CHINA INDUSTRIAL TECH

Robotics & Automation: Asia Leaders Conference 2026 Takeaways: Demand rotation, global expansion and humanoid robot momentum

Jacqueline Du
+852-2978-1783 |
jacqueline.du@gs.com
Goldman Sachs (Asia) L.L.C.

Asia Leaders Conference 2026
Aug 31-Sep 2, 2026
Explore >



We hosted ~40 companies for investor meetings at the GS Asia Leaders Conference 2026 in Hong Kong during Aug 31-Sept 2. In this report, **we summarize highlights from key robotics & automation companies:**

- While there's been rising investor concern on potential tightening of domestic lithium battery capacity expansion approvals and whether new capacity additions are peaking, company checks suggest **3Q26 sequential demand is so far flat or up, and more likely led by leading customers ahead, while unlikely be the fastest-growing vertical looking into 2H26/2027E** per Lead Intelligent/Yiheda.
- **End-market demand drivers are rotating toward 3C, semiconductors, opticals, MLCC, SOFC and other niche extensions, with Apple's 2027 form-factor cycle the most visible medium-term catalyst** per Han's Laser/OPT/Luster.
- **Overseas expansion remains a key structural theme, amongst which Europe is the most tangible near-term highlight,** especially for Estun Automation/Shuanghuan.
- **Strong growth and growing strategic positioning demonstrated by several supply chain companies in the AI robotics space** such as Leaderdrive/Laifual and Sanhua.

The author would like to thank Zhou Li, Hao Chen, Zhihan Ye, and Junfang Zhang for their contributions to this report.

Key takeaways

- While there's been rising investor concern on potential tightening of domestic

Goldman Sachs does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. For Reg AC certification and other important disclosures, see the Disclosure Appendix, or go to www.gs.com/research/hedge.html. Analysts employed by non-US affiliates are not registered/qualified as research analysts with FINRA in the U.S.

lithium battery capacity expansion approvals and whether new capacity additions are peaking, company checks suggest **3Q26 sequential demand is so far flat or up, and more likely led by leading customers ahead, while unlikely be the fastest-growing vertical looking into 2H26/2027E.** We remain constructive on **Lead Intelligent (300450.SZ/0470.HK, Buy/Buy)** as the clearest beneficiary of lithium order concentration: mgmt. sees policy scrutiny focused on low-utilization smaller players, while leading customer eg. CATL/EVE approvals, overseas projects, solid-state and sodium-ion remain intact. Lead's 3Q26 orders are tracking qoq flat to higher, with visibility to Aug-2027. The industry is set up to tilt further toward leading battery makers and top-tier equipment suppliers. For **Yiheda (301029.SZ, Buy)**, lithium demand remains solid but less incremental: 1H26 lithium revenue grew +48% yoy and contributed c.26% of revenue, though mgmt. expects growth to normalize toward company average in 2027. We therefore prefer leading equipment suppliers with customer concentration toward top battery makers and non-lithium optionality, rather than broad lithium battery beta.

- **End-market demand drivers are rotating toward 3C, semiconductors, opticals, MLCC, SOFC and other niche extensions, with Apple's 2027 form-factor cycle the most visible medium-term catalyst.** We see the next 1-2 year automation demand drivers becoming more diversified beyond lithium. In 3C, multiple companies highlighted a more constructive 2027 outlook tied to Apple new-model/20th-anniversary form-factor changes, which should drive incremental equipment demand across 3D printing, machine vision, AOI and process-control modules. **We highlight names with more direct exposure to this diversification. Han's Laser (002008.SZ, Neutral)** has the most visible 3D-printing catalyst, with mgmt. estimating c.Rmb10bn Apple supply-chain demand in 2026-27 and targeting c.50% share. **OPT Machine Vision (688686.SS/Neutral)** and **Luster (688400.SS/Neutral)** are better positioned for machine-vision substitution: Luster's consumer-electronics revenue is guided to grow 20%+ in 2026E and 30%+ in 2027E. On niche extension upsides, **Yiheda** should benefit from semiconductor FA demand, mainly in back-end automation-related fixtures and jigs, with semiconductor GPM at 40%+, while **OPT** has also highlighted optical-module / semiconductor / industrial-AI opportunities through full-stack vision hardware and integration capability. We also highlight **Lead Intelligent** for MLCC/SOFC and solid-state optionality (each below Rmb100mn last year but are now guided to several-fold growth), with 1H26 solid-state orders close to Rmb1bn at 50%+ GPM.
- **Overseas expansion remains a key structural theme, amongst which Europe is the most tangible near-term highlight** given local manufacturing, customer-cost pressure and share-gain opportunities. We see **Estun (002747.SZ/2715.HK, Sell/Neutral)** as the most specific Europe margin-improvement case, although near-term overseas revenue mix remains limited. Europe GPM is c.50-60% versus China at c.30-35%, and mgmt. targets selected robot assembly in Poland by end-2026 and "Made in Europe" status by end-2027. Its strategy is focused on cost-pressured European automotive customers and small-to-mid-sized accounts where incumbent service coverage is weaker. We continue to prefer **Shuanghuan (002472.SZ, Buy)** for more visible overseas volume delivery: foreign-brand overseas

shipments should exceed 1mn sets this year, mainly in Europe, where market share is already double digit.

- **Strong growth and growing strategic positioning demonstrated by several supply chain companies in the humanoid robot space: LeaderDrive (688017.SS, Neutral)** is targeting at least annual capacity doubling over the next three years and 10mn+ units of harmonic reduction gears longer term. **Sanhua (002050.SZ/2050.HK, Neutral/Buy)** has doubled robotics team size vs. year and has broader optionality across dexterous hands, thermal management and sensors, with batch orders from leading customers, but data-center liquid cooling remains the more visible near term driver. **Luster** mgmt. expects embodied-AI data-collection revenue to double to c.Rmb100mn in 2026E. **Laifual (3952.HK, NC)** is also worth noting for clearer early revenue traction, with humanoid applications contributing c.30% of 1H26 harmonic reducer sales, and capacity targeted to double into 2027.

Detailed by-company takeaways

Estun (002747.SZ/2715.HK, Sell/Neutral)

- **Overseas revenue contribution** will likely remain relatively small in the near term, but margin contribution is already meaningful and should outpace revenue mix benefits given significantly higher gross margins; with European expansion progressing steadily, mgmt. expects it to become increasingly accretive to group margins. By region, GPM for Europe/ex-China Asia/Latin America /China are c.50-60%/c.40%/c.40%/c.30-35%. Management is prioritizing Europe over the U.S. due to prohibitive ~60% tariffs on Chinese robot imports, an existing manufacturing base in Poland, and local production of certain CLOOS components. Selected Estun robot assembly is expected to begin in Poland by end-2026, with "Made in Europe" status targeted by end-2027. Estun's European share-gain strategy centers on a price-cost advantage and strong local engineering support: European customers, particularly in automotive are still highly-cost pressured. On local engineering support strategy, Estun is initially targeting small-to-mid-sized accounts (5-50 units) where incumbent service coverage is often less comprehensive and performance requirements remain achievable versus leading peers such as FANUC.
- **Aftermarket:** Mgmt. expects aftermarket revenue to increase from c.Rmb100mn in 2025 to c.Rmb170mn in 2026E, yoy +70%, supported by an installed base of c.100k robots. Mgmt. expects aftermarket to become increasingly important as the installed base expands, while CLOOS generates c.1/3 of its revenue from services.
- **Embodied intelligence:** Estun sees the "brain", rather than the humanoid form factor, as the key technological breakthrough, while current humanoids still lack compelling ROI in industrial applications. The company does not plan to develop foundation models internally for now and instead works with model developers including Alibaba by providing robot bodies, industrial scenarios and training data.

Han's Laser (002008.SZ, Neutral)

- **3D printing equipment:** Total demand for from the Apple supply chain is estimated at ~Rmb10bn in 2026-27 (per mgmt.), and company expects to take ~50% total market share among 2~3 players. First volume order might be placed in Sep 2026 with shipment starting in Nov 2026, and company believes they will have higher share in the first few batches of orders with a first-mover advantage.
- **Fiber/preform business:** Hangzhou Yongtong (acquired in Jun 2026) has been consolidated starting July 1, 2026, likely generating Rmb300~500mn in sales and Rmb50~100mn in net profit in 2026, per mgmt. Yutong's 160-ton preform capacity has commenced ignition, with a targeted output of 120 tons in 2027. For the self-built project, plant construction is scheduled for completion by mid-2027, with ignition and full commissioning expected in 3Q27; initial production will ramp up to 400–800 tons. For the hollow-core fiber (HCF) business via Lingxian Technology, long-term

expansion will depend heavily on the progress of Microsoft's licensing. Current HCF capacity stands at 40k–50 fkm and is on track to reach 80k–100f km by year-end.

