

Greener Roads Ahead.

With our Next-Gen Personal Mobility Solutions.





About Aditya Birla Group

Aditya Birla Group (ABG), a global conglomerate with a turnover of \$63 Billion, is in the league of Fortune 500 companies. Headquartered in India, the Group is present across 14 industry sectors. It has achieved global and national market leadership in several sectors like metals, pulp and fibre, chemicals, textiles, carbon black, cement, financial services, and fashion retail.

About Hindalco

Hindalco Industries Limited is the metals flagship company of the Aditya Birla Group and a global leader in Aluminium, Copper, and Specialty Alumina. It is India's largest fully integrated aluminium manufacturer and one of Asia's top primary aluminium producers. Its subsidiary, Novelis Inc., is the world's largest aluminium rolling company and recycler.

Hindalco also operates a major copper smelter and fertiliser plant, and is the third-largest copper cathode rod manufacturer outside China.

Our Specialty Alumina business with mines to market fundamentals is at the forefront of the industry in India and is recognised as a prominent global player in specialty alumina and hydrates.

Our Commitment to Sustainability

Carbon Footprint

Currently, 80% of waste is re-used, including 2.3 M tons of red mud and over 100% of fly ash.



Environmental Effects

Hindalco aims to reduce net water intensity by 30% by FY'25 compared to 2019, saving over 18 MCM of water annually.



Recycling of Waste

During the fiscal year 2022, Hindalco processed and recycled 2.2 MM tons of aluminium scrap.



Impact on Biodiversity

Hindalco contributes to environmental conservation with 190 HA of greenbelt and 450,000 trees planted each year.



HINDALCO INDUSTRIES

TOP 1%

S&P Global (DJSI) ESG Score 2024

87 / 100

as of February 7, 2024.

Position and Score are industry specific and reflect exclusion screening criteria. Learn more at spglobal.com/esg/yearbook

ESG Targets

- Zero net carbon & net loss of biodiversity by 2050.
- 100% of electricity requirement from renewable energy by 2050.
- Zero waste to landfill by 2050.
- Zero harm to occupational health & safety.

At Hindalco, our unwavering commitment to enriching lives is intricately woven into our sustainability efforts. We firmly believe in creating a greener future, and to achieve this, we are committed to attaining our environmental goals. Our ESG commitment is deeply ingrained in our strategic priorities, which drive positive change and make a lasting impact on the planet. Awarded "Most Sustainable Aluminium Company" in Dow Jones sustainable indices five years in a row from 2020-2024.

Our Innovation Capabilities

Hindalco has a dedicated business unit designed to drive innovation and sustainability in the evolving personal mobility sector. Focused on manufacturing advanced aluminium components, Hindalco supports the rising demand for lightweight, high-performance solutions in electric vehicles (EVs) and related technologies, and the commitment to providing greener, more efficient transportation solutions only grows every day.



