ResearchInChina
www.researchinchina.com

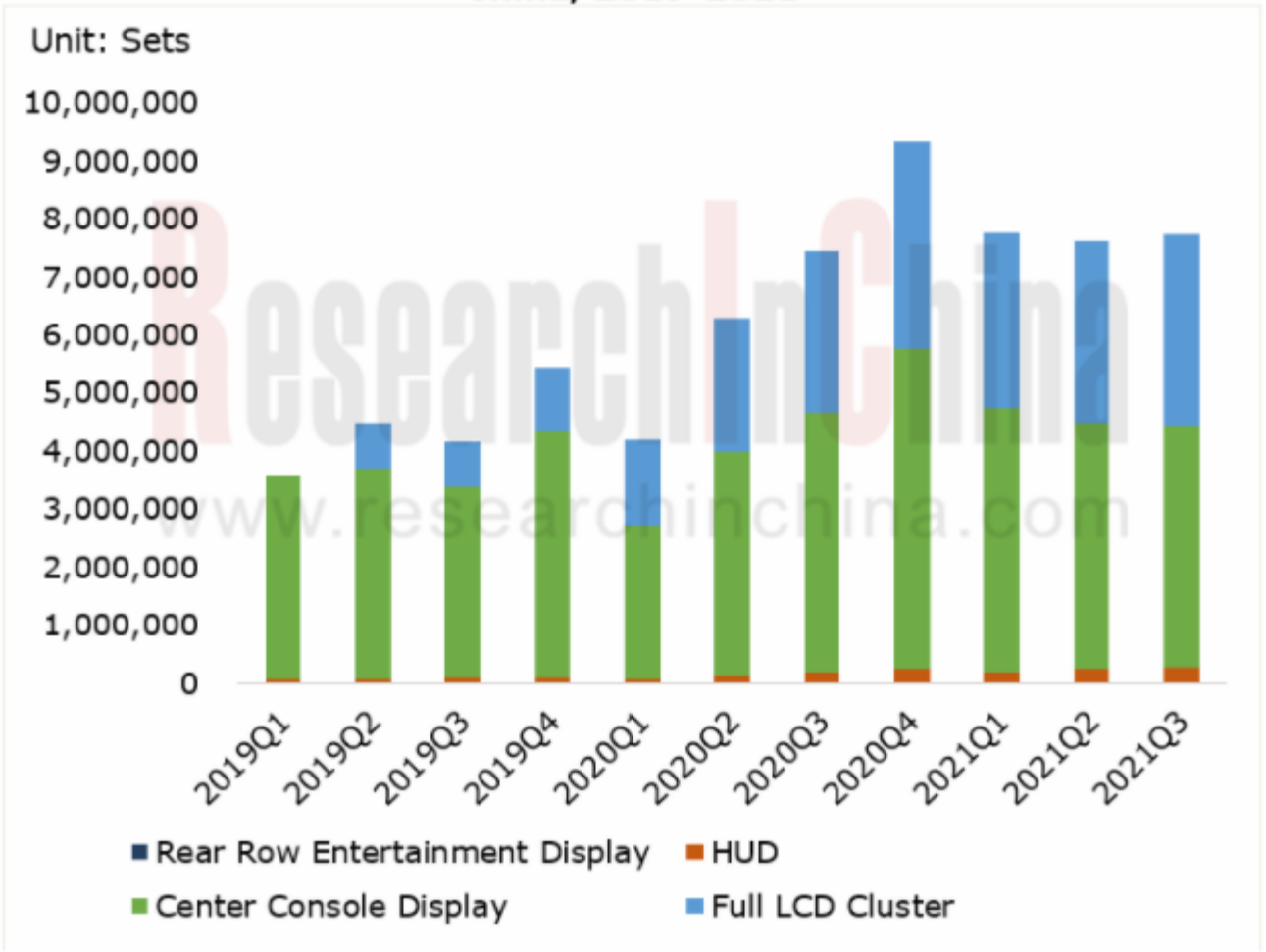
Global and China Automotive LCD Cluster and Center Console Industry Report, 2021

