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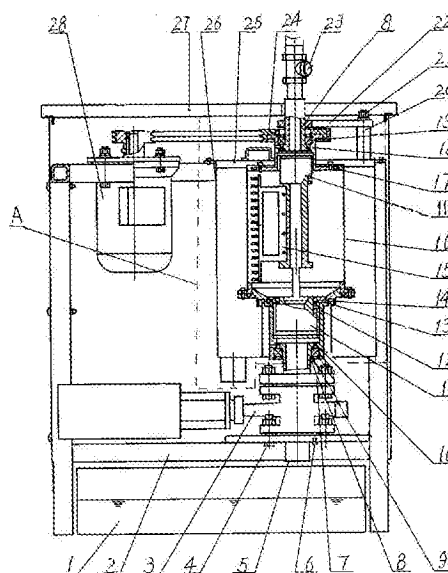
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(54)发明名称

一种自动控制的滤筒式污泥浓缩装置

(57)摘要

本发明公开了一种自动控制的滤筒式污泥浓缩装置,主要用于日处理量在20-50吨的小型生活污水处理一体机中。主要技术方案:在支架的台板上固定外桶;外桶内中轴与支撑杆连接并固定在支架上,中轴与上连接座配合;中轴上、下部安装机械密封件,下连接座与中轴配合;中轴中部通过上、下连接座安装过滤筒,过滤筒内,中轴的四个键槽分别定位安装毛刷;在中轴下端连接法兰盘,法兰盘与电动蝶阀连接;在支架台板左边安装电机。本发明通过试用证明:从根本上克服了原装置体积大、制造成本高的现象,达到有效的降低成本,提高污水处理效率,满足20-50吨的小型生活污水处理一体机的需求。



1. 一种自动控制的滤筒式污泥浓缩装置,其特征在于:包含接泥盘(1)、支架(2)、电动蝶阀(3)、螺栓(4)、控止圈(5)、螺钉(6)、法兰盘(7)、中轴(8)、挡圈(9)、销(10)、机械密封件(11)、下连接座(12)、滤圈座(13)、滤圈(14)、毛刷(15)、过滤筒(16)、密封圈(17)、上连接座(18)、轴承(19)、双头螺杆(20)、螺母(21)、支撑杆(22)、止回阀(23)、传动轮(24)、活动桶盖(25)、外桶(26)、活动顶盖(27)、电机(28)、管(29)、提升泵(30),具体结构:a、在支架(2)顶部装有活动顶盖(27),支架的台板上,用螺钉(6)固定外桶(26),外桶上装有活动桶盖(25); b、外接止回阀(23)的中轴(8)与支撑杆(22)连接并用螺钉止紧,支撑杆(22)用双头螺杆(20)、螺母(21)与支架(2)固定连接,中轴(8)通过轴承(19)与上连接座(18)配合连接,上连接座与传动轮(24)通过螺钉固定;c、中轴(8)上部通过螺钉(6)、销(10)安装机械密封件(11),机械密封件紧靠上连接座(18);d、中轴(8)下部通过螺钉(6)、销(10)安装机械密封件(11),机械密封件紧靠下连接座(12),在下连接座上通过螺钉(6)安装滤圈座(13)、滤圈(14),下连接座(12)通过轴承(19)、挡圈(9)与中轴(8)配合连接;e、中轴(8)中部,通过上连接座(18)、下连接座(12)、螺钉(6)、密封圈(17)安装过滤筒(16),在过滤筒内,中轴(8)的四个键槽分别定位安装毛刷(15);f、在中轴(8)下端螺纹连接法兰盘(7),法兰盘通过螺栓(4)、法兰垫与支架固定的电动蝶阀(3)连接,电动蝶阀出口处螺纹连接控止圈(5);g、在支架(2)的台板左边,通过螺栓(4)安装电机(28),由皮带将电机和上连接座的传动轮(24)连接。

一种自动控制的滤筒式污泥浓缩装置

技术领域

[0001] 本发明涉及一种污水处理装置,具体是一种自动控制的滤筒式污泥浓缩装置,主要用于日处理量在20-50吨的小型生活污水处理一体机中。

背景技术

[0002] 应用活性污泥法进行生活污水处理,具有成本低的优势,但污泥浓度的控制是关键,污泥浓度的有效控制,不但直接影响水处理的质量和效率,还直接影响微生物的生长环境,因此必须适时抽取处理池中的多余污泥,以有效控制其污泥浓度,确保处理效果和效率。双面导流一体机,就是应用活性污泥法加双面导流原理进行污水处理的一种生活污水处理一体机,它以较低的制造成本和运行成本,使处理效果达到GB18918—2002《城镇污水处理厂污染物排放标准》的一级A标准要求。但这种污水处理设备需要一种从结构上、经济上与之相匹配的污泥浓缩装置,将多余的污泥进行浓缩后排除。

