Electric Cooking in India – Induction vs Infrared Cooktops

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Why in News?

Amid LPG shortages due to the West Asia conflict, many Indian households have shifted to induction and infrared cooktops.

Induction vs Infrared Cooktops—Detailed Comparison		
Feature	**Induction Cooktops**	**Infrared Cooktops**
Working Principle	Uses **rapidly changing electromagnetic field** to directly heat ferromagnetic cookware.	Uses **heated coil/halogen element** beneath glass surface to emit **infrared radiation**, which heats cookware indirectly.
Cookware Compatibility	Requires **ferromagnetic cookware** (cast iron, magnetic stainless steel). Non-magnetic vessels (aluminium, copper, glass) not compatible.	Works with **any cookware** – steel, aluminium, ceramic, glass – no magnetic requirement.
Efficiency	**High -** 85–95% electricity converted to heat (direct vessel heating).	**Moderate** - 70–80% efficiency (heat lost during transfer from coil to glass to vessel).
Heat Control	Precise control via **power electronics (PWM, frequency adjustment)**; efficient even at low heat settings.	Heat control via **phase-angle control** (coil on/off cycles); less precise, distorts current waveform, lowers power factor.
Cooking Speed	Faster heating due to direct energy transfer.	Slower heating; coil warms first, then transfers heat.

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Feature	**Induction Cooktops**	**Infrared Cooktops**
Grid Impact	More efficient, but concentrated cooking demand (morning/evening) can add **3–5 GW spikes**.	Lower efficiency + waveform distortion; leads to higher localised stress on distribution transformers.
Safety	No open flame; surface remains relatively cool except under vessel.	Coil/glass surface gets very hot; higher risk of burns.

Reference

The Indian Express | Electric Cooking