Bumper Assembly



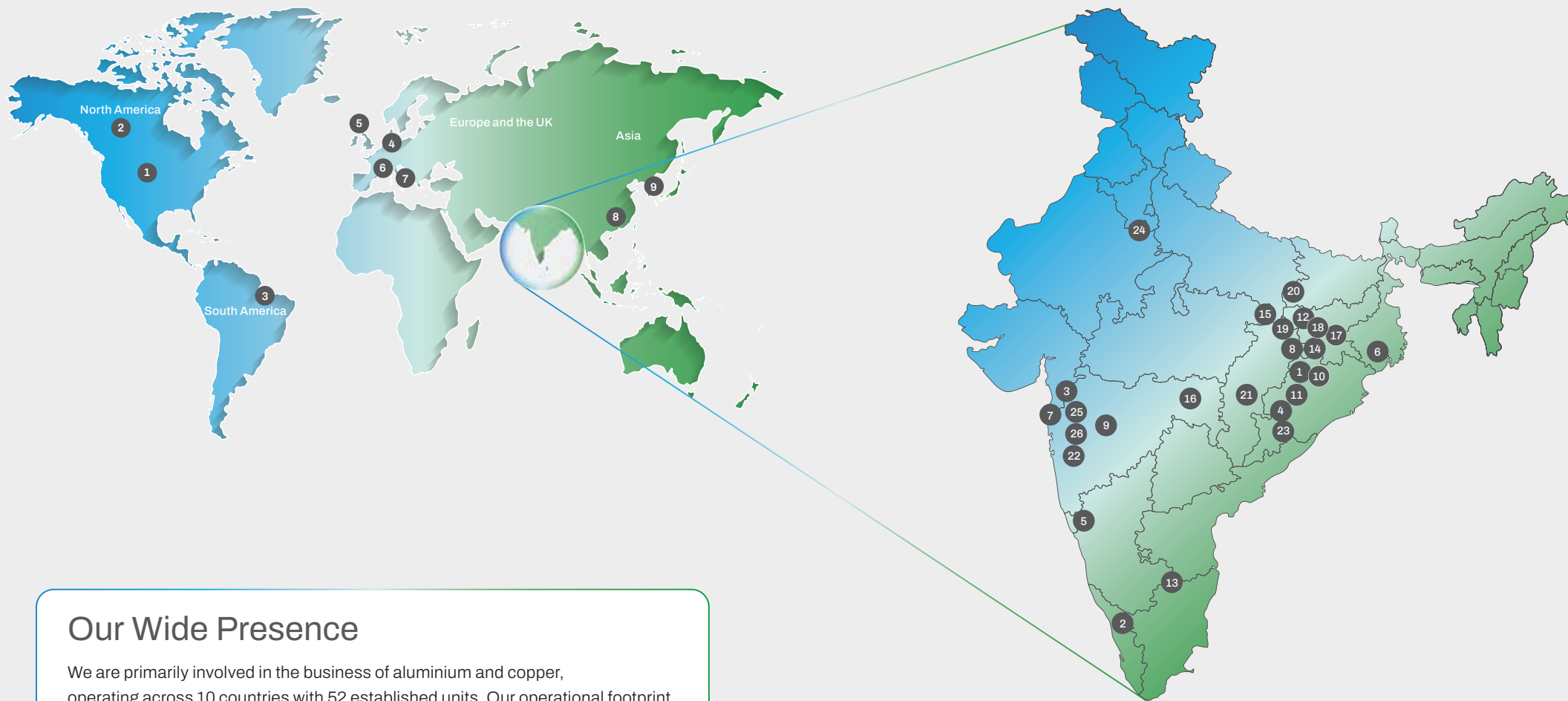
Crash Components



Battery Enclosure
for Personal
Mobility EVs



Aluminium foil
for Li-ion battery
current collectors



Our Wide Presence

We are primarily involved in the business of aluminium and copper, operating across 10 countries with 52 established units. Our operational footprint across India has been indicated on the map.

Novelis' Global Operations

North America and South America

Novelis Inc.	
1. US	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
2. Canada	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
3. Brazil	■ ■ ■ ■ ■ ■ ■ ■ ■ ■

Europe and the UK

4. Germany	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
5. UK	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
6. Switzerland	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
7. Italy	■ ■ ■ ■ ■ ■ ■ ■ ■ ■

Asia

8. China	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
9. South Korea	■ ■ ■ ■ ■ ■ ■ ■ ■ ■

Domestic Operations

1. Aditya Aluminium	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	8. Gare Palma (IV/IV)	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	15. Mahan	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	22. Taloja	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
2. Alupuram	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	9. HAAL	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	16. Mouda	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	23. Utkal Alumina	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
3. Asoj	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	10. Hirakud FRP	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	17. Muri	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	24. Bhiwadi	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
4. Baphlimali	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	11. Hirakud S&P	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	18. Netarhat (4 mine sites)	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	25. Silvassa	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
5. Belagavi	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	12. Kathautia	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	19. Renukoot	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	26. Pune	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
6. Belur works	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	13. Kuppam	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	20. Renusagar	■ ■ ■ ■ ■ ■ ■ ■ ■ ■		
7. Dahej	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	14. Lohardaga (4 mine sites)	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	21. Samri	■ ■ ■ ■ ■ ■ ■ ■ ■ ■		

■ CPP ■ Refinery ■ Smelter ■ Extrusion/FRP/Foil ■ Bauxite ■ Coal ■ Copper ■ Personal Mobility Solutions

One Hindalco Many Solutions

At Hindalco, we offer materials, products and solutions engineered to suit the needs of various applications across sectors.



