

Claims:

1. An intelligent dual drive pump, characterized by comprising:

a water pump, the water pump comprising a pump housing (100) and an impeller (200), wherein the pump housing (100) forms a pressure chamber (1001) having suction ports (1002) on both sides, the pump housing (100) further comprising an inlet pipe (102) and an outlet pipe (103), the outlet pipe (103) communicating with the pressure chamber (1001), and the inlet pipe (102) communicating with the suction ports (1002); the pump housing (100) further comprising a rotatable main shaft (101) penetrating the pressure chamber (1001), with both ends of the main shaft (101) extending outward from the pump housing (100);

the impeller (200) disposed within the pressure chamber (1001) and between the two suction ports (1002), the impeller (200) is configured to draw water from the inlet pipe (102) through the suction ports (1002) into the pressure chamber (1001) and discharge it from the outlet pipe (103);

two motors (300), each motor (300) comprising a casing (301), a stator (302), and a rotor (303), the casing (301) having a first end with a first bearing (304) and a second end of the casing (301) with a second bearing (305) and a through hole, the second bearing (305) disposed in the through hole; the stator (302) disposed within the casing (301), the rotor (303) rotatably disposed within the casing (301); the main shaft (101) entering the casing (301) through the through hole and disposed on the first bearing (304) and the second bearing (305);

a controller (400) configured with a variable frequency module for adjusting the power supply frequency the motors (300);

wherein the pump housing (100) comprises a first water inlet passage (1003) and a first water return passage (1004), the first water inlet passage (1003) communicating with the pressure chamber (1001), the first water return passage (1004) communicating with the inlet pipe (102); the casing (301) comprising a second water inlet passage (307) and a second water return passage (308), the first end of the casing (301) further comprising a cooling passage (306) connecting the second water inlet passage (307) and the second water return passage (308) and disposed on the outer side of the first bearing (304), the second water inlet passage (307) connected to the first water inlet passage (1003), the second water return passage (308) is connected to the first water return passage (1004);

wherein the rotors (303) of the two motors (300) and the impeller (200) of the water pump are fixedly connected to the main shaft (101), the pump housing (100) equipped with the motors

(300) on both sides, the second ends of the casings (301) of the two motors (300) fixed to the pump housing (100) to form a coaxial integrated structure of the motors (300) and the water pump;

wherein the pump housing (100) comprises a first pump body (104) and a second pump body (105), the first pump body (104) comprising a water inlet groove and a first installation notch (1042) on both sides, the water inlet groove communicating with the inlet pipe (102), the water inlet groove further comprising a protruding structure dividing the water inlet groove into two first water inlet slots (1041), communicating with the inlet pipe (102), the protruding structure forming a first arc-shaped groove (1044) communicating with the outlet pipe (103); both sides of the protruding structure further comprising a first water inlet notch (1043);

the second pump body (105) forming a second arc-shaped groove (1051), both sides of the second arc-shaped groove (1051) sequentially comprising a second water inlet slot (1052), a second water inlet slot (1053), and a second installation notch (1054);

the second pump body (105) disposed on the first pump body (104), the first arc-shaped groove (1044) and the second arc-shaped groove (1051) connecting to form the pressure chamber (1001), the first water inlet notch (1043) and the corresponding second water inlet slot (1052) connecting to form the suction port (1002), the first water inlet slot (1041) and the corresponding second water inlet slot (1053) connecting to form a water inlet cavity (1005) communicating with the pressure chamber (1001) through the suction port (1002); the first installation notch (1042) and the corresponding second installation notch (1054) connecting to form an axle hole, the main shaft (101) passing through the suction port (1002) and dynamically sealed in the axle hole;

the water inlet cavity (1005) comprising a guide component (106) with a through hole and a generally conical guide surface (1061) configured to guide the water flow in the water inlet cavity (1005) towards the suction port (1002);

the guide surface (1061) further comprising a protruding guide rib (1062), extending along the axis of the main shaft (101) towards the suction port (1002), the two sides of the guide rib (1062) forming an arc-shaped surface configured to guide the water flow in the water inlet cavity (1005) towards the suction port (1002);

the first water inlet passage (1003) further comprising a branch passage (10031), the inner wall of the through hole and the outer wall of the main shaft (101) forming a first auxiliary passage (1063);

the axle hole comprising a mechanical seal assembly (107), the mechanical seal assembly (107)

comprising a mechanical seal cover (1071), a static seal ring (1072), and a dynamic seal ring (1073), the static seal ring (1072) disposed on the mechanical seal cover (1071), the dynamic seal ring (1073) and the static seal ring (1072) forming a dynamic seal area where they contact; the mechanical seal cover (1071) sealed in the axle hole, the main shaft (101) passing through the mechanical seal assembly (107), the guide component (106) fixed on the mechanical seal cover (1071), and the dynamic seal ring (1073) disposed on the main shaft (101);

the guide component (106) comprising a second auxiliary passage (1064), the branch passage (10031) connected to the first auxiliary passage (1063) through the second auxiliary passage (1064), the outlet of the second auxiliary passage (1064) directing the water flow towards the dynamic seal area;

wherein the water flow exiting the second auxiliary passage (1064) cleans the dynamic seal area formed between the dynamic seal ring (1073) and the static seal ring (1072).

2. The intelligent dual drive pump according to claim 1, characterized in that the casing (301) comprises a shell (3011) disposed between a first end cover (3012) and a second end cover (3013), the stator (302) disposed within the shell (3011), the first bearing (304) disposed on the first end cover (3012), the second bearing (305) disposed on the second end cover (3013); the outer surface of the first end cover (3012) comprising a cooling water groove (3014) disposed on the outer side of the first bearing (304), the first end cover (3012) further comprising a sealing component (3015) sealing and covering the cooling water groove (3014), the sealing component (3015) and the cooling water groove (3014) forming the cooling passage (306); wherein the second end cover (3013) is fixedly connected to the pump housing (100).
3. The intelligent dual drive pump according to claim 2, characterized in that the shell (3011) comprises a first passage (3016) and a second passage (3017); the first end cover (3012) and the second end cover (3013) respectively comprising a third passage (3018) and a fourth passage (3019); the first passage (3016) connected to the cooling passage (306) through the third passage (3018); the first passage (3016) and the third passage (3018) connected to form the second water inlet passage (307); the second passage (3017) and the fourth passage (3019) collectively forming the second water return passage (308).
4. The intelligent dual drive pump according to claim 3, characterized in that the shell (3011) forms an annular passage (309) arranged around the stator (302); the first passage (3016) and the second passage (3017) connected to the annular passage (309).
5. The intelligent dual drive pump according to claim 1, characterized in that the first water inlet

passage (1003) is disposed on the second pump body (105) and connected to a second arc-shaped groove (1051), while the first water return passage (1004) is disposed on the first pump body (104) and connected to the first water inlet slot (1041).

6. A water supply system, comprising a water supply pipe, characterized by further comprising the intelligent dual drive pump according to any one of claims 1-9, wherein the intelligent dual drive pump is connected to the water supply pipe.