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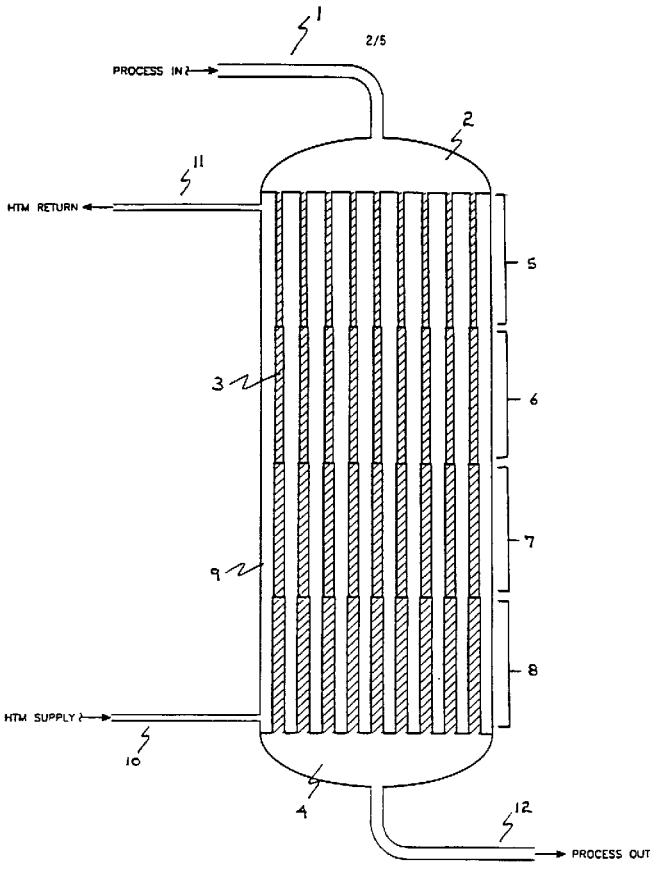
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(54) Title: FLOW REACTORS FOR CHEMICAL CONVERSIONS WITH HETERGENEOUOS CATALYSTS



(57) Abstract: A apparatus for use in process systems which include exothermic chemical conversions of organic compounds to value added products is disclosed more particularly, flow reactors for exothermic chemical conversions using a fixed heterogeneous catalyst with means for control of the exotherm. Flow reactors of the invention comprise a plurality of walled conduits (3) each having an outer surface disposed for contact with a heat-transfer medium, an inlet distribution manifold (2) adapted for flow communication with a downstream manifold (4) through channels formed by heterogeneous catalytic material disposed within each conduit during operation in a sequence of zones for catalyst having the same or different length along the longitudinal coordinate of the conduit and within each zone essentially uniform cross-section of the conduit measured in a plane perpendicular to the longitudinal coordinate thereby defining volume of the zone, and the sequence of zones comprising of at least two zones (5, 6, 7, 8) such that each downstream zone has a larger or smaller cross-section than the contiguous upstream zone. Another aspect of the invention includes processes which use such flow reactors, for example the continuous manufacture of maleic anhydride.

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