- **Gross margin profile:** GPM from consumer electronics / PCB / semiconductors / battery / high-power / low-power equipment were 40%+ / 35% / 22%/ 22% / 40% in 1H26.

Han's CNC (301200.SZ/3200.HK, NC)

- **Ultrafast laser drilling equipment** recorded >Rmb100mn in sales and 20+ in shipment unit in 1H26 mainly driven by optical transceiver applications, and mgmt. guides that 2H26sales will see robust sequential growth. Han's CNC is currently dominating this market with volume delivery experience, while other peers are mostly still in demo or qualification stages.
- **CO2 laser drilling equipment** will likely see surging application for AI PCBs in 4Q26-2027. Company is benefiting from the overseas players' capacity constraint, with product quality and efficiency largely matching customer requirements and ~20% pricing discount vs. overseas peers. Company currently has ~20% domestic market share in this market.
- **Capacity expansion** remains relatively easy for Han's CNC as the core know-how lies in design, R&D, and assembly, but some core components such as high-end laser generators are seeing severe supply tightness.

Laifual (3952.HK, NC)

- **Capacity plan:** Company targets to expand monthly capacity for harmonic reduction gears to 80k by end-2026 and 150~160k by end-2027 vs. 65k units by Jul 2026.
- **Humanoid robot application:** Humanoid robot applications roughly contributed to ~30% of total harmonic reduction gear sales in 1H26.
- **Market share:** Laifual has a higher market share in the domestic industrial robot market than in the collaborative robot markets, and is working with an overseas peer, Harmonic Drive Systems (6324.T, covered by GS Yuichiro Isayama), to develop products for Chinese and international industrial robot brands.

Lead Intelligent (300450.SZ/0470.HK, Buy/Buy)

- **Lithium battery order risk:** Management's view is that domestic capacity-control risk appears manageable and may even favor Lead. Current policy targets low-utilization/low-profit smaller battery makers, not high-utilization leaders; CATL, EVE and other top customers are still receiving approvals, while overseas projects, solid-state and sodium-ion are largely outside this restriction. Industry concentration should therefore push orders further toward leading battery makers and top equipment suppliers. Per mgmt., 3Q26 orders are tracking sequentially flat to higher vs. 2Q, with visibility still extending to Aug 2027.

- **AIDC ESS as upside:** ESS, especially AIDC-related storage, is becoming the main upside variable vs. mgmt.'s prior expectations. Power battery demand is still growing, but ESS is growing faster; North American customers are starting to request AIDC storage solutions. Mgmt. believes lithium orders can remain resilient even if traditional domestic power-battery capacity expansion is more tightly reviewed.
- **New businesses:** Non-lithium businesses are also moving from small base to early scale: MLCC and SOFC orders were each below Rmb100mn last year but are now guided to several-fold growth, solid-state 1H26 orders were close to Rmb1bn with 50%+ GPM; mgmt. guides that if non-lithium orders rise toward ~30% of total, they become more meaningful for revenue mix and valuation.

LeaderDrive (688017.SS, Neutral)

- **Capacity plan:** Domestic harmonic reducer monthly production is currently around 100k units, implying annual industry output of roughly 1.0-1.5mn units. LeaderDrive aims to at least double capacity annually over the next three years, with a longer-term product-line capacity target of more than 10mn units, around 10x the current level.
- **Competition:** LeaderDrive believes that at 10mn-unit scale it could accept GPM above 30%, potentially 5-10ppt below current levels. Competitors' equipment costs may still be 3-5x LeaderDrive's, while process complexity and cycle times could be 2-3x higher, suggesting the cost advantage could become more visible at scale, per mgmt.
- The **JV with SKF** is primarily aimed at securing bearing supply for humanoid robot harmonic reducers. Each harmonic reducer uses at least two bearings, while humanoid robots also require a large number of high-precision bearings across the robot body, screws and other components. Beyond internal supply, the JV could eventually become an independent business selling a full range of robot bearings externally, with the addressable market extending well beyond harmonic-reducer bearings alone, per mgmt.

Luster (688400.SS/Neutral)

- **Medium-term growth targets:** Luster targets c.20% revenue CAGR and c.40% recurring net profit CAGR, with growth over the next three years mainly driven by industrial AI, embodied-AI data collection and optical communication.
- **Consumer-electronics machine vision:** Consumer-electronics revenue grew c.50% in 2025 and mgmt. expects the segment to continue to grow 20%+ in 2026 and 30%+ in 2027, supported by the ramp-up of foldable phones and other complex processes. Apple and its supply chain account for c.20% of group revenue, while Luster estimates its machine-vision system share within the Apple supply chain at c.40%.
- **Optical communication agency business:** Mgmt. expects revenue of Rmb700-800mn in 2026, up 50%+ yoy, with another 50%+ growth expected in 2027 as demand expands from traditional telecom operators to AI computing centers and data centers.

- **Yuanke Vision and AI infrastructure:** Embodied-AI data-collection revenue is expected by mgmt to double from c.Rmb50mn in 2025 to c.Rmb100mn in 2026, with the product portfolio expanding from optical motion capture to multimodal data-collection solutions. AI infrastructure remains at an early stage, with 1H26 revenue of Rmb29mn, while the company expects server and optical-module inspection revenue to reach c.Rmb200mn in 2027.

Sanhua (002050.SZ/2050.HK, Neutral/Buy)

- **Robotics optionality** is broadening beyond actuators into dexterous hand modules, thermal management and sensors. Sanhua is developing dexterous hand modules by combining hollow-cup motors from a JV platform with sensors and other components, with batch orders already secured from several leading domestic customers. For thermal management, both air- and liquid-cooling solutions are under development, with some projects expected to enter mass production by year-end. The company is also extending its existing pressure, temperature and gas-sensing capabilities into six-axis force and other robotic sensors.
- **Data-center liquid cooling** remains the more visible near-term growth driver, with mix shifting toward secondary-side products. Primary-side products accounted for c.80%-90% previously but the mix is moving toward 70% this year, with secondary-side contribution expected by mgm to rise further in 2027E. Primary-side demand mainly comes from existing commercial HVAC customers including Trane, Carrier and Daikin, with micro channel heat exchangers currently the largest incremental product and capacity being expanded urgently. On the secondary side, Sanhua offers valves, sensors, plate heat exchangers, quick disconnect and manifolds, with sensors and plate heat exchangers seeing the fastest commercial ramp.
- **Data center revenue** was c.Rmb1.4bn last year, plus c.Rmb0.6bn from ESS, and data center revenue is expected to grow c.50% this year toward Rmb2bn. Growth could remain at c.50%-100% over the next few years.

OPT Machine Vision (688686.SS/Neutral)

- **Apple's domestic substitution is broader than a single project:** The company is seeing substitution moving across FATP/assembly/modules/3D printing/AOI with Cognex/Keyence replacement pressure accelerating in new projects and gradually extending to legacy-line retrofit.
- **3D printing demand is real but still at validation/small-batch stage**, with volume ramp dependent on 2027 phone-project approval. OPT can participate in printing-process monitoring, powder inspection, key-dimension inspection, defect standard definition, data analysis and back-end AOI.
- **Industrial AI moat color:** OPT's edge in industrial AI is less about owning a generic "large model" and more about its full-stack vision capability at the equipment level. Per mgmt., light-source design alone accounts for ~30% of solution value and directly determines image quality, which then determines AI recognition accuracy. In AOI and other inspection

scenarios, equipment customers may build their own algorithms because they understand process windows and inspection logic, but they typically still lack strong capabilities in cameras, lenses, light sources, controllers and vision-system integration. OPT can therefore participate either as a core vision-hardware supplier or as a soft-hardware integrated solution provider. This makes OPT's value capture broader and stickier than a pure camera/lens vendor, especially as industrial AI moves from proof-of-concept (POC) into standardized AOI and process-control modules.

