TABLE OF CONTENTS

RELATED SBD REPORTS

534 – Autonomous & Autonomy Guide

SBD's regional ADAS & Autonomy Database helps customers to understand which ADAS features are being offered by each vehicle manufacturer.

The database is built at model level and covers: ACC, PD, FCW, CA, NV/PD, TSR, LDP, BSM, RCTA, DM, AHD, SAPA, FAPA, RP, TA and SVC.

ADAS

ADAS & Autonomy

#538

ADAS & Autonomy Forecast

Interest in ADAS is growing at a rapid rate. OEMs today are integrating more features into their vehicles and announcing conceptual autonomous vehicles with the intent to produce them. This interest extends to a range of suppliers and technology companies who have announced the development of technologies for these vehicles.

Despite these advances, L4 autonomy faces many obstacles before becoming a commercial reality. Among these are the guidelines, legislation and regulations surrounding autonomous vehicles alongside the consumer trust needed to roll them out on a wide scale. These factors have caused OEMs to shift their focus from achieving the highest levels of vehicle autonomy to expanding the availability of lower levels and the capability of their own ADAS systems.

The ADAS L0 - L3 Forecast assesses and analyzes how features operating at lower levels of autonomy are expected to grow. Examining the offerings featured in passenger vehicles, the forecast works to highlight the regional differences in the penetration of different ADAS types. The technologies that facilitate them are also accounted for - including Adaptive Cruise Control, Driver Monitoring, and Rear Cross Traffic Alert systems. This report is updated quarterly, with regional versions covering the ADAS markets for China, Europe, and the U.S.

COVERAGE	FREQUENCY	PUBLICATION FORMAT	PAGES
GLOBAL, NA, CHINA, EUROPE	ANNUALLY, QUARTERLY, ONE-OFF	PDF, POWERPOINT, EXCEL, ONLINE	70+

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Key questions answered

- How will ADAS deployments vary per region?
- What impact will regional regulations play?
- How aggressively are different OEMs expected to ramp-up fitment of L1, L2, L2+, and L3 features in the coming years?
- How widely adopted will LiDAR, camera, radar and other types of sensors become?

This research supports

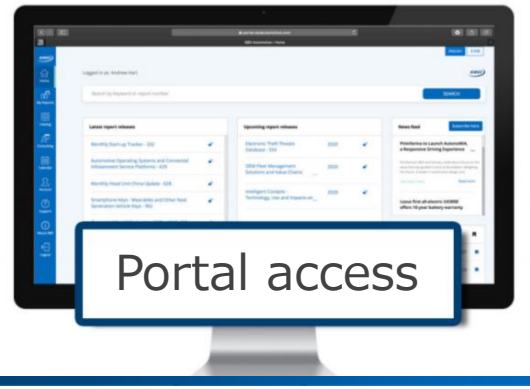
- PRODUCT PLANNERS
- C-SUITE
- MARKETING
- ENGINEERING

Do I have access?

100+
Reports published per year

50k+
Slides of insights, forecasts & data

4,000+
# of auto professionals who access our reports



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China Japan

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ADAS & AUTONOMY FORECAST

Contents Page

538 ADAS & Autonomy Forecast Europe

Data Deep Dive
View and analyze deep data in your own way

Customer Feedback
Provide feedback to SBD regarding this report

Total number of pages - 77

Introduction

Chapter Introduction

Some early Advanced Driver Assistance Systems (ADAS) were introduced during the 1990s. After being in the market for over two decades, ADAS has started to witness some noticeable market penetration. Key driving factors include competitive pressures, legislation, incentives by safety groups and lower cost of sensors.

SBD has therefore prepared this report to understand at a regional level (Europe) the differences in penetration for various types of ADAS and the technologies supporting these features on personal vehicles. This report provides a deeper understanding by estimating the technology and feature penetrations on personal vehicles at an OEM level.

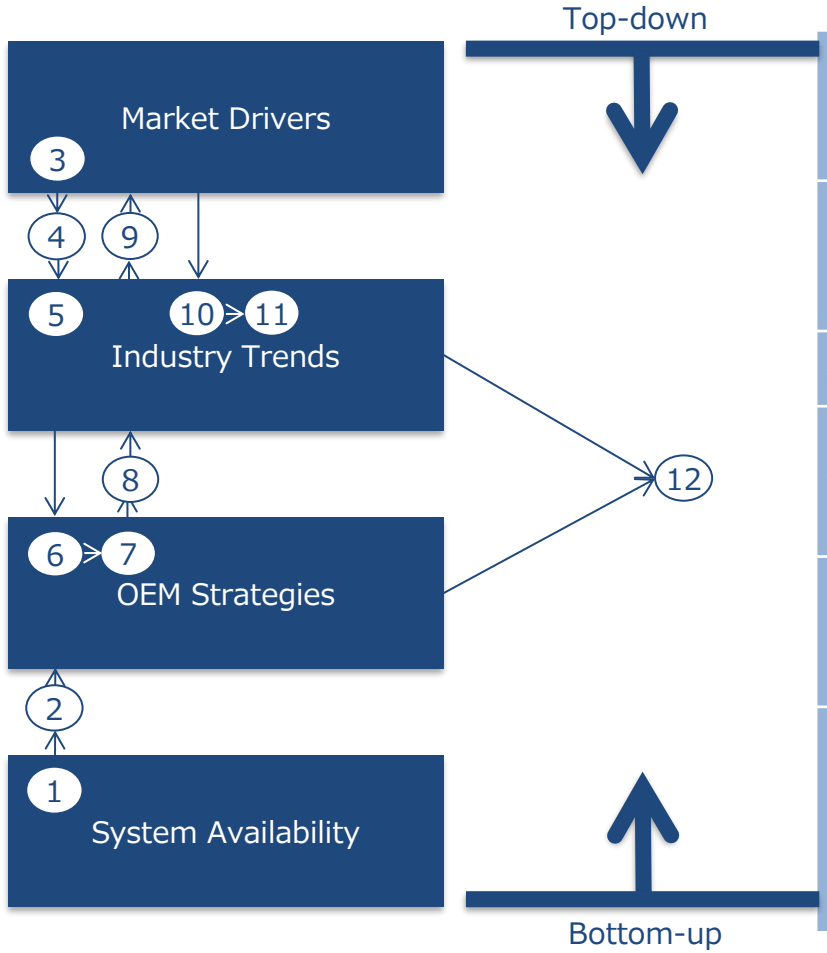
As well as trend changes (e.g. SBD are predicting a speeding up or reducing of a trend) and market changes (e.g. a new model has been launched with standard fit equipment), this year's report has changed in two other subtle ways. These two items mean care must be taken when directly comparing with 2023's ADAS and Autonomy Forecast.