Dec.2021

Cluster and Center Console Display Research: How Chinese Manufacturers Scramble for Mini LED/Micro LE Market

The surging demand for intelligent and connected vehicles, in-vehicle infotainment systems and navigation systems among others gives a big boost to the automotive display market. The statistics from our automotive database show that in 2020 China shipped more than 35 million sets of passenger car displays (cluster, center console, entertainment display, HUD, etc.), up over 4% more than in the previous year.

Installations of Main Automotive Displays for Passenger Cars in China, 2019-2021



Source: ResearchInChina

Large-size Display and Multi-screen Display Hold the Trend for Automotive Displays

Automotive display is a key booster to the digital transformation of automotive cockpits. The better performance of on-board computers enables the central computing unit to support LCD cluster, high-resolution infotainment display, HUD, electronic rearview mirror and other display systems, and provides technical support for multi-display systems.

From the new models launched in recent two years, it can be seen that large-size display and multi-screen display have been trends for automotive displays. High-end models have begun to pack at least 4 displays. Products like co-pilot seat entertainment display, control display, rear row entertainment display and streaming media rearview mirror have started finding application, and the demand for large-size displays has been soaring.

Large-size display

The installation of clusters shows that about 60% of new vehicles carry LCD clusters. In the first three quarters of 2021, 6.544 million LCD clusters were installed in passenger cars, a like-on-like spurt of 44.5%, of which 12.0-inch (incl.) to 13.0-inch (excl.) LCD clusters were most installed, up to 2.512 million units, up by 35.0%, and 10.0-inch (incl.) to 12.0-inch (excl.) LCD clusters grew at the fastest pace with the installations rocketing by 173.8% to 1.186 million units.

Through the lens of installation in mass-produced models, most new models launched in 2021 are equipped with larger than 10-inch LCD clusters

Cluster Display Solutions of Some Models Launched in 2021

OEM	Model	Launch Time	Cluster Display Solution	Features
GENESIS	G70	Oct. 2021	3D glasses-free cluster	The 12.3-inch glasses-free 3D dashboard delivers a sense of technology, and provides 3D effects for the driver when he/she sees the steering wheel from any angle.
GAC Honda	2022 VE-1 TA Series	Sept. 2021	Full LCD cluster	The 12.3-inch new color full LCD dashboard first mounted on VE-1 TA Series enables information interaction with the center console DA display and supports features like charging visualization, multimedia play/call information, and synchronous navigation mapping.
Volkswagen	Skoda All-new Fabia	Sept. 2021 (UK)	Full LCD cluster	The installation of full LCD clusters in Skoda entry-level models has been a highlight.
Chery	Arrizo 5 Plus	Jan. 2021	LCD cluster	The 10.25-inch full LCD cluster for the full range of the model supports three different styles of UI effects, adding better technological texture to vehicles.
Cadillac	Escalade	2021	P-OLED curved cluster display	The industry's pioneering P-OLED curved cluster display for this model consists of three screens: 7.2-inch touch screen at the front left of driver, 14.2-inch cluster screen at the front of steering wheel, and 16.9-inch infotainment screen at the front right of driver.
	CT5	Jan. 2021	Digital LCD dashboard	The top-of-the-line model carries the 12-inch personalized and customizable digital LCD dashboard.

