Abstract

Process for producing ultrapure nitrogen

The invention relates to a process for producing ultrapure nitrogen by low-temperature fractionation of air in a rectification system having at least one rectification column, in which process compressed and purified feed air is conducted into a pressure column, an oxygen-free pressurized nitrogen fraction is produced from the pressure column, conducted into a low-pressure column and in the low-pressure column carbon-monoxide-free low-pressure nitrogen is produced as overhead gas.

According to the invention, the oxygen-free pressurized nitrogen fraction (1) is either taken off in the liquid state from an upper region of the pressure column or is provided from a liquid tank (22) containing stored oxygen-free nitrogen and the oxygen-free pressurized nitrogen fraction (1) is expanded into the bottom-heated low-pressure column (2). In the course of this, ascending vapour is formed in the low-pressure column (2) and using a reflux applied at the top of the low-pressure column (2) is freed from carbon monoxide using ultrapure nitrogen, withdrawn as carbon-monoxide-free overhead gas (5) at the top of the low-pressure column (2) and, after a pressure increase (5), partially liquefied. The liquefied part (17, 18) is expanded into a bottom-heated He-Ne-H_2 column (4) from which the ultrapure nitrogen (19) is taken off in the liquid state.

Figure 1 is associated herewith