- Amongst other methods the forecast interpolates between data in the SBD ADAS Guide and future model sales data. Each year the ADAS guide reprioritizes OEMs to focus in on markets, meaning there is a not insignificant change in the models that the base data represents.
- Some 538 methodologies have been improved and 'sharpened' to take a more granular sample of a trend line, leading to some sampling calculation differences.

This report draws necessary inferences and provides actionable insights for strategic and product planning teams to act upon to aid OEMs in delivering the five desired commercial outcomes commonly targeted through delivering ADAS systems:

Section	Content
Autonomy Bird's Eye View	An overview of the key topics that correlate with ADAS developments
Executive Summary	Introduction to the forecast and presents key highlights and conclusions from the report.
The Basics	A brief overview of the forecast methodology and the features being forecasted (with SAE classification).
What's New?	Identifies trends within the forecast which are new to the 2024 forecast.
Feature Trends	Analysis of feature trends identified in the forecast, including the drivers and barriers of deployment.
OEM Trends	Overview of each OEM's offerings in terms of autonomy and supporting sensors.
Go Deeper	Can SBD help you with any unanswered questions?

Forecast Methodology



Bottom-up Phase	**Step 1:** A database of model-level availability of different ADAS for 2024 is created using data from the 534 ADAS & Autonomy database.
	Step 2: The sales volume (LMC data) of each model is overlaid to create 2024 penetration database
Top-down Phase	**Step 3:** Top-level market drivers and major triggers for change are considered
	Step 4: A top-down forecast is created using Step 2 and Step 3 results as starting-points
Industry Trends Phase	**Step 5:** Using Step 4 a top-level technology, feature, fitment and pricing trends roadmap is created
OEM Strategy Phase	**Step 6:** OEM-by-OEM strategy is created using results from Step 1 and 5
	Step 7: OEM strategy is converted into estimated penetration growth using Step 2 as a starting point
Cross-Check Phase	**Step 8:** Results from Step 7 are aggregated into industry-level forecast by feature and technology
	Step 9: The forecast from Step 8 (bottom-up) is then compared to the Step 4 forecast (top-down)
Aggregation Phase	**Step 10:** Breakdown Step 8 technology/ feature forecast into sub-technology/feature levels using Step 1 and Step 5 as starting points
	Step 11: Calculate revenue projections based on cost depreciation from Step 5
	Step 12: Create rest of the aggregated number sets for OEMs

Note: The model level availability data (Step 1) for the forecast is obtained by researching the feature availability and feature fitment by various OEMs in the European market.

GlobalData.

LMC Automotive is the premier automotive forecasting company and has an exclusive focus on the industry and an understanding of the dynamics that drive it. With offices in Oxford, Detroit, Shanghai, Bangkok and Frankfurt and representation in Brazil, Japan and Korea, they combine 30 years of experience in macroeconomics and demand analysis, with a global network of ground-level, intelligence gathering expert analysts to create unique perspectives and insights.

LMC Automotive provides the vehicle history and forecasts which power SBD's forecasting services.

