

ABSTRACT

A bladed reactor for pyrolysis of hydrocarbons comprises a rotor with blades (3) they form an axial-flow blade cascade, a fixed torus-shaped hoop (10) that adjoins the tips of said blades, and a housing (5) that encloses the hoop and a rotor periphery so that a passage having a ring shape of its meridian section is formed. One or more partitions are installed in the passage, an inlet port (18) is located directly after each partition while an outlet port (19) is located directly in front of each partition. Nozzle vanes (20) forming a nozzle cascade are installed upstream of the blade cascade, and diffusing vanes (21) forming a diffusing cascade are installed downstream of the blade cascade. There is a vaneless space (22) between the exit from the diffusing cascade and the entry into the nozzle cascade. A group of nozzle vanes arranged directly after each partition may be separated off from the remaining nozzle vanes by a bulkhead so that a channel is formed which connects the corresponding inlet port (18) with separated group of nozzle vanes to simplify the reactor starting. Geometrical parameters of the nozzle and diffusing cascades can vary in the circumferential direction to provide the identical pressure at an inlet of the blade cascade throughout a length thereof and to provide the identical pressure at an outlet of the blade cascade throughout the length thereof, which reduces radial leakages through gaps between the rotor and the housing.



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