[0003] 目前在日处理量20-50吨的小型生活污水处理一体机中,无法找到相匹配的污泥浓缩装置,只有螺杆式离心脱泥机、叠螺式脱泥机等,这些脱泥机对污泥量较大、污泥脱水率较高、连续长时间工作的自动化设备是非常合适的,但对于小型生活污水处理一体机来说,由于污泥量少、脱泥间隔时间较长,有时十天半月才需要脱一次,这些脱泥机就太浪费了,而且结构复杂体积大,占地面积和空间多,制造成本高,一台脱泥机售价十几万元,不适合与20-50吨的小型生活污水处理一体机配合。同时也有刚研制出的用于日处理量在20吨以下的小型生活污水处理一体机的污泥浓缩装置,这种装置虽然体积小,制造成本不高,但污泥脱水率偏低,不能满足20-50吨的小型生活污水处理一体机的需求。鉴于此情况,必须研制一种新的适合于20-50吨的小型生活污水处理一体机的装置。

发明内容

[0004] 本发明的主要任务和目的是,根据现有的污泥浓缩装置存在的不足,设计一种利用离心力和液体压力相结合脱水的滤筒式污泥浓缩装置。从根本上克服原装置体积大、制造成本高的现象,达到有效的降低成本,提高污水处理效率,满足20-50吨的小型生活污水处理一体机的需求。

[0005] 本发明的主要技术方案:该装置包含接泥盘、支架、电动蝶阀、螺栓、控止圈、螺钉、法兰盘、中轴、挡圈、销、机械密封件、下连接座、滤圈座、滤圈、毛刷、过滤筒、密封圈、上连接座、轴承、双头螺杆、螺母、支撑杆、止回阀、传动轮、活动桶盖、外桶、活动顶盖、电机、管、提升泵,具体结构:a、在支架顶部装有活动顶盖,支架的台板上,用螺钉固定外桶,外桶上装有活动桶盖;b、外接止回阀的中轴与支撑杆连接并用螺钉止紧,支撑杆用双头螺杆、螺母与支架固定连接,中轴通过轴承与上连接座配合连接,上连接座与传动轮通过螺钉固定;c、中轴上部通过螺钉、销安装机械密封件,机械密封件紧靠上连接座;d、中轴下部通过螺钉、销安装机械密封件,机械密封件紧靠下连接座,在下连接座上通过螺钉安装滤圈座、滤圈,下连接座通过轴承、挡圈与中轴配合连接;e、中轴中部,通过上连接座、下连接座、螺钉、密封圈

安装过滤筒,在过滤筒内,中轴的四个键槽分别定位安装毛刷;f、在中轴下端螺纹连接法兰盘,法兰盘通过螺栓、法兰垫与支架固定的电动蝶阀连接,电动蝶阀出口处螺纹连接控止圈;g、在支架的台板左边,通过螺栓安装电机,由皮带将电机和上连接座的传动轮连接。

[0006] 本发明通过试用证明:完全达到研制目的,该装置污泥脱水率完全满足20-50吨的小型生活污水处理一体机的需求;结构简单、紧凑,体积只有原装置三分之一,维修方便;制造成本低,只有原装置的五分之一;应用程序软件,实现污泥脱水全过程的自动控制。

附图说明

[0007] 下面结合附图,对本发明作进一步详细地描述。

[0008] 图1,是本发明的装配示意图。

[0009] 图2,是图1局部A的放大图,也是本发明的主要结构图。

[0010] 图3,是本发明的支架2形状图。

[0011] 图4,是本发明的中轴8形状图。

[0012] 图5,是本发明的工作原理图。

具体实施方式

[0013] 参照图1、2,对本发明的主要技术方案进行说明:该装置主要是利用离心力和污泥液体压力相结合的方式,对污泥脱水浓缩,应用程序软件,实现污泥脱水全过程的自动控制。本发明包含接泥盘1、支架2(由方管和钢板焊接而成见图3)、电动蝶阀3、螺栓4、控止圈5、螺钉6、法兰盘7、中轴(见图4)8、挡圈9、销10、机械密封件11、下连接座12、滤圈座13、滤圈14、毛刷(四把)15、过滤筒(在一个圆筒型骨架的外围,压紧固定一层滤布)16、密封圈17、上连接座18、轴承19、双头螺杆20、螺母21、支撑杆22、止回阀23、传动轮24、活动桶盖25、外桶(带出水接头的桶)26、活动顶盖27、电机28、管29(见图5)、提升泵30(见图5),具体结构:a、在支架2顶部装有活动顶盖27,支架的台板上,用螺钉6固定外桶26,外桶上装有活动桶盖25;b、外接止回阀23的中轴8与支撑杆22连接并用螺钉止紧,支撑杆22用双头螺杆20、螺母21与支架2固定连接,中轴8通过轴承19与上连接座18配合连接,上连接座与传动轮24通过螺钉固定;c、中轴8上部通过螺钉6、销10安装机械密封件11,机械密封件紧靠上连接座18;d、中轴8下部通过螺钉6、销10安装机械密封件11,机械密封件紧靠下连接座12,在下连接座上通过螺钉6安装滤圈座13、滤圈14,下连接座通过轴承19、挡圈9与中轴8配合连接;e、中轴8中部,通过上连接座18、下连接座12、螺钉6、密封圈17安装过滤筒16,在过滤筒内,中轴8的四个键槽分别定位安装毛刷15;f、在中轴8下端螺纹连接法兰盘7,法兰盘通过螺栓4、法兰垫与支架固定的电动蝶阀3连接,电动蝶阀出口处螺纹连接控止圈5;g、在支架2的台板左边,通过螺栓4安装电机28,由皮带将电机和上连接座的传动轮24连接。