Shuanghuan (002472.SZ, Buy)

- **Overseas auto gears** continue to gain share steadily, while a Tesla breakthrough could provide upside. Shipments to overseas foreign-brand customers are expected to exceed 1mn sets this year, mainly in Europe, where market share has reached double digits and penetration is broadening across most major OEMs excluding Volkswagen, which remains largely vertically integrated. Growth should therefore remain gradual, while faster upside could come from entering Tesla's existing overseas supplier system.
- **Coaxial gears remain a key growth driver:** 1H26 shipments were c.300k-400k sets, while 2H26 shipments are expected at c.80k sets per month on average, or c.500k-600k sets in total, supported by Changan Automobile's ramp-up and increasing contribution from BYD and Huawei-related projects, with additional customers including XPeng potentially joining later, per mgmt. Coaxial penetration is c.10% this year based on current shipment mix, while we see a longer-term ceiling of c.50% supporting further volume growth in 2027E.
- **Intelligent transmission gears** are undergoing customer mix optimization after Shuanghuan reduced exposure to a robotic vacuum customer considered to have a more aggressive operating/procurement strategy, with robotic vacuum contribution falling from c.65% and customer coverage now concentrated on higher-quality names. The company is expanding into pool cleaners, lawnmowers, office applications, autos and e-bikes; full-year revenue remains targeted at c.Rmb1.05bn.

Yiheda (301029.SZ, Buy)

- **End-market outlook:** Lithium battery will likely shift from 2026 high-growth driver to steadier 2027 support, with upside rotating to 3C/semis. Though lithium was still strong in 1H26 at +48% yoy and c.26% of revenue, mgmt. notes that growth is already normalizing toward company average and suggested outperformance may be harder on a higher base. Key delta is mix: BYD fell from close to 50% of lithium revenue last year to 20–30% this year, while non-BYD is now 70–80%, making CATL's expansion cadence the main swing factor. By contrast, after 2Q26 3C demand recovery and 1H26 3C +15% yoy, mgmt. is more constructive on 3C and semis for 2027: 3C could benefit from Apple new-model/20th-anniversary form factor changes driving equipment refresh, while semis are still growing mainly through back-end automation-related FA demand such as fixtures and jigs rather than front-end core equipment parts. Semiconductor GPM was said to be 40%+, making it both a growth and margin-mix driver.

- **BOM/FA share:** Yiheda is currently at c.10% FA market share and targets c.20% over the next five years, but large-customer mature-product FA upside may be structurally limited, because these customers still multi-source and run tenders and also FA itself represents only c.10–15% of a customer BOM addressable pool. The bigger opportunity is likely long-tail SME penetration, where one-stop procurement, SKU breadth and short delivery matter more than lowest bid pricing. Misumi is likely at a similar share level, per mgmt, while c.80% of the market remains with small single-product/machining suppliers. Mgmt. frames Yiheda's share gain as less about aggressive pricing but more about customer coverage, SKU coverage and supply-chain integration.

Investment thesis, price targets, risks & methodology

Investment Thesis - Lead Intelligent-A

Lead Intelligent is a leading global manufacturer of battery equipment, focusing on the end markets for lithium-ion batteries, solar photovoltaics, 3C inspection equipment, warehouse & logistics systems, automobiles, and fuel cells. The company holds a significant market position, with a c.25% global market share in intelligent lithium-ion battery equipment. We expect the company to see rising exposure (c.80%) to battery capex, supported by a healthy customer profile and key trends, including: 1) the acceleration of energy storage systems (ESS), with their contribution rising to c.40% of total battery orders between 2026E and 2030E; 2) Lead Intelligent's further concentration among Tier 1 battery OEMs; and 3) sodium battery and full solid-state batteries (FSSB) offering high growth potential over the long term despite the current small base. For the remaining 20% business exposure, Lead Intelligent is also actively building second growth curve narratives with breakthroughs in 3C consumer electronics equipment and humanoid business initiatives. We forecast 28%/34% revenue/net profit CAGRs over 2026E-30E, with profitability recovering as margins normalize from a 2.7%/10.8% NPM trough in 2024/2025 (due to the battery downcycle and AR deterioration) to 14.5% by 2030E. We apply a 2027E P/E multiple of 30X for Lead Intelligent-A. We see A-share valuation as attractive based on its upside vs. our coverage's average return and trading P/E multiples below historical average. We are Buy rated on Lead Intelligent-A.

Investment Thesis - Lead Intelligent-H

Lead Intelligent is a leading global manufacturer of battery equipment, focusing on the end markets for lithium-ion batteries, solar photovoltaics, 3C inspection equipment, warehouse & logistics systems, automobiles, and fuel cells. The company holds a significant market position, with a c.25% global market share in intelligent lithium-ion battery equipment. We expect the company to see rising exposure (c.80%) to battery capex, supported by a healthy customer profile and key trends, including: 1) the acceleration of energy storage systems (ESS), with their contribution rising to c.40% of total battery orders between 2026E and 2030E; 2) Lead Intelligent's further concentration among Tier 1 battery OEMs; and 3) sodium battery and full solid-state batteries (FSSB) offering high growth potential over the long term despite the current small base. For the remaining 20% business exposure, Lead Intelligent is also actively building second growth curve narratives with breakthroughs in 3C consumer electronics equipment and humanoid business initiatives. We forecast 28%/34% revenue/net profit CAGRs over 2026E-30E, with profitability recovering as margins normalize from a 2.7%/10.8% NPM trough in 2024/2025 (due to the battery downcycle and AR deterioration) to 14.5% by 2030E. We apply a 2027E P/E multiple of 30X for Lead Intelligent-A, and a 20% H/A-share discount for Lead Intelligent-H, resulting in a 2027E P/E multiple of 24x, supported by the correlation of key factors that typically drive the H-share discount. We see H-share valuation as attractive based on its upside vs. our coverage's average return and trading P/E multiples below historical average. We are Buy rated on Lead Intelligent-H.

Price Target Risks and Methodology - Lead Intelligent

Valuation: Our 12-month target prices for Lead Intelligent A/H of Rmb50.9/HK$46.4 are based on 2027E P/Es of 30x/24x. We incorporate a 20% H-share discount to our A-share valuation based on our regression analysis of the average trading discounts for China Industrial stocks.

Key downside risks to our investment thesis for Lead Intelligent-H/A:

1) A more severe pullback in EV development in China and globally: China EV sales have recorded a declining trend in 2026ytd. As c.50% of Lead Intelligent's total orders are connected to the domestic power battery market, a significant pullback in EV demand would impact net capacity demand forecasts and thus pose downside risks.

2) Weaker-than-expected ESS capacity expansion progress: We forecast ESS' contribution to overall battery equipment orders to be c.40% in 2026E-30E. ESS demand is critical to offset the potential deceleration in power battery demand. Therefore, weaker-than-expected ESS demand would pose downside risks to our revenue and net profit forecasts due to possible disruptions in cash collection, considering weaker ASPs and UTR in a softer cycle.

3) Slower-than-expected expansion in new business segments (solar PV, consumer electronics, humanoid robot, etc.): Lead Intelligent aims to become a high-end equipment platform company. As the contribution from non-battery segments becomes more meaningful to counter the battery equipment segment deceleration, we may see potential downside risks to our estimates if Lead Intelligent pauses non-battery segment development and over-concentrates in the battery equipment segment.

Investment Thesis - Shuanghuan Driveline

Shuanghuan Driveline is one of the largest gear manufacturers in China and one of the few capable of producing high-precision gears. We believe Shuanghuan's EV gear revenue will deliver an 18% CAGR in 2026-30E, driven by rising content value from higher co-axial gearbox penetration and market share gains in ex-China markets. In parallel, Shuanghuan is proactively developing new growth drivers in intelligent transmission gears, for which we forecast a 27% CAGR in 2026-30E, expanding applications from robotic vacuum cleaners to e-bikes and intelligent vehicles, while also conducting R&D on robotic reduction gears and cooperating with more industrial and humanoid robot OEMs on new reduction gear designs. We forecast 15%/16% firmwide revenue/net profit CAGR in 2026-30E, reflecting internal operational efficiency improvements that should offset lower margins at overseas factories in Hungary and potentially Vietnam. We are Buy rated on consistently better-than-expected margins and operational resilience, and we believe future catalysts include faster overseas passenger-vehicle gear share gains and better-than-expected GPM improvement.