Example slides from the report

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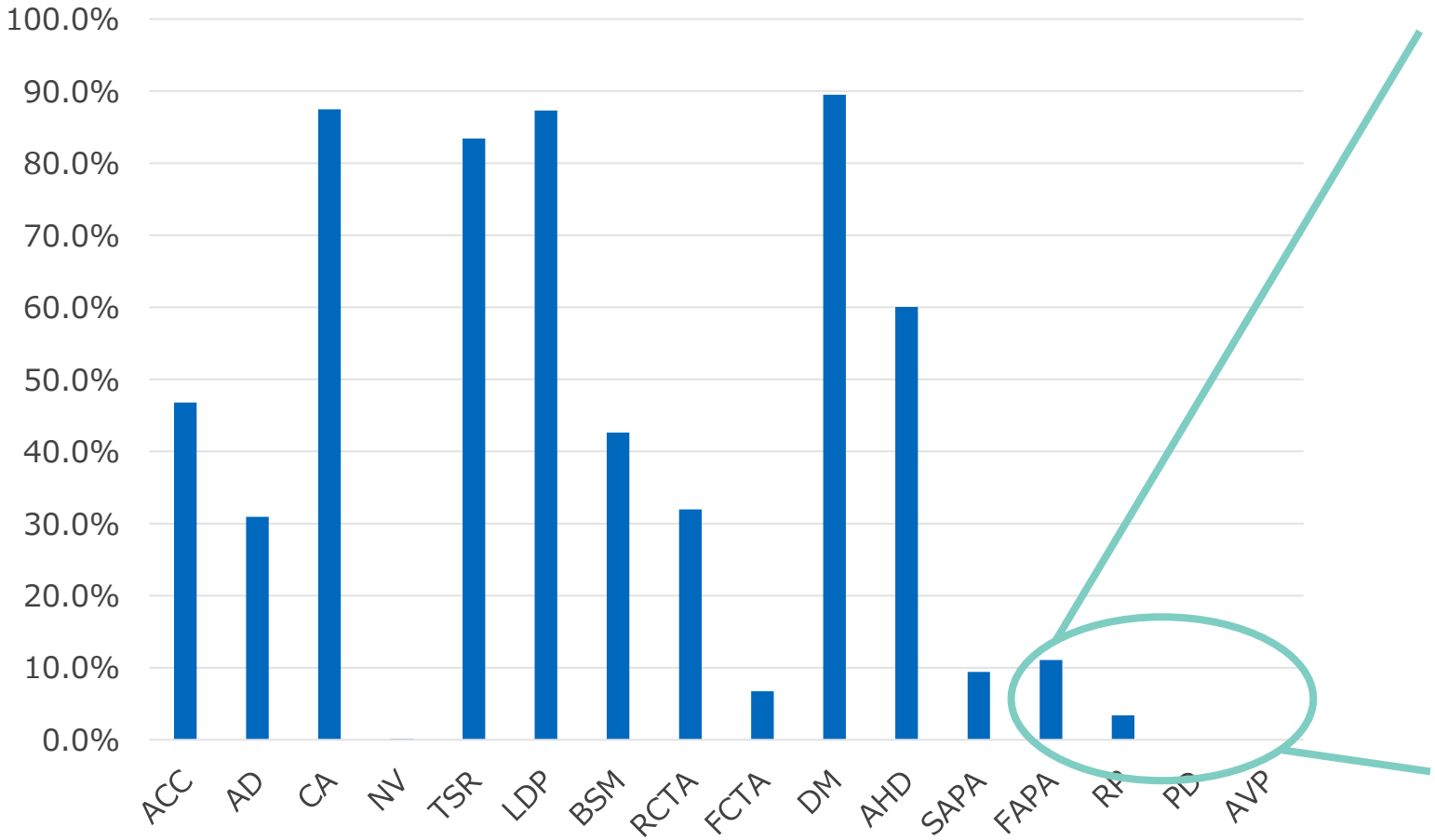
The Competition is focused on Convenience Features

Overview

As safety feature become mandatory, much of the competition is developing on higher-level features that are adopted more as convenience features rather than safety ones such as fully-automatic parking, remote parking, and piloted driving.

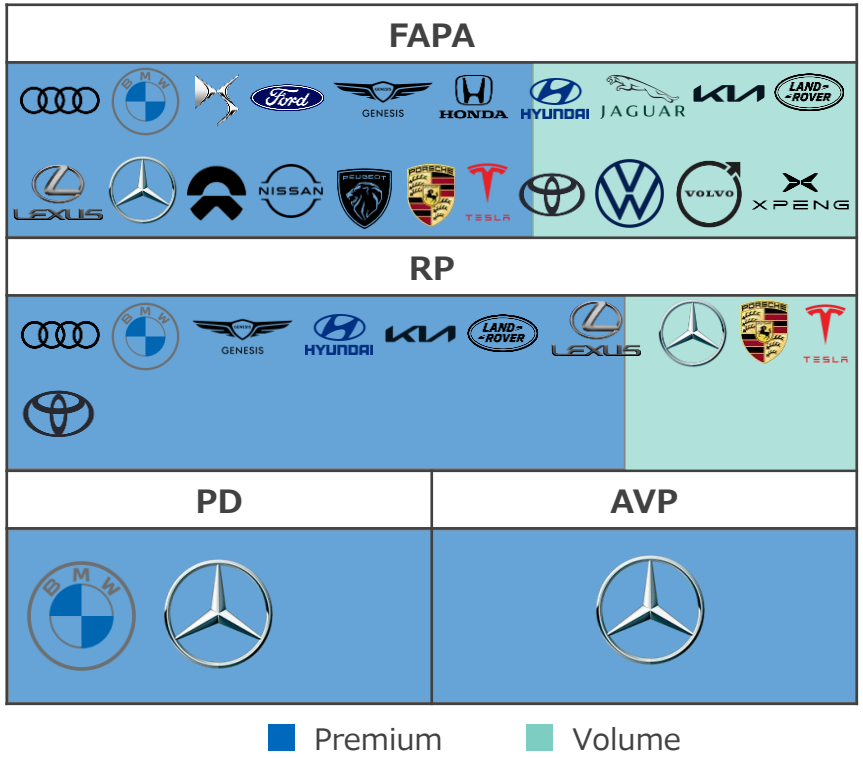


Mercedes-Benz have been pioneers in **AVP technology,** and their system has received approval for operation in Germany. While other OEMs are working on AVP systems, Mercedes-Benz is the first to bring this technology to market.

1. Convergence | **2. Convenience** | 3. Regional Differences

Highlight

Fully-automatic parking assist (FAPA), remote parking (RP), and Level 3 Piloted Driving (PD+) are the features with the lowest adoption (except for NV which is being gradually abandoned), mostly by premium brands, and the current stage of competition.

