

A kind of pure electric vehicle pressure break sled

Abstract translated from Chinese

The utility model discloses a pure electric fracturing skid, which relates to various fracturing operation equipment used for deep wells, medium-deep wells and shallow wells in oil and gas fields. It includes a skid base, on the horizontal center line of the skid base, there are frequency conversion and speed regulating AC motors, three-cylinder plunger pumps and liquid tanks in sequence from left to right, and one side of the frequency conversion speed regulating AC motors is connected to the frequency conversion cabinet through cables. The other end of the transformer is provided with a frequency conversion cabinet and a control cabinet respectively connected to the frequency conversion and speed regulation AC motor through cables. The utility model solves the technical problem that the engine pollutes the environment seriously and the operation cost is high by using the skid-mounted structure of the motor as the power source. The skid-mounted structure can be fixed at the oil and gas well for fracturing operations, and can also be transported It can be transported to work wherever it is needed, and it is compact.

Landscapes: 本实用新型公开了一种纯电动压裂撬，涉及一种用于油气田深井、中深井、浅井的各种压裂作业设备。它包括撬座，撬座的横向中心线上由左至右依次设置有变频调速交流电机、三缸柱塞泵和液柜，变频调速交流电机一侧设置有通过线缆与变频柜连接的变压器，其另一端设置有通过线缆分别与变频调速交流电机连接的变频柜和控制柜。本实用新型通过采用电机作为动力源的撬装结构，解决了发动机对环境污染严重且作业成本较高的技术问题，撬装结构既可以固定在油气井处进行压裂作业，也可以采用运输工具运输到任何需要的地方进行作业，并且结构紧凑。

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Current Assignee : [Henan Normal University](#)

Worldwide applications

2018 [CN](#)

Application [CN201820197640.XU events](#) ⓘ

2018-02-06	Application filed by Henan Normal University
2018-02-06	Priority to CN201820197640.XU
2018-09-07	Application granted
2018-09-07	Publication of CN207829871U
Status	Expired - Fee Related
2028-02-06	Anticipated expiration

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Claims (8) Hide Dependent ^
translated from Chinese

1. A pure electric fracturing skid, characterized in that it includes a skid base (5), and the horizontal center line of the skid base (5) is sequentially provided with a frequency conversion speed regulation AC motor (1), a three-cylinder The plunger pump (4) and the liquid tank (6), the power output end of the variable frequency AC motor (1) is connected to the power end of the three-cylinder plunger pump (4) through the transmission shaft (3), and the three-cylinder plunger pump (4) The hydraulic end is connected with the liquid tank (6) through the suction manifold (13). The hydraulic end of the three-cylinder plunger pump (4) is also equipped with a high-pressure manifold (10), and a frequency-controlled AC motor (1) One side is provided with a transformer (7) connected to the frequency conversion cabinet (8) through cables, and the other end is provided with a frequency conversion cabinet (8) and a control cabinet (9) respectively connected to the frequency conversion and speed regulation AC motor (1) through cables). 2. A pure electric fracturing skid according to claim 1, characterized in that: the skid seat (5) on the left side of the three-cylinder plunger pump (4) is provided with a covered frequency conversion speed regulating AC motor (1), transmission shaft (3), transformer (7), frequency conversion cabinet (8) and protective cover (2) of control cabinet (9). 3. A pure electric fracturing skid according to claim 1, characterized in that: folding doors are arranged on both sides of the protective cover (2). 4. The pure electric fracturing skid according to claim 1, characterized in that: the frequency of the variable frequency speed regulating AC motor (1) is 40 Hz-145 Hz. 5. A pure electric fracturing skid according to any one of claims 1 to 4, characterized in that: the liquid tank (6) is a rectangular structure, and the four corners of the bottom are respectively provided with corresponding to the skid seat (5). The set lug plate carries out the connection lug seat of pin shaft hinge. 6. A pure electric fracturing skid according to claim 5, characterized in that: the connecting lugs are arranged opposite to each other. 7. A pure electric fracturing skid according to claim 6, characterized in that: the high-pressure manifold (10) passes under the liquid tank (6), and the drain port (11) at the end is set At the right end of the pry seat (5). 8. A pure electric fracturing skid according to claim 7, characterized in that: lifting lugs (12) are respectively provided on both sides of the top of the liquid tank (6).