Price Target Risks and Methodology - Shuanghuan Driveline

Valuation: Our 12-month TP of Rmb45.50 is based on 25x 2027E P/E.

Downside risks: 1) Lower-than-expected market share in NEV segment
Lower-than-expected new energy revenue outlook; 3) Lower-than-exp
robot gears revenue.



Investment Thesis - Yiheda Automation

We are positive on Yiheda Automation's business model to modernize China's manufacturing and factory automation (FA) supply chain, as it drives the move away from traditional mom & pop hardware stores and distributors by offering enhanced efficiency and lower costs for manufacturers. The company provides concrete benefits for clients such as: convenient online and offline channels, diverse SKUs, on-demand CAD configuration, professional technology support, agile supply chain management and competitive pricing. We are Buy rated on Yiheda with potential catalysts being faster SKU expansion/strong FA demand/better operational performance than overseas peers.

Price Target Risks and Methodology - Yiheda Automation

Price target: Our 12m target price of Rmb35.7 is based on a 2027E P/E of 32x.

Downside risks: (1) Slower-than-expected SKU expansion; (2) Weak FA demand; (3) intense competition.

Investment Thesis - Sanhua Intelligent Controls

Sanhua is a global leader in HVAC control & thermal management components. We like its growth potential in humanoid robot actuators on top of a solid market leadership position in its core business, and expect it to deliver 16%/17% revenue/net profit CAGR in 2025-30E. On the HVAC component segment, we believe the company is well positioned to deliver revenue growth above the residential HVAC industry, driven by commercial HVAC market share gain and ramp up in sensor products. On the EV thermal management segment, we believe the company's revenue growth will be driven by further global EV penetration increase and modest content value gain. In addition, we see humanoid robots as a significant long-term technology trend, with Sanhua likely to secure a key role in the supply chain, as a high visibility actuator assembler. Catalysts include technology advancement in humanoid robot functionality, volume production for humanoid robot big customers, and further EV penetration in Europe. However, we think the market has priced in a too bullish outlook for humanoid robots compared to rather a delayed timeline of Optimus production. We are Neutral/Buy-rated on Sanhua-A/H.

Price Target Risks and Methodology - Sanhua Intelligent Controls

Valuation: Our 12m target price for Sanhua A/H is Rmb38.6/HK$40.0, based on 2030E P/E of 25X, discounted back to 2027E with a COE of 9.5%.

Sanhua-A key upside/downside risks: (1) Faster/Slower-than-expected revenue contribution from humanoid robots; (2) Better/Worse-than-expected global EV sales; (3) Better/Worse-than-expected home appliance sales.

Sanhua-H key downside risks: (1) Slower-than-expected revenue contribution from humanoid robots; (2) Worse-than-expected global EV sales; (3) Worse-than-expected home appliance sales.

Investment thesis: Han's Laser is the largest laser equipment provider in China, with diverse end-market exposure, such as PCB, consumer electronics, lithium battery, FPD/semi, general industrials. We expect to see robust earnings growth and continued margins improvement in 2026-27E, driven by (1) increasing AI-related demand for the PCB equipment business since 2025, driven by solid demand of AI servers and optical

transceivers as well as equipment upgrade as a result of PCB specs upgrade and rising PCB usage in AI servers; (2) new consumer electronics equipment opportunities due to the upcoming form factor changes in the smartphone industry especially 3D printing for titanium components; and (3) significant mix improvement with higher contribution from PCB and electronics equipment. That said, we believe the share price has priced in most of the earnings growth potentials with a balanced risk-reward profile among our China Industrial Tech coverage. Hence, we are Neutral rated on the stock.

Target price: Our 12m-TP of Rmb115.0 is based on 30x 2027E P/E.

Upside risks: (1) Faster development in new AI related businesses; (2) Faster vertical integration of core components. **Downside risks:** (1) End-market capex growth slowdown; (2) Customer concentration risk.

Investment Thesis - Leader Harmonious Drive Systems Co.

We are Neutral rated on LeaderDrive, the domestic leader in China's harmonic reduction gear market. We are positive on the company for its growing harmonic reduction gear TAM expansion, driven by a broadening set of applications both domestically and globally across industrial robots, collaborative robots, humanoid/service robots, CNC machine tools and other high-end equipment, including solar, SPE, medical and aerospace. Beyond its core harmonic reduction gear business, LeaderDrive has also been expanding its humanoid robot product offering toward higher-content integrated modules, combining reducers with motors, encoders and sensors, which should support higher value per robot versus selling standalone components. The company continues to gain traction with overseas partners including volume shipments to the Chinese factories of at least two of the Big 4 international robot brands since 2024 and expects more meaningful revenue contribution into the next few years. While we are constructive on the company's long-term growth potential and see gradual humanoid robot contribution kicking in, we maintain our Neutral rating as valuation already appears to price in substantial long-run humanoid growth, leaving a more balanced risk-reward despite the company's improving content value and customer traction.

Price Target Risks and Methodology - Leader Harmonious Drive Systems Co.

Target price: Our 12-month target price for Leader Harmonious Drive Systems Co. is Rmb186.7, based on a 2030E P/E of 50x discounted back to 2027E with an 11.5% CoE.

Upside risks: (1) faster-than-expected volume production and/or technology advancement of humanoid robots; (2) faster-than-expected penetration into key robot customers (especially foreign brands). Downside risks: (1) worse-than-expected domestic industrial/collaborative robot demand; (2) more competition pressure from overseas and local brands.

Investment Thesis - Luster LightTech Co.

Within the fast-growing machine vision sub-sector, we expect Luster's market share in traditional machine vision systems to grow mildly on the back of its solution capabilities to service big customers and selective in-house software, cameras and lenses. Beyond traditional machine vision, Luster has been expanding into higher-growth new businesses, including ESS/new energy, AI servers and optical modules, which should support a more favorable product mix and margin profile over time. Starting from 2025,

Luster's FZMotion motion capture system also began to increase its exposure to humanoid robot data collection, creating a second growth driver alongside its core machine vision business. While we are constructive on Luster's long-term growth potential from its humanoid MoCap (motion capture) business and higher-margin new businesses, we maintain our Neutral rating as valuation already appears to reflect part of this business mix improvement and humanoid-related optionality.

Price Target Risks and Methodology - Luster LightTech Co.

Price target: Our 12-month target price of Rmb40.1 comprises: (1) Rmb32.3 per share for the main business valuation, based on 30x 2030E P/E discounted back to 2027E with an 11.5% CoE, and (2) Rmb7.8 per share for Luster's 0.42% equity stake in Zhipu (2513.HK), based on the GS China Internet team's DCF valuation discounted to 2027E.

Upside/downside risks: (1) Faster/slower-than-expected penetration and recovery in the new energy sector; (2) Faster/slower-than-expected development of vision software; (3) Better/worse-than-expected motion capture business development; (4) Easing/Intensifying pricing competition in the machine vision industry.

Investment Thesis - Estun Automation Co.

Estun Automation Co is the domestic leader in industrial robots with in-house production of servos and controllers. Its market share now ranks No.1 in the domestic industrial robot market and is rapidly expanding market share in the automation component market. We believe the tailwind from the trend of domestic substitution and production automation by industrial robots will continue in the coming years. Per Estun, the company aims to improve its product and business quality, and to compete directly with the Big Four to further drive market share gains. However, we are cautious on its margin outlook due to: 1) fierce price competition in its major end markets, auto and auto electronics; 2) inconsistent earnings track record. We do recognize the company already has credible monetization paths in "physical AI" for industrial settings and meaningful optionality into the broader humanoid ecosystem, and forecast AI projects to take up 10% of firmwide revenue by 2030E.

Price Target Risks and Methodology - Estun Automation Co.

Valuation: Our 12-month target prices for Estun A/H of Rmb14.7/HK$11.6 are derived from 2030E P/E of 35X and 25X, discounted to 2027E at a COE of 11.5%. We are Sell rated on Estun A / Neutral on Estun H.

Upside risks for Estun A: (1) Faster-than-expected robotics market share gains; (2) Better-than-expected margin trend; (3) Faster-than-expected humanoid robot development progress.

Up/downside risks for Estun H: (1) Faster/slower-than-expected robotics market share gains; (2) Better/worse-than-expected margin trend; (3) Faster/slower-than-expected humanoid robot development progress.

Investment Thesis - OPT Machine Vision Tech Co.

OPT Machine Vision Tech competes in the high entry barrier, high penetration potential machine vision space in China with global companies such as Keyence and Cognex.