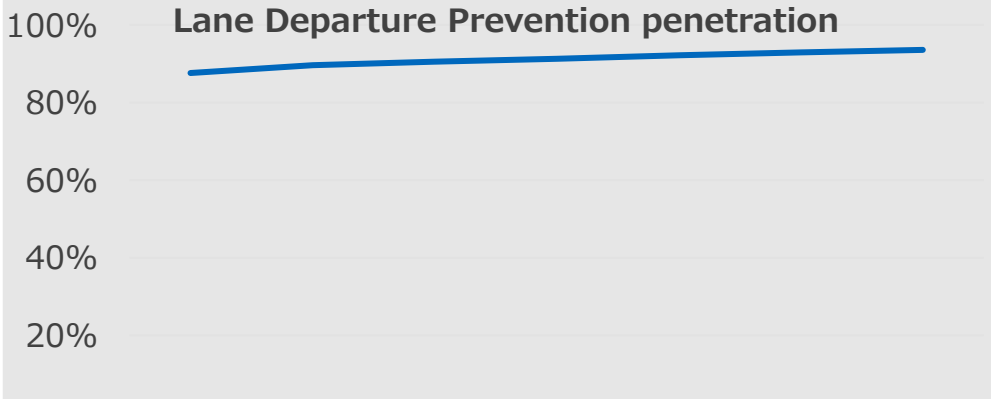


Lane Departure Prevention and Traffic Sign Recognition

SAE Level 0

Lane Departure Prevention

Lane Departure Prevention is currently the second most widely deployed feature in the European market. It is expected to grow quickly, reaching ~ 90% adoption driven by the European Commission mandate in 2025 and general competition in volume and premium segments for a hygiene feature that consumers expect.



	2024	2025	2026	2027	2028	2029	2030
LDP	87.60	89.58	90.51	91.25	92.20	92.91	93.56

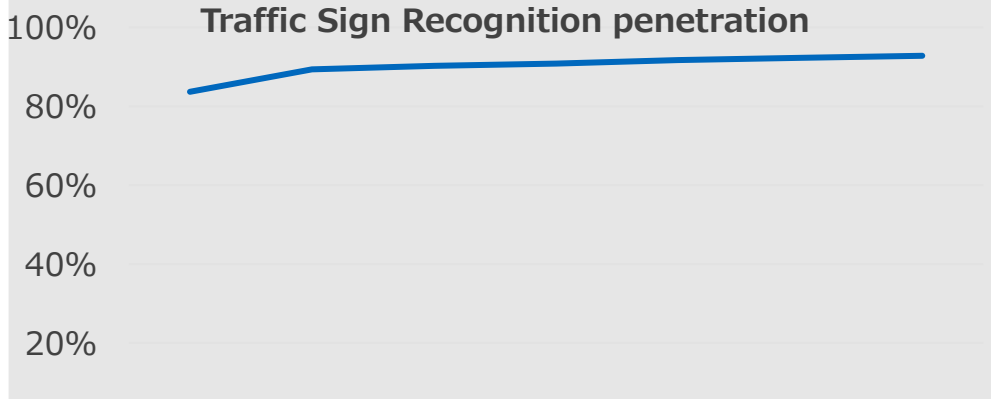
Takeaway(s):

Warning systems now feature 100% saturation in Lane Departure Prevention, with Lane Keeping becoming standard in many vehicle models. Haptic feedback in steering wheels enhances driver safety and experience. Exciting progress is underway!

SAE Level 0

Traffic Sign Recognition

Traffic Sign Recognition is already commonly equipped, reaching ~ 84% penetration in Europe. It is expected to come quickly ~ 90%, primarily driven by competition and an evolving regulatory environment. In Europe the Union General Safety Regulation mandates intelligent speed assist on all new vehicles which drives TSR adoption.



	2024	2025	2026	2027	2028	2029	2030
TSR	83.69	89.41	90.23	90.85	91.71	92.30	92.82

Takeaway(s):

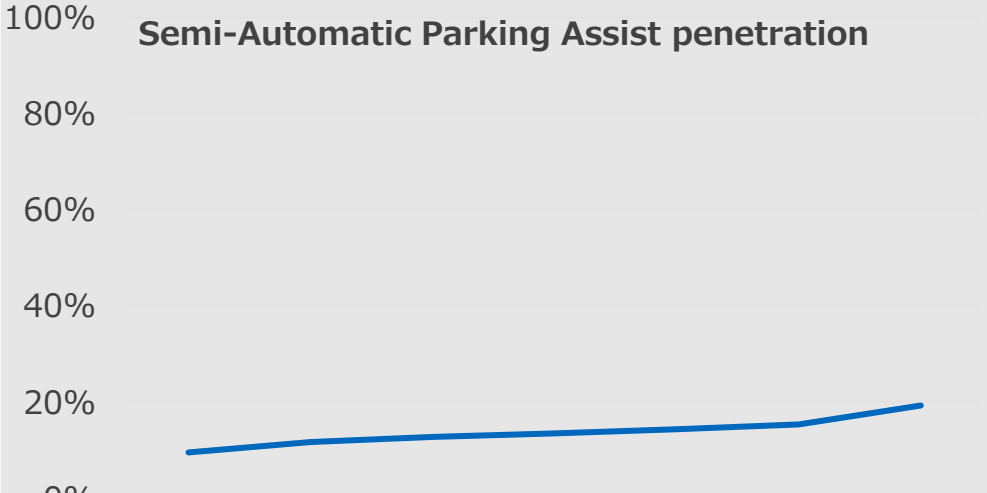
A wide range of Western OEMs are still yet to introduce Traffic Sign Recognition to their vehicle offerings in China. TSR is one of two features where the penetration is higher amongst domestic Chinese OEMs than Western ones.

Semi and Fully Automatic Parking Assist

SAE Level 2

Semi-Automatic Parking Assist

Semi-Automatic Parking Assist currently has a limited deployment in Europe at around ~ 10% and it is expected to continue its gradual growth over the forecasting period to double its penetration.



	2024	2025	2026	2027	2028	2029	2030
SAPA	9.46%	11.64	12.68	13.43	14.31	15.32	19.23

Takeaway(s):

The European adoption of SAPA reflects its adoption in volume vehicles and lower-end applications compared to FAPA which has a lower adoption mostly found in premium vehicles. SAPA is expected to consistently maintain a penetration twice as higher as that of FAPA.

SAE Level 2

Fully-Automatic Parking Assist

Fully-Automatic Parking Assist currently has a lower penetration in Europe and SBD expects expected to see constant growth over the coming years, ~ 11% to ~ 20%.

