AUTOMOBILE

Lessons from a USD60 billion hit: an automakers' guide to rewiring the chip supply chain

00:00 01:20

Synopsis

Automakers are digging in to overcome the global shortage of semiconductors, something that will leave a lasting impact on the industry. While legacy approaches to supply-chain management can be blamed for the current mess, the real solution lies in making systemic changes. Can auto companies fix what's broken?

The chips are down, literally. And the reverberations are a thunderous USD60 billion.

ICYMI, at the centre of this storm is a shortage of semiconductors globally that has put automakers in muck. At present, there are two kinds of automakers. Those who have been affected by the **chip shortage** and those who soon will be. So much so that the shortage is forcing automakers to sell suboptimal products.

BY
Shobha Mathur
Kanika Saxena
Nirmal John
Shishir Prasad

10 MINS READ

Mar 19, 2021, 12:01 AM IST

General Motors in the US is in such a desperate situation that it is now building pickup trucks without a fuel-management module, which will result in lowering the fuel economy by a mile a gallon.

Clearly, something's gotta give, something's gotta change.

So, who should the automakers blame? Well, no one, but themselves.

Consultancy firm Bain & Company reckons the mess isn't just a result of temporary factors. There are systemic issues at play. It says that a lack of understanding about risk exposure, in combination with "legacy" automotive approaches to supply-chain management, brought the industry to this point. "Individual players, and the industry as a whole, need to define holistic chip strategies that make them more resilient against external shocks," it believes.

This brings up the next question: How is the global automobile industry, and India's automakers, reacting?

The ground situation

There are various approaches to manage the shortage.

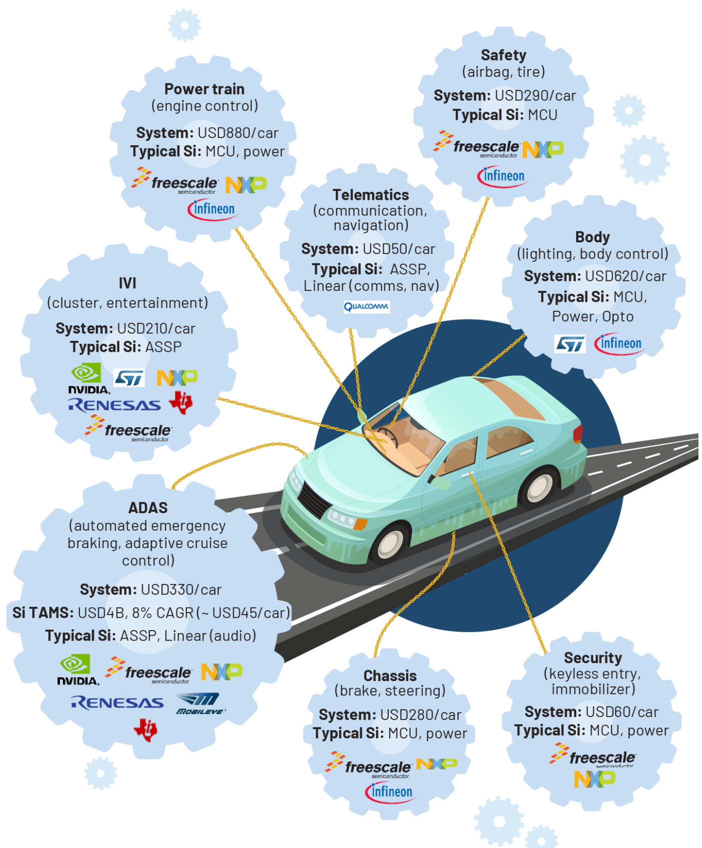
- Stopping production is not a viable option. However, slowing production is one way. Result? Waiting periods for vehicles could rise to between three and six months or beyond, as original equipment manufacturers (OEMs) space out components on a priority basis.
- Spot buying of semiconductor chips in the open market. Mind it, this comes at exorbitant prices.
- Addition of capacity by chipmakers. But that will take time.