Description translated from Chinese

A pure electric fracturing skid

technical field

The utility model relates to a pumping operation equipment suitable for various types of different liquids, which can be used for various fracturing operations of deep wells, medium-deep wells and shallow wells in oil and gas fields, in particular to a pure electric fracturing skid.

Background technique

For the development and production activities in the middle and late stages of oil and gas fields, fracturing of oil and gas wells is an important measure to increase oil and gas production. The fluid truck or other fluid supply equipment absorbs fracturing fluid and other media and injects them into oil and gas wells.

Common fracturing equipment is generally self-propelled vehicle-mounted fracturing equipment, which uses the engine of the main vehicle as the working power. In this way of operation, the engine will generate a lot of oily smoke. Exhaust emissions cause great pollution to the environment. Moreover, when the equipment needs to be

parked at the well site for a long time, the operating cost is relatively high.

For a long time, due to the restrictions of the national standard GB1589 "Automobiles, Trailers and Automobile Train Outline Dimensions, Axle Load and Quality Limits" and the national standard GB7258 "Technical Conditions for Safe Operation of Motor Vehicles", the existing fracturing equipment vehicles (especially It is a fracturing truck modified with a two-axle or three-axle chassis) and the space utilization rate of the vehicle structure is not high (resulting in a lot of waste of space). If the space utilization rate is increased blindly (such as changing the design structure), it is very easy to cause the vehicle to roll over due to the unreasonable design of the structure (especially when turning) (mainly does not meet the national standard GB7258 Section 4.6 "Rolling stability and parking stability angle") and car chassis beam cracking (stress concentration caused by unreasonable layout of various components). At present, there is an urgent need to develop a skid-mounted fracturing equipment with a compact structure and a motor as a power source.

Contents of the invention

The purpose of the utility model is to overcome the shortcomings of the prior art and provide a pure electric fracturing skid, which solves the technical problems of serious environmental pollution and high operating costs by the engine through the skid-mounted structure using the motor as the power source.

In order to achieve the above purpose, the utility model adopts the following technical scheme: a pure electric fracturing skid, which includes a skid seat, and the horizontal center line of the skid seat is sequentially provided with a frequency conversion speed regulating AC motor, a three-cylinder plunger pump The pump and the liquid tank, the power output end of the variable frequency speed regulating AC motor is connected to the power end of the three-cylinder plunger pump through the transmission shaft, the liquid end of the three-cylinder plunger pump is connected to the liquid tank through the suction manifold, and the three-cylinder plunger pump The hydraulic end is also equipped with a high-voltage manifold, one side of the variable frequency speed regulating AC motor is provided with a transformer connected to the frequency conversion cabinet through cables, and the other end is provided with a frequency conversion cabinet and control box connected to the frequency conversion speed regulating AC motor through cables respectively. cabinet. The utility model solves the technical problem that the engine pollutes the environment seriously and the operation cost is high by using the skid-mounted structure of the motor as the power source. It can be transported to any place needed for operation, and has a cor

As an improv- 本实用新型公开了一种纯电动压裂撬，涉及一种用于油气田深井、中
conversion ar 深井、浅井的各种压裂作业设备。它包括撬座，撬座的横向中心线上
由左至右依次设置有变频调速交流电机、三缸柱塞泵和液缸，变频调
速交流电机一侧设置有通过线缆与变频柜连接的变压器，其另一端设
置有通过线缆分别与变频调速交流电机连接的变频柜和控制柜。本实
用新型通过采用电机作为动力源的撬装结构，解决了发动机对环境污
染严重且作业成本较高的技术问题，撬装结构既可以固定在油气井处
进行压裂作业，也可以采用运输工具运输到任何需要的地方进行作
业，并且结构紧凑。

As an improvement of the utility model, the liquid tank has a rectangular structure, and the four corners of the bottom are respectively provided with ear plates corresponding to the skid base for hinged connecting ear seats, and the liquid tank and the skid base are detachable If the liquid in the liquid tank is used up, you only need to remove the liquid tank and transport it to the infusion site by means of transportation. It is not necessary to transport the entire skid base as a whole, which reduces transportation costs and improves transportation efficiency. cabinets for other purposes (such as liquid mixing tanks or "toolboxes" for loose parts, etc.);

As an improvement of the utility model, the connecting lugs are arranged in pairs, and through the mutual restriction in two directions (longitudinal and horizontal), avoiding the shaking phenomenon during the operation of the liquid tank, the structure is firm;

As an improvement of the utility model, the high-pressure manifold passes through the bottom of the liquid tank, and the liquid discharge port at the end is set at the right end of the skid seat, which has high space utilization and is convenient for liquid discharge;

As an improvement of the utility model, lifting lugs are respectively provided on both sides of the top of the liquid tank, which is convenient for hoisting of lifting equipment.