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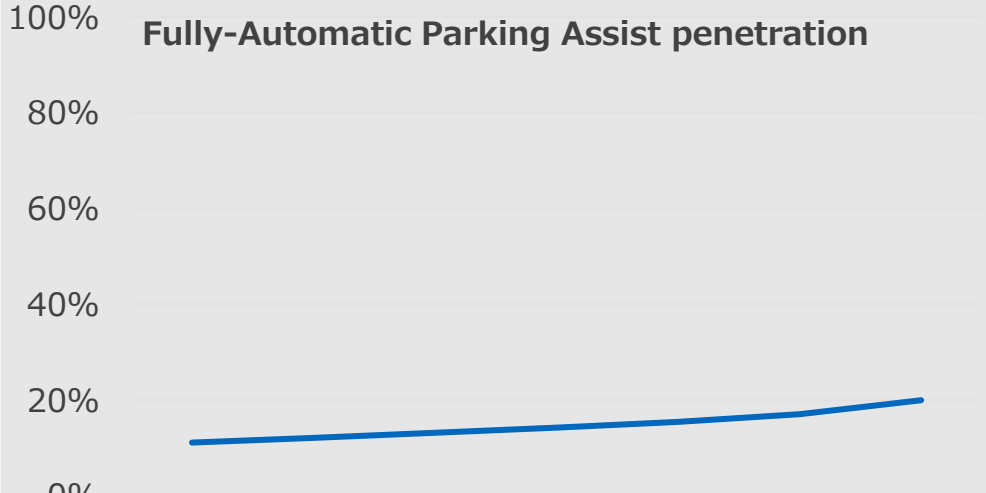


	2024	2025	2026	2027	2028	2029	2030
FAPA	11.11	12.09	13.13	14.21	15.40	17.06	19.94

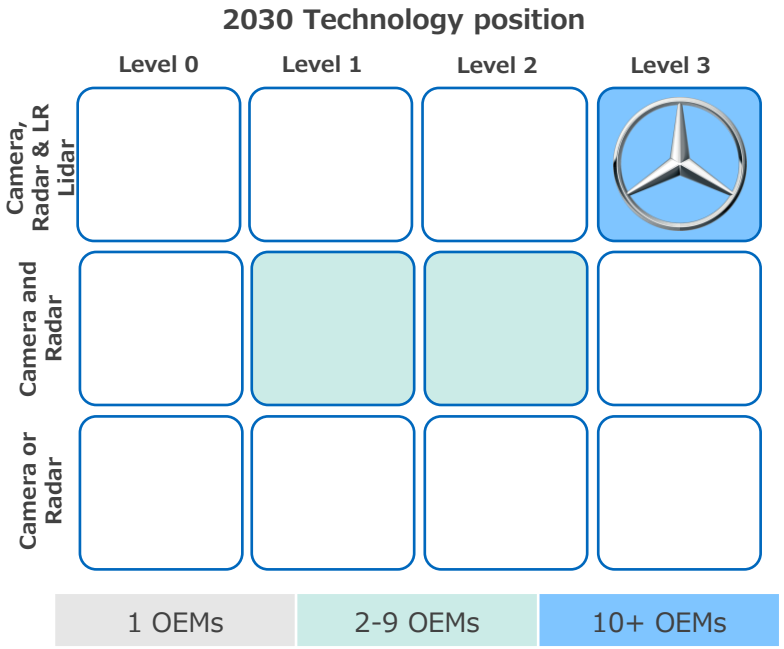
Takeaway(s):

FAPA is mostly offered by premium OEMs, with a few exceptions like Hyundai, Nissan and Volkswagen. Of the function currently offered through FAPA, Parallel and Perpendicular parking reach almost 100% penetration.

Mercedes-Benz Group

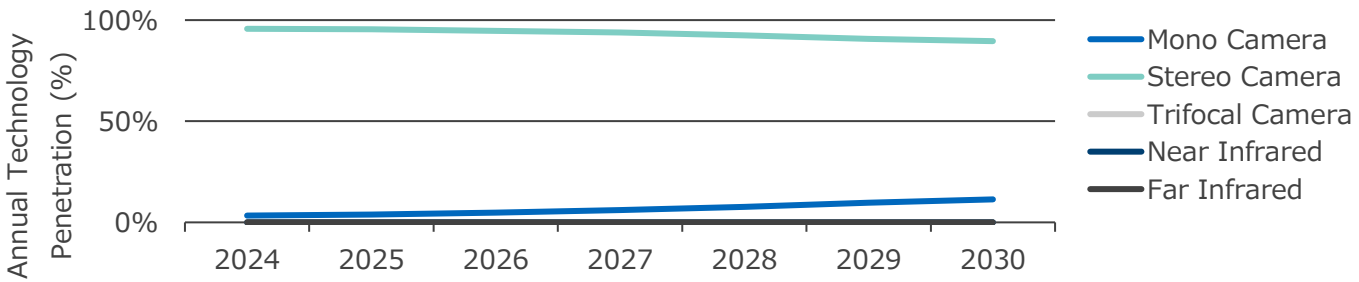
Overview

Mercedes-Benz is a leader in ADAS technology thanks to its SAE Level 4 AVP offering achieved. Mercedes-Benz has been a pioneer in this technology, and its system has received approval for operation in Germany.