[0014] 参照图1、2,本发明除了支架2、中轴8、下连接座12、过滤筒16、上连接座18、活动桶盖25、外桶26、活动顶盖27外,均为购置的标准件。

[0015] 参照图5,本发明的工作原理:1、将电动蝶阀3置于关闭状态,启动提升泵30,一体机处理池31中的多余污泥经过管道29、止回阀23、中轴8进入过滤筒16内,(见箭头方向),在过滤筒内形成液体压力(压强增大),此时启动电机28,过滤筒16绕中轴8作高速旋转运动,过滤筒内的污泥在离心力和液体压力的双重作用下,污泥和水进一步分离,滤布分离出的

污水透过过滤筒的滤布喷射到外桶26中(见箭头方向),经过外桶出水道流入集水池32中;2、高浓度污泥留在过滤筒16腔内,过滤过程中毛刷15连续清刷滤布,确保滤布过滤能力存在,抽泥结束后,打开电动碟阀3、关闭提升泵30,过滤筒16内的高浓度污泥从中轴8的出口处经过电动碟阀3和控止圈5流入接泥盘1中;3、接泥盘1中的高浓度污泥可以直接并入固化垃圾清除。

[0016] 本发明整个污泥脱水浓缩过程,是通过PLC合理控制提升泵30、电机28、电动碟阀3完成的,还可有效控制滤布最后的清洗效果和浓缩污泥的浓度(详情略)。工作一段时间后,需要更换过滤筒时,只需打开支架活动顶盖27,取出活动桶盖25,松动止回阀23的螺纹和过滤筒16连接螺钉,即可取出过滤筒更换新的。