Solutions for Aviation

Solutions for Packaging

Solutions for Building and Infrastructure

Solutions for Electrification

Solutions for Renewable Energy

Solutions for Aerospace

Solutions for Consumer Durables

Solutions for Defence

Solutions for Railways

Solutions for Mobility

Solutions for Safety

Solutions for Circularity

Our 5 Range Brands Offers Unique Benefits Across Sectors:



Products/solutions that are circular in nature and hold recreation or recycling at their core.

Ingots from Recycled Aluminium, Aluminium Circles for Cookware, Aluminium Foil for Food Packaging, Copper Rods.



Products/solutions that are zero or low carbon, use alternate sources of energy, and are ultimately greener, smarter, and better.

Primary Ingots made using Renewable Energy, Ultra light Gauge Aluminium Foil for Packaging.



Products/solutions which promise use of superior technology to deliver precision and meeting exacting standards for high-tech applications.

Precision Extrusions for Transport, Aerospace, Defence and Electricals & Electronics, AluAlu foil for Pharmaceutical Packaging, Aluminium Rolled Stock for Closure, Clad, Litho, Detonators, Fin, Foil and Battery Foil, Copper Oxygen-Free Rods, Copper-Magnesium & Copper-Silver Rods for Railway Electrification, Copper Inner Groove Tubes for Air Conditioning and Refrigeration, Speciality Alumina Solutions for Refractory, Ceramics, Polishing, and Battery applications, EV Battery Frame Solutions, E-Cycle Components, Battery Foil Solutions and Crash Components.



Products/solutions that offer the promise of durability and toughness.

Roofing and Façade Solutions for B&C, Bus Body Solutions.



Product/ solutions that offer safety as their core value proposition.

Flame Retardant Solutions for Electrical Transmission, Building and Construction, Automotive, Railways and many more.

India's 1st Aluminium Battery Enclosure Plant for EVs

Hindalco has established India's first fully automated, women-operated robotics facility in Chakan, Pune, Maharashtra. This groundbreaking plant manufactures advanced battery enclosures and side crash protection components for electric vehicles (EVs), using premium Hindalco aluminium extrusions.

Equipped with state-of-the-art high-speed precision machining, advanced robotics, and aluminium welding technologies, the Chakan facility supports the fast-growing Indian EV sector. With an installed annual capacity of 160,000 units, it is set to lead the way in the production of all-aluminium battery enclosures in India.

Hindalco is also co-developing and collaborating with major OEMs in the development of complex and high-performance automotive alloys for crash management systems and related components. These are being engineered using our proprietary HIL extrusions, aimed at powering the next generation of electric vehicles.



Plant Capabilities

- ✓ CNC milling centre to mill complex extruded aluminium profiles
- ✓ Robotic welding of aluminium profiles (CMT/Friction Stir Welding) with state-of-art technology
- ✓ Flow Drill process for assembling of other metal parts to aluminium profiles
- ✓ Automatic 100% dimensional checks of critical parts
- ✓ Automatic 100% weld inspection checks
- ✓ Leak testing equipment
- ✓ R&D lab for other validations
- ✓ Various other metrology equipment required
- ✓ Washing line