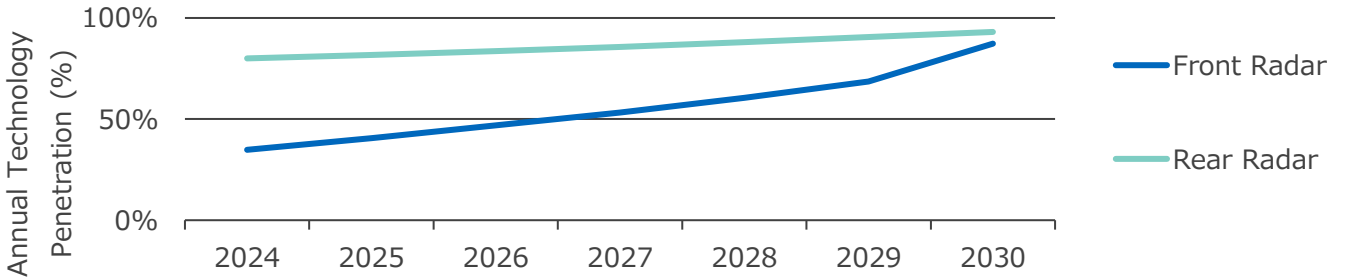
	2024	2027	2030
SAE Level 0	99%	99%	99%
SAE Level 1	99%	99%	99%
SAE Level 2	41%	46%	62%
SAE Level 3	0%	1%	3%
SAE Level 4	0%	1%	1%

Camera



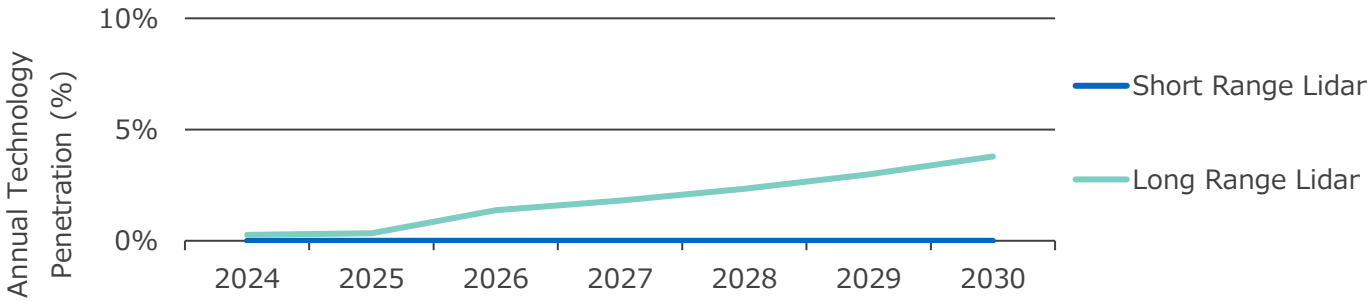
Stereo camera has already 100% adoption in Smart, but the decrease is driven by Mercedes-Benz's gradual substitution with mono cameras.

Radar



Rear radar is already approaching 100% and expected to continue, while front radar, will more than double its adoption rate over the forecasting period reaching over 87%

Lidar

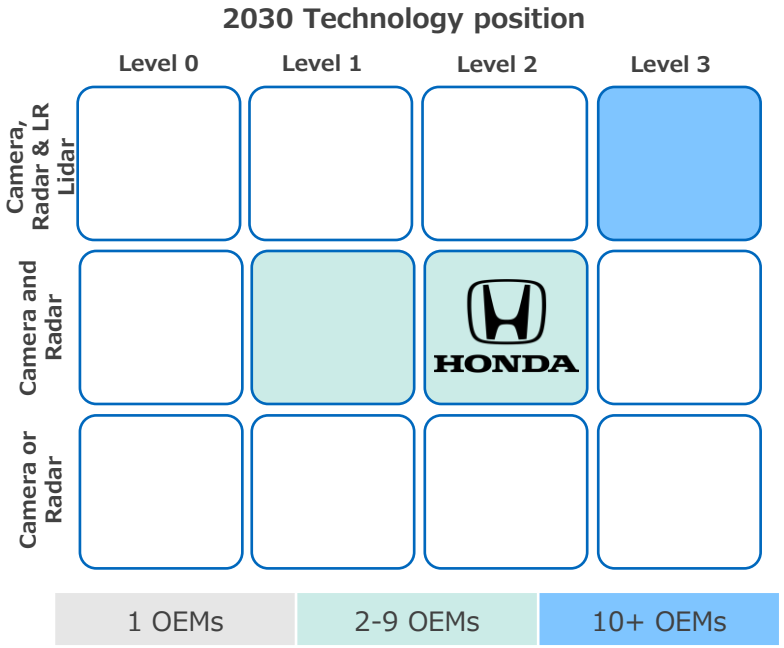


Long range lidar is adopted by Mercedes-Benz as it leads the industry with Level 3 autonomy.

Honda Group

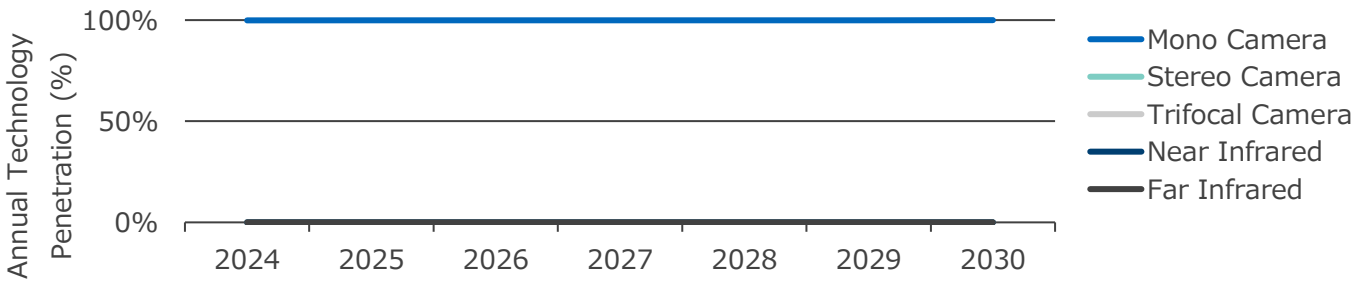
Overview

Honda currently delivers most ADAS for SAE Levels 0, 1, but has still a low adoption for Level 2 ADAS such as Piloted Driving, and fully-automatic parking assist. Level 3 is not offered as well yet.