[0017] 本发明已投入试用,除了主要用于日处理量在20-50吨的小型生活污水处理一体机外,还可以用于日处理量在20吨以下的小型生活污水处理一体机,效果较好。

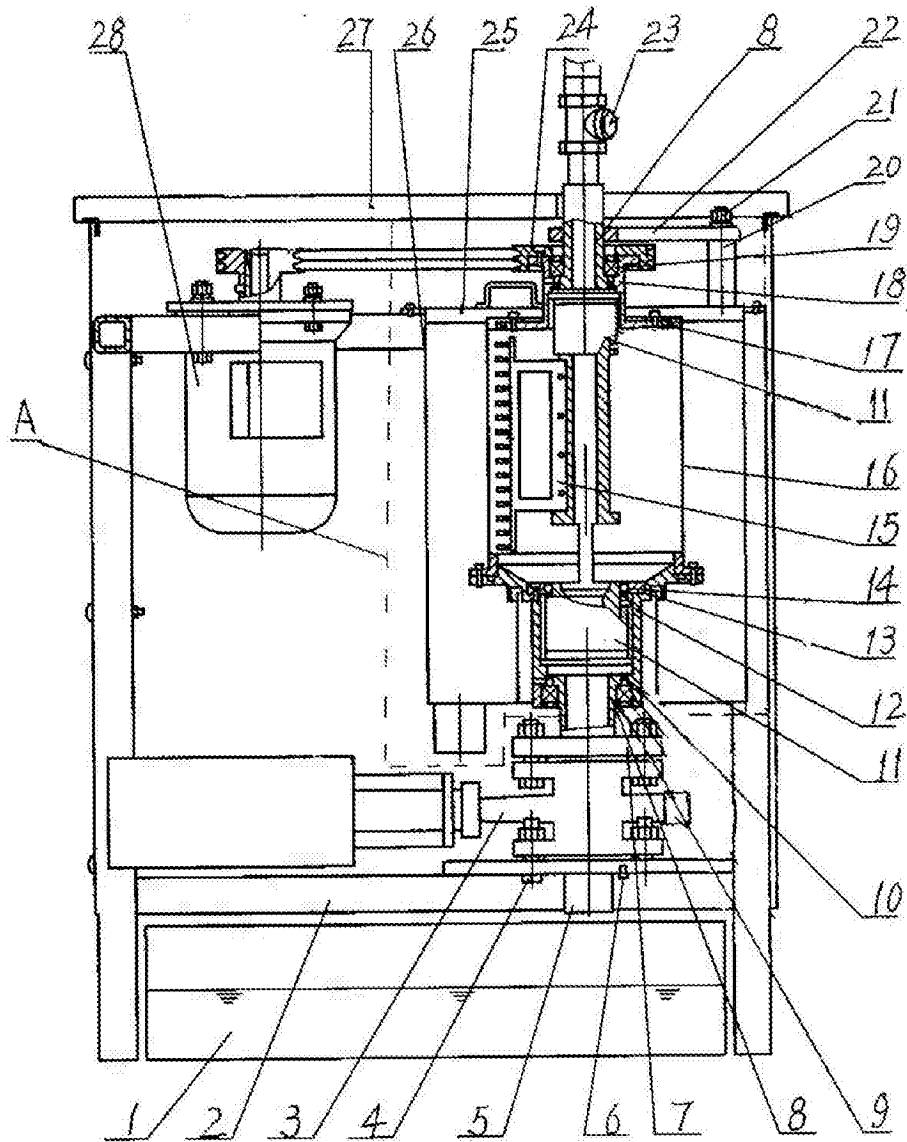


图1

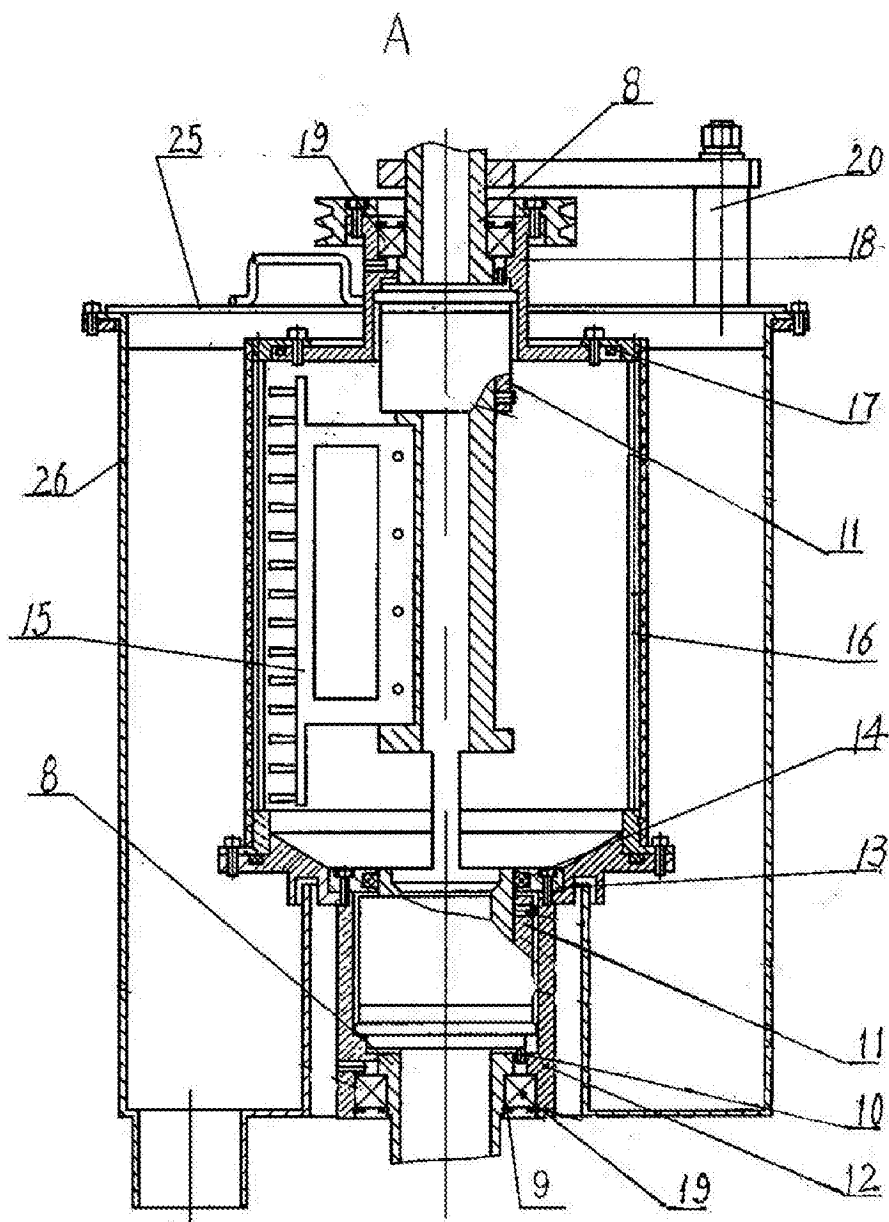


图2

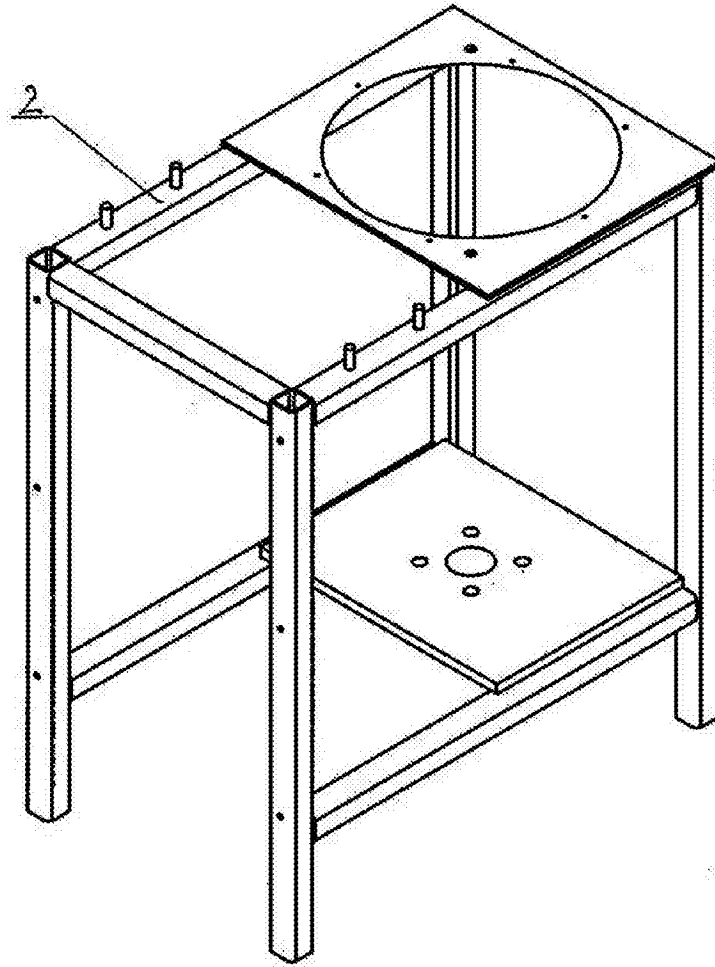


图3

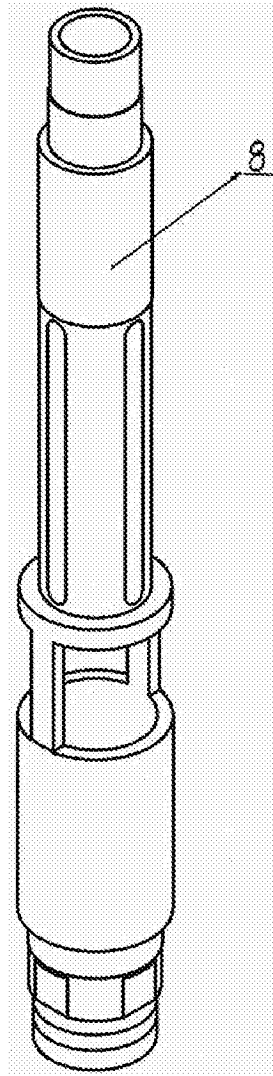


图4

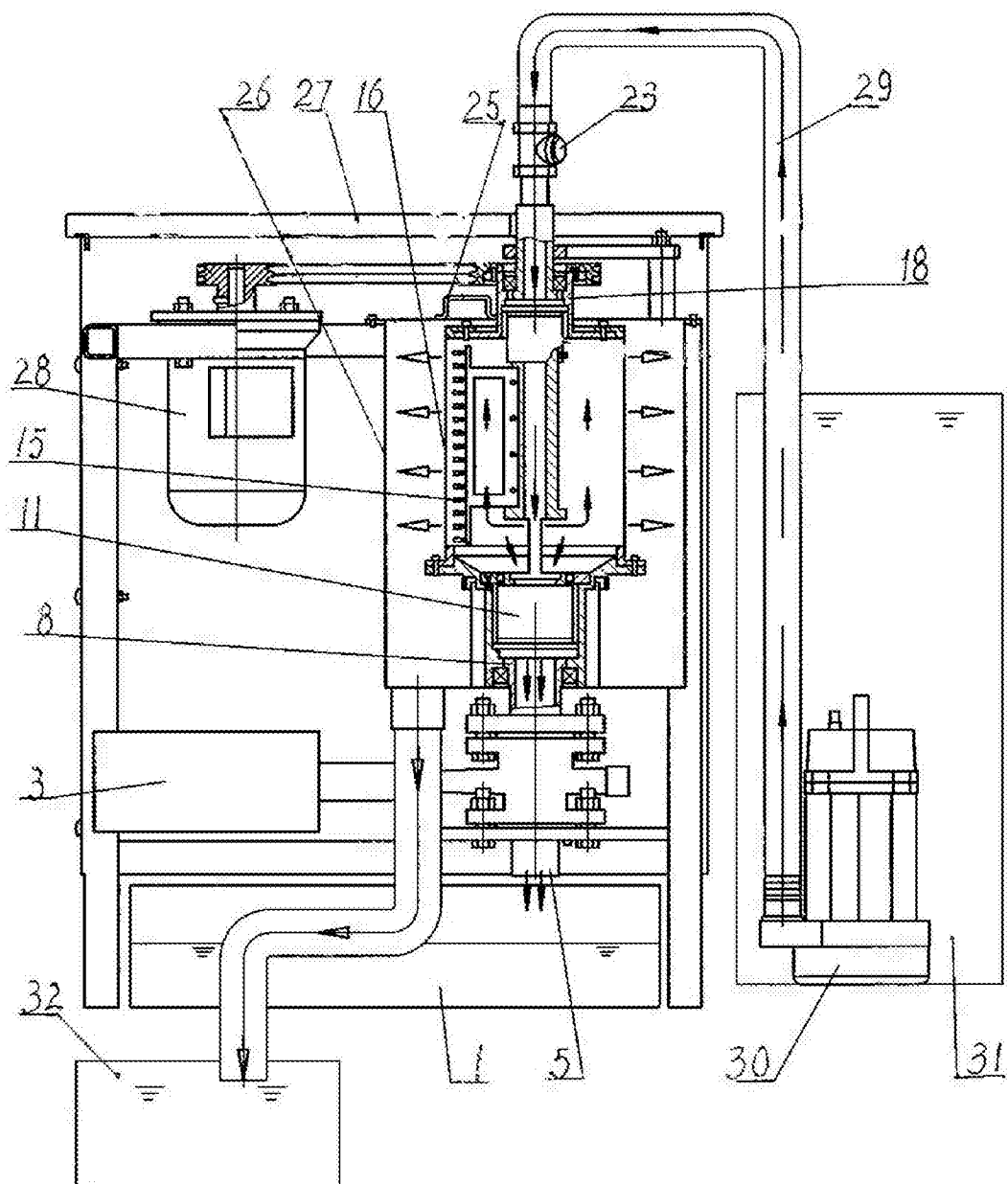


图5

A kind of filter cartridge type sludge concentration device automatically controlled

Abstract

The invention discloses a kind of filter cartridge type sludge concentration device automatically controlled, is mainly used in day output in 20 50 tons of small-sized sanitary sewage disposal all-in-one. Main technical schemes: Outer barrel is fixed on the platen of support; Axis is connected and fixed on support with support bar in outer barrel, and axis coordinates with upper connecting base; Mechanical sealing member is installed in axis upper and lower part, and lower connecting base coordinates with axis; Cartridge filter is installed by upper and lower connecting seat in the middle part of axis, in cartridge filter, four keyways difference location and installation hairbrush of axis; In axis lower end mounting flange, ring flange is connected with electric butterfly valve; Motor is installed on the support platen left side. The present invention passes through probationary certificate: The phenomenon that original device volume is big, manufacturing cost is high is fundamentally overcome, reaches and effectively reduces cost, improves sewage treating efficiency, meets the demand of 20 50 tons of small-sized sanitary sewage disposal all-in-one.

Classifications

■ **C02F11/121** Treatment of sludge; Devices therefor by de-watering, drying or thickening by mechanical de-watering