Machine vision is increasingly needed to meet high production quality standards and to address labor shortages. We like OPT's expanding solution capability to ride the fast growth of the machine vision industry, with its key competitive strengths: (1) strong R&D track record and comprehensive product line; (2) rich application experience and first-hand data accumulation; and (3) fast response with 24/7 onsite support and hardware/total solutions within 4 hours/2 days. Looking into 2027E, we believe consumer electronics revenue will pick up, supported by OPT's 3D printing equipment vision solutions and AI-powered defect inspection solutions, extending coverage to more consumer electronics product categories, and penetration into module production lines. With AI now empowering an increasing share of OPT's total sales, we are constructive on AI adoption to improve OPT's internal workflow and enhance its machine vision (especially software) product performance. That said, we see a balanced risk-reward profile for the company compared to our China Industrial Tech coverage and are **Neutral** rated on the stock.

Price Target Risks and Methodology - OPT Machine Vision Tech Co.
Price target: Our 12m TP of Rmb105.0 is based on a 2027E P/E multiple of 35X.

Upside risks: 1) Faster-than-expected AI adoption, 2) Faster-than-expected overseas expansion. **Downside risks:** 1) Over-reliance on the consumer electronics industry/single customer, 2) Pricing and margin decline due to competition.

Disclosure Appendix

Reg AC

I, Jacqueline Du, hereby certify that all of the views expressed in this report accurately reflect my personal views about the subject company or companies and its or their securities. I also certify that no part of my compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs' Global Investment Research division.

Contributing Authors: Jacqueline Du Goldman Sachs (Asia) L.L.C..

Unless otherwise stated, the individuals listed in the Contributing Authors disclosure of this report are analysts in Goldman Sachs' Global Investment Research division.

GS Factor Profile

The Goldman Sachs Factor Profile provides investment context for a stock by comparing key attributes to the market (i.e. our universe of rated stocks) and its sector peers. The four key attributes depicted are: Growth, Financial Returns, Multiple (e.g. valuation) and Integrated (a composite of Growth, Financial Returns and Multiple). Growth, Financial Returns and Multiple are calculated by using normalized ranks for specific metrics for each stock. The normalized ranks for the metrics are then averaged and converted into percentiles for the relevant attribute. The precise calculation of each metric may vary depending on the fiscal year, industry and region, but the standard approach is as follows:

Growth is based on a stock's forward-looking sales growth, EBITDA growth and EPS growth (for financial stocks, only EPS and sales growth), with a higher percentile indicating a higher growth company. **Financial Returns** is based on a stock's forward-looking ROE, ROCE and CROCI (for financial stocks, only ROE), with a higher percentile indicating a company with higher financial returns. **Multiple** is based on a stock's forward-looking P/E, P/B, price/dividend (P/D), EV/EBITDA, EV/FCF and EV/Debt Adjusted Cash Flow (DACF) (for financial stocks, only P/E, P/B and P/D), with a higher percentile indicating a stock trading at a higher multiple. The **Integrated** percentile is calculated as the average of the Growth percentile, Financial Returns percentile and (100% - Multiple percentile).

Financial Returns and Multiple use the Goldman Sachs analyst forecasts at the fiscal year-end at least three quarters in the future. Growth uses inputs for the fiscal year at least seven quarters in the future compared with the year at least three quarters in the future (on a per-share basis for all metrics).

For a more detailed description of how we calculate the GS Factor Profile, please contact your GS representative.

M&A Rank

Across our global coverage, we examine stocks using an M&A framework, considering both qualitative factors and quantitative factors (which may vary across sectors and regions) to incorporate the potential that certain companies could be acquired. We then assign a M&A rank as a means of scoring companies under our rated coverage from 1 to 3, with 1 representing high (30%-50%) probability of the company becoming an acquisition target, 2 representing medium (15%-30%) probability and 3 representing low (0%-15%) probability. For companies ranked 1 or 2, in line with our standard departmental guidelines we incorporate an M&A component into our target price. M&A rank of 3 is considered immaterial and therefore does not factor into our price target, and may or may not be discussed in research.

Quantum

Quantum is Goldman Sachs' proprietary database providing access to detailed financial statement histories, forecasts and ratios. It can be used for in-depth analysis of a single company, or to make comparisons between companies in different sectors and markets.

Disclosures

Rating and pricing information

Estun Automation Co.(A) (Sell, Rmb30.41), Estun Automation Co.(H) (Neutral, HK$16.34), Han's Laser Technology (Neutral, Rmb93.39), Lead Intelligent (A) (Buy, Rmb31.93), Lead Intelligent (H) (Buy, HK$28.50), Leader Harmonious Drive Systems Co. (Neutral, Rmb285.00), Luster LightTech Co. (Neutral, Rmb44.85), OPT Machine Vision Tech Co. (Neutral, Rmb148.65), Sanhua Intelligent Controls (A) (Neutral, Rmb35.62), Sanhua Intelligent Controls (H) (Buy, HK$24.90), Shuanghuan Driveline (Buy, Rmb34.95) and Yiheda Automation (Buy, Rmb25.41)

The rating(s) for Estun Automation Co.(A), Estun Automation Co.(H), Han's Laser Technology, Lead Intelligent (A), Lead Intelligent (H), Leader Harmonious Drive Systems Co., Luster LightTech Co., OPT Machine Vision Tech Co., Sanhua Intelligent Controls (A), Sanhua Intelligent Controls (H), Shuanghuan Driveline and Yiheda Automation is/are relative to the other companies in its/their coverage universe: Best, Bochu, CRRC Corp. (A), CRRC Corp. (H), Centre Testing Intl Group, Estun Automation Co.(A), Estun Automation Co.(H), Faratronic, Haitian International Holdings, Han's Laser Technology, Hongfa Technology, Huaming, Kehua Data Co., Lead Intelligent (A), Lead Intelligent (H), Leader Harmonious Drive Systems Co., Luster LightTech Co., Megmeet, Moons' Electric, NARI Technology, Nantong Jianghai Capacitor Co., OPT Machine Vision Tech Co., Sanhua Intelligent Controls (A), Sanhua Intelligent Controls (H), Shanghai Baosight Software, Shenzhen Envicool Technology, Shenzhen Inovance Technology Co., Shenzhen Kstar Science & Tech, Shuanghuan Driveline, Sieyuan Electric, Techtronic Industries, Wuhan Raycus Fiber Laser Tech, Yiheda Automation, Yingliu, Zhejiang Supcon Technology Co., Zhuzhou CRRC Times Electric Co. (A), Zhuzhou CRRC Times Electric Co. (H)

Company-specific regulatory disclosures

Compendium report: please see disclosures at https://www.gs.com/research/hedge.html. Disclosures applicable to the companies included in this compendium can be found in the latest relevant published research

Distribution of ratings/investment banking relationships

Goldman Sachs Investment Research global Equity coverage universe

	Rating Distribution			Investment Banking Relationships		
	Buy	Hold	Sell	Buy	Hold	Sell
Global	50%	34%	16%	65%	59%	43%

As of July 1, 2026, Goldman Sachs Global Investment Research had investment ratings on 3,104 equity securities. Goldman Sachs assigns stocks as Buys and Sells on various regional Investment Lists; stocks not so assigned are deemed Neutral. Such assignments equate to Buy, Hold and Sell for the

purposes of the above disclosure required by the FINRA Rules. See 'Ratings, Coverage universe and related definitions' below. The Investment Banking Relationships chart reflects the percentage of subject companies within each rating category for whom Goldman Sachs has provided investment banking services within the previous twelve months.

