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(71) Applicant (for all designated States except US): **UOP LLC** [US/US]; 25 East Algonquin Road, Des Plaines, IL 60017-5017 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **MILLER, Lawrence, W.** [US/US]; 25 East Algonquin Road, Des Plaines, IL 60017-5017 (US). **SENETAR, John, J.** [US/US]; 25 East Algonquin Road, Des Plaines, IL 60017-5017 (US).

(74) Common Representative: **UOP LLC**; John G. Tolomei, 25 East Algonquin Road, Des Plaines, IL 60017-5017 (US).

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(54) Title: TWO-STAGE QUENCH TOWER FOR USE WITH OXYGENATE CONVERSION PROCESS

(57) **Abstract:** The present invention relates to a process for the recovering heat and removing impurities from a reactor effluent stream withdrawn from a fluidized exothermic reaction zone for the conversion of oxygenates into light olefins from an oxygenate feedstream. The process comprises a novel two-stage quench tower system to remove water from the reactor effluent stream in the first tower and recover heat from the reactor effluent to at least partially vaporize the feedstream by indirect heat exchange between the oxygenate feedstream and either a first stage overhead stream or a first stage pumparound stream. A drag stream withdrawn from the first tower comprises the majority of the impurities and any higher boiling oxygenates. The second stage tower further removes water from the light olefin product stream and provides a purified water stream which requires only minimal water stripping to produce a high purity water stream. The present invention concentrates the impurities into a relatively small stream and results in a significant energy and capital savings in providing a vaporized feedstream to the fluidized exothermic reaction zone.



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