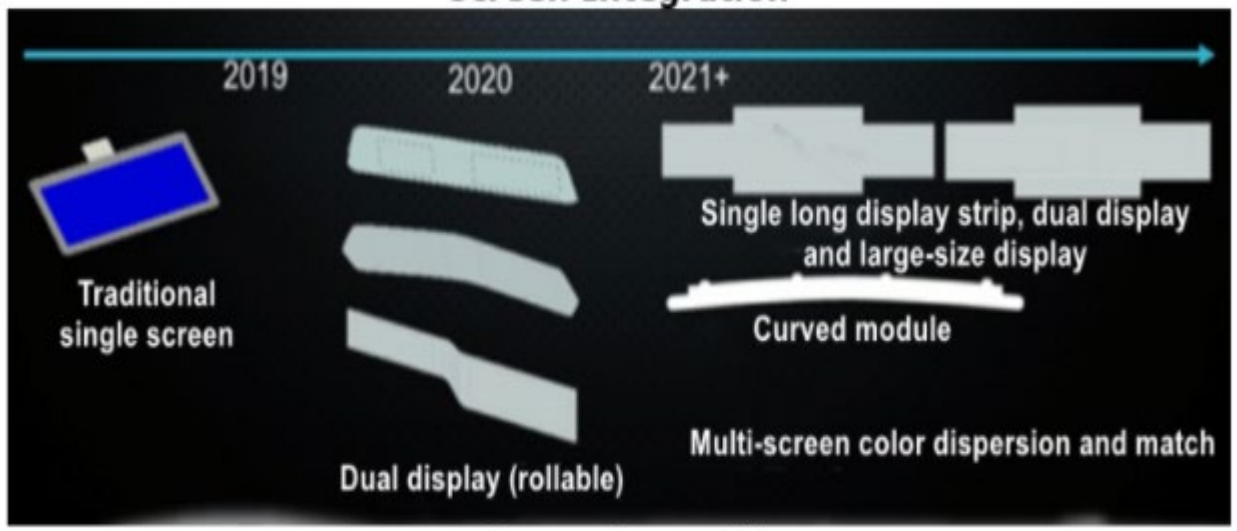
Source: ResearchInChina

From center console displays, it can be seen that the installations of large-size ones have surged. In the first three quarters of 2021, 8.0-inch to 9.0-inch center console displays were most installed, up to 4.016 million units, up by 4.3% from the prior-year period, but with the proportion of the total center console display installations down 4.2 percentage points; the installations of 13.0-inch to 15.0-inch center console displays proliferated by 250.6%; that of 15.0-inch and above center console displays multiplied by 204.0%.

Large-size Display and Multi-screen Display Hold the Trend for Automotive Displays

Multi-screen display
Cockpit electronics are heading in the direction of multi-display integration. Early in 2019, emerging carmakers have rolled out mass-produced models like LiXiang One and ENOVATE ME7 with 4 and even 5-screen displays. Traditional OEMs also step up efforts to deploy, having introduced multi-screen display products since 2020.

Evolution of Automotive Displays from Single Screen to Multi-screen Integration



Source: Desay SV

FAW Hongqi H9 unveiled in August 2020 bears dashboard, center console, and co-pilot seat entertainment displays, 2 rear row entertainment displays, and HUD. In addition, it also packs an electronic image acquisition and display system (i.e., streaming media rearview mirror) which consists of digital camera, image processing and high-definition digital display. The system uses the rear camera to project images onto the display, and displays them on the rearview mirror in digital format.

Great Wall Mecha Dragon introduced in November 2021 is equipped with 10.25-inch dashboard, 27-inch 4K center console display, 25-inch head-up display, two 1.6-inch touch bars, and two rear row capacitive touch screens, as well as external display technology at the rear.

In the future, as standards and regulations are improved, more vehicle displays will be used. For example, in June 2021, Zhejiang Society of Automotive Engineers was approved for release of group standard, the Performance Requirements and Test Methods of Passenger Car Digital Perspective A-pillar System. Neta Auto under Hozon Auto introduced its “transparent A-pillar”-enabled mass-production models with OLED flexible screens as display interfaces. The issuance of this standard will accelerate the application of “transparent A-pillar”.

New Display Technologies Tend to be Production-ready

The soaring demand for vehicle displays give impetus to development of new vehicle display technologies. In current stage, a-Si TFT LCD still prevail in vehicle display market, but advanced display technologies such as LTPS TFT LCD, OLED, mini LED backlight and micro LED are making their way into the market.

