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(57) Abstract :
This invention relates a substitute for conventional concrete made from coal fly ash, a leftover from the production of power using coal. By utilizing coal production waste and drastically lowering the environmental impact of concrete manufacture, the innovation addresses two big environmental issues at once. Fly ash is used as a binder instead of cement, which is less environmentally friendly, to create the robust, long-lasting concrete. Strongly bound calcium-aluminate-silicate-hydrate molecules are produced during the process, forming an inorganic polymer network that is more durable than (hydrated) cement. Method also highlights the advantages of coal bottom ash (CBA) sustainable applications from an economic and environmental perspective. It specifically reveals that CBA is a promising choice in standard, lightweight, self-compacting, and ultra-high-performance concrete, which demonstrates a decrease in both energy consumption and greenhouse gas emissions during concrete manufacturing.

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