

ABSTRACT

Disclosed is a main drive high-pressure sealing system for a shield machine. In the system, an inlet of a compressed air input interface is used for connecting to a gas source; an inlet of a first positive action pneumatic regulating valve (21) is connected to an outlet of the compressed air input interface, and an outlet thereof is connected to an inlet of a first reaction pneumatic regulating valve (51) and an oil gas seal cavity (P2); an outlet of the first reaction pneumatic regulating valve (51) is connected to an exhaust pipeline; a positive pressure detection end of each of the first positive action pneumatic regulating valve (21) and the first reaction pneumatic regulating valve (51) is connected to an air cushion storehouse; and a negative pressure detection end of each of the first positive action pneumatic regulating valve (21) and the first reaction pneumatic regulating valve (51) is connected to the oil gas seal cavity (P2). The system realizes pneumatic closed-loop feedback and servo response control, is safe and reliable, and has a high degree of automation, thereby improving a theoretical pressure-bearing capacity of a lip seal. Further disclosed is a slurry balance shield machine configured with the system.