Price target and rating history chart(s)

Compendium report: please see disclosures at https://www.gs.com/research/hedge.html. Disclosures applicable to the companies included in this compendium can be found in the latest relevant published research

Target price history table(s)

Lead Intelligent (H) (0470.HK)

Date of report	Target price (HK$)	Closing price (HK$)
30-Aug-26	46.40	30.10
22-Jul-26	46.30	29.24
28-Apr-26	55.60	57.60
07-Apr-26	50.80	42.40

Yiheda Automation (301029.SZ)

Date of report	Target price (Rmb)	Closing price (Rmb)
25-Aug-26	35.70	25.86
05-May-26	36.80	28.34
24-Feb-26	33.00	29.08
03-Nov-25	33.80	28.42
02-Oct-25	33.90	31.91
15-Aug-25	31.70	27.20
06-Aug-25	30.80	25.00
13-May-25	33.60	23.40
07-May-25	31.20	23.34
11-Mar-25	33.10	30.45
26-Dec-24	25.50	26.38
04-Nov-24	24.60	25.55
18-Oct-24	23.30	24.29
05-Sep-24	21.80	17.72
18-Jul-24	27.60	17.98
09-May-24	29.40	25.73
08-Jan-24	34.20	23.49
01-Nov-23	39.90	29.01
06-Sep-23	65.20	36.16

OPT Machine Vision Tech Co. (688686.SS)

Date of report	Target price (Rmb)	Closing price (Rmb)
20-Aug-26	105.00	123.67
05-May-26	100.00	109.31
03-Apr-26	98.40	89.99
24-Feb-26	90.30	121.19
28-Oct-25	94.40	132.86
02-Oct-25	84.90	146.53
21-Aug-25	77.90	121.00
06-Aug-25	77.00	107.98
13-May-25	76.90	89.85
07-May-25	70.80	91.63
12-Mar-25	75.40	102.00
26-Dec-24	64.40	77.30
04-Nov-24	61.90	62.80
18-Oct-24	70.90	57.73
05-Sep-24	63.90	48.70
18-Jul-24	91.50	60.20
09-May-24	103.80	74.60
28-Mar-24	128.50	101.00
08-Jan-24	132.90	99.87
01-Nov-23	147.30	98.87
06-Sep-23	199.60	117.40

Han's Laser Technology (002008.SZ)

Date of report	Target price (Rmb)	Closing price (Rmb)
20-Aug-26	115.00	91.56
22-Jul-26	113.00	104.93
21-Apr-26	110.00	92.80
05-Mar-26	97.00	71.48
24-Feb-26	51.50	58.83
22-Oct-25	49.80	36.73
02-Sep-25	44.80	34.34
06-Aug-25	25.50	27.02
13-May-25	26.30	24.67
07-May-25	24.10	23.90
12-Mar-25	23.50	28.84
04-Nov-24	23.10	25.55
18-Oct-24	22.70	23.98
05-Sep-24	21.10	19.09
09-May-24	21.60	21.34
08-Jan-24	19.30	18.71
24-Oct-23	24.30	20.28
06-Sep-23	26.80	23.51

Leader Harmonious Drive Systems Co. (688017.SS)

Date of report	Target price (Rmb)	Closing price (Rmb)
22-Jul-26	186.70	316.70
23-Apr-26	138.00	203.77
24-Feb-26	123.00	232.70
03-Nov-25	124.10	159.50

Estun Automation Co.(A) (002747.SZ)

Date of report	Target price (Rmb)	Closing price (Rmb)
25-Aug-26	14.70	31.68
05-May-26	14.90	21.87
07-Apr-26	16.60	19.41
24-Feb-26	9.90	24.28

Leader Harmonious Drive Systems Co. (688017.SS)

Date of report	Target price (Rmb)	Closing price (Rmb)
17-Aug-25	124.20	148.31
06-Aug-25	112.90	140.13
13-May-25	131.40	146.06
07-May-25	119.60	146.07
20-Feb-25	134.60	169.83
12-Jan-25	111.30	120.04
04-Nov-24	61.20	106.20
05-Sep-24	60.10	65.04
18-Jul-24	93.00	71.70
09-May-24	107.50	115.31
01-Mar-24	128.40	129.88
08-Jan-24	149.50	131.96
06-Sep-23	122.00	117.20

Estun Automation Co.(A) (002747.SZ)

Date of report	Target price (Rmb)	Closing price (Rmb)
02-Oct-25	10.30	25.60
02-Sep-25	9.50	24.43
06-Aug-25	9.90	24.21
13-May-25	14.90	21.17
07-May-25	13.40	20.85
12-Mar-25	15.60	24.19
04-Nov-24	11.30	16.13
18-Oct-24	12.80	14.60
05-Sep-24	9.80	12.21
12-Jul-24	12.40	12.62
09-May-24	14.40	16.31
08-Jan-24	16.10	16.30
01-Nov-23	22.10	18.36
06-Sep-23	25.30	23.06

Lead Intelligent (A) (300450.SZ)

Date of report	Target price (Rmb)	Closing price (Rmb)
30-Aug-26	50.90	33.44
22-Jul-26	50.80	31.89
28-Apr-26	61.00	55.36
07-Apr-26	55.70	47.55
24-Feb-26	47.20	54.31
26-Jan-26	49.30	61.89
03-Nov-25	44.10	54.80
28-Sep-25	42.20	65.49
01-Sep-25	21.10	40.70
06-Aug-25	18.70	26.35
12-Mar-25	16.50	23.97
04-Nov-24	15.80	18.55
05-Sep-24	15.40	14.32
18-Jul-24	23.30	16.71
09-May-24	24.30	22.50
20-Mar-24	26.00	24.94
08-Jan-24	25.40	23.70
02-Nov-23	36.80	27.15
06-Sep-23	36.70	29.30

Sanhua Intelligent Controls (A) (002050.SZ)

Date of report	Target price (Rmb)	Closing price (Rmb)
27-Aug-26	38.60	36.82
05-May-26	39.80	46.92
24-Mar-26	36.40	42.57
24-Feb-26	41.00	52.73
02-Nov-25	40.90	49.93
29-Aug-25	32.70	31.88
06-Aug-25	30.40	27.65
27-Mar-25	34.90	30.29
11-Mar-25	36.60	30.49
20-Feb-25	36.50	34.03
12-Jan-25	35.20	26.70
04-Dec-24	26.20	24.80
18-Oct-24	26.40	22.45
05-Sep-24	25.00	17.94
18-Jul-24	32.70	19.08
01-May-24	36.00	21.91
07-Feb-24	36.30	22.69
08-Jan-24	39.00	26.07
31-Oct-23	38.00	26.74
06-Sep-23	38.20	28.59

Luster LightTech Co. (688400.SS)

Date of report	Target price (Rmb)	Closing price (Rmb)
22-Jul-26	40.10	44.64
05-May-26	29.50	59.32
24-Feb-26	26.10	45.73
22-Dec-25	26.40	40.64
03-Nov-25	25.00	39.36
02-Oct-25	25.20	47.87
02-Sep-25	23.60	40.61
06-Aug-25	22.10	33.87
13-May-25	15.30	28.68
07-May-25	14.00	28.64
12-Mar-25	13.20	37.50
04-Nov-24	11.00	23.60
18-Oct-24	11.30	20.25
05-Sep-24	10.60	17.67
18-Jul-24	13.20	14.11
09-May-24	14.90	18.68
28-Mar-24	18.10	20.76
01-Nov-23	18.60	23.62

Estun Automation Co.(H) (2715.HK)

Date of report	Target price (HK$)	Closing price (HK$)
25-Aug-26	11.60	17.22
05-May-26	11.80	13.29
07-Apr-26	13.10	11.86

Luster LightTech Co. (688400.SS)

Date of report	Target price (Rmb)	Closing price (Rmb)
06-Sep-23	20.20	25.98

Estun Automation Co.(H) (2715.HK)

Date of report	Target price (HK$)	Closing price (HK$)

Sanhua Intelligent Controls (H) (2050.HK)

Date of report	Target price (HK$)	Closing price (HK$)
27-Aug-26	40.00	26.06
05-May-26	41.20	34.82
24-Mar-26	40.40	28.86
24-Feb-26	43.20	35.80
02-Nov-25	43.10	40.88
29-Aug-25	34.40	31.16
06-Aug-25	33.20	27.88

Shuanghuan Driveline (002472.SZ)

Date of report	Target price (Rmb)	Closing price (Rmb)
26-Aug-26	45.50	35.60
22-Jul-26	46.80	36.95
05-May-26	48.20	39.27
24-Feb-26	42.50	42.89
02-Oct-25	44.80	49.81
27-Aug-25	42.60	36.51
06-Aug-25	44.70	36.35
07-May-25	45.00	34.32
11-Mar-25	39.70	38.21
18-Oct-24	31.60	29.44
05-Sep-24	29.10	21.41
18-Jul-24	29.80	21.77
09-May-24	29.90	24.36
08-Jan-24	27.10	23.88
06-Sep-23	32.20	33.42

Price targets shown in table(s) are unadjusted for corporate actions.