- Putting pressure through government-level negotiations on Taiwan's semiconductor behemoth, TSMC, which supplies 80% of chips used by the auto industry globally.
- A search is on for alternative sources that can meet quality requirements. But this isn't going to be easy.
- Wait for white-goods demand to peak and settle to earlier levels as recovery sets in.

Automakers are projected to lose a mind-numbing USD60 billion in sales in 2021, according to consultancy firm IHS Markit. The real solution lies in making systemic changes. Reuters, reporting on Toyota being relatively unscathed thus far, writes that the Japanese company's resilience is explained by its decision to stock key electronics components. Toyota's move stemmed from a lesson learnt during the supply crisis it faced during the Fukushima nuclear meltdown. The carmaker had realised that the lead times for electronics was too long and vulnerable to disasters — natural or otherwise. That said, Japan's second and third largest automakers, **Honda** and Nissan, both had to cut production.

Barnik Chitran Maitra, managing partner, India, at consultancy firm Arthur D. Little, says the South Korean manufacturers, who have a large number of local suppliers and are likely sitting on good chip inventory, have come out relatively unscathed from the shortage.

Chips everywhere



Source: *Bain & Company* ETPrime

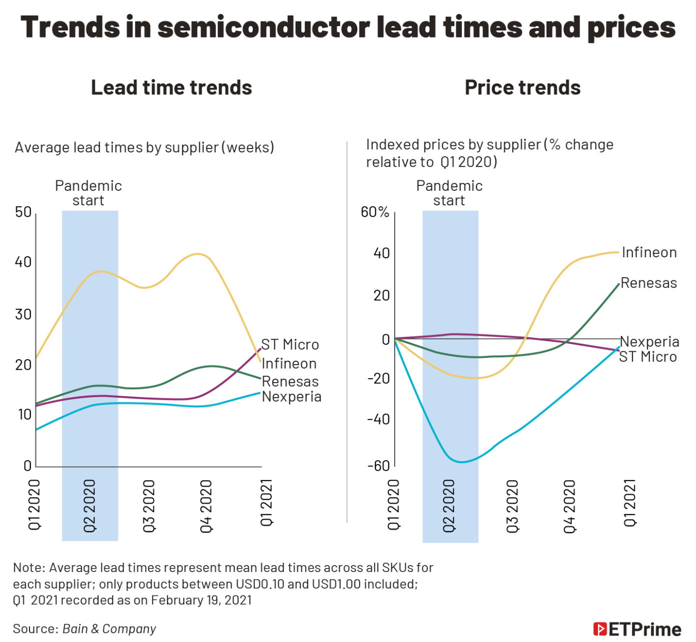
Naveen Gautam, managing director of German electronics companies Hella India Automotive and Hella eMobionics, says they are fighting on a day-to-day basis but haven't stopped supplies to any automaker. Almost all major automakers are Hella's customers. "Locally, Hella has been buying from traders and other vendors and looking at every opportunity of grabbing the material from the market."

Gautam cites the three important channels of sourcing — direct from chipmakers, through their distributors, and buying from traders. The last group is currently releasing limited quantities at five to 20 times higher prices than the normal in the open market. Traders plug gaps when the normal supply chain is unable to replenish stocks. Known as spot buying, it involves small volumes exchanging hands. CAE, a US-based trader of semiconductor-production equipment and commodities, says in 2020, it recorded a 42% growth on the back of heightened demand.

Rethinking automakers' relationship with the silicon supply chain might be the most important change on the anvil. What does that entail?

Tarun Mehta, chief executive of electric scooter maker Ather Energy, says there is a case for automakers reevaluating their lead times for electronics. Mehta, having had trouble setting up supply in the early days of manufacturing the Ather 450, says changes may need to be brought in the just-in-time philosophy automakers have long adopted as best practice. Holding inventory for far longer is critical.

There may also be a need for more aggression from automakers in increasing commonality of components, and flexibility of manufacturing.



Fixing what's broken

On their part, silicon suppliers like Infineon Technologies are going ahead with augmenting capacity, increasing their investment to EUR1.6 billion . "This will enable us to pull in the start of production of our new 300 millimetre facility in Villach, Austria, by around a quarter, to the fourth quarter of our 2021 fiscal year (originally planned for the end of calendar year 2021)," says Girish Kamala, director and head of country sales-automotive, Infineon Technologies India.