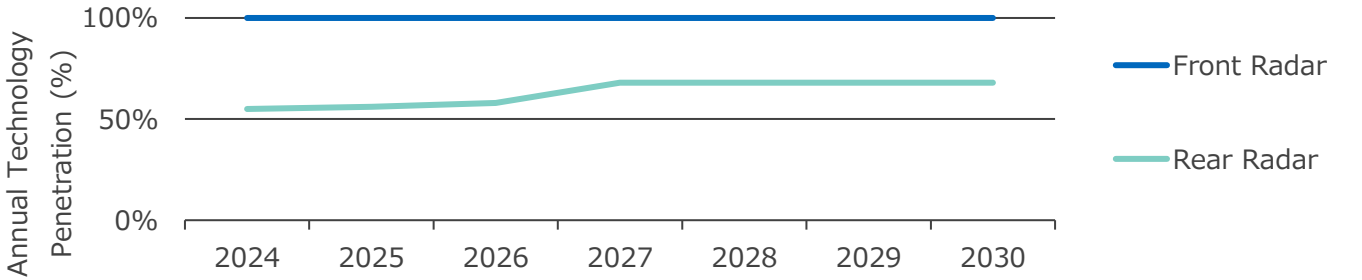
	2024	2027	2030
SAE Level 0	100%	100%	100%
SAE Level 1	100%	100%	100%
SAE Level 2	26%	26%	62%
SAE Level 3	0%	0%	0%
SAE Level 4	0%	0%	0%

Camera



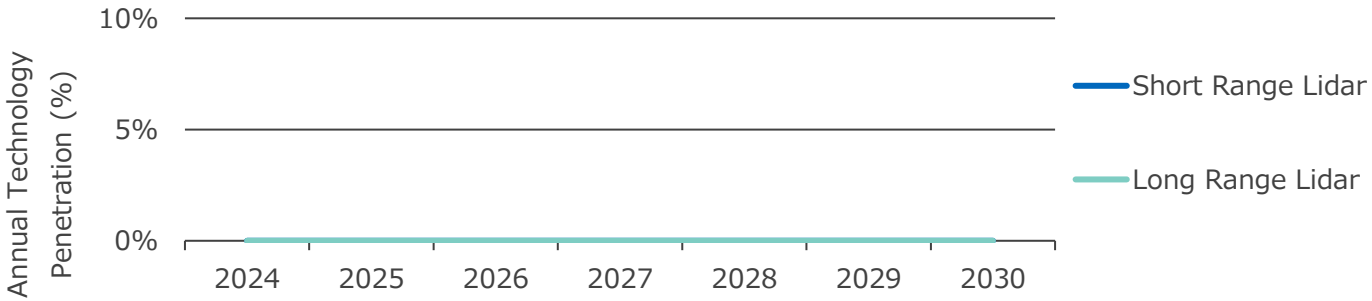
Mono-camera adoption is at 100%. Honda is not expected to provide additional sensors such as infrared or Stereo and trifocal cameras.

Radar



Front radars have achieved 100% adoption, while rear radars have surpassed 68% adoption during the forecasting period.

Lidar



Honda is not expected to feature Lidar technology in its vehicles up to 2030.

What the Excel Version Contains

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Excel Database Includes

538 - ADAS & Autonomy Forecast

538EU-23 | 2023 - Europe | Europe Market

By Feature

Annual Features Sales

Volume	Sub-cat	2023	2024	2025	2026	2027	2028	2029
ACC	ACC	6,500,594	8,173,811	9,526,477	10,522,970	11,475,877	12,404,215	13,210,808
PD	PD	3,778,351	4,805,685	5,785,596	6,617,454	7,433,110	8,207,749	8,924,897
CA	CA	13,310,385	16,381,093	17,459,554	17,799,758	17,995,104	18,134,287	18,225,437
NV	NV	6,375	9,529	14,519	19,508	24,808	32,072	38,792
TSR	TSR	9,450,784	16,380,783	17,459,255	17,799,491	17,994,867	18,134,100	18,225,283
LDP	LDP	12,544,801	16,381,093	17,459,554	17,799,758	17,995,104	18,134,287	18,225,437
BSM	BSM	5,624,423	7,115,889	8,428,854	9,596,354	10,647,116	11,620,857	12,467,955
RCTA	RCTA	4,374,123	5,620,403	6,617,076	7,457,043	8,298,941	9,102,031	9,881,677
FCTA	FCTA	1,737,837	2,052,600	2,293,600	2,483,033	2,732,808	2,972,680	3,247,609
DM	DM	11,446,816	16,381,093	17,459,554	17,799,758	17,995,104	18,134,287	18,225,437
AHD	AHD	7,856,979	10,230,954	11,521,373	12,356,178	13,100,545	13,773,077	14,345,175
SAPA	SAPA	2,006,950	2,574,725	3,252,648	3,773,361	4,307,917	4,823,674	5,352,428
FAPA	FAPA	1,096,608	1,371,704	1,651,286	1,938,119	2,242,148	2,615,371	2,910,090
RP	RP	669,516	803,756	966,061	1,135,992	1,295,093	1,465,187	1,572,687
PD+	PD+	3,058	4,536	17,072	58,249	95,203	151,528	212,301

Penetration (%)

