

Hydrogen and Carbon Black by Methane Pyrolysis

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Abstract

The carbon black industry has struggled to keep pace with both tightening environmental regulations and the incumbent technology relying on thermal-oxidative decomposition of heavy aromatic oils. Net-zero emissions targets and decarbonization ambitions are driving demand for sustainable technologies, and there continues to be considerable research and development effort dedicated to producing carbon black more efficiently, with improved product properties, and with less environmental impact.

Monolith Corporation is a leader in this space, having successfully commercialized its methane pyrolysis process utilizing an electric plasma torch to thermally decompose natural gas into carbon black and hydrogen. The Monolith plasma-based technology is combustion free and has a substantially reduced environmental footprint relative to traditional carbon black manufacturing. Monolith has a vision for its technology to play a key role in the pathway to net-zero through carbon-free hydrogen and clean carbon black.

In this review, a general overview of the Monolith technology is provided along with production and investment cost estimates for a plant sized at a capacity to produce 180,000 tons/yr of carbon black.

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