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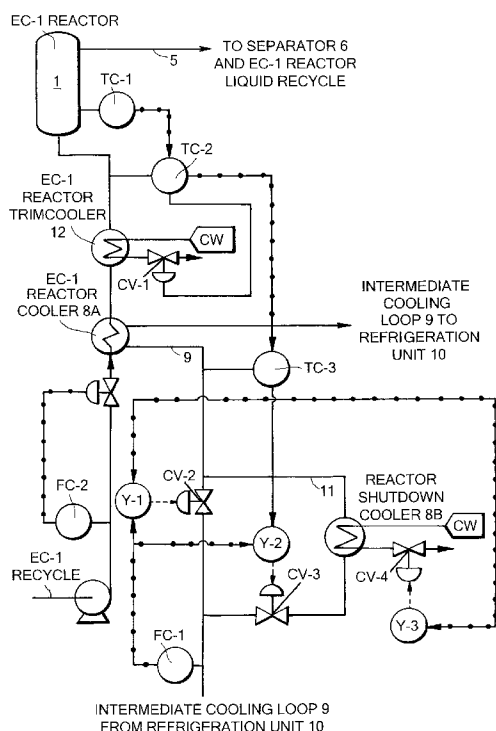
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(54) Title: HEAT INTEGRATION



(57) Abstract: A heat integration system for removing heat of reaction from an EC-I Reactor and generating Chilled liquid for use by one or more Consumer Units, in a catalytic process for producing EC from EO for conversion into MEG wherein the system comprises an EC-I Reactor Cooler suitable for removing heat from an EC-I Reactor, an Intermediate Loop which is in communication with the Reactor Cooler and with an absorption Refrigeration Unit, and which is suitable for conducting Intermediate liquid therebetween, the absorption Refrigeration Unit being suitable for generating Chilled liquid, and a Chilled liquid loop suitable for conducting Chilled liquid generated in the absorption Refrigeration Unit for use by one or more Consumer Units, the system being such that the absorption Refrigeration Unit uses heat generated in the EC-I Reactor to generate Chilled liquid for the Chilled liquid loop and Consumer Unit(s), wherein the system additionally comprises a Shutdown Cooler having an independent cooling source which is suitable, alternatively or in addition to the absorption Refrigeration Unit, for removing heat from the EC-I Reactor, and wherein the system additionally comprises an independent stand-by source of Chilled liquid which is suitable, alternatively or in addition to the absorption Refrigeration Unit, for generating chilled liquid, to serve the one or more Consumer Units; a control system for use in the heat integration system; a two phase separator for separating two phase flow in a side draw from the EC-I Reactor in a first compartment providing liquid recycle to EC-I and a second compartment providing a two phase flow to a second EC Reactor EC-2, such that the two phase flow to EC-2 Reactor is stable, the separator being suitable for use in the process and the heat integration system; their corresponding methods; and the uses of the system and separator in an EO/ethylene glycol (EG)

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