

Semiconductor Chips Shortage in Vehicle Manufacturing

Why in News

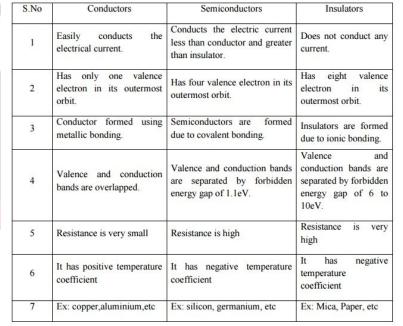
Recently, an unusual **shortage of inputs, especially semiconductor chips,** has made **India-based vehicle manufactures** (car manufactures and premium bikes) curtail production across categories.

Key Points

- Semiconductor Chips:
 - Semiconductors are materials which have a conductivity between conductors
 (generally metals) and nonconductors or insulators (such as most ceramics).
 Semiconductors can be pure elements, such as silicon or germanium, or compounds such as gallium arsenide or cadmium selenide.

• Conductivity is the measure of the ease at which an electric charge or heat can

pass through a material.



- A semiconductor chip is an electric circuit with many components such as transistors and wiring formed on a semiconductor wafer. An electronic device comprising numerous of these components is called Integrated Circuit (IC), and can be found in electronic devices such as computers, smartphones, appliances, gaming hardware and medical equipment.
 - These devices find widespread use in almost all industries, especially in the automobile industry.
- Electronic parts and components today account for 40% of the cost of a new internal combustion engine car, up from less than 20% two decades ago.

- Semiconductor Chips account for a bulk of this increase.
- Reason for Shortage:
 - Covid and Lockdowns:
 - The <u>Covid-19 pandemic</u> and the subsequent <u>lockdowns</u> across the world that forced shut crucial chip-making facilities in countries including Japan, South Korea, China and the US.
 - Its shortage causes **cascading effects**, given that the first one creates pent-up demand that becomes the cause for the follow-up famine.
 - Increased Consumption:
 - The number of transistors mounted in IC chips has doubled every two years. Notably, the **increase in chip consumption over the last decade is also partly attributable** to the rising contribution of electronic components in a car's bill of materials.
- Impact:
 - Reduced Supply:
 - Consumers of semiconductor chips, which are mainly car manufacturers and consumer electronics manufactures, have not been receiving enough of this crucial input to continue production.
 - Chip shortage is measured in chip lead time, which is the gap between when a chip is ordered and when it is delivered.
 - Reduced Production of Automobiles:
 - With just-in-time deliveries, carmakers typically kept low inventory holdings and relied on an electronics industry supply chain to feed production lines as per demand.
 - Delayed Supply and Reduced Features:
 - It has caused **delaying vehicle deliveries**, some companies have reportedly started **discarding features and high-end electronic capabilities** on a temporary basis to deal with the chip shortage.

Way Forward

- The present slump in the automobile industry seems to be a temporary phase.
 Vaccination drive and economic recovery will provide a much needed trigger.
- However, at least for some time, there is a need to reduce Goods and Services Tax (GST) on entry level cars and that on the two wheelers. The state governments also need to reduce the road tax.

Source: IE

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