Last year, Infineon ran inventories at above-normal levels to minimise supply disruptions, and the same is happening now. "We can fulfil confirmed orders," adds Kamala. For 2021, Infineon had factored in some growth in automobile production and planned accordingly.

German component maker Continental has set up task forces to track the situation closely and quickly take necessary steps to manage the issues arising out of it, according to Prashanth Doreswamy, country head - Continental India and managing director, Continental Automotive Components (India).

"We are in close contact with our customers and suppliers and communicating openly and transparently," says Doreswamy. The auto-component maker claims to be communicating daily with its suppliers down the chain to keep track of production and shipment schedules and monitoring bottlenecks.

Continental says it is negotiating to increase volumes through capacity expansion, investigating alternative sourcing and materials, and is providing additional investments in furthering capacities and supporting its supply chain during the negotiations with sub-suppliers. It is also working with industry associations to lobby governments.

Needed: structural changes
According to David Loftus, president and CEO, Electronic Components Industry Association, one reason for the problem is the structure mandated by the automakers.

"A vehicle needs many more types of chips than a smartphone, but the production of auto models usually only runs into tens of thousands, much of which should be serviced more efficiently by channel partners. In comparison, production lot sizes for smartphones run into millions. So, it's more efficient for them to buy directly from semiconductor manufacturers," he points out.

He says electronics-distribution firms like Avnet or Arrow could have batched demand from various automakers and created the volume that semiconductor producers need. "But a lot of automotive OEMs and tier-1 suppliers like Bosch have forced semiconductor manufacturers to deal with them directly and that has created what amounts to an 'impedance mismatch' in the component supply chain 'circuitry', if you will," he explains.

Production in the auto industry moves on demand forecasting. Swings beyond 10% come with a huge cost. Automotive companies have demand-forecasting systems, which are integrated with dealerships and supply chain work cycles. This is to make sure they function efficiently and in sync. Unfortunately, most of these didn't quite kick in well enough last May, as lockdown eased, and sales slid 80%.

To better prepare for such systemic shocks, automakers have concluded that they need more complex, nuanced forecasting methodologies that go beyond just building a couple of possible scenarios.

A recent report from consultancy firm EY on 'Semiconductor supplies hitting vehicle sales' suggests ways of mitigating challenges in the supply chain with effective technology-based planning. The report talks of a suite of 14 AI-enabled integrated planning solutions to help build a lean and responsive supply chain.

"Other similar disruptions may occur again," cautions Yugesh Aglawe, partner and supply-chain leader, EY India. "Automobile manufacturers should make use of rapid what-if scenario-modelling capabilities that are available in modern-day intelligent digital-planning solutions to assess such risks in advance."

"We have to wait for capacity enhancement by chipmakers so that we get semiconductors to the extent the market requires.

The hurdles for Indian

So, waiting periods will increase."

— Naveen Soni, senior vice-president, sales and service, Toyota Kirloskar Motor

automakers

Currently, more than 75% of all electronics used in Indian cars is imported. While there are limited stocks of electronic control units and controllers with OEMs, the priority is to use them prudently, as the numbers are not adequate to meet the existing demand. Best option is to accept the vehicle bookings and space out deliveries as and when the electronic components are available.

It is the Indian vehicle manufacturers that seem to have borne the brunt of the chip shortage, with Mahindra & Mahindra (M&M), Tata Motors, Ashok Leyland, Volvo Eicher, Hero MotoCorp, and Bajaj Auto, believed to be hit harder.

A Tata Motors spokesperson says the company is taking "appropriate measures" and feels the challenges are likely to continue through FY22. Pawan Goenka, managing director and CEO of M&M, had said during the Q3 FY21 results that the company was managing the problem on a day-to-day basis. "The situation has to be watched and managed. Given the global nature of the situation, it may spill into Q2 of the calendar year."

Interestingly, the top two passenger-vehicle manufacturers, Maruti Suzuki and **Hyundai** Motor India, are largely unscarred so far. Hyundai has control over its value chain with a South Korean chipmaker within its portfolio. Having a significant stake in these manufacturers, it can secure chips for its cars.