OLED has achieved mass production.

The year of 2020 saw the start of production of automotive OLED. Due to high cost, OLED, often larger than 7.2 inches, is largely used in high-end models, with applications including cluster, center console and copilot seat entertainment displays. Suppliers are led by LGD, Samsung Display and BOE.

2021 Mercedes-Benz S-Class sedans differ greatly from the previous generations in application of displays, changing the original siamesed center console display into a large waterfall display, a 12.8-inch vertical waterfall OLED screen with resolution of 1888×1728. They also pack a glasses-free 3D full LCD dashboard, HUD and rear row entertainment display, which connect with each other.

Mercedes-Benz EQS rolled out overseas in September 2021 features an OLED flexible integrated touch screen that sweeps almost from A-pillar to A-pillar, and adopts innovative technologies like optically clear adhesives (OCA) and On-cell touch control.

2021 Cadillac Escalade is equipped with an OLED AR perspective curved display with three screens total – a 7.2-inch driver information display, a 14.2-inch digital dashboard, and a 16.9-inch infotainment screen. Wherein, the cluster option features a large speedometer displaying temperature and time at the left and dynamics at the right. In addition, the display is in night mode where infrared technology is used to observe farther than human eyes.

Mini LED Comes into Mass Production

Mini LED is a necessary transition phase from fine pitch LED to Micro LED. At present, most vehicle display technology companies have deployed Mini LED and Micro LED, and ever more vehicle projects use mini LED backlight technology. One example is Cadillac Lyriq EV in which GM plans to use a 33-inch mini LED backlit display in 2022.

In November 2021, Mecha Dragon, the first model of SL, a high-end brand of Great Wall Motor made a debut at Auto Guangzhou. The Mini-LED external display technology at the rear of this model enables display of user-defined content, the first attempt to apply Mini-LED in cars.

Mini LED And Micro LED Will be Deployed Rapidly

Automotive displays head in the direction of large size and multi-screen integration, and the surging demand creates huge room to grow. Various suppliers are therefore trying hard to deploy innovative technologies such as Mini LED and Micro LED.

Major Suppliers' Deployments in Mini LED/Micro LED Technologies

Company	Mini LED Layout and Development in Vehicle Applications
Shenzhen Longli Technology	The company has started developing Mini-LED technology since 2016; completed and put into use a trial production line in 2018; raised around RMB180 million in 2020 for more investment in Mini-LED production capacity involving 10 lines with mass production capacity for vehicle products. The company together with Wuhan China Star Optoelectronics Technology Co., Ltd. set up a joint innovation laboratory for development of small and medium-size display technologies, especially Mini-LED.
HGC Lighting Solutions	As of 2021Q3, HGC Lighting Solutions has achieved mass production and delivery of vehicle white light Mini LED series products, and partnered with several well-known automakers.
Tianma Microelectronics	The company showcased its self-developed innovative LTPS AM Mini LED HDR display at SID 2019 annual meeting. It exhibited its Micro LED technology online at SID 2021
Lextar Electronics	Lextar focuses on application in high-end products such as gaming laptop computers, vehicle panels, medical displays, and high-end professional graphics displays. It has begun to ship Mini LED in July 2019, with the first batch mainly for 32-inch gaming displays.
	As a Taiwan-based vertically integrated LED vendor, Lextar has also developed I-Mini RGB (red, green and blue) LED automotive modules for dashboard displays and tail lights.
Innolux	Innolux has been shifting from Micro LED to Mini LED backlight, and works hard on vehicle panel market. Innolux is the first one to introduce a vehicle AM Mini LED backlight display, exhibiting a vehicle product that integrates 28.3-inch Mini LED backlight in 2019.
	In 2021, Innolux's Mini LED backlight display technology has broken into high-end vehicle market.
AU Optronics	AU Optronics' Mini LED backlight targets gaming display market. In 2020, AU Optronics launched Mini LED backlight with the best HDR. The company independently developed a Micro LED mass transfer technology. At SID's annual Display Week in 2020, it showed 12.1-inch vehicle dashboard and center console panels which attract much attention, by virtue of good display effects and high integrity.
BOE	In May 2021, BOE mass-produced new-generation glass-based Mini LED and rolled out a 75-inch Mini LED backlight display product. In 2019, BOE and American company Rohinni formed a joint venture to develop Mini LED and Micro LED technologies, a great attempt to forge into larger than 32-inch consumer and automotive display markets.
InfoVision Optoelectronics	The company has rolled out a 12.3-inch Mini LED vehicle display, an optimal partition dimming technology which has been verified by customers.
TCL CSOT	TCL CSOT continues its efforts on Mini/Micro LED. In October 2020, it launched a 48-inch 8K In-cell Touch AM Mini-LED backlit curved vehicle display.