Mobility Solutions for 4-Wheeler EVs

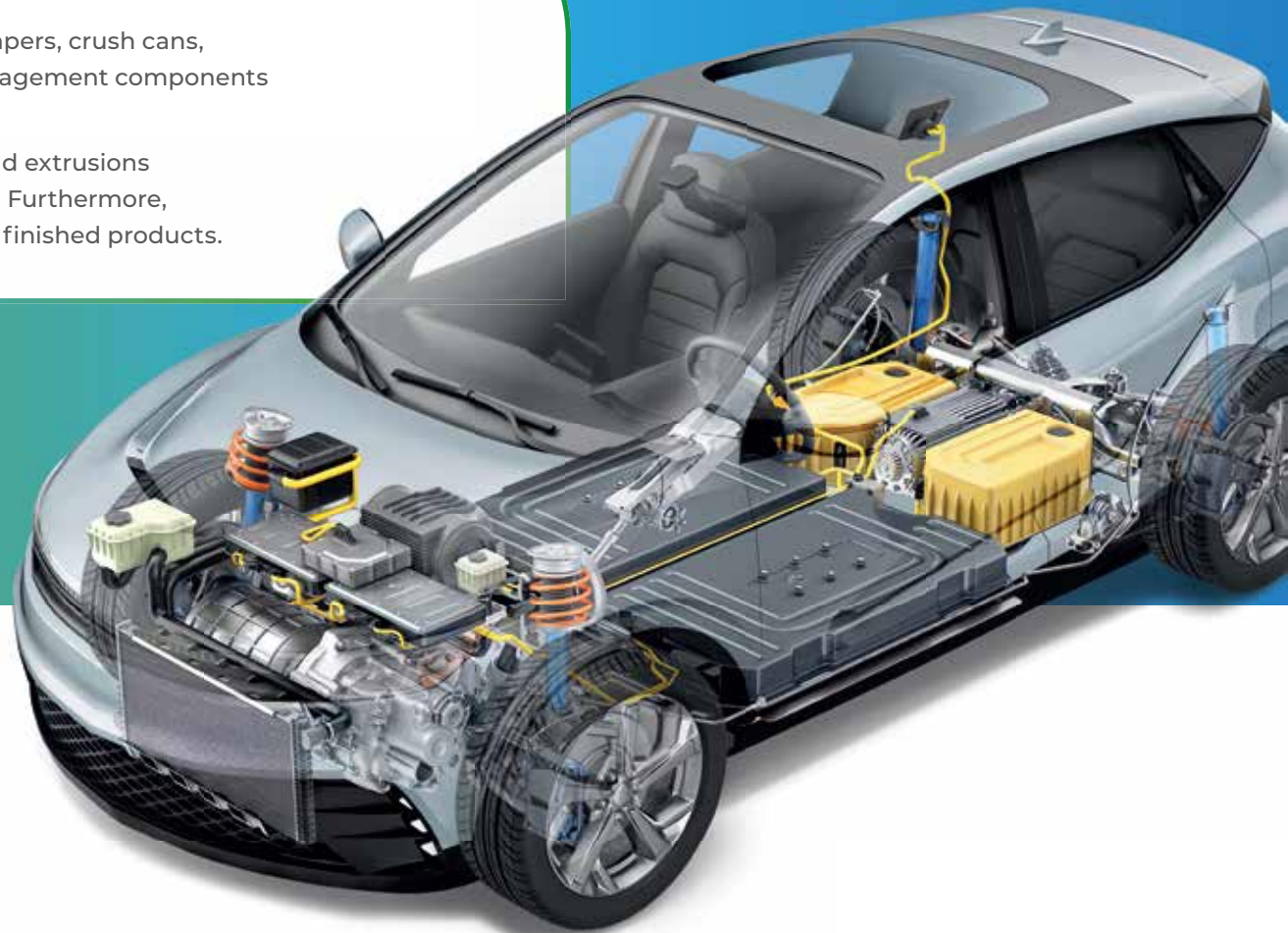
Hindalco is a one-stop solution for 4-wheeler EV components such as battery enclosures, bus bars, cooling plates and other auto parts. A fully automated state-of-the-art precision manufacturing facility is fully ready to meet the highest quality standard of welding, dimension and leak testing complying to IP67.

Body Components

Hindalco is developing global standard aluminium crash alloys to support local customers.

Our offerings includes front and rear structural bumpers, crush cans, Rocker arm/SILLs, CCBs, and front & rear crash management components specific to customer requirements.

We provide customised aluminium sheets, alloys and extrusions as per international standards for BIW components. Furthermore, we also provide value addition to convert them into finished products.



Battery Pack Components

Hindalco develops tailor-made high-quality aluminium alloys in 6XXX series to meet customer requirements of stiffness, strength, and crash.

We have expertise in manufacturing multi-mandrel extrusions which are used in battery frames. The top and bottom cover sheets are produced in 5XXX series alloy (HT and Post-lube).

