the coolant system and may be higher than the temperature needed for the target production, resulting in overproduction of the alkylene oxide beyond that which is economically desirable or resulting in limitations in downstream recovery sections, such as a distillation section. While it may be possible to reduce gas phase promoter concentration to avoid such overproduction, underchloriding the catalyst can irreversibly impair catalyst efficiency. In addition, gas phase promoter concentrations are sometimes difficult to control to a degree necessary to maintain a desired alkylene oxide production parameter value due to their relatively low flow rates and the lack of sensitivity of available flow control systems. The problem tends to be more acute in the period following start-up when the activity of high efficiency catalysts tends to be high and/or the alkylene production target is low.

SUMMARY

[0001] ~~In accordance with a first aspect of the present disclosure,~~There is provided a method for reducing the value of an alkylene oxide production parameter in a process for making the alkylene oxide by reacting a feed gas comprising an alkylene, oxygen, and at least one organic chloride over a high-efficiency silver catalyst is provided. The method comprises operating the process at a first reaction temperature, a first overall chloriding effectiveness, and a first concentration of oxygen in the feed gas to yield a first value of the alkylene oxide production parameter. The method further comprises selecting a target value of the alkylene oxide production parameter which is less than the first value of the alkylene oxide production parameter. At least one process parameter is adjusted such that the alkylene oxide production parameter decreases, wherein the step of adjusting at least one alkylene oxide production parameter comprises first decreasing the concentration of oxygen in the feed gas.

[0002] In accordance with ~~a further aspect~~an embodiment of the present disclosure, a method of maintaining a desired value of an alkylene oxide production parameter in a process for making the alkylene oxide by reacting a feed gas comprising an alkylene, oxygen, and at least one organic chloride over a high-efficiency silver catalyst is described. The method comprises the steps of selecting a target value of alkylene concentration in the feed gas and a target value of oxygen concentration in the feed gas, wherein the target value of the alkylene concentration in the feed gas, the target value of the oxygen concentration in the feed gas, and the desired alkylene oxide production parameter correspond to a first reaction

temperature. The method further comprises maintaining at least one selected from the group consisting of the alkylene concentration in the feed gas and the oxygen concentration in the feed gas below its corresponding target value to maintain the desired value of the alkylene oxide production parameter at a second reaction temperature. In certain examples, the second reaction temperature is a minimum reaction temperature as dictated by process constraints such as reactor cooling circuit capability limitations.

[0002a] In a first aspect, there is provided a method of maintaining a desired value of an alkylene oxide production parameter in a process for making the alkylene oxide by reacting a feed gas comprising an alkylene, oxygen, and at least one organic chloride over a high-efficiency silver catalyst, the method comprising the steps of: selecting a target value of alkylene concentration in the feed gas and a target value of oxygen concentration in the feed gas, wherein the target value of the alkylene concentration in the feed gas, the target value of the oxygen concentration in the feed gas, and the desired alkylene oxide production parameter correspond to a first reaction temperature; and maintaining at least one selected from the group consisting of the alkylene concentration in the feed gas and the oxygen concentration in the feed gas below its corresponding target value to maintain the desired value of the alkylene oxide production parameter at a second reaction temperature greater than the first reaction temperature.

[0003] In accordance with an additional ~~aspect~~ embodiment of the present disclosure, a method of maintaining a desired value of an alkylene oxide production parameter in a process for making the alkylene oxide by reacting a feed gas comprising an alkylene, oxygen, and at least one organic chloride over a high-efficiency silver catalyst is described. The method comprises the steps of selecting a target value of alkylene concentration in the feed gas, a target value of oxygen concentration in the feed gas, and a target value of carbon dioxide concentration in the feed gas, wherein the target value of the alkylene concentration in the feed gas, the target value of the oxygen concentration in the feed gas, the target value of carbon dioxide concentration in the feed gas, and the desired alkylene oxide production parameter correspond to a first reaction temperature. The method further comprises maintaining the carbon dioxide concentration in the feed gas above its corresponding target value while maintaining the alkylene concentration in the feed gas and the oxygen concentration in the feed gas at or above their corresponding target values to maintain the

desired value of the alkylene oxide production parameter at a second reaction temperature greater than the first reaction temperature.

[0003a] In another aspect, there is provided a method of maintaining a desired value of an alkylene oxide production parameter in a process for making the alkylene oxide by reacting a feed gas comprising an alkylene, oxygen, and at least one organic chloride over a high-efficiency silver catalyst, the method comprising the steps of: selecting a target value of alkylene concentration in the feed gas, a target value of oxygen concentration in the feed gas, and a target value of carbon dioxide concentration in the feed gas, wherein the target value of the alkylene concentration in the feed gas, the target value of the oxygen concentration in the feed gas, the target value of carbon dioxide concentration in the feed gas, and the desired alkylene oxide production parameter correspond to a first reaction temperature; and maintaining the carbon dioxide concentration in the feed gas above its corresponding target value while maintaining the alkylene concentration in the feed gas and the oxygen concentration in the feed gas at or above their corresponding target values to maintain the desired value of the alkylene oxide production parameter at a second reaction temperature greater than the first reaction temperature.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] Referring now to the drawings, illustrative embodiments are shown in detail. Although the drawings represent some embodiments, the drawings are not necessarily to scale and certain features may be exaggerated, removed, or partially sectioned to better illustrate and explain the present invention. Further, the embodiments set forth herein are exemplary and are not intended to be exhaustive or otherwise limit or restrict the claims to the precise forms and configurations shown in the drawings and disclosed in the following detailed description