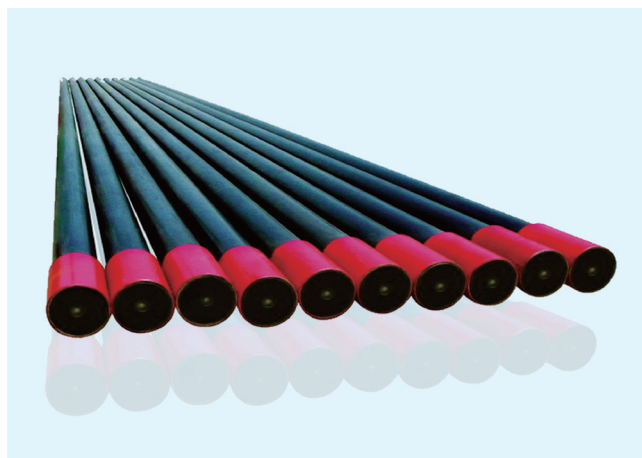


Pre-Stressed Vacuum Insulated Tubing/Casing

- 1 Reduces the heat loss, ensures the steam quality being injected into the oil formation as well as the depth of steam injection can be increased.
- 2 Minimizes heat stress on well casing and cement mantle, protect the casing from damage by high temperature.
- 3 During oil production it will provide superior insulation and greatly reduce the loss of heat energy



Product Features:

- 1 The pre-stress will compensate the tubing expansion caused by temperature difference between the inner and the outer tubes so as to ensure reliable operation under high temp.
- 2 Gas absorbing materials are packed inside the annulus to clean up harmful gases and maintain good insulating property whilst in service.

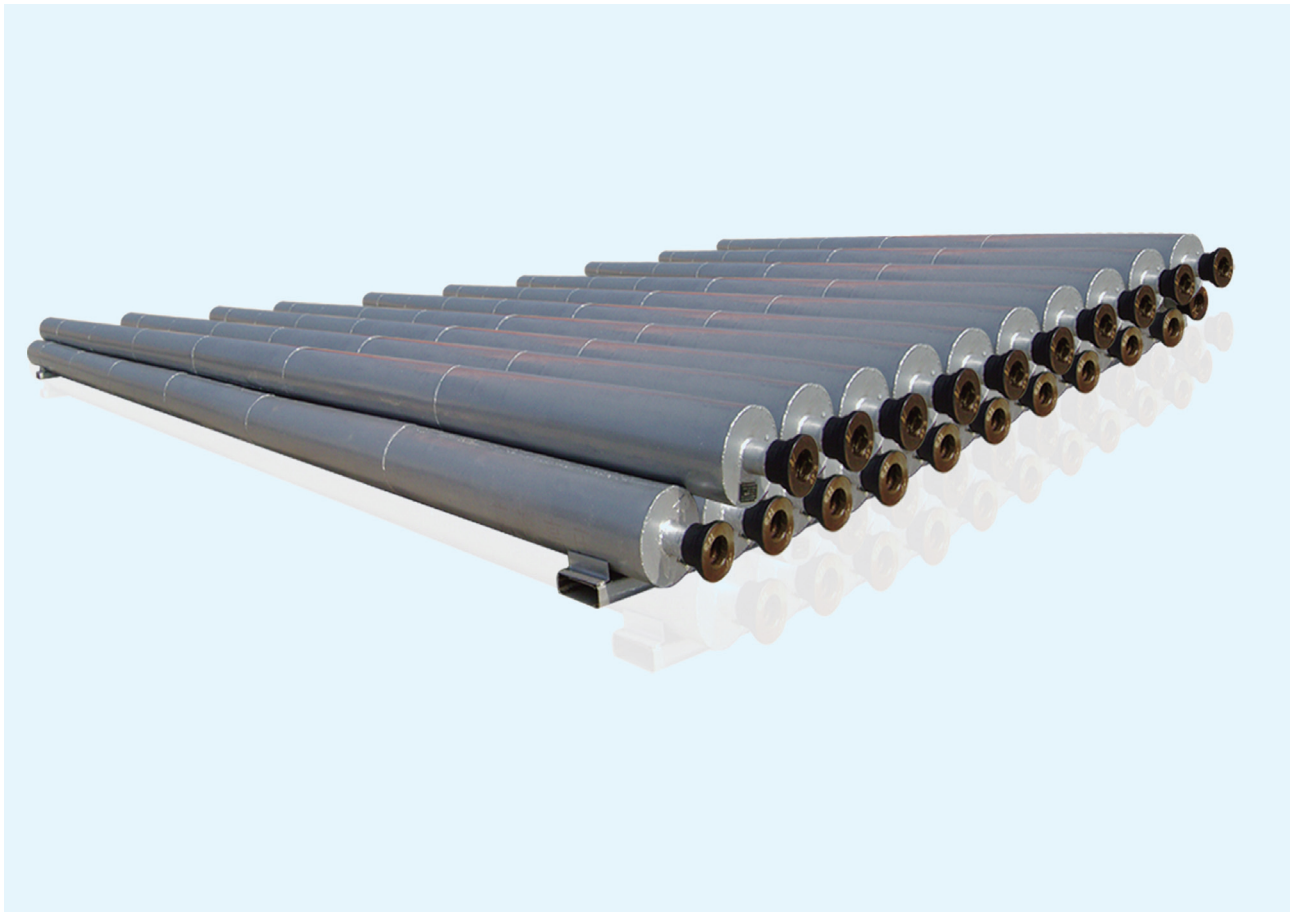
Product Specifications:

