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(71) Applicant: **EXXONMOBIL RESEARCH AND ENGINEERING COMPANY** [US/US]; 1545 Route 22 East, P.O. Box 900, Annandale, NJ 08801-0900 (US).

(72) Inventors: **SKOULIDAS, Anastasios, I.**; 9 Emley Road, Pittstown, NJ 08867 (US). **O'NEAL, Everett, J.**; 39 Grandin Court, Asbury, NJ 08822 (US). **GATT, Joseph, E.**; 5 Roxiticus Court, Annandale, NJ 08801 (US). **KOVVALI, Anjaneya, S.**; 1160 Millwood Pond Drive, Herndon, VA 20170 (US).

(74) Agent: **NEGRON, Liza** et al.; ExxonMobil Research and Engineering Company, 1545 Route 22 East, P.O. Box 900, Annandale, NJ 08801-0900 (US).

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(54) Title: PROCESS INTENSIFICATION FOR REVERSE FLOW REACTORS

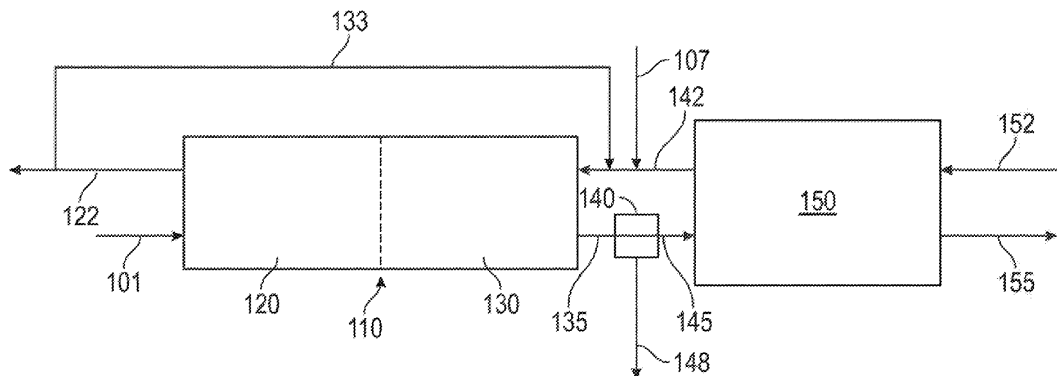


FIG. 1

(57) Abstract: Systems and methods are provided for improving thermal management and/or efficiency of reaction systems including a reverse flow reactor for performance of at least one endothermic reaction and at least one supplemental exothermic reaction. The supplemental exothermic reaction can be performed in the recuperation zone of the reverse flow reactor system. By integrating the supplemental exothermic reaction into the recuperation zone, the heat generated from the supplemental exothermic reaction can be absorbed by heat transfer surfaces in the recuperation zone. The adsorbed heat can then be used to heat at least one of the fuel and the oxidant for the combustion reaction performed during regeneration, thus reducing the amount of combustion that is needed to achieve a desired temperature profile at the end of the regeneration step.

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