



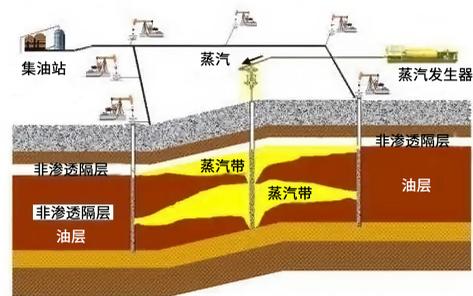
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New nano insulated oil well pipe for heavy oil exploration(Pioneering Technology)

Application scenarios and industry pain points

#Keywords in this paragraph# Heavy oil , super heavy oil field exploitation , SAGD technology , high viscosity of heavy oil , poor fluidity , high temperature steam transportation , heat loss , safety and environmental protection

In the production of heavy oil fields on land and offshore, especially when using SAGD technology, the main challenges include the high viscosity and poor fluidity of heavy oil and the significant heat loss during high-temperature steam transportation. Traditional pipelines not only increase energy consumption and mining costs, but also exhibit unstable performance in extreme environments (such as extreme cold or deep sea), resulting in frequent maintenance and increased risk of equipment damage. In addition, high-temperature steam leaks may cause safety accidents and fail to comply with increasingly stringent environmental regulations.



Technical method of heavy oil thermal exploitation by thermal fluid displacement

Product Introduction

#Keywords in this paragraph# Temperature drop of no more than 0.7°C per 100 meters , nano thermal insulation , conventional connection method , strength protection design , pipe end sealing structure , greatly reduced temperature change , torsion extrusion adaptability

Tianyang's nano-insulated oil well pipe not only maintains the connection method of conventional oil well pipes (such as coupling connection), but also integrates advanced nano-insulation materials, unique strength protection and pipe end sealing structure design on its outside, which greatly reduces the temperature change of the medium in the pipe. It is measured that the temperature of 375°C high-temperature steam drops by no more than 0.7°C within a transportation distance of 100 meters, and it is fully adaptable to underground torsion, extrusion and other working conditions.

Performance characteristics, key data and test reports

- Excellent thermal insulation performance:
In three rounds of steam injection tests , the average temperature drop per 100 meters was 0.7°C , and the thermal insulation performance was extremely significant;
- Reliable sealing and durability:
It solves the sealing reliability problem of the insulation layer port, has excellent anti-twisting and extrusion capabilities , can be used repeatedly, and extends the service life.
- Lightweight and flexible design:
With light structure and small size, it is especially suitable for SAGD deep well operation and easy to install and transport.
- Long life guarantee:
Service life \geq 10 years (under normal operating conditions), reducing replacement frequency and maintenance costs.

Parameter Item	Vacuum insulation oil well pipe	New nano- insulated oil well pipe for thermal recovery of heavy oil
Outer diameter/mm	114.3	94/110
Inner diameter/mm	62/76	62/76
Thermal conductivity of pipe wall/[W•(m•K)-1]	0.03	0.022
Weight kg/m	30.01 /27.39	11.95/16.37
Mechanical properties	Not resistant to collision, compression, and easy to fail	Collision resistance, extrusion resistance, high reliability
Service life and maintenance performance	Not durable and cannot be repaired	Durable and repairable

Economic Benefits

- Replace the traditional high-priced and heavy vacuum insulation oil well pipe
- Lightweight structure and small size, suitable for SAGD deep well operations
- Completely solve the common pain points of leakage failure in vacuum oil well pipes
- Insulated oil pipe vs bare pipe: energy saving of more than 90%, helping enterprises achieve energy conservation and emission reduction goals
- Comparison of experimental oil wells: Improved the fluidity of heavy oil, and the output of liquid and oil increased by more than 3 times



Application performance

It is recommended that we make an appointment for an online video conference or offline face-to-face communication. We will bring you the latest, most complete and more detailed information.



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