| Parameter | Model | | | | | | | | | | | |
|---------------------|------------|--|------------|--|------------|--|---------|--|-----------|--|------------------------|--|
| | 139×101 | | 139×88 | | 114×76 | | 114×62 | | 88×50 | | 73×40 | |
| Grade of Insulating | D E | | C D E | | | | B C D E | | | | | |
| Length (m) | 9.0-10.0 | | | | | | | | | | | |
| Unit Weight (kg/m) | 42.04 | | 40.7 | | 32 | | 28 | | 21 | | 15 | |
| Connecting Thread | 5-1/2 BCSG | | 5-1/2 BCSG | | 4-1/2 BCSG | | | | 3-1/2 USS | | 2-7/8 USS 2-7/8 TBG | |
| Outer Tube OD (mm) | 139.7 | | 139.7 | | 114.3 | | | | 88.9 | | 73.0 | |
| Inner Tube ID (mm) | 101.6 | | 88 | | 76.0 | | 62.0 | | 50.6 | | 40.9 | |
| Coupling OD (mm) | 154 | | 154 | | 132 | | | | 108 | | 88.9 | |
| Running Depth (m) | 1600 | | | | | | | | | | | |

Insulating grade

| Insulating grade | B | C | D | E |
|--|-------------------------|-------------------------|--------------------------|---------------------------|
| Apparent k-factor (λ)(W/m. °C) | 0.06 > λ ≥ 0.04 | 0.04 > λ ≥ 0.02 | 0.02 > λ ≥ 0.006 | 0.006 > λ ≥ 0.002 |

Movable Surface Pipeline For Steam Injection



- It is used for transporting high temperature and high pressure steam on the ground;
- It is made of material 20G or 15CrMo;
- Feature: thermal insulation and corrosion resistance;
- Connection mode: clamp, quick joint(thread).

Tertiary Recovery Equipment



Product Features:

1. The complete set of equipment is designed with skid-mounted modular structure or fixed station structure and it makes the installation and transportation work easily.
2. The chemical agents including polymer, alkali and surfactant are commingled by practiced technology and have good application effect.
3. Adopt dry powder unloaded machinery with accurate measurement, control the water PID by closed loop. It has high accuracy concentration, good stability, and adjustable.
4. Adopt special structure mixer, it can get good results of dispersal

and dissolution, without “fish eye”.

5. The key components like pump and valve are machined by stainless steel and can avoid mechanical and chemical degradation.
6. The technics process automation control system of complete set of equipment is controlled by PLC, it can achieve checking and alarming functions and has high-level automation.
7. The operating situation of complete set of equipment can be showed in the computer screen. It is easy to input, setting and modify the parameters.



Dispersal and Dissolving Equipment of Polymer

The series of dispersal and dissolving equipment of polymer is used to transit, measure, dispersal, dissolution of polymer and output the mixed liquid. The complete set of equipment is made of seven main parts include materials supply unit, storage unit, measure unit, powder supply unit, water supply unit, mixing unit and mixed liquid output unit. We make use of the pneumatic conveying to send the measured dry powder of polymer into the mixer to disperse completely, and then mix the dispersed powder with the measured water to get the certain concentration polymer solution. The whole equipment is controlled by PLC, and some parts are processed with stainless steel. The series of dispersal and dissolving equipment of polymer are ZJ20, ZJ30, and ZJ50 etc.



Dissolving Unit



Feeding Unit



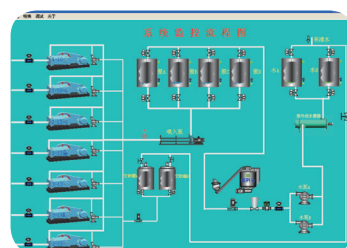
Curing Unit



Injection Unit



Auto Control System Unit



Monitoring Screen

Product Features:

- 1 Adopt dry powder unloaded machinery with accurate measurement; control the water PID by closed loop. It has high accuracy concentration of compound liquid and good stability; the concentration can also be adjusted.
- 2 Adopt sending powder with pneumatic conveying, and special structure mixer, it can get good results of dispersal and dissolution, without “fish eye”.
- 3 Some key parts of the equipment are made by stainless steel, avoiding from machinery and chemical degradation.
- 4 The whole equipment is controlled by PLC, it can achieve the checking and alarming functions with high-level automation and reliability.
- 5 Dynamic showing of operating situation by computer screen, it is easy to input and modify the parameters with high accuracy.