Regulatory disclosures

Disclosures required by United States laws and regulations

See company-specific regulatory disclosures above for any of the following disclosures required as to companies referred to in this report: manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/co-managed public offerings in prior periods; directorships; registered market maker. Goldman Sachs trades or may trade as a principal in debt securities (or in related derivatives) of issuers discussed in this report.

The following are additional required disclosures: **Ownership and material conflicts of interest:** Goldman Sachs policy prohibits its analysts, professionals reporting to analysts and members of their households from owning securities of any company in the analyst's area of coverage. **Analyst compensation:** Analysts are paid in part based on the profitability of Goldman Sachs, which includes investment banking revenues. **Analyst as officer or director:** Goldman Sachs policy generally prohibits its analysts, persons reporting to analysts or members of their households from serving as an officer, director or advisor of any company in the analyst's area of coverage. **Non-U.S. Analysts:** Non-U.S. analysts may not be associated persons of Goldman Sachs & Co. LLC and therefore may not be subject to FINRA Rule 2241 or FINRA Rule 2242 restrictions on communications with a subject company, public appearances and trading in securities covered by the analysts.

Additional disclosures required under the laws and regulations of jurisdictions other than the United States

The following disclosures are those required by the jurisdiction indicated, except to the extent already made above pursuant to United States laws and regulations. **Australia:** Goldman Sachs Australia Pty Ltd and its affiliates are not authorised deposit-taking institutions (as that term is defined in the Banking Act 1959 (Cth)) in Australia and do not provide banking services, nor carry on a banking business, in Australia. This research, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act, unless otherwise agreed by Goldman Sachs. In producing research reports, members of Global Investment Research of Goldman Sachs Australia may attend site visits and other meetings hosted by the companies and other entities which are the subject of its research reports. In some instances the costs of such site visits or meetings may be met in part or in whole by the issuers concerned if Goldman Sachs Australia considers it is appropriate and reasonable in the specific circumstances relating to the site visit or meeting. To the extent that the contents of this document contains any financial product advice, it is general advice only and has been prepared by Goldman Sachs without taking into account a client's objectives, financial situation or needs. A client should, before acting on any such advice, consider the appropriateness of the advice having regard to the client's own objectives, financial situation and needs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests and a copy of Goldman Sachs' Australian Sell-Side Research Independence Policy Statement are available at: https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html. **Brazil:** Disclosure information in relation to CVM Resolution n. 20 is available at https://www.gs.com/worldwide/brazil/area/gir/index.html. Where applicable, the Brazil-registered analyst primarily responsible for the content of this research report, as defined in Article 20 of CVM Resolution n. 20, is the first author named at the beginning of this report, unless indicated otherwise at the end of the text. **Canada:** This information is being provided to you for information purposes only and is not, and under no circumstances should be construed as, an advertisement, offering or solicitation by Goldman Sachs & Co. LLC for purchasers of securities in Canada to trade in any Canadian security. Goldman Sachs & Co. LLC is not registered as a dealer in any jurisdiction in Canada under applicable Canadian securities laws and generally is not permitted to trade in Canadian securities and may be prohibited from selling certain securities and products in certain jurisdictions in Canada. If you wish to trade in any Canadian securities or other products in Canada please contact Goldman Sachs Canada Inc., an affiliate of The Goldman Sachs Group Inc., or another registered Canadian dealer. **Hong Kong:** Further information on the securities of covered companies referred to in this research may be obtained on request from Goldman Sachs (Asia) L.L.C. **India:** Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (India) Securities Private Limited, Research Analyst - SEBI Registration Number INH000001493, 10th Floor, Ascent-Worli, Sudam Kalu Ahire Marg, Worli, Mumbai-400 025, India, Corporate Identity Number U74140MH2006FTC160634, Phone +91 22 6616 9000, Fax +91 22 6616 9001. Goldman Sachs may beneficially own 1% or more of the securities (as such term is defined in clause 2 (h) the Indian Securities Contracts (Regulation) Act, 1956) of the subject company or companies referred to in this research report. Registration granted by SEBI and certification from NISM in no way guarantee performance of the intermediary or provide any assurance of returns to investors. Goldman Sachs (India) Securities Private Limited compliance officer and investor grievance contact details, a copy of the annual compliance audit report and other relevant information and disclosures can be found at this link: https://www.goldmansachs.com/worldwide/india/research-analyst. **Japan:** See below. **Korea:** This research, and any access to it, is intended only for "professional investors" within the meaning of the Financial Services and Capital Markets Act, unless otherwise agreed by Goldman Sachs. Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (Asia) L.L.C., Seoul Branch. **New**

Zealand: Goldman Sachs New Zealand Limited and its affiliates are neither "registered banks" nor "deposit takers" (as defined in the Reserve Bank of New Zealand Act 1989) in New Zealand. This research, and any access to it, is intended for "wholesale clients" (as defined in the Financial Advisers Act 2008) unless otherwise agreed by Goldman Sachs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests is available at: https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html. **Russia:** Research reports distributed in the Russian Federation are not advertising as defined in the Russian legislation, but are information and analysis not having product promotion as their main purpose and do not provide appraisal within the meaning of the Russian legislation on appraisal activity. Research reports do not constitute a personalized investment recommendation as defined in Russian laws and regulations, are not addressed to a specific client, and are prepared without analyzing the financial circumstances, investment profiles or risk profiles of clients. Goldman Sachs assumes no responsibility for any investment decisions that may be taken by a client or any other person based on this research report. **Singapore:** Goldman Sachs (Singapore) Pte. (Company Number: 198602165W), which is regulated by the Monetary Authority of Singapore, accepts legal responsibility for this research, and should be contacted with respect to any matters arising from, or in connection with, this research. **Taiwan:** This material is for reference only and must not be reprinted without permission. Investors should carefully consider their own investment risk. Investment results are the responsibility of the individual investor. **United Kingdom:** Persons who would be categorized as retail clients in the United Kingdom, as such term is defined in the rules of the Financial Conduct Authority, should read this research in conjunction with prior Goldman Sachs research on the covered companies referred to herein and should refer to the risk warnings that have been sent to them by Goldman Sachs International. A copy of these risks warnings, and a glossary of certain financial terms used in this report, are available from Goldman Sachs International on request.

European Union and United Kingdom: Disclosure information in relation to Article 6 (2) of the European Commission Delegated Regulation (EU) (2016/958) supplementing Regulation (EU) No 596/2014 of the European Parliament and of the Council (including as that Delegated Regulation is implemented into United Kingdom domestic law and regulation following the United Kingdom's departure from the European Union and the European Economic Area) with regard to regulatory technical standards for the technical arrangements for objective presentation of investment recommendations or other information recommending or suggesting an investment strategy and for disclosure of particular interests or indications of conflicts of interest is available at https://www.gs.com/disclosures/europeanpolicy.html which states the European Policy for Managing Conflicts of Interest in Connection with Investment Research.

Japan: Goldman Sachs Japan Co., Ltd. is a Financial Instrument Dealer registered with the Kanto Financial Bureau under registration number Kinsho 69, and a member of Japan Securities Dealers Association, Financial Futures Association of Japan Type II Financial Instruments Firms Association, and Investment Management Association of Japan. Sales and purchase of equities are subject to commission pre-determined with clients plus consumption tax. See company-specific disclosures as to any applicable disclosures required by Japanese stock exchanges, the Japanese Securities Dealers Association or the Japanese Securities Finance Company.

Ratings, coverage universe and related definitions

Buy (B), Neutral (N), Sell (S) Analysts recommend stocks as Buys or Sells for inclusion on various regional Investment Lists. Being assigned a Buy or Sell on an Investment List is determined by a stock's total return potential relative to its coverage universe. Any stock not assigned as a Buy or a Sell on an Investment List with an active rating (i.e., a stock that is not Rating Suspended, Not Rated, Early-Stage Biotech, Coverage Suspended or Not Covered), is deemed Neutral. Each region manages Regional Conviction Lists, which are selected from Buy rated stocks on the respective region's Investment Lists and represent investment recommendations focused on the size of the total return potential and/or the likelihood of the realization of the return across their respective areas of coverage. The addition or removal of stocks from such Conviction Lists are managed by the Investment Review Committee or other designated committee in each respective region and do not represent a change in the analysts' investment rating for such stocks.