View 8 more classifications

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Current Assignee: [YUNNAN FEILONG LAOER EQUIPMENT Co Ltd](#)

Worldwide applications

2017 [CN](#)

Application [CN201710816968.5A](#) events ⓘ

2017-09-12 Application filed by [YUNNAN FEILONG LAOER EQUIPMENT Co Ltd](#)

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Claims (1)

Hide Dependent ^

1. A kind of 1. filter cartridge type sludge concentration device automatically controlled, it is characterised in that: Include the disk that grafts clay (1), support (2), it is electronic Butterfly valve (3), bolt (4), control only enclose (5), screw (6), ring flange (7), axis (8), back-up ring (9), pin (10), mechanical sealing member (11), lower connecting base (12), filter ring support (13), filter circle (14), hairbrush (15), cartridge filter (16), sealing ring (17), upper connecting base (18), bearing (19), double threaded screw (20), nut (21), support bar (22), check-valves (23), drive (24), movable bung (25), outer barrel (26), removable top cover (27), motor (28), pipe (29), elevator pump (30), concrete structure: A, in support (2) Top Portion is equipped with removable top cover (27), on the platen of support, use screw (6) Fixed outer barrel (26), movable bung is housed in outer barrel (25); B, external check-valves (23) Axis (8) With support bar (22) Connection and, support bar only tight with screw (22) Use double threaded screw (20), nut (21) With support (2) It is fixedly connected, axis (8) Pass through bearing (19) With upper connecting base (18) It is connected, upper company Joint