Product Specifications:

| No. | Items | ZJ20 | ZJ30 | ZJ50 |
|-----|-------------------------------------|---------------------|---------------------|---------------------|
| 1 | Rated Compound Liquid Quantities | 20m ³ /h | 30m ³ /h | 50m ³ /h |
| 2 | Rated Compound Liquid Concentration | 5000mg/l | 5000mg/l | 5000mg/l |
| 3 | Total Power | 25kW | 30kW | 45kW |

Skid-mounted Water-soluble Polymer Injection Equipment

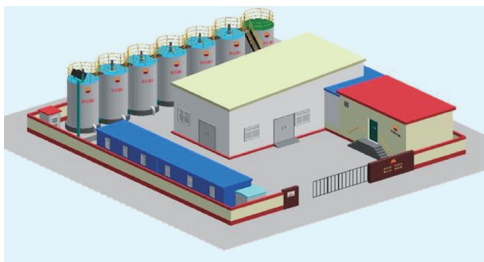
Skid-mounted Water-mixed Polymer Injection Equipment is used to transit, measure, dissolve and output the mixed liquid of polymer dry powder. The complete set of equipment is made of five parts including dissolving unit, feeding unit, curing unit, injection unit, auto control system unit. The unit is used in a complicated process. Firstly, the certain concentration mixed liquid forms in vortex ejector by mixture of polymer dry powder and water in certain proportion. Secondly, use injector to transit the mixed liquid to the receiving unit. Thirdly, transit the mixed liquid to tanks group to curing. Finally, finish the dissolved process of polymer.

Product Features:

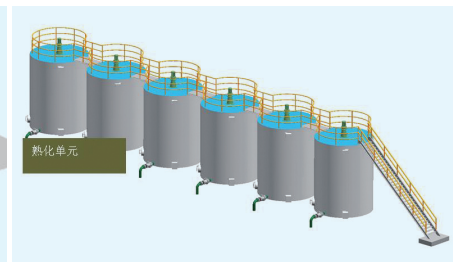
- 1 The complete set of equipment is designed with skid-mounted modular structure and it is easy to install and transport the equipment.
- 2 It uses water-mixing structure; covers less area and it can shorten the technology process, minimize the number of troubles and reduce coherence and degradation of polymer.
- 3 Its concentration has stable property; adopt water distribution system PID closed loop control; converter-controlled pump reducing the mixing air; converter-controlled measuring-feeder, high concentration accuracy and lower error.
- 4 Use special design with injector; feed the powder with water stream, no fish-eye-like indissolvable article.
- 5 It is machined by stainless steel and can avoid mechanical and chemical degradation.
- 6 It is controlled by PLC, which can realize checking and alarming functions, it has high-level automation and reliability.



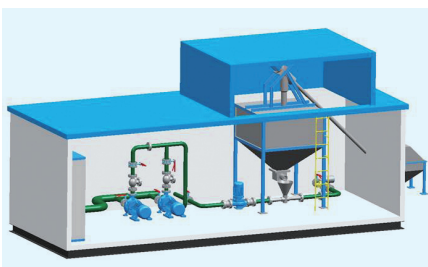
Entire view of CDG Polymer Injection Station



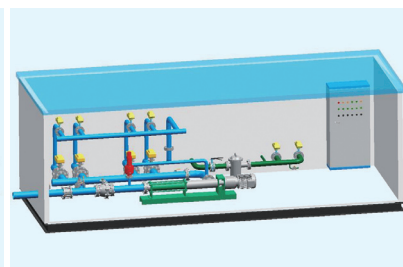
Skid-mounted Polymer Injection Station



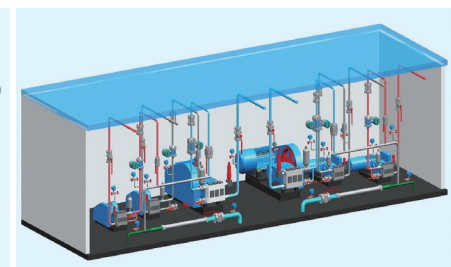
Maturing Unit of Polymer Injection Equipment



Dissolve Unit of Polymer Injection Equipment



Feeder Unit of Polymer Injection Equipment



Injection Unit of Polymer Injection Equipment

Alkali Injection Equipment

Alkali Injection Equipment is used to deliver, measure, mixing and output the alkali liquor. It is machined by stainless steel and can avoid mechanical and chemical degradation and also be controlled by PLC. This equipment can be used alone, and can also be used with other injection polymer equipment. (Binary Combination Injection Equipment)



Product Features:

1. Loading quickly, no blocking and no scaling.
2. With high accuracy in baiting operation.
3. With high accuracy of liquor concentration, lower error.
4. Fully dissolved, stirred evenly.
5. Controlled by PLC
6. Dynamic showing of operating situation by computer screen, it is easy to input and modify the parameters with high accuracy.

Product Specifications:

| No. | Item | Technical |
|-----|-------------------------------------|---------------------|
| 1 | Supply Pressure | 0.6MPa |
| 2 | Rated Compound Liquid Quantities | 10m ³ /h |
| 3 | Rated Compound Liquid Concentration | 6-8% |
| 4 | Total Power | 30kW |