the risks involved in investments. ACML and its affiliates may have positions in the securities discussed or hold other financial interests in them.

The distribution of this report in certain jurisdictions may be restricted by law, and the report is not intended for distribution where it would violate local laws. Investors are advised to consider their financial position, risk tolerance, and investment objectives before engaging in transactions, particularly in high-risk financial products such as derivatives.

ACML reserves the right to modify this disclosure statement without prior notice. The report has been prepared using publicly available information and internally developed data, though ACML does not guarantee its completeness or accuracy. Historical price data for securities can be accessed via official exchanges like NSE or BSE. ACML and its affiliates may conduct proprietary transactions or investment banking services for the companies mentioned in this report. In compliance with SEBI regulations, ACML maintains comprehensive records of research reports, recommendations, and the rationale for those recommendations, which are preserved for at least five years. An annual compliance audit is conducted by a member of the ICAI or ICSI to ensure adherence to applicable regulations. This report is issued in accordance with applicable SEBI regulations and does not guarantee future performance or returns.

Arihant Capital Markets Ltd.
1011, Solitaire Corporate park, Building No. 10, 1st Floor,
Andheri Ghatkopar Link Road, Chakala, Andheri (E)
Tel. 022-42254800