ABSTRACT OF THE DISCLOSURE

A THREE COLUMN CRYOGENIC CYCLE FOR THE PRODUCTION OF IMPURE OXYGEN AND PURE NITROGEN

A cryogenic process for producing impure oxygen and/or substantially pure nitrogen utilizes a classic double column arrangement and an additional third column operating at a medium pressure, i.e. between the pressure of the higher pressure stage and the lower pressure stage of the double column system. A portion of the feed air is separated in the stages of the double column system, and another portion of the feed air is distilled in the medium pressure stage. Crude liquid oxygen from the higher pressure stage and/or the medium pressure stage is reduced in pressure and boiled in a reboiler/condenser at the top of the medium pressure column. The vaporized crude liquid oxygen from the top reboiler/condenser of the medium pressure column is subsequently introduced as a vapor feed to the lower pressure stage, which reduces irreversibilities of separation in the lower pressure stage.

(Figure 3)