

## **Abstract**

The present disclosure relates to a Roots pump rotor with pneumatic sealing grooves and a Roots pump. Roots vacuum pump rotors work in pairs, cross sections of the two rotors perpendicular to an axis of rotation exhibit a figure-8 leaf-shaped contour, two side surfaces of the figure-8 leaf shape are provided with annular pneumatic sealing grooves, and when leakage airflow exists in a clearance between side surfaces on two sides of the rotor and a wall surface of a pump body, the pneumatic sealing grooves provided in the side surfaces can reduce a leakage amount through the clearance between the side surfaces and the wall surface of the pump body. By means of the principle of pneumatic sealing, the present disclosure reduces pressure difference between two sides of a sealing device. Combined with a vortex structure formed in the groove during rotation of the rotor, backflow loss and air leakage loss in the clearance between the side surfaces on the two sides of the rotor and the wall surface of the pump body may be significantly mitigated under the premise of not changing the thickness dimension of the rotor, thereby effectively suppressing the clearance leakage flow caused by the pressure difference in the pump, and enhancing the overall pumping speed.

[FIG. 1]