

Abstract

A turbo chiller that has an oil-free configuration, which reduces the frequency of maintenance and maintenance-induced release of refrigerant, and can achieve a reduced environmental impact by utilizing the characteristics of the low-pressure refrigerant R1233zd(E) that reaches negative pressure at a saturation temperature of 18°C or lower. The turbo chiller comprises a refrigeration cycle that includes a turbo compressor (2), a condenser, a decompression device, and an evaporator connected in sequence via piping and is filled with a refrigerant; wherein the refrigerant is a low-pressure refrigerant R1233zd(E) refrigerant with low global warming potential and low ozone depletion potential; the turbo compressor (2) has a direct drive configuration in which a rotating shaft (18) of impellers (15, 17) is directly joined to a motor (19); and the rotating shaft (18) is supported by magnetic bearings (20, 21, 23, 24).