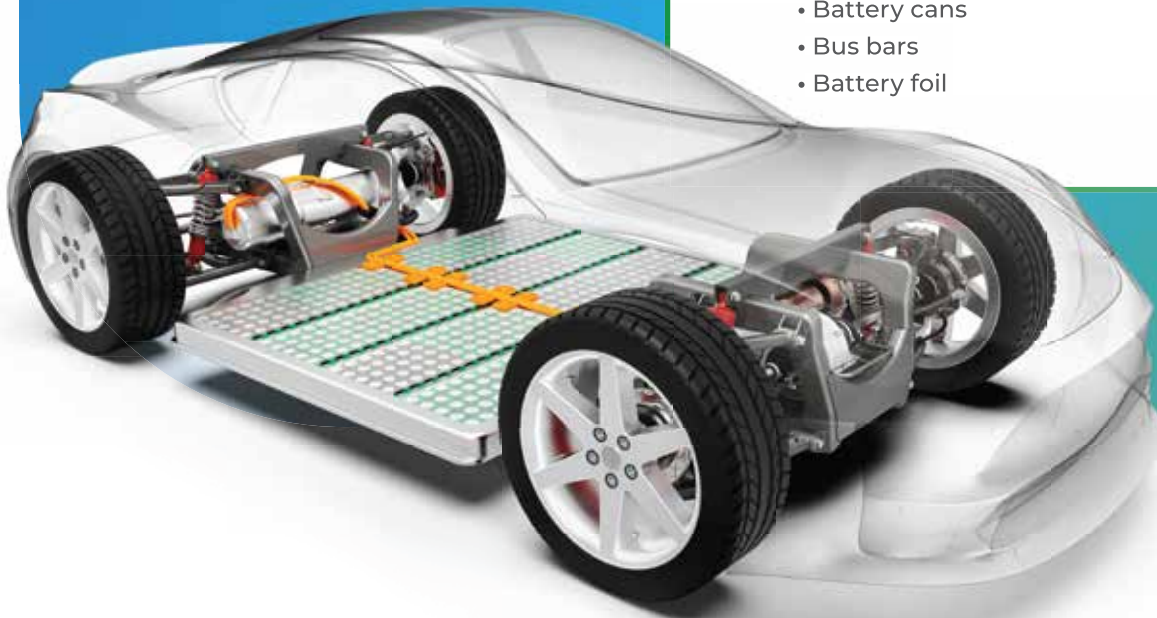
We also supply clad sheets for making cooling plates. Our IMS and MES systems ensure quality and traceability from billet to end product.

Our Battery Pack Solutions include:

- Battery tray/frame assembly
- Material for top/bottom cover
- Material for cooling plates
- Battery cans
- Bus bars
- Battery foil

Our Aluminium Products include:

- Alloys
- Extrusions
- FRP
- Coil
- Battery foil



Mobility Solutions for 2-Wheeler EVs

Hindalco is a one-stop solution for 2-wheeler EV components such as fork ends, battery casings, battery chargers, wheel alloys, auto fins, and other auto parts.

With state-of-the-art manufacturing facilities and advanced equipment, we deliver high-end machines and superior surface finishes.

Our solutions ensure portability, safety, and robustness, to meet the evolving needs of the 2-wheeler EV industry.

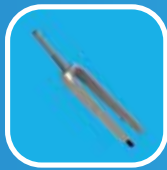


Our Array of Cycle Components

Hindalco is a one-stop solution for major requirements of Aluminium Cycle components. With state-of-the-art manufacturing and advance equipment, Hindalco provides strong, lightweight, superior quality and is an affordable alternative to traditional cycle frames and other cycle components, catering to categories such as E-cycles, MTBs, Trekking, Cargo bikes.



Rim



Fork



Frame



Handlebar



Advanced equipment for precision manufacturing and consistent high-quality products:

- Machining, 3D Laser Cutting.
- Hydroforming, Hydraulic presses, Double & Tripple butting.
- Heat Treatment – T4, T6 and Annealing.
- Semi-Automatic frame alignment.
- Welding – Robotic & Manual (CMT/TIG) with pulse and without pulse.
- Dedicated new product development team for new alloy development & unique design development.

World-class testing facility for aluminium cycle components:

- Weld Penetration Test (such as AWS D1.2).
- Material testing - ASTM certified.
- In-house component testing – drop test, impact test, fatigue test (EN 14764 to 14766 & EN 14781 compliant).
- In-house quality testing for coatings: Salt Spray, Xenon Arc, Hardness, Impact.
- RoHS, REACH, and ISO 4210 /9001 & others compliant manufacturing facility.