To sum up, the utility model has a simple structure, saves the hydraulic gearbox and other components of traditional products, and can control the frequency of the frequency conversion and speed regulation AC motor by operating the control cabinet to adjust the frequency converter in the frequency conversion cabinet, realizing It realizes the control of the speed of the AC motor with variable frequency speed regulation, and then controls the output of the liquid in the liquid tank through the high-pressure manifold, and is easy to operate.

Description of drawings

Fig. 1 is a structural representation of the utility model;

FIG. 2 is a top view of FIG. 1 .

In the figure 1. Frequency conversion speed regulation AC motor, 2. Protective cover, 3. Transmission shaft, 4. Three-cylinder plunger pump, 5. Skid seat, 6. Liquid tank, 7. Transformer, 8. Frequency conversion cabinet, 9. Control Cabinet, 10, high pressure manifold, 11, liquid outlet, 12, lifting lug, 13, suction manifold.

Detailed ways

Embodiments of the present invention are described in detail below, examples of which are shown in the drawings, wherein the same or similar reference numerals represent the same or similar elements or elements having the same or similar functions throughout. The embodiments described below with reference to the accompanying drawings are exemplary, and are only used to explain the present invention, and cannot be construed as limiting the present invention.

It should be noted that the orientation terms such as horizontal, vertical, left, and right in the embodiments of the present utility model are only relative concepts or refer to the normal use state of the product, and should not be regarded as restrictive .

In Fig. 1 and Fig. 2, a pure electric fracturing skid includes a skid base 5, and a frequency conversion speed regulating AC motor 1 and a three-cylinder plunger pump 4 are sequentially arranged on the transverse center line of the skid base 5 from left to right. and liquid tank6. One side of the variable frequency speed regulating AC motor 1 is provided with a transformer 7 connected to the frequency conversion cabinet 8 through cables, and the other end is provided with a frequency conversion cabinet 8 and a control cabinet 9 respectively connected to the frequency conversion speed regulating AC motor 1 through cables; It is a 40Hz-145Hz frequency conversion speed-regulating AC motor 1 with a large frequency range, which expands the application site; the liquid tank 6 is a rectangular structure, and the four corners of the bottom are respectively provided with ear plates corresponding to the skid seat 5 for pin hinges The connecting lugs of the connecting lugs are arranged in pairs, that is, the hinge pins are arranged perpendicular to each other (for example, the pin shafts at the two corners on the left side of the liquid tank are respectively perpendicular to the axis centerlines of the pin shafts at the two corners on the right side of the liquid tank.), through the mutual restriction in two directions (longitudinal and horizontal), avoiding the shaking phenomenon of the liquid tank 6 during operation, and the structure is firm; in addition, by detachably connecting the liquid tank 6 with the skid seat 5, if the liquid tank After the liquid in 6 is used up, it is only necessary to dismantle the liquid tank 6 and transport it to the infusion place by means of transportation, without

having to transport the entire skid base 5 as a whole, which reduces transportation costs and improves transportation efficiency, and the liquid tank 6 can also be used For other purposes (such as being used as a "toolbox" for liquid mixing tanks or scattered parts); both sides of the top of the liquid tank 6 are also provided with lifting lugs 12, which is convenient for hoisting of lifting equipment.