Source: ResearchInChina

Mini LED And Micro LED Deployment

Tianma Microelectronics: in 2020 it first outran JDI and became the world's largest vehicle display company in terms of shipments. The company supplies through Tier1s, covering 92% of global customers (top 24 Tier1s) and 100% of Chinese brands (top 10).

Tianma Microelectronics works to deploy Mini LED and Micro LED technologies. Following the on-site exhibition of its self-developed LTPS AM Mini LED HDR display at annual meeting of Society for Information Display (SID) early in 2019, the company showcased its Micro LED technologies online at SID 2021, including 5.04" Splitting ultra-narrow bezel Micro LED, the world's first 7.56" transparent Micro LED, and innovative technology applications combined with electronic paper.

Moreover, its self-developed Hybrid TFT Display (HTD) technology is in the phase of verification for mass production. The company has deployed HTD on its flexible AMOLED production lines, and will achieve mass production based on the advanced drive and backplane technologies with lower power consumption.

HGC Lighting Solutions: the new-generation white light Mini LED vehicle backlight display module features automotive-grade reliability, ultra-thin display body, multi-zone dynamic control, and million-level ultra-high contrast.

This white light Mini LED display module uses automotive chip and self-developed superior ACSP chip-scale packaging technology. By removing the cost of QD and DBEF and upgrading the production process, it not only delivers automotive-grade reliability but cuts 15-25% production cost. The company have spawned and delivered white light Mini LED vehicle display series products and partnered with several well-known automakers.

TCL CSOT: in November 2021, TCL CSOT joined hands with Yanfeng to roll out the industry's first under-screen camera-based automotive intelligent display. Combining TCL CSOT's blind-hole optical design with the smoked black processing method and Yanfeng's HMI design, the product embeds a camera into backlight hole to enable an integrated under-screen camera solution, that is, the DMS camera is hidden in the display.

What the report include?

The Automotive LCD Cluster and Center Console Display Industry Report, 2021 highlights the following:

- Automotive cluster and center console display (overview, industry chain, industrial policies and standards, market size and competitive pattern, etc.);
- China automotive display market (installation of LCD/HUD/center console/rear seat entertainment displays, display technologies of major suppliers, vehicle display installation schemes of major OEMs, etc.);
- Vehicle display (installation rate, technology trends, business models, development trends, etc.);
- Foreign and Chinese vehicle display system solution providers (vehicle display business, vehicle display technology, etc.);
- Foreign and Chinese vehicle display suppliers (display business, display technology, etc.).

Table of Content

Table of Content

Table of Content

Table of Content

Table of Content

Table of Content

Table of Content

Contact

Beijing Headquarters
TEL: 13718845418
FAX: 010-82601570
Email: report@researchinchina.com

Website:
www.researchinchina.com

WeChat: zuosiqiche

zuosiqiche

Chengdu Branch

TEL: 028-68738514
FAX: 028-86930659