Aluminium is the Answer Automotive BIW benefits

Lightweight, sustainable and versatile, aluminium is the best material for vehicles of the present and the future.

Aluminium-intensive vehicles offer the following benefits:



Lighter Weight

AIV BIWs 40% has less weight than SIV BIWs. AIV closures can be up to 50% less weight. AHS alloys compete against AHSS & UHSS. AIV potential for secondary weight savings.



Value Proposition

40% less material required.
Smaller motors & less batteries for BEVs.
Smaller engines, suspension, brakes, etc.
Less complex OEM manufacturing.



Performance

Better energy absorption in crash.
Safer for other road users ($F=Ma$).
Better handling, braking & accelerating.
Better corrosion resistance & durability.
Less vehicle maintenance.



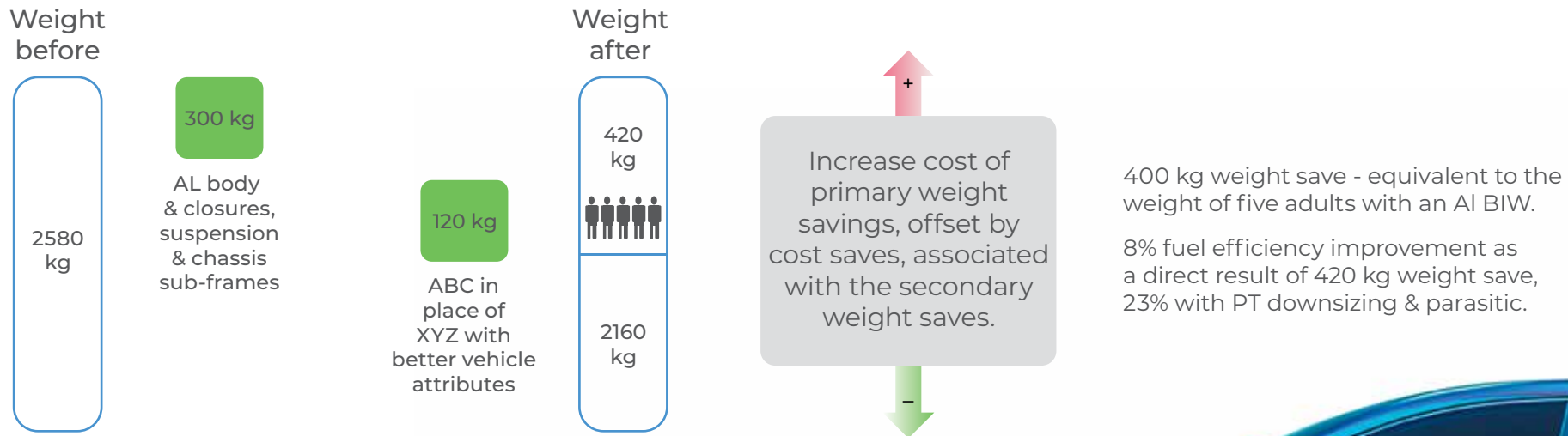
More Sustainable

Less CO₂e than SIVs in most scenarios.
More vehicle lifetime, lower energy costs.
Infinitely recyclable at end of life.
30% less energy to recycle than SIV BIWs.
Less batteries mean less mineral mining.



Emissions & better attributes.

Primary weight in BIW & chassis to save cost with secondary weight, save in power train & other vehicle systems.

