

Title (en)

METHOD AND DEVICE FOR THE LOW-TEMPERATURE SEPARATION OF AIR AT VARIABLE ENERGY CONSUMPTION

Title (de)

VERFAHREN UND VORRICHTUNG ZUR TIEFTEMPERATURZERLEGUNG VON LUFT MIT VARIABLEM ENERGIEVERBRAUCH

Title (fr)

PROCÉDÉ ET DISPOSITIF DE FRACTIONNEMENT DE L'AIR À BASSE TEMPÉRATURE À CONSOMMATION D'ÉNERGIE VARIABLE

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Application

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Abstract (en)

[origin: WO2016005030A1] The invention relates to a method and to a device used to variably obtain a compressed-gas product (72; 73) by means of the low-temperature separation of air in a distillation column system, which distillation column system comprises a high-pressure column (21) and a low-pressure column (22). The entire feed air is compressed in a main air compressor (2) to a first pressure, which is at least 4 bar higher than the operating pressure of the high-pressure column (21). A first partial flow (8, 11, 14) of the feed air (7) compressed in the main air compressor (2) is cooled in a main heat exchanger (13) to an intermediate temperature and expanded in a first air turbine (15) in such a way that work is performed and is introduced into the distillation column system (40; 18, 19, 20). A second partial flow (12, 27, 29, 30) of the feed air compressed in the main air compressor (2) is post-compressed in a first post-compressor (9), cooled in the main heat exchanger (13), and then expanded (31) and introduced into the distillation column system. A first product flow (69; 75) is removed from the distillation column system in the liquid state, subjected to a pressure increase (71; 76) to a first product pressure, evaporated or pseudo-evaporated and heated in the main heat exchanger (13), and obtained as a first compressed-gas product (GOX IC; GAN IC). The entire feed air is compressed in a multi-stage main air compressor (2) from an inlet pressure to a final pressure. At least at times, a part (65) of the first partial flow (16) of the feed air expanded in such a way that work is performed is mixed with the total air flow downstream of the first stage of the main air compressor (2). In a first operating mode, a first amount of first compressed-gas product is obtained, and, in a second operating mode, a second, smaller amount is obtained. In the first operating mode, a first amount of air (65, 66) expanded in such a way that work is performed, which first amount can also be zero, is compressed in the main air compressor (2), and, in the second operating mode, a second, larger amount is compressed in the main air compressor.

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