Volume	Sub-cat	2023	2024	2025	2026	2027	2028	2029
ACC	ACC	42.7%	49.9%	54.6%	59.1%	63.8%	68.4%	72.5%
PD	PD	24.8%	29.3%	33.1%	37.2%	41.3%	45.3%	49.0%
CA	CA	87.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
NV	NV	0.042%	0.058%	0.083%	0.110%	0.138%	0.177%	0.213%
TSR	TSR	62.1%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
LDP	LDP	82.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
BSM	BSM	37.0%	43.4%	48.3%	53.9%	59.2%	64.1%	68.4%
RCTA	RCTA	28.8%	34.3%	37.9%	41.9%	46.1%	50.2%	54.2%

Home | Europe Market | Features by OEM | Technologies by OEM | Definitions | +

Excel Data Points:
10,000+

Global OEMs Covered:
40+

Excel Tabs:
4

Excel Database Includes

OEM	Feature	Sum of 2023	Sum of 2024	Sum of 2025	Sum of 2026	Sum of 2027	Sum of 2028	Sum of 2029
Alfa Romeo	ACC	66%	71%	76%	81%	85%	88%	91%
	AHD	100%	100%	100%	100%	100%	100%	100%
	BSM	35%	36%	37%	39%	41%	44%	47%
	CA	100%	100%	100%	100%	100%	100%	100%
	DM	74%	100%	100%	100%	100%	100%	100%
	FAPA	0%	0%	0%	0%	0%	0%	0%
	FCTA	0%	0%	0%	0%	0%	0%	0%
	LDW	100%	100%	100%	100%	100%	100%	100%
	NV	0%	0%	0%	0%	0%	0%	0%
	PD	17%	22%	28%	35%	42%	50%	58%
	PD+	0%	0%	0%	0%	0%	2%	8%
	RCTA	35%	36%	37%	39%	41%	44%	47%
	RP	0%	0%	0%	0%	0%	0%	0%
	SAPA	2%	3%	3%	8%	10%	14%	18%
	TSR	74%	100%	100%	100%	100%	100%	100%
Audi	ACC	26%	36%	45%	53%	60%	65%	69%
	AHD	30%	36%	43%	49%	56%	63%	70%
	BSM	19%	22%	26%	31%	36%	43%	50%
	CA	99%	100%	100%	100%	100%	100%	100%
	DM	82%	100%	100%	100%	100%	100%	100%
	FAPA	1%	2%	3%	4%	5%	7%	8%
	FCTA	3%	10%	13%	16%	20%	23%	27%
	LDW	99%	100%	100%	100%	100%	100%	100%
	NV	0%	0%	0%	0%	1%	1%	1%
	PD	26%	44%	52%	60%	66%	71%	74%
	PD+	0%	0%	0%	1%	2%	3%	4%
	RCTA	19%	22%	26%	31%	36%	43%	50%
	RP	1%	2%	3%	4%	5%	7%	8%
	SAPA	11%	14%	18%	23%	29%	35%	42%
	TSR	48%	100%	100%	100%	100%	100%	100%
BMW	ACC	43%	54%	57%	61%	66%	72%	77%

Home | Europe Market | Features by OEM | Technologies by OEM | Definitions | +

Excel Data Points:
10,000+

Global OEMs Covered:
40+

Excel Tabs:
4

Excel Database Includes

Hyundai	Far Infrared	0%	0%	0%	0%	0%	0%	0%
	Front Radar	100%	100%	100%	100%	100%	100%	100%
	Long Range Lidar	0%	0%	0%	0%	0%	0%	0%
	Mono Camera	100%	100%	100%	100%	100%	100%	100%
	Near Infrared	0%	0%	0%	0%	0%	0%	0%
	Rear Radar	47%	54%	61%	67%	73%	77%	82%
	Short Range Lidar	0%	0%	0%	0%	0%	0%	0%
	Stereo Camera	0%	0%	0%	0%	0%	0%	0%
	Trifocal Camera	0%	0%	0%	0%	0%	0%	0%
	Ultrasonic	7%	10%	13%	16%	20%	25%	29%
Jaguar	Far Infrared	0%	0%	0%	0%	0%	0%	0%
	Front Radar	82%	93%	93%	93%	93%	93%	93%
	Long Range Lidar	0%	0%	1%	2%	3%	4%	5%
	Mono Camera	0%	0%	0%	0%	0%	0%	0%
	Near Infrared	0%	0%	0%	0%	0%	0%	0%
	Rear Radar	62%	69%	75%	81%	85%	88%	91%
	Short Range Lidar	0%	0%	0%	0%	0%	0%	0%
	Stereo Camera	100%	100%	100%	100%	100%	100%	100%
	Trifocal Camera	0%	0%	0%	0%	0%	0%	0%
	Ultrasonic	23%	27%	32%	38%	43%	48%	54%
Jeep	Far Infrared	0%	0%	0%	0%	0%	0%	0%
	Front Radar	100%	100%	100%	100%	100%	100%	100%
	Long Range Lidar	0%	0%	0%	0%	0%	0%	0%
	Mono Camera	100%	100%	100%	100%	100%	100%	100%
	Near Infrared	0%	0%	0%	0%	0%	0%	0%
	Rear Radar	27%	34%	42%	49%	54%	59%	63%
	Short Range Lidar	0%	0%	0%	0%	0%	0%	0%
	Stereo Camera	0%	0%	0%	0%	0%	0%	0%
	Trifocal Camera	0%	0%	0%	0%	0%	0%	0%
	Ultrasonic	14%	17%	21%	26%	31%	36%	41%
Kia	Far Infrared	0%	0%	0%	0%	0%	0%	0%
	Front Radar	93%	100%	100%	100%	100%	100%	100%

Home | Europe Market | Features by OEM | **Technologies by OEM** | Definitions | +

Excel Data Points:
10,000+

Global OEMs Covered:
40+

Excel Tabs:
4

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Do you have any questions?

If you have any questions or feedback about this research report or SBD Automotive's consulting services, you can email us at info@sbdautomotive.com or discuss with your local account manager below.

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Book a meeting

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