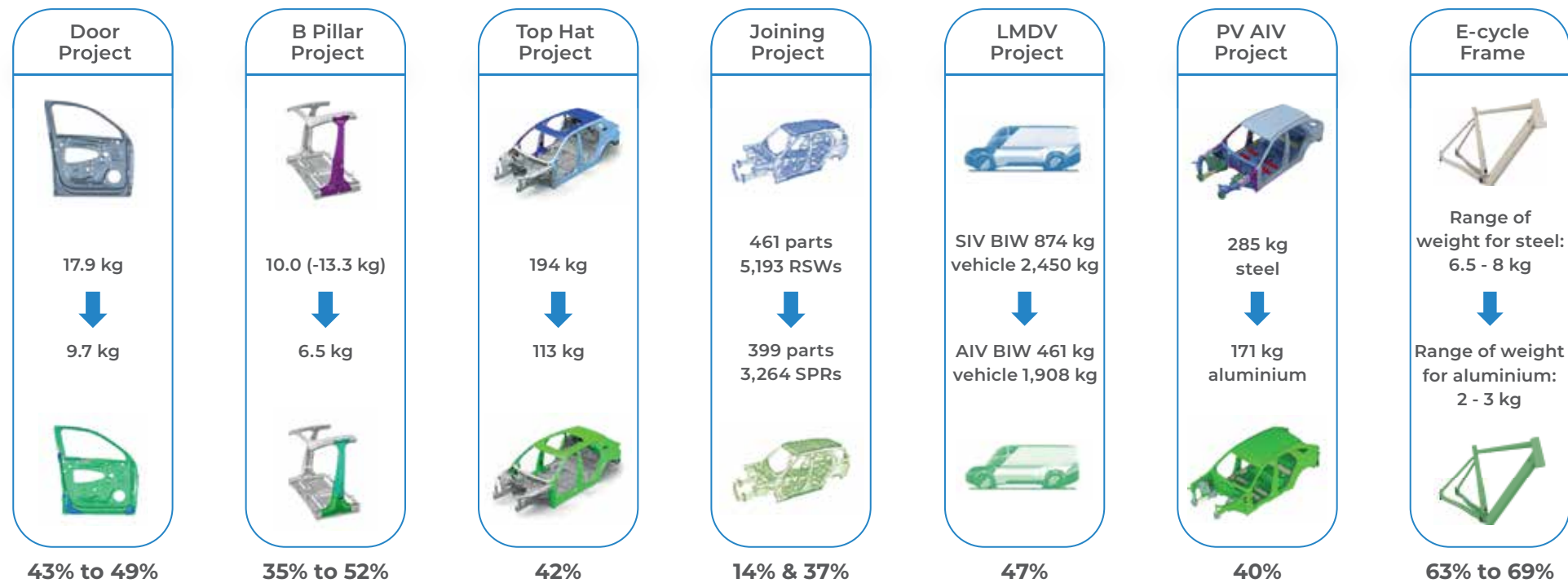


The increased material cost of aluminium can be offset by secondary weight save cost savings on vehicle.



Alumobility Overview

Technical case studies to date.



Demonstrate to OEM's best practice aluminium application through collaborative technical studies as well as Alumobility White Papers & aluminium technical guideline publications.

SUV Redesign

SIV to AIV focus on less is more approach.



SIV BSO panel:
BSO weight: 18.7kg
BSO gauge: 0.8mm



AIV BSO panel:
BSO weight: 6.7kg
BSO gauge: 1.0mm

Joint Count



SIV: 4762 RSWs
AIV: 3305 SPRs
384 RSWs

Part Count



SIV: 371 Parts
AIV: 361 Parts

Grade Count



SIV: 7 steel
AIV: 5 aluminium

Closure Gaps



SIV: 4.5mm
AIV: 3.5mm

64% Weight Save 5 Operation Process Draw Depth 435mm 8.5 PPM Press Rate
2.0 mm Radii on Aperture Returns +/- 0.4 Surface, Break & Trim Tols.

It's not just about saving weight, but reducing complexity
& improving BIW attributes & part quality.



SIV - Steel Intensive Vehicle
AIV - Alu Intensive Vehicle





*Study based on specific model

More Sustainable

Value proposition with lighter AIV BEV.

Primary Body & Chassis Saves + Secondary Vehicle Saves. Last Mile Delivery Vehicle (LMDV) study showed big improvements for AIV BEV. 542 kg primary weight save v/s SIV BEV with 8% less energy consumption. 47% primary body weight save allows 6 kWh smaller battery, with secondary cost, saves off-setting BIW material cost. Result is 45% lower running costs relative to Steel ICE & 5% v/s Steel BEV.

Material & Vehicle Architecture Impact

	 Energy Consumption (100 miles)	 Curb Weight	 Battery Capacity
Steel ICE	68 kWh	2,321 kg	N/A
Steel BEV	50 kWh	2,450 kg	69 kWh
AIV BEV	46 kWh	1,908 kg	63 kWh
Improvement	8% to 32%	18% to 22%	9% reduction

45% lower running cost relative to a Steel ICE LMDV &
5% relative to steel BEV LMDV + lower total lifetime emissions.



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