Wherever vehicle manufacturers have control over their value chain because of their investments or holdings, they will ensure their demands are met. Tata and M&M are dependent on tier-1 suppliers who are importing and are more impacted, feels Rajeev Singh, partner, Deloitte India.

Shashank Srivastava, executive director, sales and marketing, Maruti Suzuki, says that the company is not facing any shortage, but it is "monitoring the situation very closely". Sources say Maruti has benefitted from placing large orders. Suppliers tend to honour large commitments on a priority basis when stocks are limited, delaying or postponing smaller orders till supply normalises.

While an automaker like Maruti maintains that it has reserves to tide over the irritants in the electronics supply chain for now, it could be in dire straits if the pain is prolonged.

Napino Auto & Electronics, a key electronics supplier to Hero MotoCorp, has been managing long-term orders with suppliers and says it has allocations of semiconductors at the required run rate. Hemant Patil, head, procurement at Napino, claims it is ahead in the queue for supplies, thanks to long-term contracts.

For Toyota Kirloskar Motor (TKM), its average waiting period for models could double to two months if the market demand continues to rise and the shortage continues. Naveen Soni, senior vice-president, sales and service, TKM, says, "We have to wait for capacity enhancement by chipmakers so that we get semiconductors to the extent the market requires. So, waiting periods will increase."

The bottom line

An electric vehicle has a far higher requirement for electronics. So, as the industry moves to an electric future, should it delve deeper into electronics?

Complexity in silicon fabrication may yet prove a bridge too far to do it all in-house, but the current crisis is indicative of the need to develop new capabilities.

There is a school of thought that believes automakers should do an **Apple** by designing their own chips. Indeed, Tesla CEO **Elon Musk** had talked about moving to chips designed in-house, with **Samsung** manufacturing them in the US itself.

But it would pay to be cautious. As Peter Hanbury, partner at Bain & Company and the leader of its manufacturing excellence practice in America, points out, "The cultures and capabilities of the two industries are very different, which would make it very challenging for auto OEMs to design their own chips."

That said, the fact that this conversation is taking place is signal enough of the work to be done by automakers as they stumble into an era that will be defined by even more electronics.

(Graphics by Manali Ghosh)

The latest from ET Prime is now on Telegram. To subscribe to our Telegram newsletter click here.

ADD COMMENT

POPULAR WITH READERS

AUTO COMPONENTS

A car not made is a car never sold: inside the chip shortage that has got automakers in a pickle

10 mins read • By Shishir Prasad , Shobha Mathur , Kanika Saxena & Nirmal John

HDFC is seen not just as a mortgage company but as a financial conglomerate: Keki Mistry, CEO, HDFC

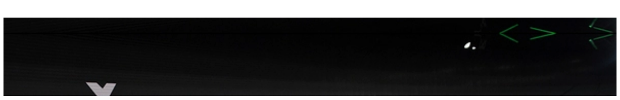
6 mins read • By Joel Rebello & MC Govardhana Rangan

Risks associated with concentrated stock portfolios are high now: How diversified is your portfolio?

6 mins read • By Narendra Nathan

MORE STORIES ON AUTO + AVIATION

MORE FROM
AUTO + AVIATION »



AUTO

Skoda Auto Volkswagen revs up for India 2.0 with mainstream roadmap

10 mins read • By Ketan Thakkar

AUTO COMPONENTS

A car not made is a car never sold: inside the chip shortage that has got automakers in a pickle

10 mins read • By Shishir Prasad , Shobha Mathur , Kanika Saxena & Nirmal John

AVIATION

Jet Airways 2.0: behind-the-scene story of what’s delaying India’s oldest private airline’s take-off

16 mins read • By Tarun Shukla

AUTO

As jostle for third row revs up, Hyundai oils seven-seater SUV Alcazar. Challengers: Tata, M&M, MG

11 mins read • By Shobha Mathur

COVID-19 an opportunity for airlines to go long-haul: Airbus executive

4 mins read • By Mihir Mishra

Business jets flying high as Indians opt for the private experience

3 mins read • By Mihir Mishra