The power output end of the frequency conversion speed-regulating AC motor 1 is connected to the power end of the three-cylinder plunger pump 4 through the transmission shaft 3, and the hydraulic end of the three-cylinder plunger pump 4 is connected to the liquid tank 6 through the suction manifold 13, and connected to the three-cylinder column The high-pressure manifold 10 connected to the hydraulic end of the plug pump 4 passes through the bottom of the liquid tank 6 (the space between the skid base 5 and the bottom surface of the liquid tank 6), and the liquid discharge port 11 at its end is set at the right end of the skid base 5 , and the space The utilization rate is high and the liquid is easy to discharge; the skid seat 5 on the left side of the three-cylinder plunger pump 4 is provided with a protective cover 2 covering the frequency conversion and speed regulation AC motor 1, the transmission shaft 3, the transformer 7, the frequency conversion cabinet 8 and the control cabinet 9, That is, the frequency conversion speed regulation AC motor 1, the drive shaft 3, the transformer 7, the frequency conversion cabinet 8 and the control cabinet 9 are all arranged in the protective cover 2 to play the functions of preventing rain and dust; For maintenance and other work, folding doors are respectively arranged on both sides of the protective cover 2; the utility model solves the technical problem of serious environmental pollution and high operating cost of the engine by using the frequency conversion and speed regulation AC motor 1 as the skid-mounted structure of the power source. The skid-mounted structure can not only be fixed at the oil and gas well for fracturing operations, but also can be transported to any place needed for operation by means of transportation, and the structure is compact, which greatly improves the space utilization;

When the utility model works, the transformer 7 can be connected with the well site power grid or the well site generator set through the cable, and the frequency converter in the frequency conversion cabinet 8 can be adjusted by operating the control cabinet 9 to control the frequency of the frequency conversion and speed regulation AC motor 1. The speed control of the variable frequency speed regulating AC motor 1 is realized, and the output of the liquid in the liquid tank 6 through the high pressure manifold 10 is controlled, and the operation is convenient and the structure is simple.

This embodiment does not impose any formal restrictions on the shape, structure, etc. of the present utility model. Any simple modification or equivalent change made to the above technical solution belongs to the protection scope of the technical solution of the utility model.

本实用新型公开了一种纯电动压裂撬，涉及一种用于油气田深井、中深井、浅井的各种压裂作业设备。它包括撬座，撬座的横向中心线上由左至右依次设置有变频调速交流电机、三缸柱塞泵和液柜，变频调速交流电机一侧设置有通过线缆与变频器连接的变压器，其另一端设置有通过线缆分别与变频调速交流电机连接的变频器和控制柜。本实用新型通过采用电机作为动力源的撬装结构，解决了发动机对环境污染严重且作业成本较高的技术问题，撬装结构既可以固定在油气井处进行压裂作业，也可以采用运输工具运输到任何需要的地方进行作业，并且结构紧凑。

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Similar Documents

Publication	Publication Date	Title
CN207829871U	2018-09-07	A kind of pure electric vehicle pressure break sled
US11499405B2	2022-11-15	Hydraulic fracturing system for driving a plunger pump with a turbine engine
CN211201919U	2020-08-07	Turbine fracturing equipment
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CN202911489U	2013-05-01	Chassis hydraulic control driving system and autorailer
CN201729	本实用新型公开了一种纯电动压裂撬，涉及一种用于油气田深井、中深井、浅井的各种压裂作业设备。它包括撬座，撬座的横向中心线上由左至右依次设置有变频调速交流电机、三缸柱塞泵和液柜，变频调速交流电机一侧设置有通过线缆与变频柜连接的变压器，其另一端设置有通过线缆分别与变频调速交流电机连接的变频柜和控制柜。本实用新型通过采用电机作为动力源的撬装结构，解决了发动机对环境污染严重且作业成本较高的技术问题，撬装结构既可以固定在油气井处进行压裂作业，也可以采用运输工具运输到任何需要的地方进行作业，并且结构紧凑。	ng vehicle
CN207673		ip of fuel and electric hybrid
CN221704		and integrated light workover rig

Priority And

Priority App

Application	Priority date	Filing date	Title
CN201820197640.XU	2018-02-06	2018-02-06	A kind of pure electric vehicle pressure break sled

Applications Claiming Priority (1)

Application	Filing date	Title
CN201820197640.XU	2018-02-06	A kind of pure electric vehicle pressure break sled

Legal Events

Date	Code	Title	Description
2018-09-07	GR01	Patent grant	
2018-09-07	GR01	Patent grant	
2020-01-24	CF01	Termination of patent right due to non-payment of annual fee	Granted publication date: 20180907 Termination date: 20190206
2020-01-24	CF01	Termination of patent right due to non-payment of annual fee	

Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
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regulatory effect		claims,abstract,description	12	0.000
protective effect		claims,description	9	0.000
biological transmission		claims,description	7	0.000

Show all concepts from the description section

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