chair and drive (24) Fixed by screw; C, axis (8) Top passes through screw (6), pin (10) Mechanical sealing member is installed (11), mechanical sealing member abuts upper connecting base (18); D, axis (8) Bottom passes through screw (6), pin (10) Mechanical sealing member is installed (11), mechanical sealing member abuts lower connecting base (12), pass through screw on lower connecting base (6) Installation filter ring support (13), filter circle (14), lower connecting base (12) Pass through bearing (19), back-up ring (9) With axis (8) It is connected; E, axis (8) Middle part, pass through upper company Joint chair (18), lower connecting base (12), screw (6), sealing ring (17) Cartridge filter is installed (16), in cartridge filter, axis (8) Four Individual keyway distinguishes location and installation hairbrush (15); F, in axis (8) Lower end is threadedly coupled flange disk (7), ring flange passes through bolt (4), the electric butterfly valve fixed of flange gasket and support (3) Connection, the threaded connection control of electric butterfly valve exit are only enclosed (5); G, propping up Frame (2) The platen left side, pass through bolt (4) Motor is installed (28), by belt by motor and the drive of upper connecting base (24) Even Connect.

Description

A kind of filter cartridge type sludge concentration device automatically controlled

Technical field

The present invention relates to a kind of sewage-treatment plant, specifically a kind of filter cartridge type sludge concentration device automatically controlled is main It is used for day output in the small-sized sanitary sewage disposal all-in-one of 20-50 tons.