Total return potential represents the upside or downside differential between the current share price and the price target, including all paid or anticipated dividends, expected during the time horizon associated with the price target. Price targets are required for all covered stocks. The total return potential, price target and associated time horizon are stated in each report adding or reiterating an Investment List membership.

Coverage Universe: A list of all stocks in each coverage universe is available by primary analyst, stock and coverage universe at https://www.gs.com/research/hedge.html.

Not Rated (NR). The investment rating, target price and earnings estimates (where relevant) are removed pursuant to Goldman Sachs policy when Goldman Sachs is acting in an advisory capacity in a merger or in a strategic transaction involving this company, when there are legal, regulatory or policy constraints due to Goldman Sachs' involvement in a transaction, and in certain other circumstances. **Early-Stage Biotech (ES).** An investment rating and a target price are not assigned pursuant to Goldman Sachs policy when this company has neither a drug, treatment or medical device that has passed a Phase II clinical trial nor a license to distribute a post-Phase II drug, treatment or medical device. **Rating Suspended (RS).** Goldman Sachs Research has suspended the investment rating and price target for this stock, because there is not a sufficient fundamental basis for determining an investment rating or target price. The previous investment rating and target price, if any, are no longer in effect for this stock and should not be relied upon. **Coverage Suspended (CS).** Goldman Sachs has suspended coverage of this company. **Not Covered (NC).** Goldman Sachs does not cover this company.

Global product; distributing entities

Goldman Sachs Global Investment Research produces and distributes research products for clients of Goldman Sachs on a global basis. Analysts based in Goldman Sachs offices around the world produce research on industries and companies, and research on macroeconomics, currencies, commodities and portfolio strategy. This research is disseminated in Australia by Goldman Sachs Australia Pty Ltd (ABN 21 006 797 897); in Brazil by Goldman Sachs do Brasil Corretora de Títulos e Valores Mobiliários S.A.; Public Communication Channel Goldman Sachs Brazil: 0800 727 5764 and / or contatogoldmanbrasil@gs.com. Available Weekdays (except holidays), from 9am to 6pm. Canal de Comunicação com o Público Goldman Sachs Brasil: 0800 727 5764 e/ou contatogoldmanbrasil@gs.com. Horário de funcionamento: segunda-feira à sexta-feira (exceto feriados), das 9h às 18h; in Canada by Goldman Sachs & Co. LLC; in Hong Kong by Goldman Sachs (Asia) L.L.C.; in India by Goldman Sachs (India) Securities Private Ltd.; in Japan by Goldman Sachs Japan Co., Ltd.; in the Republic of Korea by Goldman Sachs (Asia) L.L.C., Seoul Branch; in New Zealand by Goldman Sachs New Zealand Limited; in Russia by OOO Goldman Sachs; in Singapore by Goldman Sachs (Singapore) Pte. (Company Number: 198602165W); and in the United States of America by Goldman Sachs & Co. LLC. Goldman Sachs International has approved this research in connection with its distribution in the United Kingdom.

Goldman Sachs International ("GSI"), authorised by the Prudential Regulation Authority ("PRA") and regulated by the Financial Conduct Authority ("FCA") and the PRA, has approved this research in connection with its distribution in the United Kingdom.

European Economic Area: Goldman Sachs Bank Europe SE ("GSBE") is a credit institution incorporated in Germany and, within the Single Supervisory Mechanism, subject to direct prudential supervision by the European Central Bank and in other respects supervised by German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin) and Deutsche Bundesbank and disseminates research within the European Economic Area.

General disclosures

This research is for our clients only. Other than disclosures relating to Goldman Sachs, this research is based on current public information that we consider reliable, but we do not represent it is accurate or complete, and it should not be relied on as such. The information, opinions, estimates and

forecasts contained herein are as of the date hereof and are subject to change without prior notification. We seek to update our research as appropriate, but various regulations may prevent us from doing so. Other than certain industry reports published on a periodic basis, the large majority of reports are published at irregular intervals as appropriate in the analyst's judgment.

Goldman Sachs conducts a global full-service, integrated investment banking, investment management, and brokerage business. We have investment banking and other business relationships with a substantial percentage of the companies covered by Global Investment Research. Goldman Sachs & Co. LLC, the United States broker dealer, is a member of SIPC (https://www.sipc.org).

Our salespeople, traders, and other professionals may provide oral or written market commentary or trading strategies to our clients and principal trading desks that reflect opinions that are contrary to the opinions expressed in this research. Our asset management area, principal trading desks and investing businesses may make investment decisions that are inconsistent with the recommendations or views expressed in this research.

The analysts named in this report may have from time to time discussed with our clients, including Goldman Sachs salespersons and traders, or may discuss in this report, trading strategies that reference catalysts or events that may have a near-term impact on the market price of the equity securities discussed in this report, which impact may be directionally counter to the analyst's published price target expectations for such stocks. Any such trading strategies are distinct from and do not affect the analyst's fundamental equity rating for such stocks, which rating reflects a stock's return potential relative to its coverage universe as described herein.

We and our affiliates, officers, directors, and employees will from time to time have long or short positions in, act as principal in, make a market or act as liquidity provider in, and buy or sell, any securities, derivatives, or other financial instruments referred to in this research (including any financial instruments issued by the companies referred to herein), unless otherwise prohibited by regulation or Goldman Sachs policy.

The views attributed to third party presenters at Goldman Sachs arranged conferences, including individuals from other parts of Goldman Sachs, do not necessarily reflect those of Global Investment Research and are not an official view of Goldman Sachs.

Any third party referenced herein, including any salespeople, traders and other professionals or members of their household, may have positions in the products mentioned that are inconsistent with the views expressed by analysts named in this report.

This research is not an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer or solicitation would be illegal. It does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Clients should consider whether any advice or recommendation in this research is suitable for their particular circumstances and, if appropriate, seek professional advice, including tax advice. The price and value of investments referred to in this research and the income from them may fluctuate. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. Fluctuations in exchange rates could have adverse effects on the value or price of, or income derived from, certain investments.

Certain transactions, including those involving futures, options, and other derivatives, give rise to substantial risk and are not suitable for all investors. Investors should review current options and futures disclosure documents which are available from Goldman Sachs sales representatives or at https://www.theocc.com/about/publications/character-risks.jsp and https://www.goldmansachs.com/disclosures/cftc_fcm_disclosures. Transaction costs may be significant in option strategies calling for multiple purchase and sales of options such as spreads. Supporting documentation will be supplied upon request.

Differing Levels of Service provided by Global Investment Research: The level and types of services provided to you by Goldman Sachs Global Investment Research may vary as compared to that provided to internal and other external clients of GS, depending on various factors including your individual preferences as to the frequency and manner of receiving communication, your risk profile and investment focus and perspective (e.g., marketwide, sector specific, long term, short term), the size and scope of your overall client relationship with GS, and legal and regulatory constraints. As an example, certain clients may request to receive notifications when research on specific securities is published, and certain clients may request that specific data underlying analysts' fundamental analysis available on our internal client websites be delivered to them electronically through data feeds or otherwise. No change to an analyst's fundamental research views (e.g., ratings, price targets, or material changes to earnings estimates for equity securities), will be communicated to any client prior to inclusion of such information in a research report broadly disseminated through electronic publication to our internal client websites or through other means, as necessary, to all clients who are entitled to receive such reports.

All research reports are disseminated and available to all clients simultaneously through electronic publication to our internal client websites. Not all research content is redistributed to our clients or available to third-party aggregators, nor is Goldman Sachs responsible for the redistribution of our research by third party aggregators. For research, models or other data related to one or more securities, markets or asset classes (including related services) that may be available to you, please contact your GS representative or go to https://research.gs.com.

Disclosure information is also available at https://www.gs.com/research/hedge.html or from Research Compliance, 200 West Street, New York, NY 10282.

© 2026 Goldman Sachs.

You are permitted to store, display, analyze, modify, reformat, and print the information made available to you via this service only for your own use. You may not resell or reverse engineer this information to calculate or develop any index for disclosure and/or marketing or create any other derivative works or commercial product(s), data or offering(s) without the express written consent of Goldman Sachs. You are not permitted to publish, transmit, or otherwise reproduce this information, in whole or in part, in any format to any third party without the express written consent of Goldman Sachs. This foregoing restriction includes, without limitation, using, extracting, downloading or retrieving this information, in whole or in part, to train or finetune a machine learning or artificial intelligence system, or to provide or reproduce this information, in whole or in part, as a prompt or input to any such system.