Background technology

Sanitary sewage disposal is carried out using activated sludge process, there is the low advantage of cost, but the control of sludge concentration is to close Key, effective control of sludge concentration, the quality and efficiency of water process are not only directly affected, also directly affect the growth ring of microorganism Border, it is therefore necessary to the unnecessary sludge in processing pond is extracted in good time, effectively to control its sludge concentration, it is ensured that

treatment effect and effect Rate. Double-face flow-guiding all-in-one, a kind of sanitary sewage of double-face flow-guiding principle progress sewage disposal is exactly added using activated sludge process All-in-one is handled, it makes treatment effect reach GB18918-2002 with relatively low manufacturing cost and operating cost 《Town sewage Treatment plant's pollutant emission standard》 One-level A standards requirement. But this sewage disposal device needs one kind from structure, is economical Upper matched sludge concentration device, unnecessary sludge is subjected to concentration heel row and removed.

At present in the small-sized sanitary sewage disposal all-in-one of day output 20-50 tons, the sludge to match can not be found Enrichment facility, only screw centrifugation desliming, folded spiral shell formula desliming etc., these deslimers are larger to sludge quantity, sludge dewatering The automation equipment that rate is higher, continuously works long hours is very suitable, but is come for small-sized sanitary sewage disposal all-in-one Say, because sludge quantity is few, desliming interval time is longer, ten days sometimes first quarter moons just need to take off once, and these deslimers just waste very much , and complicated volume is big, and floor space and space are more, and manufacturing cost is high, tens of thousands of yuan of a desliming price ten, uncomfortable Close and coordinate with the small-sized sanitary sewage disposal all-in-one of 20-50 tons. Also there is that has just developed to be used for day output at 20 tons simultaneously The sludge concentration device of following small-sized sanitary sewage disposal all-in-one, although this device small volume, manufacturing cost is not high, Dewatering rate is relatively low, it is impossible to meets the demand of the small-sized sanitary sewage disposal all-in-one of 20-50 tons. Given this situation, it is necessary to Develop a kind of device of the new small-sized sanitary sewage disposal all-in-one for being suitable for 20-50 tons.

The content of the invention

The main task and purpose of the present invention is, insufficient according to existing for existing sludge concentration device, designs a kind of profit The filter cartridge type sludge concentration device of dehydration is combined with centrifugal force and fluid pressure. Fundamentally overcome that original device volume is big, system This high phenomenon is caused, reaches and effectively reduces cost, improves sewage treating efficiency, meets the small-sized sanitary sewage of 20-50 tons Handle the demand of all-in-one.

The main technical schemes of the present invention: The device include graft clay disk, support, electric butterfly valve, bolt, control stop circle, screw, Ring flange, axis, back-up ring, pin, mechanical sealing member, lower connecting base, filter ring support, filter circle, hairbrush, cartridge filter, sealing ring, upper connection Seat, bearing, double threaded screw, nut, support bar, check-valves, drive, movable bung, outer barrel, removable top cover, motor, manage, carry Rise pump, concrete structure: A, removable top cover is housed in cradle top, on the platen of support, is screwed outer barrel, is equipped with outer barrel Movable bung; B, the axis of external check-valves is connected and, support bar double threaded screw, nut and branch only tight with screw with support bar Frame is fixedly connected, and axis is connected by bearing and upper connecting base, and upper connecting base is fixed with drive by screw; C, axis Top abuts upper connecting base by screw, pin installation mechanical sealing member, mechanical sealing member; D, axis bottom is pacified by screw, pin Mechanical sealing member is filled, mechanical sealing member abuts lower connecting base, installs filter ring support by screw on lower connecting base, filter is enclosed, lower company Joint chair is connected by bearing, back-up ring and axis; E, in the middle part of axis, upper connecting base, lower connecting base, screw, sealing ring are passed through Cartridge filter is installed, in cartridge filter, four keyways difference location and installation hairbrush of axis; F, it is threadedly coupled flange in axis lower end Disk, the electric butterfly valve that ring flange is fixed by bolt, flange gasket and support connect, and the threaded connection control of electric butterfly valve exit stops Circle; G, on the platen left side of support, motor is installed by bolt, connected motor with the drive of upper connecting base by belt.

The present invention passes through probationary certificate: Development purpose is fully achieved, the apparatus sewage sludge dehydration rate fully meets 20-50 tons The demand of small-sized sanitary sewage disposal all-in-one: Simple in construction, compact, volume only has original device 1/3rd, easy to maintenance; System Cause low, only 1/5th of original device; Application software, realize automatically controlling for sludge dewatering overall process.

Brief description of the drawings

Below in conjunction with the accompanying drawings, the present invention is described in further detail.

Fig. 1, it is the assembling schematic diagram of the present invention.

Fig. 2, it is Fig. 1 parts A enlarged drawing, and the primary structure figure of the present invention.

Fig. 3, it is the shape graph of support 2 of the present invention.

Fig. 4, it is the shape graph of axis 8 of the present invention.

Fig. 5, it is the fundamental diagram of the present invention.

Embodiment

Reference picture 1,2, the main technical schemes of the present invention are illustrated: The device mainly utilizes centrifugal force and sludge The mode that fluid pressure is combined, sludge dewatering is concentrated, application software, realizes the automatic control of sludge dewatering overall process System. The present invention includes graft clay disk 1, support 2 (It is welded by square tube and steel plate and sees Fig. 3) , electric butterfly valve 3, bolt 4, control only enclose 5th, screw 6, ring flange 7, axis (See Fig. 4) 8th, back-up ring 9, pin 10, mechanical sealing member 11, lower connecting base 12, filter ring support 13, filter circle 14th, hairbrush (Four) 15th, cartridge filter (In the periphery of a cylinder type skeleton, one layer of filter cloth is fixed) 16th, sealing ring 17, on Connecting seat 18, bearing 19, double threaded screw 20, nut 21, support bar 22, check-valves 23, drive 24, movable bung 25, outer barrel (Bucket with water out adapter) 26th, removable top cover 27, motor 28, pipe 29 (See Fig. 5) , elevator pump 30 (See Fig. 5) , concrete structure: a、Removable top cover 27 be housed at the top of support 2, on the platen of support, with the fixation outer barrel 26 of screw 6, movable bung is housed in outer barrel 25; B, the axis 8 of external check-valves 23 is connected and, support bar 22 double threaded screw 20, nut only tight with screw with support bar 22 21 are fixedly connected with support 2, and axis 8 is connected by bearing 19 and upper connecting base 18, and upper connecting base passes through with drive 24 Screw is fixed; C, mechanical sealing member 11 is installed in the top of axis 8 by screw 6, pin 10, and mechanical sealing member abuts upper connecting base 18; D, mechanical sealing member 11 is installed in the bottom of axis 8 by screw 6, pin 10, and mechanical sealing member abuts lower connecting base 12, in lower connecting base Upper to filter ring support 13, filter circle 14 by the installation of screw 6, lower connecting base is connected by bearing 19, back-up ring 9 and axis 8; E, axis 8 middle parts, cartridge filter 16, in cartridge filter, axis 8 are installed by upper connecting base 18, lower connecting base 12, screw 6, sealing ring 17 Four keyway difference location and installation hairbrush 15; F, in the lower end of axis 8 threaded connection flange disk 7, ring flange passes through bolt 4, flange Pad the electric butterfly valve 3 fixed with support to be connected, the threaded connection control of electric butterfly valve exit stops circle 5; G, it is left in the platen of support 2 Side, motor 28 is installed by bolt 4, connected the drive 24 of motor and upper connecting base by belt.

Reference picture 1,2, the present invention is except support 2, axis 8, lower connecting base 12, cartridge filter 16, upper connecting base 18, movable bucket Lid 25, outer barrel 26, it is the standard component purchased outside removable top cover 27.

Reference picture 5, operation principle of the invention: 1st, electronic dish valve 3 is placed in off, starts elevator pump 30, one Unnecessary sludge in machine processing pond 31 enters in cartridge filter 16 through piping 29, check-valves 23, axis 8, (See the direction of arrow) , Fluid pressure is formed in cartridge filter (Pressure increases) , now starting motor 28, cartridge filter 16 makes high speed rotary motion around axis 8, Sludge in cartridge filter is under the double action of

centrifugal force and fluid pressure, and sludge and water further separate, what filter cloth was isolated Sewage is ejected into outer barrel 26 through the filter cloth of cartridge filter (See the direction of arrow) , flowed into by outer barrel water outlet in collecting-tank 32; 2nd, high concentration sludge stays in the intracavitary of cartridge filter 16, the continuous cleaning filter cloth of hairbrush 15 in filter process, it is ensured that filter-cloth filtering ability is deposited Taking out after mud terminates, opening electronic dish valve 3, close elevator pump 30, the high concentration sludge in cartridge filter 16 is from the outlet of axis 8 By electronic dish valve 3 and control, only circle 5 is flowed into the disk 1 that grafts clay at place; 3rd, the high concentration sludge to graft clay in disk 1 can be directly incorporated into solidification Rubbish is removed.

Whole sludge dewatering concentration process of the invention, is that elevator pump 30, motor 28, electronic dish valve 3 are rationally controlled by PLC Complete, can also effectively control the concentration of the last cleaning performance of filter cloth and thickened sludge (Details are omitted) .After work a period of time, When needing to change cartridge filter, support removable top cover 27, taking-up activity bung 25, the screw thread and mistake of loosening check-valves 23 need to be only opened The attachment screw of filter cylinder 16, you can take out what cartridge filter more renewed.

The present invention put into it is on probation, except be mainly used in day output 20-50 tons small-sized sanitary sewage disposal one Outside machine, small-sized sanitary sewage disposal all-in-one of the day output below 20 tons is can be also used for, effect is preferable.

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Family To Family Citations				

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Priority And Related Applications

Priority Applications (1) ▲

Application	Priority date	Filing date	Title
CN201710816968.5A	2017-09-12	2017-09-12	A kind of filter cartridge type sludge concentration device automatically controlled

Applications Claiming Priority (1) ▲

Application	Filing date	Title
CN201710816968.5A	2017-09-12	A kind of filter cartridge type sludge concentration device automatically controlled

Legal Events ▲

Date	Code	Title	Description
2017-12-01	PB01	Publication	
2017-12-01	PB01	Publication	
2017-12-26	SE01	Entry into force of request for substantive examination	
2023-04-14	WW01	Invention patent application withdrawn after publication	
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